Teaching University Students About Evidence-Based Perinatal Care: Effects on Learning and Future Care Preferences

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ABSTRACT

U.S. university students hold generally medicalized views on childbirth, which contrast with evidence indicating that low-intervention birth is safest for most. Therefore, intentional efforts are needed to educate childbearing populations on perinatal care evidence. Toward that aim, this study involved teaching university students in an introductory class ($N = 50$) about evidence-based perinatal care. Students completed a “future birth plan” and an essay on how their learning affected care preferences. Analyses revealed that students selected evidence-based care components up to 100 times more frequently than what the national data indicate they are used. Students based care selections on evidence, costs, and personal views. Their interest in physiologic birth has important implications for advancing education on perinatal care, practice, and policy.

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INTRODUCTION

To support optimal reproductive health, the Centers for Disease Control and Prevention (CDC, 2014) encourages childbearing age women and men to develop a reproductive life plan, which involves reviewing personal goals for having children and associated health-care needs. For those who wish to have children, the CDC promotes pregnancy planning and health maintenance to maximize chances of healthy outcomes.

Although parental health is key in birth outcomes, perinatal care is also a factor and should be addressed in reproductive life plans. Therefore, we examined how providing evidence on perinatal care

to university women and men influenced their future care preferences. Our approach aligns with a developmental life course perspective: Reproductive health and outcomes theoretically result from multiple influences that accumulate across earlier developmental phases (Misra & Grason, 2006; Witt et al., 2015), and we viewed learning and reflection on birth approaches as constituting one of the multiple influences in the students’ reproductive life courses.

Background and Rationale

Considerable, high-quality evidence has shown that birth attended by credentialed midwives and that relies on the physical capacities of the woman and

fetus (physiologic birth) is safest in the short and long term in most cases (Buckley, 2015; Sakala & Corry, 2008). In contrast, the prevailing birth care approach in the United States and other industrialized nations is “medicalized,” with birth treated as a medical condition requiring intervention by specialized care professionals who use advanced technology available only in hospitals (Davis-Floyd, 2001). The dominance of the medical birth paradigm is reflected in 21st century data indicating that more than 98% of U.S. births took place in hospitals (Martin, Hamilton, Osterman, Curtin, & Matthews, 2013). Obstetricians attended most births, and women reported routinely receiving procedures such as intravenous (IV) antibiotics, synthetic oxytocin, pain medications, and episiotomy (Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013). At nearly 33%, the current cesarean birth rate (Hamilton, Martin, Osterman, Curtin, & Matthews, 2015) is more than twice the 10%–15% recommended by the World Health Organization (WHO, 2015) as safest for mothers and babies.

Population-level studies indicate that increased birth intervention has not corresponded to measurably improved maternal or newborn health. In a review of research involving more than 17,000 women, Sandall, Soltani, Gates, Shennan, and Devane (2016) found that midwife- (as opposed to physician) led care of lower and higher risk women was associated with lower likelihood of birth intervention yet comparable rates of adverse maternal and neonatal outcomes. Research involving only lower risk women indicates that medically intervening in birth may even increase risk. A study of more than 691,000 lower risk Australian women found that neonates of women who had more medical birth intervention (i.e., those who birthed in private hospitals) had significantly higher rates of complications such as hypoxia, jaundice, and feeding problems (Dahlen et al., 2014). A global study of cesarean birth found that the 1% of cesarean births classified as “without indication” were associated with higher risk of neonatal death, intensive care admission, and serious maternal complications (Souza et al., 2010), and cesarean rates exceeding 10%–15% have been associated with increased morbidity and mortality (WHO, 2015).

Based on a review of current evidence, Buckley (2015) proposed that the mechanism behind increased risk associated with medically intervening in otherwise normal physiologic birth is the disruption

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of evolutionarily based hormonal mechanisms necessary for healthy maternal and newborn adaptation. However, in a medicalized birth culture, intentional efforts are required to inform women and men on evidence-based perinatal care, and Buckley (2015) recommends that women be engaged in learning about physiologic birth and related care. Going a step further, we propose that university classes offer excellent opportunities for this learning because traditional-age university students are primed for considering scientific evidence. They are entering the highest fertility decade of life (Martin et al., 2013; Martin, Hamilton, Osterman, Curtin, & Matthews, 2015) but are not yet firmly bound to a specific care system. University-based perinatal education can also more easily involve men, thus broadening program reach to future male partners. This type of education also represents an effort to educate individuals more generally on evidence-based care and health decision making.

There are also practical and policy-related reasons for informing students on evidence-based perinatal care. Whereas reimbursement structures and defensive practice are powerful drivers of high-intervention birth (Francis, 2014; Perl, 2010), systemic forces are unlikely the sole reasons behind the medicalized birth paradigm's dominance. Women have historically had some role in shaping care practices, perhaps most famously with Britain's Queen Victoria's disclosure to the press on her use of “blessed chloroform” to block birth pain (Pitcock & Clark, 1992). Unfortunately, even today's advanced pain medications cannot guarantee pain- or risk-free birth (Soliday, 2012; Wertz & Wertz, 1989), and educating future parents on perinatal care may help lower the high percentage of 21st century women who have reported experiencing birth interventions that they felt poorly informed about, did not want, or found aversive (Declercq et al., 2013; Soliday, 2012). Informing individuals about perinatal care evidence is also consistent with person-centered care, a focus of national health-care policy (Sakallaris, Miller, Saper, Kreitzer, & Jonas, 2016).

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Studies Involving University Students in Birth Care Questions

Research involving university students on perinatal care has focused primarily on attitudes, care preferences, and associations between the two. In a survey of U.S. university women and men, results supported medicalized birth as the prevailing paradigm (Soliday & Mammenga, 2015), with “medical birth” attitude scores generally higher than “natural birth” attitude scores (some variability by demographic subgroups resulted). University students with medicalized birth preferences more frequently endorsed obstetrician-led care over family practitioners or midwives because they believed this care to be safer (Fairbrother, Stoll, Schummers, & Carty, 2012). A study of future birth mode preferences indicated that women who selected cesarean surgery viewed it as safer and more predictable than vaginal birth (D’Cruz & Lee, 2014).

Educational Interventions With Nulliparous University-Aged Populations

The few available studies of perinatal or birth-related education in university populations have shown positive effects on students’ birth knowledge, awareness, and attitudes. A comprehensive, peer-delivered multimedia educational program focused on preconception health behavior (e.g., taking folic acid) and on awareness of planning one’s reproductive future, and related care showed program benefits on learning and awareness at posttest (Wade, Herrman, & McBeth-Snyder, 2012). Following presentation of a video featuring birth professionals discussing hospital birth risks and midwifery benefits, university women and men reported surprise at the risks of commonly used hospital birth interventions, particularly cesarean surgeries, and some reported increased interest in the midwifery model (Cleeton, 2001).

In line with previous research indicating a lack of knowledge of evidence-based perinatal care among undergraduate students and the potential benefits of teaching interventions to address that gap, we prepared a teaching module for students in an undergraduate social sciences course. Students’ learning and the effects of their learning on expressed future care preferences were assessed with a brief quantitative measure and written assignment.

METHOD

Design Overview

Students in this study had 50 minutes of classroom teaching on physical and psychological aspects of pregnancy, birth, and postpartum accompanied by an assigned textbook chapter (Rathus, 2015) and a report on evidence-based perinatal care (Sakala & Corry, 2008). We assessed effects of the intervention at posttest only using the mixed methods QUAN + QUAL structure (Palinkas, 2014; Palinkas et al., 2011), which involved collecting quantitative and qualitative data under the view that the two data types were complementary and connected.

Quantitative data were from a student-completed future birth plan checklist that corresponded to birth care components (e.g., birth place, birth attendant) discussed in the readings. Tabulations from the checklist provided a broad overview of instructional effects, and although analyses were only descriptive, they allowed us to compare student data to national use rates. Qualitative data yielded deeper understanding of students’ reasoning behind their birth plan selections, and analyses were based on an essay that students wrote under the instructions to reflect on their selections in relationship to their reading (the evidence) and personal values. The “values” reflection was assigned to acknowledge that women (and likely, men) make rational birth and other health-related decisions using medical evidence along with valid personal and other considerations (Kukla et al., 2009; Williams et al., 2005). To encourage students to articulate how evidence and values factored into their care selections, assignment instructions explicitly stated that specific selections would have no bearing on grades.

Participants

Participants were students in an introductory lifespan development university class ($N = 50$) that took place during the Fall 2015 semester at a metropolitan public university. Because the class fulfilled a university general education requirement, diverse disciplines were represented: 38.8% of students were social science majors, and the remaining were roughly evenly represented across disciplines (e.g., business, education). The average student age was 22.5 years, 26.5% were men, 32.7% identified as racial/ethnic minorities, and 52.3% were Pell Grant eligible (i.e., federal criteria indicated significant financial need). Three women had previously given birth and two men’s partners had given birth.

Materials

Readings. In addition to “Birth and the Newborn Baby: In a New World” (Rathus, 2015), a textbook chapter on birth and the newborn, students read *Evidence-Based Maternity Care: What It Is and What It Can Achieve* (Sakala & Corry, 2008). The original aim of the 128-page report was to inform policy decision makers, health professionals, and others on U.S. maternity care with evidence of maximum benefit and least harm. This report was chosen because of its comprehensiveness and its structure (i.e., narrative summaries and tables drawn from peer-reviewed sources). The report also provided background on current U.S. maternity care structure and practices, costs, and performance indicators.

Future Birth Plan. Students submitted a detailed future birth plan for themselves (women) or for a partner (men). The plan was a preformatted table into which students wrote their selections for specific care components discussed in the Sakala and Corry (2008) report. These included birth attendant, birth place, birth mode, professional and other support persons, position and freedom to move during labor, labor induction, episiotomy, fetal monitoring during labor, pain medications, breastfeeding, and postpartum skin-to-skin contact. Students had to indicate the report pages they consulted in making their selections.

Final Essay. Students submitted a 2,000-word essay that included a brief summary of the reading and a reflection addressing how their selections may or may not have aligned with the evidence and how their personal characteristics and values (e.g., partner, finances, geographic location, religious views) factored in.

Procedure

This study was categorized as *exempt* by the authors’ institutional review board (IRB). Students accessed materials (reading, birth plan forms) electronically at the start of the course. In Week 3 of the semester, students had their 50-minute class session on pregnancy and birth. In Week 5, students had to submit their “Future Birth Plan” form. Week 8 of class involved work on essay drafts, and students submitted their final essays in Week 10. Students were aware that their work could be used for research and could opt not to have their data included in analyses; none chose to opt out.

Data Analysis Procedure

Quantitative/Descriptive Analysis. Frequencies of specific care selections were calculated for the whole sample and by gender. These were tabulated against recent U.S. utilization data (where available) for specific procedures.

Qualitative Analysis. Both study authors gave each student’s final essay a deep read as the first step. Then data on the two rationale sections (“Evidence” and “Values”) were extracted from each essay and formatted for use in the qualitative analytic program, MAXQDA Version 12.

The second author (SRS) performed the qualitative analysis separately for the two essay sections. The analytic strategy involved identifying categories and comparing phrases within identified thematic categories to account for possible deviations (Glaser, 1992). A constant comparison approach was used, in which categories and subcategories were created and compared; the process continued until all (or nearly all, excepting, e.g., connector words) the data were accounted for in as few discrete categories as necessary (Miles & Huberman, 1994). Final qualitative results were achieved by consensus.

RESULTS

Care Component Selection Frequencies (Quantitative Data)

Table 1 contains frequencies of student care selections by gender and for which national uptake/use data were available for comparison; other care preferences are summarized in the following text. National uptake/use data were obtained from official U.S. vital statistics reports, national surveys, and professional organizations (American College of Obstetricians and Gynecologists, 2009; Declercq et al., 2013; Friedman, Ananth, Pregndergast, D’Alton, & Wright, 2015; Hamilton et al., 2015; Osterman & Martin, 2014). Cesarean preference rates were drawn from studies of nulliparous populations (Gallagher, Bell, Waddell, Benoît, & Côté, 2012; Stoll et al., 2009).

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TABLE 1
Birth Plan Selections by Gender

Decision Item	Men (<i>n</i> , %)	Women (<i>n</i> , %)	National (% only)
Setting			
Center	7 (50.0)	19 (52.8)	0.5
Home	1 (7.1)	0 (0)	1.0
Hospital	6 (42.9)	15 (41.7)	98.5
Combo ^a	0 (0)	2 (5.6)	
Provider			
Midwife	8 (57.1)	21 (58.3)	8
Physician	4 (28.6)	11 (30.6)	91
Both	0 (0)	4 (11.1)	
Primary/other support			
Spouse	13 (92.9)	31 (86.1)	77
Doula	1 (7.1)	5 (13.9)	6
Freedom to move			
Yes	12 (85.7)	33 (91.7)	43
No	2 (14.3)	3 (8.3)	
Labor induction			
No	7 (50.0)	16 (44.4)	23.3–41
Yes	4 (28.6)	2 (5.6)	
Only if needed	1 (7.1)	15 (41.7)	
Self-induce if needed	1 (7.1)	3 (8.3)	
Episiotomy			
No	10 (71.4)	27 (75.0)	14.4
Yes	0 (0)	1 (2.8)	
Only if needed	4 (28.6)	8 (22.2)	
Cesarean			
No	6 (42.9)	10 (27.8)	9–28 (primary)
Yes	0 (0.0)	3 (8.3)	
Only if needed	8 (57.1)	22 (61.1)	
Epidural			
No	11 (78.6)	19 (52.8)	83
Yes	3 (21.4)	10 (27.8)	
Only if needed	0 (0)	7 (19.4)	

Note. Values do not always add to 100% because of occasional missing data. National data provided where available; see text for data sources.

^aHome + birth center, birth center + hospital.

(52.8% women, 50% men) selected a birth center, 100 times the approximate 0.5% rate of center births (Hamilton et al., 2015). For a future birth attendant, close to 60% (58.3% of women, 57.1% of men) selected “midwife” for a sole attendant, more than seven times the U.S. rate of 8% (hospital birth only; Hamilton et al., 2015). Women selected doulas as either primary or additional supports at about twice the U.S. reported rate, 13.9% (study) versus 6% (national). Women (91.7%) and men (85.7%) selected freedom to move during labor and birth at more than twice the reported national rate of 43% (Declercq et al., 2013).

Students also reported preference for medicalized birth practices at lower rates than national reports. They chose episiotomy at about one quarter

the national rate (0% men, 2.8% women vs. 14.4% national; Friedman et al., 2015) and pain medications at one third the national rate (27.8% women vs. 83% national; Declercq et al., 2013). The only birth intervention selected by women (but not men) at rates consistent with existing data was cesarean surgery without indication. Stoll et al. (2009) found that 8.8% of university men and 8.4% of university women would prefer a cesarean birth without indication; in our study, the cesarean preference rates were 8.3% (women) and 0% (men).

Number of Pages Consulted. Students reported pages consulted in making their selections. The mean number of pages consulted across all selections was

3.4, ranging from 1.7 (skin-to-skin contact) to 8.8 (cesarean birth).

Themes in Care Selections (Qualitative Data)

Effects of Learning. Many students reported having been previously unaware of the informational content in the teaching and wrote about adjusting their birth plans based on their new learning. One female student stated, “Following my new found information . . . thanks to our class’s assigned research. I am surprised to admit that my views and beliefs have almost completely shifted,” which aligned with this male student’s statement, “The . . . reading helped me make many decisions that either I did not know existed or was on the fence about.”

Students’ learning on care specifics applied across care components, beginning with birth place. They discussed preferring birth centers because they saw them as more baby focused and more likely to promote a natural birth through practices such as freedom of movement during labor and lower use of invasive procedures. One female student wrote,

. . . Not only is a birth center more affordable . . . but women who have experienced a birth center have reported a pleasant experience (p. 13) and have done so without any additional procedures that a hospital typically imposes on mother and baby.

However, a central reason students gave for choosing a birth center was cost, shown in this woman’s quote: “. . . Finances never crossed my mind when bringing the bundle of joy to the world until reading this article. I couldn’t believe hospital costs were significantly higher than birthing centers.” Nearly all students who mentioned cost mentioned other benefits previously listed such as skin-to-skin contact, support for breastfeeding, and overall optimal care.

Midwife as birth attendant was another care component students selected based primarily on their learning. Students reflected on the personal connection and continuous care offered by midwives as seen here:

Before reading . . . I had heard the term midwife but never really knew what it meant . . . a midwife [is] with you every step of the way . . . offering women the information they need to make decisions, giving

those women a say in what happens . . . looking out for the well-being of the child and mother. . . .

Similarly, students indicated preference for doula care based on the evidence and again commented on the personal attention and supportive care they provided. One male student wrote, “. . . personal support, such as a doula and midwife is very important for keeping a calm and focused environment.”

Class content also affected students’ learning and views on medical birth procedures. This male student wrote about a desire to avoid medical labor induction, saying, “Labor induction has almost no clear evidence . . . and boasts more concerns including increased likelihood of fetal monitoring, epidural analgesia, and caesarean surgery.” In response to the risks, students expressed interest in nonmedical, lower risk approaches such as this woman’s preference for “walk/exercise, have sexual intercourse, and stimulate the nipple” to initiate labor. Interest in avoiding medical birth intervention carried over to the epidural as well, with one woman writing, “Using an epidural or other pain medication can add harm to the baby or the mother. I value babies . . . so it gives me an emotional motivation to not use pain medication. . . .”

Learning and Personal Values. Students’ care selections and associated essay content were generally consistent with the evidence but that was not always the case. For the choice of epidural in particular, personal- rather than evidence-based experiences appeared to be the chief influencer. One woman reported that she had suffered from a back injury, and although she acknowledged epidural risks, she said, “I feel it might be too painful . . . when giving birth . . . I still feel it will be necessary for pain management.” The other two students for whom personal views trumped evidence were male and arrived at their decision out of consideration for their partners. One stated,

The use of pain management is also based on fear and what I’ve seen women in labor go through. The pain looks unbearable. Even though the evidence base states that medicated babies are less likely to breastfeed successfully and cry more, my decision would not change.

Another reflected on his partner’s previous mention of pain sensitivity.

Personal preference also played a role in the choice of a cesarean birth. Whereas most students said they would only choose a cesarean if necessary for the safety of the mother or the baby, a small percentage preferred cesarean from the outset. One woman had previously had a cesarean and said, “. . . that is what made my child’s delivery a success.” For another, her own mother’s history of three successful cesareans led her to elect one for herself: “. . . [I have] always preferred and thought of all births to be done that way. While [I have] never got scientific proof . . . [I] believe cesarean birth is less harmful for both mother and the baby.”

Other students based their preference for an obstetrician on personal views, writing that an obstetrician would be better situated to handle birth complications and, for example, to “rush [me] into an operating room for treatment” if needed. One student wished to continue receiving care from her trusted obstetrician, saying she had no “worries when it comes to being underinformed about certain practices.”

DISCUSSION

In a medicalized birth culture where clear evidence on benefits of intensive intervention in lower risk birth is lacking and health-care costs are rising, intentional efforts are needed to educate childbearing populations on safe, effective, and cost-efficient birth care. Our university is located in an educationally underserved region, which allowed us to broaden the reach of high-quality evidence via focused teaching of economically and ethnically diverse students in an introductory social science course. Following the learning intervention, students selected care options generally aligned with physiologic birth, such as midwife-attended and center birth, at 2–100 times their rate of practice nationwide. Correspondingly, students indicated preference for medical birth practices such as episiotomy and labor induction at one fifth to one half their reported practice rates. Overall, our results provide support for classroom-based learning as one means of addressing information gaps in prevailing medical birth views reported by those of childbearing age (Soliday & Mammenga, 2015).

By involving an entire class, we were able to include men, which helped address criticisms that preconception education has largely been limited to women (Moos, 2010). Men’s participation had a secondary benefit in that their responses acted as a

validity check on women’s responses to the learning. That is, quantitative (checklist) data showed that men selected care options at rates similar to women (e.g., 52.8% of women and 50% of men selected “birth center,” see Table 1 for more), which lent confidence that the information had a relatively uniform effect across subgroups.

Our qualitative analysis yielded results that extended and connected to the quantitative findings because the essay themes indicated how the learning was largely responsible for students’ care selections. Essay content revealed how students had been previously unaware of evidence-based perinatal care and how they integrated their new learning into care selections, reflected in this representative quote, “. . . birth place was a difficult choice. . . . Originally, I had made up my mind that it would be in a hospital like I was born in, but after reading . . . I realized that it might not be the best choice.”

Our qualitative analysis shed additional light on students’ reasoning behind care selections that did *not* align with the evidence, beginning with preference for cesarean birth. The percentage of women (8.3%) who selected cesarean birth was consistent with the 9% Stoll and colleagues (2009) obtained in a large sample of university students (but it is on the lower end of the 28.6% of university students who reported feeling favorably enough toward cesarean without indication to ask a health-care provider about it, see Stoll et al., [2009]). Our students’ reasons for preferring cesarean varied and reflected how personal concerns and values enter into medical decision making alongside evidence. Whether reflecting on cesarean preference in the preparent years or between conceptions could help women have productive exchanges with obstetric providers in the event of pregnancy remains an open question but is important in light of focused efforts to reduce primary cesarean rates (Caughey, Cahill, Guise, & Rouse, 2014; Saisto & Halmesmäki, 2007; WHO, 2015).

Implications for Childbirth Educators and Clinicians

Based on our results showing that classroom teaching had an effect on students’ expressed preference for care options rooted in evidence, we recommend that whenever possible, practitioners provide related teaching in advance of a first pregnancy or birth. Not only would this information help address knowledge gaps but also could counter misinformation

from the most commonly cited sources of childbirth information among young women, that is, family and friends (Edmonds, Cwierniewicz, & Stoll, 2015). Also, the new learning the handful of parents in our study described underscores how education can benefit even those with prior experience and we propose that clinicians promote the value of preparing well for each pregnancy and birth.

Because women and men reported new awareness and learning, we also recommend involving both genders when possible. Advance teaching of women and men could give these prospective parents time to identify care providers, settings, and financial resources to help them meet their goals. Along those lines, we would recommend that educators and clinicians help guide young populations in researching and evaluating birth care options and guidance could include direct instruction on approaching prospective care providers with requests for information. Because our students focused on how potential cost savings figured into their expressed preference for physiologic birth, we also recommend that educators emphasize the likely financial benefits of evidence-based care.

Our final recommendations surround the need to tailor teaching to specific audiences. In addition to a classroom presentation and discussion, we assigned students advanced readings including a 128-page report and a university-level textbook chapter; practitioners might want to consider the suitability of these resources for their purposes. Also, when presenting evidence on perinatal care, we recommend that practitioners present content within the context of birth as an individual and individually determined experience, aspects of which might be outside of parents' direct control. Most think of the uncontrollable aspects of birth in physiological terms. Of course, physical health in pregnancy can certainly set parameters on care needs and approaches, but less obvious to women and their families are the critical parameters on birth care access and decision making that are set within professional practices, policies, and legislation. Those who teach and inform individuals of evidence-based care therefore need to be mindful of resources and limitations that might apply specifically to their audiences.

Study Limitations and Future Research

Although our analyses supported the use of classroom learning to increase knowledge on evidence-based

care and practices, we must acknowledge its limitations. Our sample was diverse but modestly sized, which precluded more extensive quantitative analyses such as for gender differences and effects of having given birth. We used a posttest only design because in this first phase of the research, we wanted to integrate the curriculum and the written assignment into the natural flow of the course without taking time away from students' learning for research. Of course, that approach did not allow us to formally assess students' preexisting views on birth. However, our qualitative data indicated that most students had no prior awareness of much of the information, and the effects of the teaching were evident on at least the awareness dimension.

To address study limitations, future iterations of this work will include pretests. Assessment will also be longitudinal to allow us to examine how students might have acted on their learning in behavioral terms, with special emphasis on *what* care participants obtained and *how* they obtained it (e.g., how they identified care settings, arranged payment). Our ultimate aim is to extend the classroom teaching to address practical aspects and outcomes of obtaining evidence-based care.

CONCLUSION

Our study documents how teaching childbearing populations about evidence-based perinatal care can orient them toward physiologic birth and related approaches that they had not previously known about or considered. Whereas professional training, practice traditions and protocols, reimbursement structures, and institutional policies have been shown to very much affect parents' decisional latitude, history has also shown that childbearing populations influence professional practices (Pitcock & Clark, 1992; Wertz & Wertz, 1989). From that perspective and our results, we have even greater reason to advocate for informing preparents of the evidence surrounding perinatal care, and the effects will be even more powerful as professional practices and policies grow to reflect effortful integration of the evidence base.

REFERENCES

- American College of Obstetricians and Gynecologists. (2009). *ACOG refines fetal heart rate monitoring guidelines*. Retrieved from <http://www.acog.org/About-ACOG/News-Room/News-Releases/2009/ACOG-Refines-Fetal-Heart-Rate-Monitoring-Guidelines>
- Buckley, S. J. (2015). *Hormonal physiology of childbearing: Evidence and implications for women, babies, and*

- maternity care. Washington, DC: Childbirth Connection. Retrieved from <http://transform.childbirthconnection.org/reports/physiology/>
- Caughey, A. B., Cahill, A. G., Guise, J. M., & Rouse, D. J. (2014). Safe prevention of the primary cesarean delivery. *American Journal of Obstetrics and Gynecology*, 210(3), 179–193.
- Centers for Disease Control and Prevention. (2014). *Preconception health and health care: My reproductive life plan*. Retrieved from <http://www.cdc.gov/preconception/reproductiveplan.html>
- Cleeton, E. R. (2001). Attitudes and beliefs about childbirth among college students: Results of an educational intervention. *Birth*, 28(3), 192–200.
- D'Cruz, L., & Lee, C. (2014). Childbirth expectations: An Australian study of young childless women. *Journal of Reproductive and Infant Psychology*, 32(2), 199–211.
- Dahlen, H. G., Tracy, S., Tracy, M., Bisits, A., Brown, C., & Thornton, C. (2014). Rates of obstetric intervention and associated perinatal mortality and morbidity among low-risk women giving birth in private and public hospitals in NSW (2000–2008): A linked data population-based cohort study. *BMJ Open*, 4(5), e004551.
- Davis-Floyd, R. (2001). The technocratic, humanistic, and holistic paradigms of childbirth. *International Journal of Gynaecology and Obstetrics*, 75(Suppl. 1), S5–S23.
- Declercq, E. R., Sakala, C., Corry, M. P., Applebaum, S., & Herrlich, A. (2013). *Listening to mothers III: Pregnancy and birth: Report of the third national U.S. survey of women's childbearing experiences*. New York, NY: Childbirth Connection.
- Edmonds, J. K., Cwierniewicz, T., & Stoll, K. (2015). Childbirth education prior to pregnancy? Survey findings of childbirth preferences and attitudes among young women. *The Journal of Perinatal Education*, 24(2), 93–101.
- Fairbrother, N., Stoll, K., Schummers, L., & Carty, E. (2012). Obstetrician, family physician, or midwife: Preferences of the next generation of maternity care consumers. *Canadian Journal of Midwifery Research and Practice*, 11(2), 8–15.
- Francis, K. (2014). Interview with William Emerson. *Journal of Perinatal & Perinatal Psychology & Health*, 29(4), 300–312.
- Friedman, A. M., Ananth, C. V., Prendergast, E., D'Alton, M. E., & Wright, J. D. (2015). Variation in and factors associated with use of episiotomy. *JAMA*, 313(2), 197–199.
- Gallagher, F., Bell, L., Waddell, G., Benoît, A., & Côté, N. (2012). Requesting cesareans without medical indications: An option being considered by young Canadian women. *Birth*, 39(1), 39–47.
- Glaser, B. G. (1992). *Emergence vs forcing: Basics of grounded theory analysis*. Mill Valley, CA: Sociology Press.
- Hamilton, B. E., Martin, J. A., Osterman, M. J. K., Curtin, S. C., & Matthews, T. J. (2015). Births: Final data for 2014. *National Vital Statistics Reports*, 64(12), 1–64.
- Kukla, R., Kuppermann, M., Little, M., Lyerly, A. D., Mitchell, L. M., Armstrong, E. M., & Harris, L. (2009). Finding autonomy in birth. *Bioethics*, 23(1), 1–8.
- Martin, J. A., Hamilton, B. E., Osterman, M. J. K., Curtin, S. C., & Matthews, T. J. (2013). Births: Final data for 2012. *National Vital Statistics Reports*, 62(9), 1–68. Retrieved from <http://www.cdc.gov/nchs/products/nvsr.htm>
- Martin, J. A., Hamilton, B. E., Osterman, M. J. K., Curtin, S. C., & Matthews, T. J. (2015). Births: Final data for 2013. *National Vital Statistics Reports*, 64(1), 1–65. Retrieved from <http://www.cdc.gov/nchs/products/nvsr.htm>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage.
- Misra, D. P., & Grason, H. (2006). Achieving safe motherhood: Applying a life course and multiple determinants perinatal health framework in public health. *Women's Health Issues*, 16(4), 159–175.
- Moos, M. K. (2010). From concept to practice: Reflections on the preconception health agenda. *Journal of Women's Health*, 19(3), 561–567.
- Osterman, M. J., & Martin, J. A. (2014). *Trends in low-risk cesarean delivery in the United States, 1990–2013*. Hyattsville, MD: National Center for Health Statistics. Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr63/nvsr63_06.pdf
- Palinkas, L. A. (2014). Qualitative and mixed methods in mental health services and implementation research. *Journal of Clinical Child & Adolescent Psychology*, 43(6), 851–861.
- Palinkas, L. A., Aarons, G. A., Horwitz, S., Chamberlain, P., Hurlburt, M., & Landsverk, J. (2011). Mixed method designs in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(1), 44–53.
- Perl, L. M. (2010). The birth and death of VBACs in a rural community hospital. *Birth*, 37(3), 257–258.
- Pitcock, C. D., & Clark, R. B. (1992). From Fanny to Fernand: The development of consumerism in pain control during the birth process. *American Journal of Obstetrics & Gynecology*, 167(3), 581–587.
- Rathus, S. A. (2015). Birth and the newborn baby: In the new world. In S. A. Rathus, *HDEV* (4th ed., pp. 54–75). Boston, MA: Cengage/4LTR Press.
- Saisto, T., & Halmesmaki, E. (2007). Fear of childbirth can be treated, and cesarean section on maternal request avoided. *Acta Obstetrica et Gynecologica Scandinavica*, 86(9), 1148–1149.
- Sakala, C., & Corry, M. P. (2008). *Evidence-based maternity care: What it is and what it can achieve*. Retrieved from <http://www.milbank.org/reports/0809MaternityCare/0809MaternityCare.html#sidebar4>
- Sakallaris, B. R., Miller, W. L., Saper, R., Kreitzer, M. J., & Jonas, W. (2016). Meeting the challenge of a more person-centered future for US healthcare. *Global Advances in Health and Medicine*, 5(1), 51–60.
- Sandall, J., Soltani, H., Gates, S., Shennan, A., & Devane, D. (2016). Midwife-led continuity models versus other models of care for childbearing women. *Cochrane Database of Systematic Reviews*, (4), CD004667. <http://dx.doi.org/10.1002/14651858.CD004667.pub5>

- Soliday, E. (2012). *Childbirth in a technocratic age: The documentation of women's expectations and experiences*. Amherst, NY: Cambria Press.
- Soliday, E., & Mammenga, S. (2015). Views on medical and natural birth in university women and men. *Journal of Prenatal & Perinatal Psychology & Health*, 30(1), 30–41.
- Souza, J. P., Gülmezoglu, A. M., Lumbiganon, P., Laopaiboon, M., Carroli, G., Fawole, B., & Ruyan, P. (2010). Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: The 2004–2008 WHO Global Survey on Maternal and Perinatal Health. *BMC Medicine*, 8, 71.
- Stoll, K., Fairbrother, N., Carty, E., Jordan, N., Miceli, C., Vostrcil, Y., & Willihnganz, L. (2009). "It's all the rage these days": University students' attitudes toward vaginal and cesarean birth. *Birth*, 36(2), 133–140.
- Wade, G. H., Herrman, J., & McBeth-Snyder, L. (2012). A preconception care program for women in a college setting. *The American Journal of Maternal Child Nursing*, 37(3), 164–170.
- Wertz, R. W., & Wertz, D. C. (1989). *Lying in: A history of childbirth in America* (Expanded ed.). New Haven, CT: Yale University Press.
- Williams, C., Sandall, J., Lewando-Hundt, G., Heyman, B., Spencer, K., & Grellier, R. (2005). Women as moral pioneers? Experiences of first trimester antenatal screening. *Social Science and Medicine*, 61(9), 1983–1992.
- Witt, W. P., Wisk, L. E., Cheng, E. R., Mandell, K., Chatterjee, D., Wakeel, F., . . . Zarak, D. (2015). Determinants of cesarean delivery in the US: A lifecourse approach. *Maternal and Child Health Journal*, 19(1), 84–93.
- World Health Organization. (2015). *WHO statement on caesarean section rates*. Retrieved from http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/cs-statement/en/

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