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Balancing the Scale: Directions for Future Research for Perinatal Advanced Practice Nurses

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Abstract

Advanced practice nurses, including midwives, are well positioned to conduct, participate, or both in both basic and translational research to improve the outcomes and processes of perinatal care. This article contains suggestions for future research by perinatal advanced practice nurses, conceptualized around a scale to promote balance in outcomes. More research is needed in a number of areas, examples include collaborative practice, normal birth, and translation of the evidence concerning skin-to-skin practice. Health disparities;

maternal, neonatal, and infant morbidity and mortality; formula feeding; and other vulnerabilities need more research to decrease these problematic outcomes. Advanced practice nurses are encouraged to be actively involved in perinatal research, to help confront and reduce health disparities, and to apply evidence in practice, broadly promoting wellness for women and their families.

The 4 types of advanced practice nurses (APNs) form the focus of this article because subgroups of each concentrate in perinatal practice: certified nurse-midwives (CNMs), certified registered nurse anesthetists, clinical nurse specialists, and nurse practitioners. Certified midwives, although not licensed as nurses, function in the same scope of care and with the same standards as CNMs in several states. The research suggestions for perinatal APNs and certified midwives were considered together in this article, because the whole is stronger than the sum of the parts. A search of professional organization Web sites revealed that only 2 have written research agendas. Both the American College of Nurse-Midwives¹ and the Association of Women's Health, Obstetric and Neonatal Nursing² have goals to generate evidence to support practice. The purpose of this article is to provide advanced practice perinatal nurses with suggestions for future research.

BALANCING RESEARCH TO IMPROVE MATERNAL-CHILD HEALTH

The remainder of this article is organized using the concept of a weighted scale that seeks a balance in APN perinatal research priorities ([Figure 1](#)).

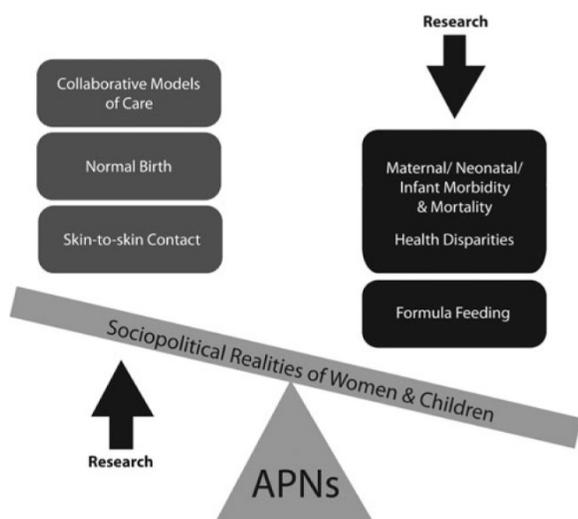


Figure 1 Weighted scale seeking balance in advanced practice nurses research priorities.

The scale rests upon a foundation that consists of the continued sociopolitical efforts to place women and children first in terms of their current and future healthcare needs. Yet, a sociopolitical division exists between wealth and poverty that impacts health at local, national, and global levels. Healthcare inequities lead to disparities in outcomes that are shocking in perinatal health. In the United States, twice as many African American families have poor perinatal outcomes compared with whites.^{3,4} More weight and resources must be given to issues pertinent to women and children so that desirable outcomes can be enhanced and the negative outcomes for women and infants reduced.

HISTORY OF RESEARCH ON ADVANCED PRACTICE NURSES' CARE OUTCOMES

As shown in the Figure, the fulcrum of the scale is APNs. Advanced practice nurses deliver high quality care with outcomes that are equivalent or superior to that provided by physicians; this fact has been supported by

decades of research.⁵ For example, the federal government reviewed comparative studies of nurse practitioners and certified nurse-midwives to physicians and reported that advanced practice nurses provided equivalent care, but were more skilled in areas of prevention and those that required communication with clients.⁶ Brown & Grimes⁷ conducted a meta-analysis of studies comparing physicians with nurse practitioners or CNMs in primary care. Although they found equivalent competency in the care provided, APNs had more favorable outcomes and client satisfaction, while using fewer interventions.

More recently, Mundinger and colleagues⁸ randomized 1316 clients to physician or nurse practitioner care. In primary care settings, the outcomes of APN care were equivalent to physician care.⁸ Furthermore, care by certified nurse-midwives has been explored in comparison to physician care in numerous studies.^{9,10} Research has documented lower levels of interventions with better outcomes for CNM clients, for example, statistically significant fewer cesarean sections,¹¹ as well as decreased neonatal and infant mortality with fewer low birth weight infants.¹² Furthermore, CNM care was cost-effective with equivalently risked clients.¹² Simonson and colleagues¹³ studied the outcomes of care provided by certified registered nurse anesthetists and anesthesiologists with comparably risked maternity clients; certified registered nurse anesthetist care was found to be equivalent. While numerous studies have identified the safety, efficacy, and client satisfaction of APNs, contemporary research is needed about all APN groups involved in perinatal care.

In an integrative review, Ingersoll⁵ identified 48 advanced practice nurse-sensitive outcome indicators that have been tested in practice. These indicators measure the outcomes of APN clinical practice that have been shown to be effective. Eight of these indicators are specifically perinatal-focused, such as fetal, neonatal, infant, and maternal morbidity and mortality; perineal lacerations; and cesarean delivery.⁵ Given the amount of data already accumulated in comparative research, the question that remains is the direction for future research efforts by, for, and about APNs.

Advanced practice nurses are in excellent positions to conduct research to improve the outcomes and processes of perinatal care. To tip the scale toward more favorable outcomes, forward-thinking researchers can support the continuum of women's health, including "internatal care" so that every encounter is used to improve the health of the woman, the entire family, and future pregnancies.¹⁴ The focus needs to expand beyond the individuals who receive care, to include their communities and cultures. Advanced practice nurses are well-prepared to meet these broad needs through clinical practice delivered to vulnerable populations. As more APNs become prepared at the doctoral level, whether DNPs or PhDs, there will be more opportunities for developing and participating in both basic and translational research.¹⁵ Their work will contribute to addressing remaining gaps in perinatal knowledge.

INCREASING POSITIVE OUTCOMES WITH RESEARCH

There are 2 broad types of research: basic and translational. While basic research adds to the fundamental knowledge that underpins practice, translational research uses the evidence to develop interventions.¹⁶ Clearly there is a need for more basic perinatal research that will help address significant health problems and improve the processes of care for women and their families. Translational research provides an opportunity for advanced practice nurses to test interventions in the clinical arena that will result in improvements in individual and community health. The following are some suggestions for general topical areas where positive outcomes of research need to be increased as shown on the left side of [Figure 1](#).

Collaborative models of care tracking comparative outcomes

As shown above, there is sound research about the positive practice outcomes of advanced practice nurses. Ingersoll⁵ suggested that research is needed to demonstrate the unique contributions of APNs while acknowledging the value added by each subgroup within collaborative care models. Evidence generated could

promote increased collaborative practices. For example, research regarding United States midwifery-led care is needed that is modeled after those included in the international meta-analysis of 11 randomized trials conducted in Australia, Canada, New Zealand, and the United Kingdom. The studies analyzed included 12 276 women with varying risk statuses and tested a variety of care models and practice settings.¹⁷ Midwife-led care was defined as a model where the midwife was the woman's lead perinatal provider and 1 or more consultations with physicians were considered common practice. This model was associated with improved outcomes when compared to other practice structures. For example, midwife-led care was associated with reduced antenatal hospitalizations, regional analgesia, episiotomies, instrumental deliveries, and neonatal hospital stays, while increasing analgesia/anesthesia-free labors and births, normal spontaneous vaginal births, reports of feeling in control during birth, and breast-feeding initiation. This type of comparative effectiveness research on varied models of care is needed in the United States to evaluate the impact on perinatal outcomes, costs, and patient satisfaction throughout the entire childbearing period.

Normal birth

The United Kingdom consensus statement on normal birth was developed in an effort to have a clear definition that could be used as a point of reference when evaluating maternity services.¹⁸ This definition was a first step in efforts to promote normal birth and limit technologic interventions because most women can give birth physiologically. Furthermore, it has been suggested that “normal birth should be used as an indicator of quality for routine monitoring and service evaluation, and as part of primary research studies.”¹⁹ The United States is in need of a similar consensus statement, and one is already in development.²⁰ Such a statement will help promote more models of care and service that would support normal birth and provide a foundation for future research.

The *optimality index*, is a 54-item tool developed as a means to assess the process and outcomes of perinatal care in healthy women.²¹ Each item (eg, nondirected pushing, nonsupine position, and episiotomy) is scored either 1 (*optimal*) or 0 (*not optimal*), thereby defining the optimal condition for each item based on evidence. This tool shows promise for clinical research, especially in evaluating subtle differences between study groups.²² The tool may also have utility as a quality benchmark to evaluate advanced practice nursing care nationally by using common definitions and metrics.²³ The index could also provide a framework for studies to develop and test interventions that support normal birth by providing consistency in ways researchers evaluate quality care measures.

Skin-to-skin contact

Skin-to-skin contact (SSC) is one example of basic research, ripe for wide translation into practice. A meta-analysis of 32 studies involving 1925 mother-newborn dyads demonstrated that SSC resulted in statistically significant positive impacts on breast-feeding initiation and duration.²⁴ Furthermore, SSC resulted in improved indicators of affectional and attachment behaviors. The infants of mothers who used SSC were observed to have reduced crying duration while late preterm infants demonstrated better transition of both the cardiovascular and respiratory systems. This meta-analysis demonstrated that SSC resulted in no adverse effects, yet the findings have not been widely translated into perinatal nursing practice.

DECREASING NEGATIVE OUTCOMES WITH RESEARCH

More leverage fueled by APN research is needed to decrease poor perinatal outcomes in a number of specific areas, such as health disparities. Suggested research areas to reduce poor outcomes are shown on the right side of [Figure 1](#).

Health disparities in maternal, neonatal, and infant morbidity and mortality

It would be irresponsible to write an article about the future of perinatal nursing research by APNs and not include a discussion of the problem of the high maternal and neonatal morbidity and mortality rates in the United States. This issue is very broad, multifactorial, and disproportionately impacts African American families of all socio-economic groups. While the problem seems insurmountable, thousands of perinatal APNs working on pieces of this substantial challenge could make a significant impact.

There is a lack of consensus about the definitions of health inequities versus health disparities.²⁵ Cox²⁵ suggested careful selection of methodology and measures because of the profound effect these choices have on research about health disparities. The Centers for Disease Control and Prevention published 11 guidelines for measuring health disparities between groups and within populations that will be useful to APN researchers.²⁶

Because of the limits of the biological sciences in addressing health disparities, contemporary researchers are drawing links between environmental stress, allopathic load, weathering, ecosocial theory, genetics, race, ethnicity, and gender with poor perinatal outcomes for vulnerable populations of women.^{4,25} Advanced practice nurses could develop and test interventions to reduce stressors experienced by pregnant women and measure the short and long-term effects. For example, a controlled study of the impact of self-hypnosis on stress and perinatal outcomes is needed.²⁷ Cox suggested interventions to reduce inequities in health. These interventions have been adapted into suggestions for research by APNs and graduate students in nursing and are presented in [Table 1](#). These suggestions may stimulate research of targeted interventions aimed at addressing health disparities.

General aim of project	Evaluate the outcomes of the following for impact on disparities
Reduce psychosocial stress	Employing support staff from the neighborhood, cultural group, or both Having face-to-face female interpreters at birth Initiating group prenatal care Teaching simple relaxation techniques Assessing social issue concerns, such as sexual orientation, financial situation, housing, and significant relationships Scheduling 2 postpartum visits Matching office setting art and posters to the population served Implementing culturally relevant educational materials appropriate to the literacy level of the population
Apply environmental interventions	Assessing client working conditions Providing maternity leaves/medical leaves when appropriate Monitoring exposures to household, workplace, or agricultural chemicals Offering laboratory testing for chemical exposures through the state environmental laboratory Educating all women about environmental chemical exposure Conducting thorough nutritional assessments at the initial visit Provide culturally specific dietary advice Teaching label-reading of food products Discouraging fast foods by suggesting cheap, easy, at-home alternatives Teaching cooking skills
Use community-level interventions	Opening a birth center in an underserved community Promoting advanced practice nurses perinatal services Instituting group prenatal care programs Offering free talks in the community on timely women's health issues Initiating support groups at a local health center Organizing peer breast feeding support programs Encouraging community led, culturally relevant cooking classes

^aAdapted from Cox by Lisa Hanson.²⁵

Table 1 Examples of research projects that aim to reduce health disparities^a

General aim of project	Evaluate the outcomes of the following for impact on disparities
Reduce psychosocial stress	<i>Employing support staff from the neighborhood, cultural group, or both Having face-to-face female interpreters at birth Initiating group prenatal care Teaching simple relaxation techniques Assessing social issue concerns, such as sexual orientation, financial situation, housing, and significant relationships Scheduling 2 postpartum visits Matching office setting art and posters to the population served Implementing culturally relevant educational materials appropriate to the literacy level of the population</i>
Apply environmental interventions	<i>Assessing client working conditions Providing maternity leaves/medical leaves when appropriate Monitoring exposures to household, workplace, or agricultural chemicals Offering laboratory testing for chemical exposures through the state environmental laboratory Educating all women about environmental chemical exposure Conducting thorough nutritional assessments at the initial visit Provide culturally specific dietary advice Teaching label-reading of food products Discouraging fast foods by suggesting cheap, easy, at-home alternatives Teaching cooking skills</i>
Use community-level interventions	<i>Opening a birth center in an underserved community Promoting advanced practice nurses perinatal services Instituting group prenatal care programs Offering free talks in the community on timely women's health issues Initiating support groups at a local health center Organizing peer breast feeding support programs Encouraging community led, culturally relevant cooking classes</i>

^aAdapted from Cox by Lisa Hanson.²⁵

Formula feeding

Bottle-feeding with formula remains a common practice, although breast-feeding is associated with lower infant morbidity and mortality and has been promoted for all populations. However, national rates of breast-feeding need to improve, as shown by the baselines and projected targets established in *Healthy People 2020* for Maternal, Infant, and Child Health (MICH-21 is specifically elaborated to increase the proportion of breast-fed infants).²⁸ Formula feeding is chosen more frequently by African American women whose infants are most vulnerable to poor outcomes.²⁹ Recently APNs examined the infant feeding choices of African American women from the women's own perspectives about their decision making and found they identified a variety of influential factors.²⁹ The findings of additional studies of African American women support consideration of qualitative or mixed-method approaches to learn how the women themselves suggest barriers to breast-feeding could be addressed.^{30,31} More investigations that avoid marginalization of participants may elucidate new ways, informed by women, to promote breast-feeding.

SUMMARY

There are numerous additional areas in which perinatal advanced practice nurses could conduct research designed to diminish poor outcomes. Low technology interventions and approaches frequently used by perinatal APNs are fertile ground to grow programs of research while seeking to reduce poor outcomes. For example, there is a gap between evidence and practice in second stage labor care³² that may benefit from translational research to reduce the discrepancy. Preventing the increased incidence of iatrogenic prematurity due to routine elective inductions also requires more study.³³ For example, late preterm neonates require special attention to avoid complications³⁴; best practices for their care are also an emerging area of inquiry. Investigations aimed at reducing primary and elective repeat cesareans are needed.³⁵ For example, CNMs could conduct research to examine the outcomes and experiences of women who have had vaginal births after cesareans compared with

those who elected repeat cesarean sections. Birth defects, genetic issues, and effects of environmental teratogens are also fast becoming important foci of research. In addition, the complex interactions between women and their intimate interpersonal relationships, including issues of domestic violence, sexually transmitted infections and human immunodeficiency virus transmission, need to be examined to reduce victimization during the perinatal period; and perhaps in the process, discover ways to value and empower all women and children.³⁶

The challenge is for perinatal advanced practice nurses to become active in research that will balance the scale toward more favorable outcomes to reduce the vulnerabilities of the clients they serve. As more APNs become prepared at the doctoral level, there will be more practitioners who are well-prepared to conduct research and translate it into practice. Perinatal APNs are prepared to collaborate or lead the conduct of a variety of methodologic approaches, such as integrative or systematic reviews, quasi-experiments, and randomized controlled trials, while valuing the depth of the individual and outlier experiences captured in qualitative, mixed method studies, or both. Advanced practice nurses owe it to the profession and their clients to develop new knowledge, test therapies, expand innovations in health broadly, and impact care beyond the single client level.³⁷

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