An Assessment of Interprofessional Collaboration between Obstetricians, Certified Nurse Midwives and Certified Professional Midwives in the State of Virginia

Laura Koehler[1], Susan Marmagas[1], Eileen Bill[1]

Virginia Polytechnic Institute and State University[1]

An Assessment of Interprofessional Collaboration between Obstetricians, Certified Nurse Midwives and Certified Professional Midwives in the State of Virginia

Abstract

Studies have shown that effective interprofessional collaboration can improve health outcomes in maternity care. However, there is currently a perceived lack of effective collaboration between maternity care providers in the state of Virginia, specifically between obstetricians (Ob-Gyns), Certified Nurse-Midwives (CNMs), and Certified Professional Midwives (CPMs). Research assessing how to improve relationships between these professions can improve outcomes for mothers and babies in Virginia. For this qualitative-quantitative study, informational interviews were conducted with leadership representatives from each organization (n=3) which informed the development of a survey administered to 1,398 Ob-Gyns, CNMs, and CPMs via email listservs for the professional organizations of each group; the Virginia Chapter of the American Congress of Obstetricians and Gynecologists, the Virginia Chapter of the American College of Nurse Midwives, and the Virginia Midwives Alliance. The goals of the study were to assess the current state of interprofessional collaboration between the groups, specifically addressing the attitudes, knowledge, and beliefs among each group regarding the other, and what barriers exist that prevent the groups from working together. Data were analyzed using appropriate qualitative (thematic analysis) and quantitative approaches. Results indicated varying levels of satisfaction among the professional groups, highlighting communication, autonomy, and trust as significant barriers to collaboration. While barriers between Ob-Gyns and CNMs appear to stem primarily from personal and organizational issues, differences between Ob-Gyns and CPMs present a more significant issue regarding differing views on birth and medical care as a whole.

Acknowledgements

This project would not have been possible without the continued support of my Virginia Tech faculty advisors, Professor Susan Marmagas and Dr. Eileen Bill. Their dedication to my education has made my time at Virginia Tech entirely fulfilled.

This research was also conducted in collaboration with the Virginia Chapter of the American College of Obstetricians and Gynecologists (ACOG), the Virginia Affiliate of the American College of Nurse Midwives (ACNM), and the Virginia Midwives Alliance (VMA). I would especially like to thank the leadership of these organizations: Dr. Holly Puritz, Jessica Jordan, and Degra Nofsinger. Support from these individuals was essential in the success of this study.

Table of Contents

Background

In Spring 2015, the Virginia Chapter of the American College of Obstetricians and Gynecologists (ACOG), the Virginia Affiliate of the American College of Nurse-Midwives (ACNM), and the Virginia Midwives Alliance (VMA) convened to discuss how the respective associations would work together to facilitate and establish improved working relationships between the OBGYNs, Certified Nurse-Midwives (CNMs) and Certified Professional Midwives (CPMs) in Virginia.

The leaders of all three organizations, along with their lobbyists, met via an in-person meeting to discuss what initial steps they could take together to help create and/or improve relationships between the three types of providers in communities throughout the Commonwealth. The groups worked to create a joint mission statement that would establish the goal to work more collaboratively and foster more mutual respect among the three types of providers. The providers agreed that although each group had a sense of what the existing attitudes and barriers to the collaboration were, they could not truly formulate solutions to these problems until they determined what actual problems, concerns, and barriers existed.

The groups reached out to Virginia Tech to find a student researcher to develop and administer a survey for the members of the Virginia Chapter of ACOG, the Virginia Affiliate of ACNM, and VMA. The anticipated findings of this study will be used to discern:

- How each profession feels about the other;
- What each group knows about the other's education and scope of practice;
- What each group sees as a barrier to working with the other group;
- What issues exist that prevent the groups from working together;
- How some members of each group have found ways to work with those from the other group.

Purpose Statement and Research Questions

The aim of this study is to assess the current state of interprofessional collaboration between OBGYNs, Certified Nurse-Midwives (CNMs), and Certified Professional Midwives (CPMs) in the state of Virginia, with the goal to facilitate and establish better interprofessional collaboration between these professions.

Specifically, the study will discern:

- What OBGYNs, CNMs, and CPMs feel about the other.
- What OBGYNs, CNMs, and CPMs know about the other's education and scope of practice.
- What OBGYNs, CNMs, and CPMs see as a barrier to working with the other group.
- What issues exist that prevent the groups from working together.
- How some members of OBGYNs, CNMs, and CPMs have found ways to work with those from the other group.

Research Questions

1) What is the level of perceived satisfaction, trust, and demand for interprofessional collaboration between Certified Nurse-Midwives (CNMs), Certified Professional Midwives (CPMs), and Obstetricians in the state of Virginia?

2) What can be done to improve collaboration among OBGYNs, CNMs, and CPMs?

3) What attitudes exist among OBGYNs, CNMs, and CPMs regarding the other professions?

4) What are the barriers to improving interprofessional collaboration between OBGYNs, CNMs, and CPMs?

Public Health Significance

Research indicates that interprofessional collaboration can improve health outcomes when multiple professions utilize each other's knowledge and skills, communicate effectively, and coordinate appropriately (Robert Wood Johnson Foundation, 2011). However, there is currently a perceived lack of effective interprofessional collaboration between maternity care providers in the state of Virginia, specifically between Ob-Gyns, CNMs, and CPMs. Moreover, women are seeking a variety of prenatal care and birth options for their children (Colter Smith, 2014). Improving the working relationships between these three professions will promote quality outcomes for both mothers and newborns in the state of Virginia and the United States.

The significance of this study can be summarized in the Collaboration's Mission Statement:

> Virginian women want multiple options for quality prenatal care and birth for their children. Our organizations: Virginia Midwives Alliance, the Virginia Affiliate of the American College of Nurse Midwives, and the American Congress of Obstetricians and Gynecologists – Virginia Chapter, are committed to promoting collaborative relationships and practice environments among all providers to ensure that happens through an entire system of care. These collaborative, open relationships among providers will promote quality outcomes for mothers and newborns, or, in the simplest terms, happy and healthy moms and babies.

Ob-Gyns, CNMs, and CPMs

Three types of maternal and child health care providers are assessed in this study: Obstetricians and Gynecologists, Certified Nurse-Midwives (CNMs), and Certified Professional Midwives (CPMs). Although all provide care to mothers during pregnancy and birth, it is important to distinguish the differences between these professions. Obstetrics and gynecology (Ob-Gyn) is a varied discipline that is comprised of two specialties; obstetrics emphasizes care of pregnant women, including care before, during, and after childbirth. Other women's health issues, such as diagnosis and treatment of conditions relating to the female reproductive system, comprise gynecology (Association of American Medical Colleges, n.d.). Ob-Gyns have extensive training; in addition to completing 4-years of medical school, 4-years of Ob-Gyn residency training by an American Council for Graduate Medical Education (ACGME) accredited program, and rotations in obstetrics, gynecology, gynecologic oncology, reproductive endocrinology, and ultrasonography, Ob-Gyns must also pass a series of written an oral exams administered by the American Board of Obstetrics and Gynecology (ABOG) (Univiersity of Illinois College of Medicine at Chicago, 2015). In 2012, there were 33,624 general Ob-Gyns in the United States (Rayburn, Klagholz, Murray-Krezan, Dowell, & Strunk, 2012).

Certified Nurse-Midwives (CNMs) comprise the majority of midwives practicing in the United States. According to the American College of Nurse-Midwives (ACNM), the professional association representing Certified Nurse-Midwives (CNMs) and Certified Midwives (CMs) in the United States, there were 11,018 CNMs in 2015 (American College of Nurse Midwives, 2015). CNMs are defined as "licensed, independent health care providers with prescriptive authority" in the United States (American College of Nurse-Midwives, 2015). Although commonly associated with home births, about 53% of CNMs claim reproductive care as their

main practice, and 33% of CNMs identify primary care as their main responsibility. In addition to care during birth, CNMs can write prescriptions, provide annual exams, nutrition counseling, and more. CNMs are accredited by the Accreditation Commission for Midwifery Education (ACME). There are 39 ACME-accredited midwifery programs in the United States (American College of Nurse Midwives, 2015). CNMs must also pass the national certification exam administered by the American Midwifery Education Board (AMCB) to earn the title of Certified Nurse-Midwife (American College of Nurse Midwives, 2004). As of 2010, all new CNMs are required to have a Masters degree; nearly 80% of CNMs have a graduate degree, and about 5% have doctoral degrees (American College of Nurse-Midwives, 2015).

Certified Professional Midwives (CPMs) are a third type of provider that women can use during their pregnancy. According to the National Association of Certified Professional Midwives, a Certified Professional Midwife is "a knowledgeable, skilled, and professional maternity care provider…[they] are trained and credentialed to offer expert care, education, counseling, and support to women during their pregnancy, birth, and the postpartum period" (National Association of Certified Professional Midwives, 2014). CPMs primarily perform out-of-hospital births, either at birthing centers or at home births (North American Registry of Midwives, 2016). Certified Professional Midwives are not considered legal practitioners in every state. If certification is available in one's state, a prospective midwife must earn the Certified Professional Midwife credential, which is issued by the North American Registry of Midwives (NARM). Notably, CPMs are the only types of midwives who are specifically required to have knowledge and experience with out-of-hospital births (Midwives Alliance of North America, 2016).

Recent trends in midwifery care reveal the increased need for public health research in this area. Since 1989, the number of births attended by CNMs/CMs has steadily increased, with 320,983 of births in 2013 attended by Certified Nurse-Midwives (CNMs) and Certified Midwives (CMs). Between 2005 and 2013, the number of births attended by CNMs increased to 7.8% of all hospital births. Moreover, the number of out-of-hospital births attended by CNMs also increased from 28.6% in 2005 to 31.2% in 2013. Non-CNMs, such as Certified Professional Midwives (CPMs) attended 27,865 births in 2013 (Martin, Hamilton, Osterman, Curtin, & Mathews, 2015).

Review of the Literature

Interprofessional collaboration has been used for decades in the healthcare setting to increase efficiency in health delivery, expand the knowledge and abilities of health care providers, and ultimately, improve overall health outcomes (King, 2015). While there are several definitions of collaborative care, there are two in particular that succinctly describe the process and goals by which collaborative maternal care can be achieved. In 2014, Colter-Smith defined midwife-physician collaboration as:

> A process in which midwives and physicians work together toward a common purpose: to provide safe, effective, patient-centered care for women and their families, guided by shared rules and structures, both formal and informal, which govern a mutually beneficial relationship, a relationship which seeks to optimize the context in which the collaboration is convened (Colter Smith, 2014).

A perhaps even more illustrative definition of collaboration was made in 1994 when J.A. Evans wrote of collaboration in the following manner:

> Collaboration is significantly more complex than simply working in close proximity to one another. It implies a bond, a joining together, a union and a degree of caring about one another and the relationship. A collaborative relationship is not merely the sum of its inputs. The collaborative relationship is more importantly a synergistic alliance that maximizes the contribution of each participant, resulting in an action that is greater than the sum of the individual works (Evans, 1994).

Both definitions describe collaborative care as a process involving a building of relationships and a set of common goals and strategies.

Recently there has been increased interest in integrating effective interprofessional models into maternity care. The World Health Organization conducted an investigation into collaborative models in nursing and midwifery care across six countries, built upon the premise that successful collaborative models can improve health outcomes and make the healthcare system more efficient. This study revealed that effective leadership and commitment at the executive level provides the essential foundation necessary to achieve successful interprofessional collaboration. Such organizations can develop effective protocols, communication models, and institutional support that can facilitate collaborative care (World Health Organization, 2013). Indeed, in the United States, there have been steps taken by national groups to develop guidelines and rules to facilitate collaborative care between midwives and physicians. In 2011, the American College of Obstetricians and Gynecologists (ACOG) and the American College of Nurse-Midwives (ACNM) co-authored the "Joint Statement of Practice Relations Between Obstetrician-Gynecologists and Certified Nurse-Midwives/Certified Midwives" affirming and detailing each group's commitment to interprofessional collaboration between obstetricians and CNMs. The document states that, "to provide the highest quality and seamless care, physicians and midwives should have access to a system of care that fosters collaboration among licensed, independent providers" (American College of Nurse Midwives & American College of Obstetricians and Gynecologists, 2011). In the same year, ACNM, the Association of Women's Health, Obstetric, and Neonatal Nurses (AWHONN) and physician organizations issued a call to action for patient safety and delivery, a collaborative statement reflecting the importance many professional health organizations place on interdisciplinary care in birth (Ivory, 2015). Such groups have continued to work together at the national level to develop guidelines, standards of care, and interprofessional education models (King, 2015).

Studies have shown that interprofessional collaboration can improve health outcomes in maternity care (Colter Smith, 2014). A 2011 study assessing the effectiveness of a collaborative model between ob-gyns and CNMs at a small obstetric unit resulted in favorable cesarean-section (C-section) and vaginal birth after cesarean (VBAC) outcomes compared to national and statewide statistics (Darlington, 2011). A 2012 study at a collaborative care practice revealed an increase in VBACs after collaboration, from 8% in 2007 to 21% in 2010. The same practice also saw improved patient and provider satisfaction and a decrease in episiotomy rates during the same period (Nielsen et al., 2012). Other studies have revealed that collaboration between midwives and physicians can lead to minimal use of prescription pain relievers, obstetric interventions, and high perinatal outcomes (Shaw-Battista et al., 2011). In addition to improved health outcomes, other positive findings have resulted from interprofessional collaboration in maternity care. Collaboration between physicians and CNMs at the San Francisco General Hospital has led not only to improved patient outcomes, but also to more efficient delivery of care and increased opportunities for partnerships between providers (Hutchinson et al., 2011). Effective collaborative relationships can also lead to a more cost-effective health care delivery system, increased revenues, and opportunities for professional education and growth for individual providers (Ogburn et al., 2012) (Stevens, Witmer, Grant, & Cammarano III, 2012).

Successful models of collaborative care share similar characteristics. Interpersonal factors, such as mutual trust and respect, emphasized communication, and shared decision-making facilitate constructive interdisciplinary relationships (Darlington, 2011)(DeJoy et al., 2011)(Hutchinson et al., 2011)(Ogburn et al., 2012). Respect and trust serves as the foundation of collaborative practice, as it helps to cultivate a culture that allows for collaboration to occur (Hutchinson et al., 2011). Mutual trust and respect allows practices to utilize each provider

effectively, as it involves not only respecting the person as an individual, but also respecting their expertise as distinctly different from their own. Additionally, open lines of communication are essential for collaborative practice; as Nielsen et al. (2012) writes, "communication could be considered as the most critical element in collaboration teamwork." The authors note that hallmarks of effective communication are that it is open, honest, regular, bi-directional, accurate, clear, concise, and systematic (Nielsen et al., 2012). Another article celebrates communication as facilitating effective interprofessional relationships, saying, "communication is the key to collaborative relationships, and although time consuming, is crucial for success" (Stevens et al., 2012).

Organizational and structural factors also facilitate effective interprofessional collaboration in maternity care. Darlington (2011) identifies three structural characteristics that lead to a successful collaboration at the Family Beginnings Obstetric Unit at Group Health in Seattle, Washington: independence and autonomy for each provider, a legal framework that allows for independence, and an institutional culture that facilitates collaboration (Darlington, 2011). The flexible culture at Family Beginnings allows for different types of care with different types of providers. In having a variety of providers, different skillsets and practicing habits can be utilized to benefit the relationship. In providing autonomy to CNMs in collaborative care, there can be a more even distribution of workload between midwives and physicians, and a greater sense of equality, trust, and respect arises (Ogburn et al., 2012).

While interprofessional collaboration is known to improve healthcare delivery in the United States, there is little research into developing effective collaborative models for maternity care in the state of Virginia. Additionally, many models of interprofessional collaboration in maternity care focus solely on the relationship between obstetricians and Certified Nurse-

Midwives (CNMs). In Virginia, Certified Professional Midwives (CPMs) are an available option for prospective mothers, yet there are no studies that address interprofessional collaboration between obstetricians, CNMs, and CPMs as a whole. In order to adopt a model of collaborative care to the Virginian healthcare system, researchers must work to identify facilitators and barriers to collaborative care with the consideration of all three types of providers.

Methodology

Informational Interviews and Survey Development

Three individual interviews were conducted with volunteer representatives from the leadership of each participating organization after an initial videoconference with the leadership of the Virginia Chapter of the American College of Obstetricians and Gynecologists (ACOG), the Virginia Affiliate of the American College of Nurse-Midwives (ACNM), and the Virginia Midwives Alliance (VMA) and their lobbyists. Two interviews were conducted via telephone, and one interview was conducted in-person. Each interview lasted approximately 1.5 hours. The organization representatives were asked open-ended and Likert-type questions reflecting primary dimensions, concepts, and statements key to successful interprofessional collaboration between midwives and physicians as defined by Colter-Smith (Colter Smith, 2014). These questions addressed the organizational dimension, including shared vision, shared interest, and commitment; the procedural dimension, including shared decision making, coordination, and role clarity; the relational dimension, including communication, trust, respect, synergy, and reciprocity; and the contextual dimension, including shared power (Colter Smith, 2014). Questions were designed to assess the current state of interprofessional collaboration between Virginian CNMs, CPMs, and physicians. Each interview was recorded, and data from the interviews were transcribed and coded using Atlas.ti software and analyzed for common themes. Since the purpose of the interviews was to inform the development of the survey questions, reliability and validity of the coding was not verified.

Survey Design and Implementation

The qualitative data derived from these interviews was used to inform the development of a survey administered to 1,398 members of the Virginia Chapter of ACOG, the Virginia Affiliate of ACNM, and the VMA. Three surveys were created that were tailored to each professional

group. The leadership of each professional organization reviewed the surveys to make recommendations and assess the accuracy of the questions to ensure face validity. The survey was created and implemented using Virginia Tech's Qualtrics Survey Software. Each survey consisted of approximately 35 questions and included both open-ended questions and Likert-type questions. An open-ended format was used for approximately 10 questions, a Likert-type was used for approximately 10 questions, and the remaining 15 questions were multiple choice. Questions were designed to address the perceived level of satisfaction, trust, and demand for interprofessional collaboration between CNMs, CPMs, and obstetricians in Virginia; the knowledge, attitudes, and beliefs that exist among each profession regarding the other professions; the barriers and facilitators to interprofessional collaboration; and what opportunities exist to improve collaboration. The remaining questions addressed demographics, including age, gender, years in practice, region of practice, and membership to professional organizations.

Each participating organization agreed to distribute the survey via email to their respective membership population. Approximately 1,398 midwives and physicians received the email invitation to participate in the survey (Ob-Gyns: n=1,121; CNMs: n=212; CPMs n=65). Participants were informed that participation in the survey was both voluntary and anonymous. The survey was open for a 7-week period, and email reminders were distributed approximately every 2 weeks. Upon opening the survey, respondents were brought to an introductory screen describing the purpose of the study. Similar questions were grouped together on the same screen, and respondents could move through the survey at their own pace by manually advancing to the next screen. To minimize asking irrelevant questions, skip patterns were utilized to move respondents to appropriate questions. For example, when asked "In 2015, how often did you

work with a Certified Nurse Midwife (CNM)?", if a physician responded "never" or "I had no deliveries in 2015" he/she was automatically moved past the set of questions regarding working relationships with CNMs. See Appendix A for a sample survey.

Data Analysis

Data was downloaded and results were analyzed using both qualitative and quantitative techniques. Open-ended questions were transcribed and assessed using a thematic analysis using Atlas.ti software. Relevant quantitative data was analyzed using appropriate statistical analysis, including T-tests and ANOVA, using the Real Statistics package in Microsoft Excel.

Results

Response Rate and Demographics

Approximately 1,121 Ob-Gyns were invited to participate in the survey. Of that group, 336 opened the email containing the survey (29.9% of 1,121), 99 (8.8% of 1,121) started the survey, and 65 completed the survey in its entirety (65% completion rate among starters). The physicians surveyed worked in a variety of settings; 25% (n=21) worked in academic settings, 19% (n=16) worked in owned private practice, and 41% (n=35) worked in independent private practice. The majority of respondents reported being members of the American Congress of Obstetricians and Gynecologists (ACOG) (68%, n=44), 42% (n=27) were male, and 58% (n=38) were female. Physicians who responded to the survey interacted with midwives at various levels; approximately 40% (n=30) of physicians reported working with CNMs in 2015 and 17% (n=12) reported working with CPMs in 2015.

Certified Nurse Midwives (CNMs) responded to the survey at higher rates than physicians. About 212 CNMs were invited to complete the survey; of that group, 73 CNMs (34%) started surveys, and 52 were completed (71% completion rate among those who started). Approximately 17% (n=10) of CNMs reporting having attended at home birth in 2015. All of the respondents were female, 23% (n=12) reported being a member of the Virginia Midwives Alliance (VMA), and 100% (n=52) reported being a member of the American College of Nurse Midwives (ACNM). About 89% (n=47) of CNMs worked with physicians in 2015, and 38% (n=20) worked with CPMs in 2015.

Approximately 65 CPMs were invited to participate in the survey; of that group, 41 CPMs (63%) started the survey, and 29 (71%) CPMs completed the survey in full. Most respondents reported working with either a CNM or a physician in 2015; 81% (n=26) reported

working with a physician, and 64% (n=19) reported working with a CNM. All CPM respondents were female (n=29), and 83% (n=24) reported being a member of VMA.

Collaboration Between Certified Nurse Midwives (CNMs) and Ob-Gyns

Collaboration was measured with three scales targeting interprofessional satisfaction, trust, and importance. Professionals were asked to rate their levels of satisfaction with the other providers on a scale of 1-5, with 1 representing "very unsatisfied," and 5 representing "very satisfied." CNMs and Ob-Gyns responses indicated a "neutral" to "satisfied" degree of satisfaction with the other provider (M_{CNMs}=3.91, SD=1.060; $M_{Ob\text{-}Gyns}$=4.11, SD=1.155). When rating their levels of trust with the other provider on a scale of 1-10 (1 = no trust at all; 10 = complete trust), CNMs reported a mean level of trust with Ob-Gyns of 8.19 (SD=1.918) level of trust with Ob-Gyns, and Ob-Gyns reported a mean level of trust with CNMs of 7.85 (SD=2.014) level of trust with CNMs. Demand for interprofessional collaboration was determined by each provider's attitudes regarding the importance of interprofessional collaboration to their work. Using a 5-point scale, CNMs reported that working with Ob-Gyns was "very important" or "extremely important" to the effectiveness of their work (M=4.06 +/- .091). Ob-Gyns reported on the same scale that working with CNMs was "neither important or unimportant" or "very important" to the effectiveness of their work (M=3.25 =/- .153). Differences in CNM's and Ob-Gyn's collaboration ratings were not significant; alpha (α) = .05. (See Figure 1).

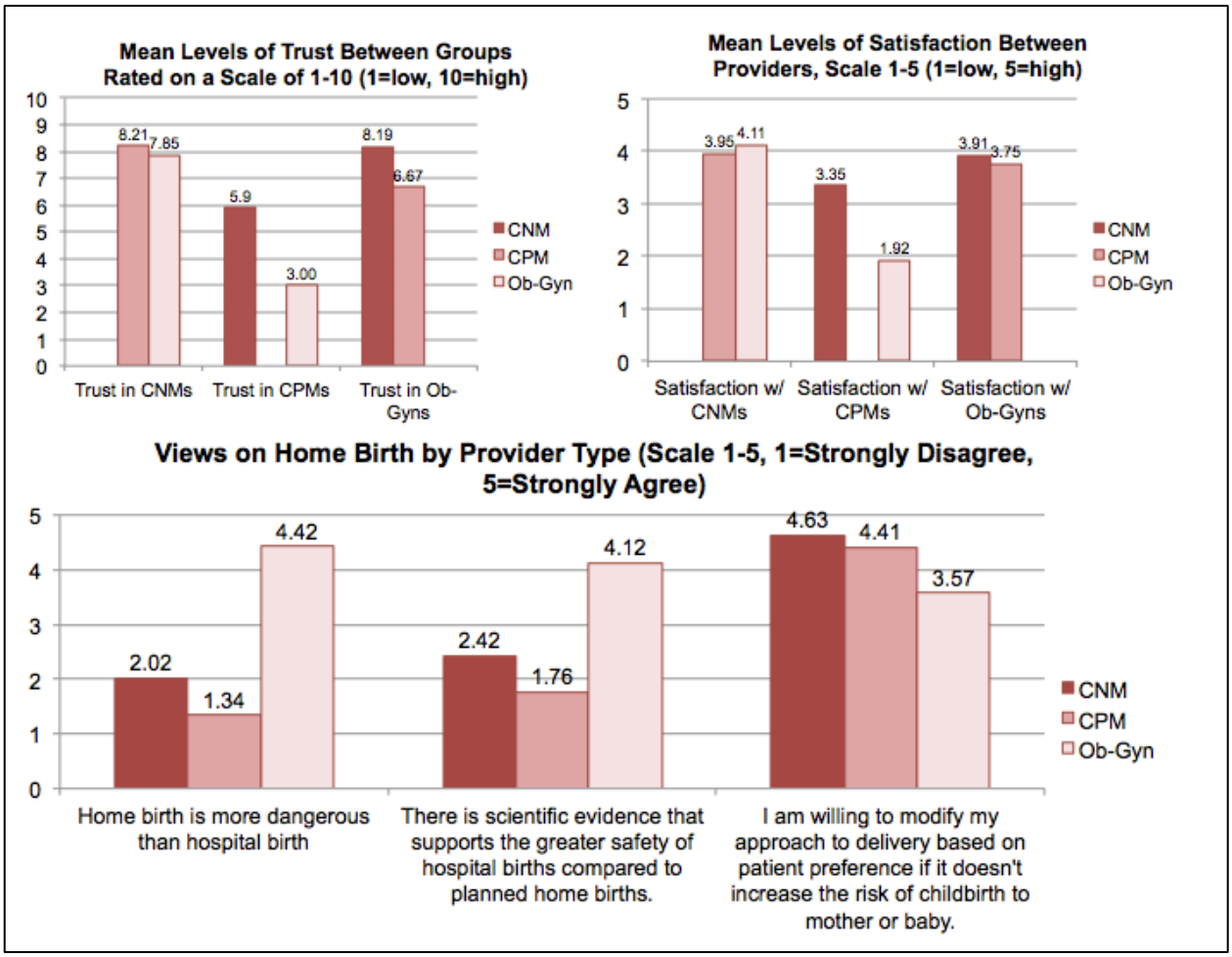

Figure 1: Summary of the means reported by profession

When asked to report facilitators to working with the respective group, CNMs and Ob-Gyns provided varying responses. The prevalent attitudes derived from physicians responses indicate a perception that CNMs are hard working and knowledgeable, thus enhancing their ability to provide attentive care to complex cases while trusting CNMs with less complicated patients. Physicians noted that sharing common goals, focusing on collaborative care, and working together to achieve the best health outcomes for patients were facilitators to the relationship. Respondents also identified open communication and understanding of the responsibilities of the respective groups as notable characteristics of successful collaboration. The prevalent Ob-gyn perception of CNMs can be summarized as follows:

> "In my experience [CNMs] have been very evidence focused. The CNMs I work with have great clinical judgment and the collaboration is very rewarding - the women we care for together get all the benefits of CNM care with the ability to easily add more advanced MD care when needed. In my practice in particular we have been able to care together for even very complicated patients who desire CNM care; I just step in for the heavy medical issues." – Ob-gyn

When asked about positive experiences when working with Ob-Gyns, CNMs highlighted equity, respect, trust, and autonomy as facilitators to positive physician-midwife relationships, as well as frequent opportunities for open consultation, learning, and interaction. CNMs discussed a desire for respect from physicians to respect and understand their model of care, and to trust that although the care is different from traditional medical care, it is nonetheless "legitimate."

Insufficient education and liability concerns were identified by Ob-Gyns as the most common barriers to collaboration with CNMs. The most common barrier reported by physicians was the perception that CNMs lack sufficient judgment; one physician stated that the CNM he/she worked with waited too long to consult with a physician regarding a high-risk patient, resulting in poor health outcomes. Physicians also detailed scenarios in which they felt uncomfortable giving CNMs full responsibility of patients that they were ultimately responsible; as one Ob-Gyn responded,

> "the CNMs are independent and licensed in their own right. I should not be expected to "sign off" on anything, or have an implied responsibility for their actions any more than they should have the same for me."

Nearly as frequently as it was reported as a facilitator to collaboration, respect was also reported by CNMs as a common barrier to successful collaboration, commenting that they feel a

lack of respect by the physician both for the midwife on a personal level, but also a lack of respect for the midwifery model of care as a whole. In fact, CNMs mentioned the words "respect" and "respectful" in their responses 52 times, while physicians only mentioned "respect" 9 times. Additional barriers identified by CNMs related to issues of autonomy and the organizational structure of the practices in which the groups collaborate. In their responses, CNMs reported a demand for support from physicians to provide opportunities for consultation and education, but also to maintain a great deal of autonomy to care for patients as their own without being viewed as physician extenders. Some mentioned that the way the practices were structured could bar the groups from communicating effectively or practicing in the same manner. The reasons for this varied; as one CNM responded,

> "The physicians are a very diverse group and do not always agree with each other's plans, which means that the plan may change from day to day depending on who is the consultant for that day."

CNMs also identified the large group model, the "limitations physicians face when their practice is owned by a healthcare corporation," the fee for service model, and employment structures as other structural barriers to collaboration. See Appendix B for additional quotations from respondents.

Collaboration Between Certified Nurse Midwives (CNMs) and Certified Professional Midwives (CPMs)

When rating their levels of satisfaction with their collaboration, CPMs and CNMs reported similarly "neutral" or "satisfied" degree of satisfaction (M_{CPMs}=3.95, SD=.970; M_{CNMs}=3.35, SD=1.309). The groups, however, reported differing levels of trust with one another (M_{CPMs}=8.21, SD=1.813; M_{CNMs}=5.90, SD=2.789; t=3.063, p=0.004). When rating the

importance of interprofessional collaboration with CNMs, CPMs reported that working with CNMs was "neither important nor unimportant," (M=3.73, SD=1.172) and CNMs reported that working with CPMs was "very unimportant" or "neither important or unimportant" (M=2.58, SD=1.232), although this difference was not significant (α=.05). See Figure 1.

Written responses by CNMs and CPMs reveal several facilitators to collaboration between the groups, including understanding the other profession's scope of practice and sharing common goals and views on birth. Some participants also highlighted a desire and commitment to improve relationships between CNMs and CPMs. Both groups emphasized the importance of having a personal relationship with the other provider when working together to treat a patient; one CNM wrote that "we have gotten to know them personally and professionally," which helped facilitate effective collaboration. A CPM expressed desire to improve these interactions, writing, "I still want us all to be able to connect on one platform and meet regularly or have a clear way of communicating or understanding." The above quotations reflect a general desire to improve communication, interaction, and relationship building in order to ease transfer of care and improve the birthing experience for the patient.

Both groups noted that sharing a common goal to enhance the birthing experience through midwifery care aided the levels of understanding between CPMs and CNMs. One CPM specifically detailed more positive experiences with CNMs who have worked in out-of-hospital settings than with CNMs who have not. However, some CNMs expressed concern that CPMs do not have the qualifications to appropriately determine which patients are too high-risk for home births. When asked what they would change about their collaborations with CPMs, one CNM wrote that he/she wished "they limited their care to low risk women." Another barrier to

successful collaboration between the groups is a perception held by CNMs that CPMs are "hostile" toward the medical community. See Appendix B.

Collaboration Between Certified Professional Midwives (CPMs) and Ob-Gyns

CPMs' satisfaction with Ob-Gyns was similar to CNMs' (M=3.75, SD=0.794), indicating a "neutral" or "satisfied" degree of satisfaction with the relationship. Conversely, Ob-Gyns reported a mean level of 1.92 (SD=1.038), reflecting a "very dissatisfied" or "dissatisfied" level of satisfaction with CPMs. The difference in satisfaction between the groups was significant ($t=5.993$, $p<.0001$). The differences in the CPMs' and the Ob-Gyns' levels of trust between the groups was also significant ($M_{CPMs}=6.67$, SD=2.036; $M_{Ob\text{-}Gyns}=3.00$, SD=2.309; $t=4.99$, $p<.0001$). CPMs and Ob-Gyns also differed in their level of demand for interprofessional collaboration with one another ($M_{CPMs}=4.13$, SD=.097; $M_{Ob\text{-}Gyns}=2.24$, SD=1.28; $t=7.51$, $p<.0001$). See Figure 1.

The reasons given for the barriers to collaboration site differed between the professions. CPMs primarily view their relationship with Ob-Gyns as being harmed by a lack of trust, respect, understanding, communication, and willingness to pursue collaborative relationships. CPMs report a perception that physicians have an overwhelmingly negative opinion about CPMs and their model of care (primarily with regards to home births), and identify a fear that physicians will report them to the Board of Medicine should patients experience negative outcomes. As one CPM stated,

> "A great challenge for us are rumors and gossip. We may think we have been building good relationships with local physicians, but then hear that they have been speaking poorly about us to their clients and in the community." – CPM

Another CPM noted, “And in my practice they have filed multiple complaints against my license which obviously creates a lack of trust! Every time I transfer I fear another BOM complaint."

Conversely, many of the Ob-Gyns surveyed view CPMs as untrustworthy, not properly educated and trained, and not adhering to their perceived best medical practices. Additionally, when asked about the positives of working with CPMs, few physicians had any positive comments to make. Much of the lack of trust reported by Ob-Gyns derived from the perception held by Ob-Gyns that CPMs do not provide adequate care. As one Ob-Gyn strongly noted, "these people are dangerous, they bring patients to the hospital that have labored too long and are in dire need of professional medical help." Another Ob-Gyn expressed a desire for improved education in CPMs; “I would like to see them have a stronger fund of knowledge and adhere to the principle of taking care of low risk patients."

Differing views on birth and different standards of care for perspective mothers was the most prominent barrier to collaboration between the groups. Many CPMs expressed a desire for “more support for the families decision and right to safely choose a home birth.” However, many Ob-Gyns responded with disapproval for the CPM model of care, with one Ob-Gyn citing a barrier as “their [CPM] model is home birth which is generally contrary to the OB/GYN training and medical models.” Another significant barrier to collaboration between the two groups was willingness to pursue a collaborative relationship at all. CPMs commented that they are willing to learn from physicians, noting a desire to have increased availability of physicians to consult with. However, few physicians appeared to be willing to work with CPMs unless they are required to do so.

When asked to identify ways to improve collaboration with Ob-Gyns, CPMs called for increased communication and interaction between the professions. Both groups agree that interaction occurs only during times of transfer, which is generally during an emergency during labor. CPMs suggested that increased interaction provides more opportunities for learning and understanding under less stressful circumstances. One CPM described a unique experience with collaboration with an Ob-Gyn:

> "I've also found it helpful to do job shadowing with my backup doctor. It has given us valuable opportunities to get to know each other better and share more with each other about philosophical differences. I seek his help when I have questions about things I am unsure about, and this has built trust with him. He knows that I don't hesitate to reach out for help if something is outside of my knowledge or skill level."

In addition to increased opportunities for collaboration, another facilitator identified by CPMs was increased respect by physicians. CPMs noted a desire for physicians to respect their expertise as experts in home birth and ability to make appropriate medical decisions. Additionally, CPMs called for a respect for the patient who made the decision to have a home birth.

The most common facilitator to collaboration recognized by Ob-Gyns was improved education and training for CPMs. Many Ob-Gyns noted that CPMS do not employ appropriate criteria for determining what patients can have a home birth and at times do not understand the limits of their training. Ob-Gyns also recognize that communication can improve education opportunities for CPMs, which in turn facilitates better understanding and trust between the groups. See Appendix B.

Views on Home Birth

Home birth was a common barrier cited by each professional group in their responses. Responses to questions pertaining to home birth varied between the groups. When asked how strongly each group agreed or disagreed with the statement on a scale of 1-5, where 1=strongly disagree and 5=strongly agree, "Home birth is more dangerous than hospital birth," CPMs indicated a "strongly disagree" to "disagree" level of agreement (M=1.34, SD=.553), CNMs indicated a "disagree" to "neither disagree or agree" level of agreement (M=2.02, SD=1.098), and Ob-Gyns indicated an "agree" to "strongly agree" level of agreement (M=4.42, SD=.827). The differences between the groups were significant (F-crit=3.06, $p<.0001$). When asked how strongly each group agreed or disagreed with the statement, "There is scientific evidence that supports the greater safety of hospital births compared to planned home births," CPMs indicated a "strongly disagree" to "disagree" level of agreement (M=1.76, SD=.689), CNMs indicated a "disagree" to "neither disagree or agree" level of agreement (M=2.42, SD=1.126), and Ob-Gyns indicated an "agree" to "strongly agree" level of agreement (M=4.12, SD=.960). Finally, when asked to rate their level of agreement with the statement, "I am willing to modify my approach to delivery based on patient preferences if it doesn't increase the risk of childbirth to mother or baby," both CPMs and CNMs reported an "agree" to "strongly agree" level of agreement (M_{CPMs}=4.41, SD=.682; M_{CNMs}=4.63, SD=.528), and Ob-Gyns reported a "neither disagree or agree" to "agree" level of agreement (M=3.57, SD=1.334). The results reported were significantly different between Ob-Gyns and CPMs (t=3.057, p=.003) and Ob-Gyns and CNMs (t=4.95, $p<.0001$), but was not significant between CNMs and CPMs (α=.05).

Discussion

Interprofessional collaboration between Ob-Gyns, CNMs, and CPMs is nuanced and complex. While there are varying degrees of agreement between the three groups, the most positive relationship exists between Ob-Gyns and CNMs, and the most contentious relationship exists between Ob-Gyns and CPMs. While the issues fracturing the relationship between Ob-Gyns and CNMs are repairable structural and personal barriers, the obstacles preventing Ob-Gyns and CPMs from effectively collaborating occur at a significantly deeper level, representing conflict over differing views on birth and medical care as a whole.

Facilitators to interprofessional collaboration between Ob-Gyns, CNMs, and CPMs in the state of Virginia include personal factors, such as high levels of trust and respect among the professions; interprofessional factors, including professional support for one another, high levels of interaction, and open and frequent communication; and sharing common goals, models of care, and views on best medical practices. These facilitators do not occur independent of one another, but rather form an interweaving network of best collaborative practices. At the individual level, it is important to maintain high levels of respect and trust between the professions. In having established positive personal relationships, professionals are able to communicate more honestly and openly, which in turn provides the foundation for trust in each other's decisions and actions. However, positive personal relationships cannot occur without frequent interaction between groups. In order to build trust and respect and to open lines of communication, professionals must be open to the collaborative practice and must make efforts to increase interaction among groups. Additionally, increased interaction not only improves personal factors between the professions, but it also provides opportunities to the professionals to learn from one another and develop a truly collaborative model of care for women.

Table 1: Barriers to Interprofessional Collaboration	
Interpersonal	❖ Respect for the patient ❖ Respect for the professional ❖ Trust in the other professional's abilities ❖ Lack of effective communication
Interdisciplinary	❖ Disagreement regarding the safety of home birth ❖ Disagreement about what cases are appropriate for home births ❖ Not sharing common goals and medical practices
Organizational	❖ Liability concerns ❖ Employment and fee structures

Barriers to interprofessional collaboration can be characterized into three categories: interpersonal barriers, interdisciplinary barriers, and organizational barriers (see Table 1). Each group mentioned various interpersonal barriers in their responses, highlighting distrust, disrespect, and a lack of communication as significant barriers to collaboration. Both CNMs and CPMs indicated that a lack of communication and a lack of respect by the physicians was a significant barrier to working together, while Ob-Gyns detailed a mistrust of the other groups' ability to discern the best medical practices. At the interdisciplinary level, disagreement about the best medical practices and models of care presented a significant barrier to collaboration. The groups lacked agreement on the safety of home birth, the best circumstances for home birth, and the overall approach taken to treat patients. Organizational barriers were also cited in the professionals' responses; many noted that liability concerns, employment arrangements, and fee structures presented issues when the groups worked together.

Findings from previous studies also support the assertion that interpersonal, interdisciplinary, and organizational attributes can prevent these groups from working successfully together. Studies have indicated that mutual trust and respect are necessary for

successful collaboration (Darlington, 2011)(DeJoy et al., 2011)(Hutchinson et al., 2011)(Ogburn et al., 2012), as well as open and honest communication (Nielsen et al., 2012). Other studies highlight the need to address organizational barriers, including improving the independence and autonomy of the providers, suggesting that these changes will facilitate improved interpersonal relationships (Darlington, 2011).

The differing levels of satisfaction not only between the groups, but also within the groups themselves, indicates that methods to improve interprofessional collaboration must be tailored to each particular practice. The professionals surveyed indicated varying levels of trust, demand, and satisfaction with their counterparts, and noted that their comments did not apply to each group universally. More research is needed to explore the unique characteristics that facilitate collaboration between these three types of providers.

Conclusion

Collaboration between CNMs, CPMs, and Ob-Gyns differs between groups, with CNMs and Ob-Gyns having the most positive relationship, and Ob-Gyns and CNMs having the most contentious relationship. The issues of home birth, models of care, and best medical practices (a barrier found in the collaborations between all three groups) entails a deeper understanding of the different, yet legitimate, scopes of practice and models of care between Ob-Gyns, CNMs, and CPMs. Each group noted discontent with the other's practicing models of care; however, Ob-Gyns and CPMs appeared to have a nearly irreparable disagreement on the best way to care for patients. In order for these groups to truly pursue a collaborative relationship, each profession must identify a path toward a better understanding of each other's scope of practice and views on birth.

References

American College of Nurse Midwives. (2004). Definition of Midwifery and Scope of Practice of Certified Nurse-Midwives and Certified Midwives. American College of Nurse Midwives. Retrieved from http://www.midwife.org/ACNM/files/ACNMLibraryData/UPLOADFILENAME/000000000266/Definition%20of%20Midwifery%20and%20Scope%20of%20Practice%20of%20CNMs%20and%20CMs%20Dec%202011.pdf

American College of Nurse Midwives. (2015, September). Fact Sheet: Essential Facts About Midwives. American College of Nurse Midwives. Retrieved from http://www.midwife.org/acnm/files/ccLibraryFiles/Filename/000000005616/EssentialFactsAboutMidwives-090915.pdf

American College of Nurse Midwives, & American College of Obstetricians and Gynecologists. (2011). Joint Statement of Practice Relations Between Obstetrician-Gynecologists and Certified Nurse-Midwives/Certified Midwives. American College of Nurse Midwives. Retrieved from http://www.midwife.org/ACNM/files/ACNMLibraryData/UPLOADFILENAME/000000000224/ACNM.ACOG%20Joint%20Statement%203.30.11.pdf

Association of American Medical Colleges. (n.d.). Obstetrics and Gynecology. Retrieved from https://www.aamc.org/cim/specialty/list/us/336850/obstetrics_and_gynecology.html

Colter Smith, D. (2014). Midwife-Physician Collaboration: A Conceptual Framework for Interprofessional Collaborative Practice. *Journal of Midwifery & Women's Health*, *60*(2), 128–139.

Darlington, A. (2011). A Northwest Collaborative Practice Model. *Obstetrics and Gynecology*, *118*(3), 673–677.

DeJoy, S., Burkman, R., Graves, B., Grow, D., Sankey, H., Delk, C., … Hallisey, A. (2011). Making it work: successful collaborative practice. *Obstetrics and Gynecology*, *118*(3), 683–686.

Evans, J. A. (1994). The Role of Nurse Manager in Creating an Environment of Collaborative Practice. *Holistic Nursing Practice*, *8*(3), 22.

Hutchinson, M., Ennis, L., Shaw-Battista, J., Delgado, A., Myers, K., Cragin, L., & Jackson, R. (2011). Great Minds Don't Think Alike: Collaborative Maternity Care at San Francisco General Hospital. *Obstetrics and Gynecology*, *118*(3), 678–682.

Ivory, C. (2015). Collaboration Between Midwives and Nurses: Past, Present, and Future. *Journal of Midwifery & Women's Health*, *60*(2).

King, T. (2015). Interprofessional Collaboration: Changing the Future. *Journal of Midwifery & Women's Health*, *60*(2), 117–119.

Martin, J., Hamilton, B., Osterman, M., Curtin, S., & Mathews, T. J. (2015). Births: Final Data for 2013. *National Vital Statistics Reports*, *64*(1). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_01.pdf

Midwives Alliance of North America. (2016). Legal Status of U.S. Midwives. Retrieved from http://mana.org/about-midwives/legal-status-of-us-midwives

National Association of Certified Professional Midwives. (2014). Who are CPMs. Retrieved from http://nacpm.org/about-cpms/who-are-cpms/

Nielsen, P., Munroe, M., Foglia, L., Piecek, R., Backman, M. P., Cypher, R., & Smith, D. (2012). Collaborative Practice Model: Madigan Army Medical Center. *Obstetrics & Gynecology Clinics of North America*, *39*(3), 399–410.

North American Registry of Midwives. (2016). What is a CPM? Retrieved from http://narm.org/

Ogburn, J., Espey, E., Pierce-Bulger, M., Waxman, A., Allee, L., Haffner, W., & Howe, J. (2012). Midwives and Obstetrician-Gynecologists Collaborating for Native American Women's Health. *Obstetrics & Gynecology Clinics of North America*, *39*(3), 359–366.

Rayburn, W., Klagholz, J., Murray-Krezan, C., Dowell, L., & Strunk, A. (2012). Distribution of American Congress of Obstetricians and Gynecologist fellows and junior fellows in practice in the United States. *Obstetrics and Gynecology*, *119*(5).

Robert Wood Johnson Foundation. (2011, September). Health Policy Snapshot: Workforce.

Shaw-Battista, J., Fineberg, A., Boehler, B., Skubic, B., Wooley, D., & Tilton, Z. (2011). Obstetrician and Nurse-Midwife Collaboration: Successful Public Health and Private Practice Partnership. *Obstetrics and Gynecology*, *118*(3), 663–672.

Stevens, J., Witmer, T., Grant, R., & Cammarano III, D. (2012). Description of a Successful Collaborative Birth Center Practice Among Midwives and an Obstetrician. *Obstetrics & Gynecology Clinics of North America*, *39*(3), 347–357.

Univiersity of Illinois College of Medicine at Chicago. (2015). Education and Training for Ob/GYN. Retrieved from http://chicago.medicine.uic.edu/departments___programs/departments/obgyn/education/students/ob_gyn_student_interest_group_/TrainingOB/

World Health Organization. (2013). Interprofessional Collaborative Practice in Primary Health Care: Nursing and Midiwfery Perspectives. *Human Resources for Health Observer*, (13). Retrieved from http://www.who.int/hrh/resources/IPE_SixCaseStudies.pdf?ua=1

Appendix A: Sample Survey

Thank you for participating in this survey. The survey will take about 15 minutes to complete. By taking this survey, you are providing your consent to participate. Participation in this study is voluntary and decision to participate or not will not have any impact on your employment or membership with the participating organizations. For more information on this survey or this study, please contact, Susan Marmagas, Associate Professor of Public Health, Virginia Tech Master of Public Health Program, swm@vt.edu, (540) 231-6778, or Laura Koehler, Master of Public Health Student, Virginia Tech, lkkoehle@vt.edu, (336) 772-5298. If you have any questions regarding rights as human subject, please contact David Moore, Dr. David M. Moore, Associate Vice President for Research Compliance, IRB Chair, moored@vt.edu, (540) 231-4991. If you have any non-research related questions, please contact Jessica Jordan, President, Virginia Affiliate of the American College of Nurse Midwives (ACNM), jordancnm@gmail.com. Thank you very much for you time.

What is your profession? Select all that apply.

- ❑ Certified Professional Midwife (CPM)
- ❑ Certified Nurse Midwife (CNM)
- ❑ Physician (obstetrician, etc.)

In what region of Virginia do you primarily practice?

- ❍ Central (Cities: Charlottesville, Colonial Heights, Hopewell, Petersburg, Richmond)
- ❍ Eastern (Counties: Accomack, Essex, King George, Lancaster, Middlesex, Northamptom, Northumberland, Richmond, Westmoreland)
- ❍ Hampton Roads (Cities: Chesapeak, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg)
- ❍ Northern (Cities: Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, Manassas Park)
- ❍ Southside (Cities: Danville, Emporia, Martinsville)
- ❍ Southwest (Cities: Bristol, Galax, Norton)
- ❍ Valley (Cities: Buena Vista, Covington, Harrisonburg, Lexington, Stauton, Waynesboro, Winchester)
- ❍ West Central (Cities: Lynchburg, Radford, Roanoke, Salem, Blacksburg)

In 2015, did you attend any home births in your role as a Certified Nurse Midwife (CNM)?

- ❍ Yes
- ❍ No

How would you describe the goal of your practice as a CNM?

On a scale of 1-10, with 1 being "not at all well," and 10 being "extremely well," how well do you think a physician's goals "fit" with the goals of a Certified Nurse Midwife (CNM)?

- ❍ 1 - Not at all well
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10 - Extremely well
- ❍ Unsure

On a scale of 1-10, with 1 being "not at all well," and 10 being "extremely well," how well do you think a Certified Professional Midwife's (CPM) goals "fit" with the goals of a Certified Nurse Midwife (CNM)?

- 1 - Not at all well
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 - Extremely well
- Unsure

How important is working with/collaborating with physicians to the effectiveness of your work?

- Not at all important
- Very unimportant
- Neither important nor unimportant
- Very important
- Extremely important

In 2015, how often did you work with a physician?

- Never - none of my cases
- Rarely - less than 1/4 of my cases
- Sometimes - 1/4 to 1/2 of my cases
- Often - 1/2 to 3/4 of my cases
- All of the time - all of my cases
- I had no cases in 2015

In your experience, how satisfied are you with the physicians you work with?

- Very dissatisfied
- Dissatisfied
- Neutral
- Satisfied
- Very satisfied

What has made your experiences working with physicians positive?

What would you change about your collaborations with physicians?

If a problem arises between you and a physician, which of the following best describes the steps you would take to resolve that issue? Select ALL that apply.

- ❑ I do not work with physicians
- ❑ I have not experienced problems with physicians
- ❑ I report the issue to my supervisor
- ❑ I report the issue to the physician's supervisor
- ❑ I speak directly with the physician I have an issue
- ❑ I do nothing
- ❑ Other (please describe below) _____

Please rate on a scale of 1-10, with 1 being low and 10 being high, the levels of trust you have with the physicians you work with.

- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10

What are the challenges to working with physicians; what makes it harder?

What are the facilitators to working with physicians; what makes it easier?

How important is working with/collaborating with Certified Professional Midwives (CPMs) to the effectiveness of your work?

- ❍ Not at all important
- ❍ Very unimportant
- ❍ Neither important nor unimportant
- ❍ Very important
- ❍ Extremely important

In 2015, how often did you work with a Certified Professional Midwife (CPM)?

- ❍ Never - none of my cases
- ❍ Rarely - less than 1/4 of my cases
- ❍ Sometimes - 1/4 to 1/2 of my cases
- ❍ Often - 1/2 to 3/4 of my cases
- ❍ All of the time - all of my cases
- ❍ I had no cases in 2015

In your experience, how satisfied are you with the CPMs you work with?

- ❍ Very dissatisfied
- ❍ Dissatisfied
- ❍ Neutral
- ❍ Satisfied
- ❍ Very satisfied

What has made your experiences working with CPMs positive?

What would you change about your collaborations with CPMs?

If a problem arises between you and a CPM, which of the following best describes the steps you would take to resolve that issue? Select ALL that apply.

- ❑ I do not work with CPMs
- ❑ I have not experienced problems with CPMs
- ❑ I report the issue to my supervisor
- ❑ I report the issue to the CPM's supervisor
- ❑ I speak directly with the CPM I have an issue
- ❑ I do nothing
- ❑ Other (please describe below) _____

Please rate on a scale of 1-10, with 1 being low and 10 being high, the levels of trust you have with the CPMs you work with.

- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10

What are the challenges to working with CPMs; what makes it harder?

What are the facilitators to working with CPMs; what makes it easier?

What is the scope of practice of a physician when working with a Certified Nurse Midwife (CNM)?

To what extent do you agree or disagree with this statement: "The physicians that I work with understand my scope of practice."

- ❍ Strongly disagree
- ❍ Disagree
- ❍ Neither agree nor disagree
- ❍ Agree
- ❍ Strongly agree

To what extent do you agree or disagree with this statement: "I understand the scope of practice of the physicians that I work with."

- ❍ Strongly disagree
- ❍ Disagree
- ❍ Neither agree nor disagree
- ❍ Agree
- ❍ Strongly agree

Which of the following are areas of conflict when collaborating with a physician? Select all that apply.

- ❑ Fetal monitoring
- ❑ Safety of home births
- ❑ C-section rate
- ❑ Prescribing privileges
- ❑ Liability concerns
- ❑ Existing fee structures
- ❑ Preserving the "normalcy" of birth
- ❑ Autonomy
- ❑ Other (please describe below) _____
- ❑ None

Which of the following are areas of conflict when collaborating with a Certified Professional Midwife (CPM)? Select all that apply.

- ❑ Fetal monitoring
- ❑ Safety of home births
- ❑ C-section rate
- ❑ Prescribing privileges
- ❑ Liability concerns
- ❑ Existing fee structures
- ❑ Preserving the "normalcy" of birth
- ❑ Autonomy
- ❑ Other (please describe below) _____
- ❑ None

To what extent do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Home birth is more dangerous than hospital birth, even in an uncomplicated pregnancy.	❍	❍	❍	❍	❍
Compared to hospital births, at home births result in a more positive birthing experience.	❍	❍	❍	❍	❍
There is scientific evidence that supports the greater safety of hospital births compared to planned home births	❍	❍	❍	❍	❍
There are physicians in my area who are comfortable providing consultation for midwives who perform home births.	❍	❍	❍	❍	❍
There are physicians in my area who are comfortable accepting transfers from midwives who attend home births.	❍	❍	❍	❍	❍
I am willing to modify my approach to delivery based on patient preference if it doesn't increase the risk of childbirth to mother or baby.	❍	❍	❍	❍	❍

Are you a member of the Virginia Midwives Alliance (VMA)?
- ❍ Yes
- ❍ No
- ❍ Choose not to respond.

Are you a member of the Virginia Affiliate of the American College of Nurse Midwives (ACNM)?
- ❍ Yes
- ❍ No
- ❍ Choose not to respond.

How likely are you to comply with recommendations provided by the Virginia Affiliate of ACNM?
- ❍ Very unlikely
- ❍ Unlikely
- ❍ Undecided
- ❍ Likely
- ❍ Very likely
- ❍ Choose not to respond.

What would make it more likely that you would comply with recommendations from the Virginia Affiliate of ACNM?

What would make it less likely that you would comply with recommendations from the Virginia Affiliate of ACNM?

What is your age?
- ❍
- ❍ 25 - 44
- ❍ 45 - 64
- ❍ 65+

What is your gender?
- ❍ Male
- ❍ Female
- ❍ Choose not to identify

How many years have you been in your current profession?
- ❍ Less than 5 years
- ❍ 5 - 10 years
- ❍ 11 - 20 years
- ❍ 21 - 30 years
- ❍ More than 30 years

Appendix B: Selected Quotations by Research Question	
Research Question	**Quotation**
What is the perceived satisfaction, trust, and demand for interprofessional collaboration between CNMs, CPMs, and Ob-Gyns in the state of Virginia?	*"These people are dangerous, they bring patients to the hospital that have labored too long and are in dire need of professional medical help." – Ob-Gyn perception of CPMs* *"Another 15+ in this community that lie to people, do not trust us, and will not work with us at all. We have two big OB practices and have similar issues. Lies, refusal to collaborate, etc." - CPM on Ob-Gyns* *"I trust our ONE OB most. I cannot say I trust any of them. I do believe they are all skilled and capable. I do not trust that they have my or my clients' best interests in mind. I do not trust that they will not file a complaint, I worry that they will. I actually have had some interactions that make me very nervous about transferring." - CPM on Ob-Gyn* *"I have little respect for physicians. I continue to feel that they consider CNMs a profession below themselves. I do not feel they use a holistic approach, nor do they advocate for the woman. I feel there decisions and advise are often based on fear of litigation. I do not think they treat CNMs as peers, not do I think they value our opinion for input." – CNM on Ob-Gyn*
What attitudes exist among each profession regarding the other professions?	*"I work in a collaborative group with wonderful physicians who respect women and provide true evidence based care, as well as informed consent to women…The group with whom I practice values my education and my practice and they treat me as a partner in our work together." – CNM on Ob-Gyns* *"CNMs are so good at providing personal, individualized care - often better than physicians are able to be." – Ob-Gyn* *"The ones [CNMs] I work with our well trained with considerable experience in caring for pregnant women" – Ob-Gyn* *"We get the bailout situations where the damages have already been done. It is very difficult to work with the less educated in our profession, especially when you try to help and educate and they continue the same practice." – Ob-Gyn on working with CPMs* *"I would like to see them have a stronger fund of knowledge and adhere to the principle of taking care of low risk patients." – Ob-Gyn view on CPMs*

Research Question	Quotation
What are the barriers to improving interprofessional collaboration between the professions?	*"The only push back I receive on a regular basis is that interventions should be employed more quickly, rather than allowing more time for natural labor to take its course." – CNM on working with Ob-Gyns* *"The disrespect and often hostility aimed at midwives." – CPM on barriers to working with Ob-Gyns* *"I wish that physicians placed a higher value on physiologic birth and how it impacts the health of mom and baby" – CNM* *"Inconsistent practices and lack of insight on choosing the right patients for the setting." – Ob-Gyn on challenges to working with CPMs* *"Not enough physicians who share similar values and goals." – CPM* *"CPMs bring us their patients when things are already going wrong. Patients have not had appropriate prenatal care, so we are playing catch-up and don't know what we are getting into." – Ob-Gyn* *"Not everyone understanding one another, communicating well with one another. General nuances of fear, perceptions, and bias." – CPM re. Ob-Gyns*
What can be done to improve collaboration?	*"I've also found it helpful to do job shadowing with my backup doctor. It has given us valuable opportunities to get to know each other better and share more with each other about philosophical differences." - CPM* *"I would like more OB's to be open to taking my patients and to not feel threatened by liability. The partners in the group need to support the decision of individual OB's to work with home birth CNM's and their patients." – CNM on Ob-Gyns* *"Positives have been the recent openness of the CPMs to transfer care effectively & the openness and awareness of our hospital administration to the need to care for patients transferred from CPM care." – Ob-Gyn* *"A respectful attitude makes all the difference on both ends." – CPM on working with Ob-Gyns* *"When they have a understanding and respect for physiologic birth." – CNM on working with Ob-Gyns* *"Independent practice for CNMs would facilitate this and remove the issue of restricted practice and physician concerns about their responsibility in "supervising" CNMs. This would open up the relationship to be more collegial." - CNM*