JOGNN CLINICAL ISSUES

A Clinical Evaluation of Evidence-Based Maternity Care Using the Optimality Index

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The Optimality Index-US (*OI-US*) reflects the use of evidence-based practices in obstetrics. This paper's objective is to apply the *OI-US* to a "typical" nurse-midwifery service data set to demonstrate its use outside of a research context. The *OI-US* score for the sample practice was 80%. The *OI-US* can be used by obstetric and gynecologic nurse clinicians to demonstrate the relationship of various care practices to optimal outcomes. *JOGNN, 35,* 786-793; 2006. DOI: 10.1111/J.1552-6909.2006.00107.x

Keywords: Childbearing—Evidence-based care—Midwifery practice—Optimality

The goal of maternity nursing practice in the United States has always been the promotion of optimal birth outcomes for childbearing women, their newborns, and their families. While there is wide variation in care practices, there is consensus that the biomedical focus is on the physical health of the mother and her newborn. There is less congruence regarding what should be done by nurses to optimize the process of giving birth. The care practices of nurse clinicians have varied greatly, depending on the birth environment, the health condition of the mother and her fetus prior to birth, the multidimensional aspects of the labor process, the type and outcome of the birth, and the health of the newborn.

Variations in care practices for childbearing women and their newborns may contribute to significant health disparities in the United States. On an international level, the United States ranks 25th when compared to other developed countries in infant mortality and 21st in maternal mortality [Centers for Disease Control (CDC), 1999], while countries that either have universal health care coverage or use midwives as the primary childbirth health care providers have the lowest rates, suggesting that models of care do have an effect on biomedical health outcomes.

Models of care during childbearing are ideally rooted in the scientific literature that links quality of care with evidence to support that care. However, the outcomes typically measured in maternity care are limited to morbidity and mortality outcomes for women and their newborns and do not encompass the full range of birth experiences or focus on optimal wellness of both mother and infant. The ability to measure care practices that promote optimal wellness has been hampered by a lack of appropriate measurement instruments.

Robust measures of perinatal care outcomes need to include the wide range of wellness-focused practices that are supported by the highest level of scientific evidence as well as biomedical outcomes. The *Optimality Index-US* (*OI-US*) is a measurement tool that helps to fill that gap (Murphy & Fullerton, 2001). The tool and its historic use in research are fully detailed in a companion article in this clinical series (Murphy & Fullerton, 2006). The purpose of this article is to describe the value of using the *OI-US* in maternity and neonatal care practices and to provide an example of how the tool can be used to explore the relationship of various care practices to optimal outcomes. For example, is fetal monitoring used routinely, or is its use consistent with its evidence-based recommendations in risk-based circumstances? A nurse-midwifery practice based in a tertiary care environment was used as a prototype to demonstrate how the *OI-US* can be used in practice.

Literature Review

The Importance of Evidence-Based Care

Linking care practices with scientific evidence is not a new concept. In fact, since the later 1990s, there has been an increase in calls for evidence-based care to become the standard for obstetric and perinatal health care professionals (American College of Nurse-Midwives (ACNM), 1998; Association of Women's Health, Obstetric and Neonatal Nurses, 2005; Grimes, 1995).

The demand to link care practices during childbirth to scientific evidence also has moved into the consumer arena. The Maternity Center Association's (MCA, 2002) "Listening to Mothers" survey demonstrated that technology-intensive labor is the common experience for a majority of women in the United States, despite a lack of evidence supporting the value of technology in promoting the best health outcomes. A majority of survey participants reported having the following physically invasive interventions while giving birth: electronic fetal monitoring (93%), intravenous (IV) hydration (86%), epidural analgesia (63%), artificially ruptured membranes (55%), pitocin augmentation of labor (53%), bladder catheterization (52%), and suturing to repair an episiotomy or laceration (52%). Although such interventions are incongruent with evidence-based care without a specific indication based on a risk profile, the rates reported by the MCA survey far exceed those projected by the World Health Organization (WHO) as expected rates, based on risk profile alone (WHO, 1997).

The Listening to Mothers survey demonstrated that many care practices not supported as efficacious by the scientific literature are routinely used during perinatal care for healthy women (MCA, 2002). Consumer groups used findings like these to advocate for less technologic approaches to maternity care, joining the professional organizations in their call for greater congruence of care with less technologically oriented evidence-based practice and increased options for childbearing women (Coalition for Improving Maternity Services, 1996; Sakala, Gyte, Henderson, Neilson, & Horey, 2001).

Measuring Evidence-Eased Care

The complexity of assessing outcomes of the childbearing process for women and their families is discussed throughout the perinatal nursing literature (Albers, 2001; Kardong-Edgren, 2001; Kennedy & Lowe, 2001). While there is general agreement regarding the measurement of biomedical outcomes, such as low birthweight, prematurity, Apgar scores, and route of delivery, there has been less consensus regarding an assessment of the quality of care practices and linkage to quantifiable outcomes underlying evidence-based care. Instead, philosophical debates have emerged about the role of care practices and whether or not the actual practices, interventions, and processes of care, even if not evidence based, were as important as the outcomes of the care provided (Hannah, 1999).

The *OI-US* (Murphy & Fullerton, 2006) combines optimal processes of care that are grounded in scientific evidence with standard biomedical health outcomes. Optimality is conceptualized as the best possible outcome in a given context. The *OI-US* captures the complexity of the process of the childbearing experience, including maternal background characteristics, processes of care, and biomedical outcomes, in a single index. It is far more sensitive to smaller differences in perinatal outcomes than are biomedical measures of major problems, such as low birthweight, prematurity, and maternal or infant morbidity and mortality. This makes it a useful measure to distinguish differences in outcomes even among populations at low risk.

The *OI-US* score includes two parts: a *Perinatal Background Index* (*PBI*) (demographic, medical, and obstetric history factors) and a combined measure of antepartum, intrapartum, neonatal, and postpartum care practices and health outcomes, the *Optimality Index* (*OI*) (Murphy & Fullerton, 2006). The total *OI-US* comprises 54 items (*PBI* = 14 items, *OI* = 40 items). Each item is coded as either "optimal" or "not optimal." Each optimal item receives a score of 1, and then the items are summed for a total score. The score is then presented as a proportion of items coded as optimal out of the total number of possible items. It serves as a global assessment of the "optimality" of processes and outcomes of maternity care.

Value of Measuring Optimality in Nursing Practice

Why should the *OI-US* be of interest to obstetric and neonatal nurses? First, the instrument is rooted in evidence-based practice congruent with the goal of professional nursing organizations to promote the use of evidence to guide clinical practice and health policy. Second, many of the care practices that contribute to optimal outcomes are within the nursing domain and can be implemented during nursing management of perinatal care. Thus, the *OI-US* reflects many best practice aspects that are usually absent from other indexes or measures of perinatal care outcomes. The *OI-US* provides nurses with the means to demonstrate the contribution of nursing care in positively influencing health outcomes of childbearing women and their newborns.

The *OI-US* was used to evaluate the match between actual practices and evidence-based optimal care, using data gathered "in the trenches" of the clinical setting.