CHAPTER 3: BIRTH AND THE NEWBORN CHILD

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LEARNING OBJECTIVES

Section 1: Learning Objectives

3.1 Describe the three stages of the birth process and methods for easing its discomfort.
3.2 Name two common types of birth complications and explain how they can be overcome by cesarean delivery.
3.3 Summarize the history of birth in the West from the 15th century to today.
3.4 Describe cultural variations in birth beliefs and identify who may assist with the birth.
3.5 Compare and contrast cultural practices and medical methods for easing the birth process.
3.6 Describe the differences in maternal and neonatal mortality both within and between developed countries and developing countries.

Section 2: Learning Objectives

3.7 Identify the features of the two major scales most often used to assess neonatal health.
3.8 Identify the neonatal classifications for low birth weight and describe the consequences and major treatments.
3.9 Describe neonates' patterns of waking and sleeping, including how and why these patterns differ across cultures.
3.10 Describe the neonatal reflexes, including those that have a functional purpose and those that do not.
3.11 Describe the neonate's sensory abilities with respect to touch, taste and smell, hearing, and sight.

Section 3: Learning Objectives

3.12 Describe the cultural customs surrounding breast-feeding across cultures and history.
3.13 Identify the advantages of breast-feeding and where those advantages are largest.
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3.15 Describe the extent to which human mothers "bond" with their neonates and the extent to which this claim has been exaggerated.
3.16 Describe the reasons for postpartum depression and its consequences for children.

KEY TERMS

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CHAPTER OUTLINE

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LECTURE NOTES

I. Section 1: Birth and Its Cultural Context

A. The Birth Process

1. Stages of Birth Process

a. The First Stage: Labor

i. The first stage is the longest and hardest stage, lasting about 12 hours for first births and 6 hours for later births.

ii. During **labor**, the contractions of the muscles in the uterus cause the mother's cervix to dilate in preparation for the baby's exit.

iii. By the end of labor, the cervix has opened to about 10 centimeters.

iv. As time passes, contractions get stronger, more painful, and closer together.

v. After the cervix opens, there may be a bloody discharge called the *bloody show*.

vi. Having emotional support from health professionals and/or family is crucial and helps ease discomfort.

b. The Second and Third Stages: Delivery and Expelling the Placenta and Umbilical Cord

i. During **delivery**, the woman spends about 30–60 minutes pushing the fetus through the cervix and out of the uterus.

ii. Contractions are less frequent than during labor and last about 60–90 seconds each.

iii. When the baby's head appears, that is called *crowning*. If a vaginal opening is too small and could or does tear, an **episiotomy** may be performed to make the vaginal opening larger and to speed the birth process.

iv. In the third and final stage of the birth process, contractions continue as the placenta and umbilical cord are expelled from the body, as well as a bloody vaginal fluid similar to a heavy menstrual period. Breast-feeding during this stage facilitates the contractions and helps push the placenta out.

2. Birth Complications

a. Failure to Progress and Breech Presentation

i. Failure to progress occurs when the birth process is taking longer than normal.

ii. **Breech presentation** of fetus means the fetus is turned around so that the feet or buttocks are positioned to come first out of the birth canal.

b. Cesarean Delivery

i. If birth complications take place, they can be overcome through the use of a **cesarean delivery** or **c-section**, which involves cutting open the mother's abdomen and retrieving the baby.

ii. Today, it is generally safe for mothers and infants when a c-section is performed.

iii. WHO recommends that rates of c-sections should be below 15%. Critics suggest that some c-sections are not medically necessary.

iv. Many women who give birth after a c-section go on to have another c-section, but there is a possibility of a vaginal birth called VBAC; it is generally safe for most women.

B. Historical and Cultural Variations

1. The Peculiar History of Birth in the West

a. Early History: From Midwives to Doctors

i. Throughout history, except during the 15th century witch hunting madness, midwives facilitated birth.

ii. Midwives were again challenged in the 18th century by medical doctors who thought they should deliver the babies.

iii. A new field of medicine developed called **obstetrics**. Doctors introduced new methods for assisting delivery, like using tongs or **forceps** to help extract the baby's head. This sometimes damaged the infant and is now rarely used.

iv. There have been attempts over the past several centuries to make birth safer for baby and mother alike. In the early 19th century, doctors spread deadly infections to mothers unwittingly by not washing their hands. 1 in 20 women died of childbed fever.

v. The use of midwives declined as the use of doctors and hospitals to deliver babies grew increasingly popular. Now, about 10% of U.S. babies are delivered by midwives, but in Norway, 96% are assisted by midwives.

b. The 20th Century: Slow Progress

i. In the 20th century, the attempts were overzealous and overly medical, as birth was taken over by doctors and hospitals with the maternal experience disregarded.
ii. Episiotomies became common practice among doctors delivering babies.
iii. Doctors commonly prescribed medication to ease the pain of childbirth in developed countries. However, some of these methods were dangerous for mother and baby. Inducing *twilight sleep* was common practice, but stopped around the 1960s.
iv. In the past 50 years, most of the West has moved toward a more reasonable middle ground, seeking to minimize medical intervention, but make it available when necessary. This produced resurgence in the use of midwives.
v. **Natural childbirth** was advocated by critics of the medical approach to childbirth; however each has been established as producing equally healthy outcomes.
vi. Natural childbirth methods for at home births are much riskier for the mother and baby than in a hospital setting and are not recommended for high-risk pregnancies.
vii. Births in developed countries are now seen as a collaborative experience between the mother, baby, medical professionals, and family members.

2. Cultural Variations in Birth Beliefs and Practices

a. Beliefs and Rituals Surrounding Birth

i. Cultural practices regarding birth vary from celebrating the mother and child to segregating them during and after the birthing process because the mother is unclean or to keep from endangering the infant.
ii. The motivation for such beliefs appears to be the desire for control.
iii. The placenta is often disposed of with care in traditional cultures because of beliefs that it is potentially dangerous or even semi-human.

iv. In developing countries, disposal techniques include burial, burning, or throwing it away.
v. In developed countries, placentas (which are nutrient rich) may be donated to research or sold to cosmetic companies. Although rare, some people even eat the placenta.

b. Who Helps?

In traditional cultures, the older women in the family and older women who have specialized training, known as midwives, consistently assist in the birth. Men most often do not assist or are completely excluded.

i. A woman may become a midwife if she received a "calling," had a mother who was a midwife, or just wanted to volunteer.
ii. It requires years of apprenticeship and is generally a highly respected position, except in cultures that view birth as unclean.
iii. Now, births in developed countries usually take place in a medical setting and health professionals provide the care. This is becoming more common in developing countries as well.

3. Cultural Variations in Methods for Easing the Birth

i. In traditional cultures, midwives provide methods for easing the birth beginning early in the pregnancy with prenatal visits, massages, herbal teas, and advice on diet and exercise.
ii. In developing countries, a midwife is the primary person to ease the birth, along with family support, usually female relatives who provide advice, encouragement, instructions, and imagery to ease the pain and speed up the labor.
iii. Sometimes a shaman or religious leader provides spiritual assistance.
iv. Invoking magic does not directly provide medical relief, but the placebo effect can be powerful.
v. In developed countries, emotional and social support are also common.
vi. Health professionals suggest a variety of methods to ease discomfort, such as walking, slow breathing, and rocking.
vii. In developed countries, an anesthetic drug called an **epidural**, which is injected into a woman's spinal fluid, is used to help manage the pain during labor. Its use is very common in the United States, but somewhat limited on other developed countries. It varies.

viii. Medical technology has made birth safer for mothers and babies. Doctors now use a vacuum cup to pull out the baby, which is safer than using forceps. They also often rely on **electronic fetal monitoring (EFM)** to monitor the fetus's heart rate and potential for distress.

ix. Most cultures also encourage the mother to be upright or somewhat upright during the process to make use of gravity.

x. The birth is not complete until the placenta has been expelled. Many strategies are used to facilitate this process, which may include massage and traditional and herbal medications. Finally, the umbilical cord is cut and the process is complete.

4. Cultural Variations in Neonatal and Maternal Mortality

i. In recent decades, birth has become routinely safe and humane in developed countries.

ii. Birth remains highly dangerous in less-developed countries and in developed countries, like the United States, among those who are poor and where little medical intervention is available.

iii. Maternal mortality has improved over the last 30 years due to better nutrition and access to health care in developing countries.

iv. In the United States, neonatal mortality is similar among Whites, Latinos, and Asian Americans, but it is twice as high for African Americans. However, maternal mortality has been rising and is highest among African Americans.

II. Section 2: The Neonate

A. The Neonate's Health

i. At birth, the baby may be covered by fine, fuzzy hair called lanugo and/or a white substance called vernix.

ii. Neonatal skulls are not one solid, hard bone, but several pieces joined together. The two soft spots on the top and toward the back of the head are called **fontanels**. Caregivers must be careful of these soft spots until they have disappeared at about 18 months of age.

iii. The average newborn is 20 inches long and weighs about 7.5 pounds at birth, although most **neonates** lose about 10% of their body weight in the first few days after birth.

iv. Neonates are at risk of developing **neonatal jaundice** due to an immature liver. It causes them to have a yellowish tint to their skin and eyes during the first week, but it is easily treated.

1. Measuring Neonatal Health

i. Neonatal health is often measured immediately after birth and again in the first few minutes of life or up to one day to two months later. One important indicator of health is the newborn's ability to breathe on his or her own. The inability to breathe can quickly result in damaging oxygen deprivation called **anoxia**.

ii. Two common Western methods to test neonatal health are the **Apgar Scale** and the **Brazelton Neonatal Behavioral Assessment Scale (NBAS)**.

iii. The Apgar Scale

a. The Apgar is comprised of 5 tests to check the newborn's Appearance, Pulse, Grimace, Activity, and Respiration on a scale from 0–2 for a total possible score of 10. A score of 7 or above is excellent, while a score of 4–6 is a cause for concern, and 3 or less is life threatening. The test is given at 1 and 5 minutes after birth.

iv. The Brazelton Neonatal Behavioral Assessment Scale

a. NBAS is used to rate neonates on 27 items such as reflexes, physical states, responses to social stimuli, and CNS instability. Newborns are rated as worrisome, normal, or superior. Ideally, this test should be administered one day and one week after birth, but can be up to two months.

v. The NBAS is a good predictor of future development and can promote a good relationship between parents and their infants.

vi. According to research on the NBAS, quick, loving, attentive parenting better promotes healthy development, especially for babies who were rated as worrisome a day after birth.

2. Low Birth Weight

i. **Low birth weight (LBW)** neonates weigh less than 5.5 pounds.

ii. LBW is common for **preterm** neonates who were born 3 or more weeks early; others may be **small-for-date** because they weigh less than 90% of other neonates of the same gestational age.

iii. LBW varies by world region, ethnicity, SES, and levels of maternal stress.
iv. Causes of LBW in developing countries include malnourished mothers, poor health, and lack of prenatal care; whereas cigarette smoking is the leading cause of LBW in developed countries.
v. Other causes include multiple births, substance use and younger than 17 or older than 40 maternal ages.

a. Consequences of Low Birth Weight

i. LBW babies are at high risk of death; it is the second most common cause of infant death in developed countries.
ii. **Very low birth weight** (less than 3.3 pounds) and extremely low birth weight (less than 2.2 pounds) are at great risk of death, even in the United States it is 25% for VLBW neonates.
iii. Preterm neonates are not fully developed and may have a host of related problems, such as immature immune systems and lungs. They do not have the ability to regulate their body heat.
iv. Preterm neonates have not yet developed **surfactant**, a coating in the lungs that keeps them from collapsing and helps them breathe. With advanced medical care, surfactant can be administered and increases their chances for survival.

b. Treatment for Low Birth Weight Babies

i. Daily, close physical contact in which the infant and caregiver are skin-to-skin is called **kangaroo care**. The outcomes improve substantially for those who use this technique.
ii. *Infant massage* can help ameliorate LBW problems also, especially when the neonate is placed in an isolette for protection. Infant massage can relieve isolation, improve weight gain, and increase activity and alertness.
iii. However, these treatments cannot alleviate all problems associated with LBW. Low birth weight is related to a variety of physical, cognitive, and behavioral problems not just in infancy, but also throughout life, if the newborn survives. In fact, the lower the birth weight, the worse the problems are expected to be.
iv. Enriched environments can help overcome some of the negative consequences of LBW babies.

A. Physical Functioning of the Neonate

1. Neonatal Sleeping Patterns

i. Neonates sleep an average of 16 to 17 hours a day (in segments of a few hours each). This sleep pattern is not very compatible with adults and often results in sleep deprivation.

ii. By four months old the typical infant sleeps for 14 of every 24 hours, including about 6 hours at night.

iii. Infants' REM sleep is different from adults. **REM** stands for **rapid eye movement**.

a. Neonates spend about 50% of sleep in REM compared with 20% for adults.

b. Neonates enter REM immediately upon sleeping, while adults take about an hour; it is a dreaming phase for adults, but likely a brain development stimulation phase for neonates.

iv. Developed countries have produced most of the sleep-wake research with neonates. But infant caregiving practices vary by culture and that influences the sleep-wake pattern. In traditional cultures where babies are closely held by mothers, the infants nap and doze more and have fewer long periods of sleep.

2. Neonatal Reflexes

i. There are 27 **reflexes** (automatic responses to stimuli) present at birth or shortly after, including some related to early survival (such as sucking and **rooting** and the **Moro reflex**).

ii. Some reflexes are precursors of voluntary movements that will develop later, such as the stepping and swimming reflexes, and others that have no apparent function (such as the *Babkin* and *Babinski* reflexes).

iii. Reflexes fade after a few months, but they are important indicators of normal, healthy neurological development and functioning early on.

3. Neonatal Senses

i. Touch

a. Touch is the earliest sense to develop in utero (at 2 months gestation).

b. Research on touch demonstrates that newborns do feel pain similar to adults, contrary to previously held beliefs. Pain relief is now provided for medical procedures.

ii. Taste and Smell

a. The sense of taste is well developed in the womb.
b. Neonates show a preference for tastes that they experienced in utero.
c. Infants prefer sweet over bitter or sour tastes. In fact, breast milk is slightly sweet. Sweet tastes have a calming effect on pain.
d. Neonates also quickly begin to discriminate smells after birth, showing a preference for the smell of their mother's breast and other sweet smells.

iii. Hearing

a. Hearing is also quite mature at birth, and they can recognize their mothers' voices and other familiar sounds heard in the womb.
b. They are sensitive to human speech and show a preference for their mother's voice and their native language.
c. They can even recognize subtle differences in speech sounds, including differences in two and three syllable words.
d. Neonates like the sound of music and prefer the music and songs they heard while in the womb.
e. Hearing is good at birth, but does improve over time, as does **sound localization**.

iv. Sight

a. Sight is the least developed of the senses at birth, due to the physiological immaturity of the visual system at birth, but reaches maturity by the end of the first year.
b. At birth, vision is best about 8–14 inches from the targeted object.
c. By about 3–4 months of age, infants develop **binocular vision**; that is, combining information from both eyes for perceiving depth and motion, as well as the ability to detect colors like an adult.
d. Most preferred visual stimuli for a newborn? Human faces.

III. Section 3: Caring for the Neonate

A. Nutrition: Is Breast Best?

1. Historical and Cultural Perspectives on Breast-Feeding
    a. A mother's breasts change during pregnancy to ready for milk production. For example, the **mammary glands** expand as milk producing cells multiply and mature.
    b. A lactating mother's **let down reflex** is activated when the infant suckles at her breast for about 30 seconds. It can also be activated when she hears an infant cry, sees her infant's hunger signs, or imagines breast-feeding.
    c. Historically, infants were solely breast-fed for about 2–3 years and occasionally for another 2–3 years.
    d. In traditional cultures in developing countries (even in modern times), infants are fed very frequently because mother's practice kangaroo care.
    e. This practice is time consuming and demanding on mothers. Sometimes they use non-human animal milk as a substitute or hire another lactating mother, a **wet nurse**, to feed the infant.
    f. In developed countries, synthesized milk products were used beginning in the late 1800s and continue to be used today due to their convenience.
    g. In the United States, breast-feeding rates dropped as low as 20% in the 1940s, but with the surge of research supporting the efficacy of breast-feeding, rates are up over 70% today for any duration.
    h. In the United States, rates of any breast-feeding are highest among Latinos and Whites, but fewer than half of infants are still breast-fed at 6 months of age.
2. Benefits of Breast-Feeding
    a. Breast-feeding is beneficial to infants in many ways, including offering protection from disease in infancy, better health in childhood and adulthood, healthy cognitive development, and reduced obesity if breast-fed for at least 6 months.
    b. Breast-feeding also has benefits for the mother, such as promoting uterine contractions, weight loss, and bone strength. In addition, it can reduce their risk of ovarian and

breast cancers and it suppresses ovulation while breast milk is the sole source of food.

c. The thick yellowish liquid the mother produces in the first few days is called **colostrum** or first milk. It is like liquid gold for the newborn because it is rich in protein and immune boosting antibodies.
d. Breast-feeding is especially important in developing countries due to the risk of disease and infection from mixing infant formula with contaminated water, which could result in infant death.
e. The benefits of breast-feeding are smaller in developed countries.
f. Some mothers experience difficulties with breast-feeding, such as improper latching or a lack of milk supply that can impede breast-feeding. Other obstacles may include a mother's work schedule and an unsupportive work or social environment. Desire to include the father in the feedings also impedes breast-feeding, but the mother can pump and store her milk as an alternative.
g. A small percentage of mothers who have infectious diseases, such as HIV/AIDS, TB, or West Nile virus are advised not to breast-feed because they could transmit the disease to the infant.
h. Rates of breast-feeding declined because of the availability of formula, but it is still not as good as breast milk.
i. Despite a WHO/UNICEF initiative to promote breast-feeding, unfortunately, worldwide only about half of all infants are breast-fed even for a short time.

B. Social and Emotional Aspects of Neonatal Care

1. Crying and Soothing

a. Crying

i. Three distinct kinds of **crying** signals have been identified: fussing, anger cry, and pain cry.
   a. *Fussing* is a mildly distressed cry meant to alert the caregiver.
   b. The *anger cry* is loud and usually comes after no one responds to fussing.

c. The *pain cry* is not preceded by fussing; it has a sudden onset after taking in a big breath and holding it, the infant then cries loudly.

ii. There are other types of less distinctive types of crying, but they are generally referred to as a *basic cry* or *frustration cry*.

iii. Universally, crying *frequency* rises steadily beginning at 3 weeks of age and reaches a peak by the end of the second month, then declines.

b. Soothing and Responding to Cries

i. The *duration* and *intensity* of crying is lower in cultures where young infants are held or carried throughout much of the day and night.

ii. Parents should be familiar with the normal features of crying. The Period of PURPLE crying in the early months educates parents about crying and lets them know that crying does have a beginning and end.

iii. In studies, the frequency and duration of crying was reduced in babies that were held more and responded to quickly.

iv. In traditional cultures, babies who cry are usually offered the breast for feeding or suckling comfort or they are **swaddled** in a tightly wrapped cloth that binds their arms and legs.

v. For most babies, gentle, repetitive motions like rocking and patting are soothing.

vi. Studies on responding to crying have been inconclusive, but we do know that it is not related to infant development long term.

vii. When a baby cries for more than 3 hours a day for 3 days in a row for over 3 weeks, the baby is said to have **colic**. This is most common in Western cultures.

2. Bonding: Myth and Truth

i. Humans do not **imprint**, an instant enduring bond that develops with the first moving object seen, like goslings.

ii. Some physicians have claimed on the basis of animal studies that the first few minutes and hours after birth are critical to mother-infant "**bonding**." This has now been shown to be false, but the claims had the beneficial effect of changing hospital policies to allow more contact between mothers, fathers, and neonates.

3. Postpartum Depression

i. Many mothers experience mood fluctuations in the days following birth as their hormones return to normal levels termed “baby blues.”

ii. Some 10% of mothers and 4% of fathers experience an extended period of deep postnatal depression, known as **postpartum depression (PPD)**.

a. PPD is worse than baby blues, with intense feelings of sadness and anxiety that may interfere with the caregiver’s ability to care for the infant and herself.

b. PPD can go on for 6 months or longer in 25–50% of women.

c. Women are more likely to develop PPD if they have a genetic vulnerability, a history of major depression, and a lack of social support.

d. Infants and children who have or had a parent(s) with PPD are at risk for poor developmental outcomes. When cared for by a mother or father with PPD, infants are more likely to have behavioral and emotional problems and to have problems later on.

LECTURE LAUNCHERS, DISCUSSION IDEAS, AND ACTIVITIES

Section 1 Lecture Launcher: Midwife Training in the United States

There are three professional associations related to the midwife profession. They are the American College of Nurse-Midwives (ACNM), the Midwives Alliance of North America (MANA), and the National Association of Certified Professional Midwives (NACPM). The ACNM’s certifying organization is the American Midwifery Certification Board (AMCB), while the MANA and NACPM are certified by the North American Registry of Midwives (NARM).

These most highly recognized and rigorous programs are accredited by the American College of Midwifery Education (ACME). The AMCB requires a graduate degree in midwifery education and recertification every five years. As of 2011, there were 39 accredited programs in the United States. Qualified applicants have a variety of backgrounds, but the majority of them are already registered nurses. For those, the midwife program is usually 2 years of graduate education, including clinical training. These graduates can be licensed in all states, D.C., and U.S. territories as a certified nurse-midwife once they pass the American Midwifery Certification Board (AMCB) exam. Certified Nurse Midwives have prescription privileges, can practice in all medical and private settings, and are eligible to accept insurance.

Source:

American College of Nurse Midwives website. Retrieved from www.midwife.org.

Section 1 Lecture Launcher: Childbirth Options

Methods of childbirth have changed dramatically in the last 50 years. Most current methods are based on the pioneering work of Grantly Dick-Read in England and Ferdinand Lamaze in France. In 1944, Dick-Read proposed that fear is the major cause of most of the pain of childbirth. He proposed the concept of *natural childbirth* and developed a method of teaching women about reproduction, pregnancy, delivery, and exercises in breathing, relaxation, and fitness. Lamaze, in the 1950s, developed a method called *prepared childbirth* where expectant mothers are taught to breathe and concentrate on sensations other than contractions. This is facilitated by a "coach," usually the father, who attends classes with them and helps time their breathing. Fathers then became a part of the childbirth process, and by the 1970s hospitals were beginning to allow them to go into the delivery room to assist. Now, most fathers elect to participate in the birth of their children.

Although 99% of all babies born in the United States are born in hospitals, some women elect to have their babies at home with the services of either a physician who specializes in home births or a midwife, a specially trained nurse. This option should be used only by women whose pregnancies are low-risk. Hospitals responded to the home-birth movement by offering birthing centers with rooming-in facilities so mothers and babies are together all day, and allowing sibling visitations.

Source:

Sullivan, D.A. & Weitz, R. (1988). *Labor pains: Modern midwives and home birth*. New Haven, CT: Yale University.

Section 1 Discussion: Student's Ideas About Birth and the Neonate

Divide the class into several groups. Each group should discuss one or more of the following:

1. List the pros and cons of home birth versus hospital birth.

2. What key factors should a woman consider in deciding whether to return to work or not after having a baby?

3. What are the pros and cons of having fathers and siblings more involved in childbirth?

4. What are reasons that people have children? How valuable are children? Why do many cultures prefer male children?

Have a representative from each group present the group's findings to the class.

Section 1 Lecture Launcher: Are There Too Many Cesarean Section Deliveries?

More cesarean section deliveries (c-sections) are performed in developed countries than in developing nations (Gibbons, et al., 2012). Brazil has the highest number of deliveries via c-section than any other country at 46%. Reasons for cesarean delivery include: labor is progressing poorly, the mother has had a previous c-section (although many women can successfully deliver vaginally after a previous c-section), the baby is in the breech or transverse position, the mother has an active case of genital herpes, and to avert potential malpractice suits. Some critics argue that the use of a fetal monitor has increased the incidence of c-sections (Stafford, 1990). It is possible that many c-sections are actually medically unnecessary (Gibbons, et al., 2012) Babies born by c-section miss out on the stress hormones released during birth (*catecholamines*) (Stafford, 1990). These hormones are believed to help in the post-birth breathing process. The effects on mothers are a result of the major abdominal surgery involved, which is associated with a longer hospital stay, longer recovery, higher rates of postpartum depression, and a greater risk of infection. As a result of criticisms, the rate has dropped since the 1980s.

Sources:

Gibbons, L., Belizan, J. M., Lauer, J. A., Betran, A. P., Merialdi, M., & Althabe, F. (2012). Inequities in the use of cesarean section deliveries in the world. *American Journal of Obstetrics and Gynecology, 206*(4), 331.e1-331.e19.

Stafford, R.S. (1990). Alternative strategies for controlling rising cesarean section rates. *Journal of the American Medical Association, 263,* 683–687.

Section 2 Lecture Launcher: Low-Birth-Weight Babies

The number one risk factor associated with death in infants in the first months of life is low birth weight. Low birth weight (LBW) is defined weighing less than 5.5 pounds for a full-term infant. Low-birth-weight babies also spend more time in intensive-care nurseries at an annual cost of over $2 billion (Cristafi & Driscoll, 1991).

Research in the United States indicates several conditions contribute to the possibility of LBW (Cristafi & Driscoll, 1991):

- maternal hypertension
- rubella during the first 16 weeks of pregnancy
- urogenital infections
- diabetes
- more than four previous pregnancies
- teenage mother or mother over age 35
- mother underweight or malnourished

- cigarette or marijuana smoking
- having two or more abortions
- anemia
- exposure to teratogens
- maternal stress

According to research by UNICEF, an estimated 15% of neonates born in developing countries are LBW, with South East Asia at 27%. The biggest contributors of LBW in these countries are poor maternal nutrition and poor maternal health prior to conception due to illness and diseases. However, these statistics may underreport the problem as many neonates in these regions are not weighed at birth because they are not born in a medical facility.

Sources:

Cristafi, M.A., & Driscoll, J.M. (April, 1991). Developmental outcome in very-low-birth-weight infants at three years of age. Paper presented at the biennial meeting for the Society for Research in Child Development, Seattle.

Singer, L.T., Yamashita, T.S., & Baley, J. (March/April, 1995). Maternal distress and medical complications predict developmental outcome in very-low-birth-weight (VLBW) infants to 2 years. Paper presented at the biennial meeting for the Society for Research in Child Development, Indianapolis.

UNICEF global databases 2010, from Multiple Indicator Cluster Surveys (MICS), Demographic Health Surveys (DHS) and other national surveys. Retrieved from http://www.childinfo.org/low_birthweight_status_trends.html

UNICEF/WHO, *Low Birthweight: Country, regional and global estimates*, UNICEF, New York, 2004.

Section 3 Lecture Launcher: Breast-Feeding

List the advantages and disadvantages of breast-feeding versus bottle-feeding for mothers and for infants. You may want to share a fascinating article with your students after this activity. Catharina Svanborg, a Swedish physician and immunologist, has discovered that a component of ordinary breast milk kills cancer cells in infants. Besides its newfound cancer-destroying properties, breast milk protects the infant against:

Diarrhea	Bacterial meningitis
Lower respiratory infection	Botulism
Otitis media (ear infection)	Urinary tract infection
Bacteremia	Necrotizing enterocolitis

Sudden infant death syndrome

Insulin-dependent diabetes mellitus

Crohn’s disease

Ulcerative colitis

Allergies

According to an article in *Discover*, the American Academy of Pediatrics recommends the following.

- Human milk is the preferred feeding for all infants, including premature and sick newborns.
- Breast-feeding should begin as soon as possible after birth, usually within the first hour.
- Newborns should be nursed whenever they show signs of hunger—increased alertness or activity, mouthing, or rooting.
- No supplements (water, glucose water, formula, etc.) should be given to breast-feeding newborns unless for medical reasons. Pacifiers should be avoided.
- Breast-feeding provides ideal nutrition. It is all an infant needs for optimal growth and development for the first 6 months.

Source:

Radetsky, P. & Wester, T. (June, 1999). Got cancer killers? *Discover*. 68–75. Retrieved from http://discovermagazine.com/1999/jun/featcancer

Section 3 Lecture Launcher: Supporting Breast-Feeding

Based on extensive research, we all know that breast milk is very healthy for infants, with few exceptions. Arnett (2012) notes benefits of breast-feeding in the text. How does the Unites States stack up when it comes to breast-feeding?

In developed countries, particularly the United States, there can be many obstacles to breast-feeding. Mothers without a good support network and a lack of education about the importance of breast-feeding may grow quickly discouraged and switch to formula. According to the *Breast-Feeding Report Card* produced by the CDC (2011), 75% of mothers in the United States attempt to breast-feed, but that number dwindles quickly. Within two days of birth, 25% of breast-fed infants begin receiving formula to supplement breast milk or replace it entirely. By three months of age, only 35% of U.S. infants are exclusively breastfed.

The CDC evaluates several process indicators to determine how well breast-feeding is supported in the United States. These indicators include support from the birth facility, the amount of professional lactation support from Certified Lactation Consultants, support from other mothers who are trained La Leche League Leader volunteers, the type of and amount of infrastructure provided by the state, and support in child care settings.

Less than 5% of live births in the United States occur at a birth facility that has been rated as baby friendly. There are only 2.67 certified lactation consultants and fewer than one La Leche League Leader available for every 1,000 live births in the United States. There are only 125 state health department employees who have a full-time position dedicated to promoting and supporting breast-feeding initiatives. Finally, only six states have optimal regulations in place to provide breast-feeding support via child care facilities.

More detailed information is available at http://www.cdc.gov/breast-feeding/data/reportcard.htm which is the Breast-Feeding Report Card for 2014.

In addition, you may want to customize your lecture by providing additional information on how your state is doing compared to the national averages.

Sources:

2009 CDC Maternity Practices in Infant Nutrition and Care (mPINC) Survey.

Centers for Disease Control and Prevention (2011). *Breast-Feeding Report Card–United States, 2014*. Retrieved from http://www.cdc.gov/breast-feeding/pdf/2014breast-feedingreportcard.pdf

Section 3 Lecture Launcher: Colic

The Mayo Clinic provides an excellent overview of colic, including a definition, symptoms, causes, risk factors, complications, testing and diagnosis, treatment, and suggestions for coping and support. I find that students frequently ask about this and would like more information.

About 25% of infants may be affected with colic, according to the Mayo Clinic (2011). The onset of colic is usually evident when the infant is just a few weeks old and may last about 3 months. Although we do not know what causes colic in infants, we do know that pre- and post-natal maternal smoking is a risk factor. It is important to have infants medically evaluated for colic to make sure that is what they have. There are several medical conditions, such as pyloric stenosis or an intestinal obstruction that could cause sustained periods of inconsolable crying. Note that colic is temporary and that having support and child care respite is helpful for maintaining a positive attitude and good mental health.

Source:

Mayo Clinic staff (2015). *Colic*. Retrieved from http://www.mayoclinic.org/diseases-conditions/colic/basics/definition/con-20019091

CRITICAL THINKING ABOUT DEVELOPMENT

Evaluating Periodicals and Journals for Academic Use

Understanding the Concept

Very few students come to college understanding the standards that will be expected of them for selecting and using resources. When writing an essay or a paper and when supporting your opinions in college, not all resources are acceptable.

This exercise introduces you to differences between sources written for the general public, and scholarly journals with peer-reviewed articles for academic use. Rather than reading about the differences, see the differences with the exercise below.

Critical Thinking Challenge, Periodical Evaluation

1. Begin by examining two periodicals. Go to your school or public librarian and access free copies of Parenting Magazine and find an article on newborns. Go to http://jama.ama-assn.org/ and enter “newborn or neonate” in the search box. Choose an article and click on full text.

2. Compare each source in the following table and circle their scores.

	Parenting	JAMA
1. List author's discipline and degrees.		
2. Author's work has been reviewed by knowledgeable peers in their field.	( )Yes +5 ( )No	( )Yes +5 ( )No
3. Sources the author used are cited.	( )Yes +5 ( )No	( )Yes +5 ( )No
4. References are given after the article.	( )Yes +5 ( )No	( )Yes +5 ( )No
5. Includes number and characteristics of subjects in studies.	( )Yes +5 ( )No ( ) NA, no study included.	( )Yes +5 ( )No ( ) NA, no study included.
6. Describes research method in detail.	( )Yes +5 ( )No ( ) NA, no research included.	( )Yes +5 ( )No ( ) NA, no research included.
7. Has advertisements for products related to articles.	( )Yes -5 ( )No	( )Yes -5 ( )No
8. Has conflict of interest disclaimers.	( )Yes +5 ( )No	( )Yes +5 ( )No
9. Different opinions or weaknesses in the information are discussed.	( )Yes +5 ( )No	( )Yes +5 ( )No
10. Fact, theory, and opinion are easy to tell apart.	( )Yes +5 ( )No	( )Yes +5 ( )No
Total Points		

3. Summarize in writing the differences you see between the publications and their weaknesses or strengths as appropriate academic sources for information.

Instructor's Guide

This exercise works well as an individual assignment followed by class or small group discussion if time allows. You may wish to select your own set of periodicals. The *Journal of the American Medical Association* provides full text articles at no cost. If your students have access to free databases the selection of journals you might wish to use will be larger.

The exercise transfers most easily to online discussion by preselecting periodicals available to your students online for free. For a forum, have students use the table as a guide, and then submit their written summary and comments in the discussion board.

SUPPLEMENTAL READINGS

Bean, C. (1990). *Methods of childbirth* (Rev. Ed.). New York: Quill.

Brazelton, T.B., Nugent, J.K., & Lester, B.M. (1987). Neonatal Behavioral Assessment Scale. In J.D. Osofsky (Ed.), *Handbook of infant development* (2nd. Ed.). New York: Wiley.

Eisenberg, A., Murkoff, H.E. & Hathaway, S.E. (1989). *What to expect in the first year*. New York: Workman.

Frey, D. (July 9, 1995). Does anyone here think this baby can live? *The New York Times Magazine*. pp. 22–47.
This article presents a true story of a 24-week-old fetus who is born prematurely and discusses the decisions involved in whether to use medical technology to keep the baby alive.

Karr-Morse, R., Wiley, M., and Brazelton, T. (1999). *Ghosts from the nursery: Tracing the roots of violence.*
This book details recent research about the importance of a healthy prenatal environment.

Leboyer, F. (1975). *Birth without violence*. New York: Knopf.

Murkoff, H, Hathaway, S., & Eisenberg, A. (2002). *What to expect when you're expecting.*
This book covers important topics such as exercise, childbirth options, multiple births, choosing a caregiver, and common (and uncommon) problems. It's a comprehensive, straightforward guide to labor, delivery, postpartum care, breast-feeding, and more. There is a section for fathers-to-be also.

Smith, R. (March, 1999). The timing of birth. *Scientific American*. Scientists have recently discovered a hormone in the human placenta that tells the pregnant woman's body to begin labor.

Warrick, P. (March 1, 1992). The fantastic voyage of Tanner Roberts. *The Los Angeles Times.* pp. E1, E12–13.
This fascinating article relates a typical birth.

MULTIMEDIA IDEAS

After the Baby Comes Home (Films for the Humanities and Sciences, 19 minutes)
This film shows how new parents can prepare for the stress of the new baby, including postpartum depression, marital stress, exhaustion, and the reactions of siblings.

The Amazing Newborn (Polymorph Films, 1975, 26 minutes)
This film emphasizes the sensory capabilities of the newborn.

Babywatching (Films for the Humanities and Sciences, 50 minutes)
Based on the best-selling book by Desmond Morris, this program depicts the world through the eyes of a baby.

Birth and the Newborn (Concept Media, 27 minutes)
A video describing various childbirth practices.

Birth at Home (Filmmakers Library, 14 minutes)
A fascinating film about a home birth in Australia assisted by a midwife.

The Dad Film (Fanlite Productions, 1991, 28 minutes)
This video assuages the anxieties of "expectant dads" and encourages the involvement of fathers in the birth experience.

Easier to Bear (ABC News/Prentice Hall, 1994, 12 minutes)
A *20/20* segment that deals with underwater birth as an alternative method to ease the pain of childbirth. Both pros and cons are discussed. Several underwater births are shown.

First Adaptations (Insight Media, 1992, 30 minutes)
Describes capabilities infants have to survive and learn by their senses.

Five Women, Five Births (Davidson Films, 29 minutes)
This film shows two home births and three hospital births.

It's Our Baby: *Parents Talk About Certified Nurse-Midwife Birth Care* (The Cinema Guild, 1992, 25 minutes)
Dispels common misconceptions and shows what midwives do.

A Joyous Labor (Filmmakers Library, 1987, 30 minutes)
Explores birth options: hospital, home births, birthing centers and the methods used in each setting.

Labor and Delivery (Injoy Productions, 35 minutes)
This video details the labor and delivery process and includes interviews with mothers and fathers during the last weeks of pregnancy and after delivery.

The Miracle of Birth (AIMS Media, 1989, 30 minutes)
This video presents information on childbirth.

The Newborn (Films for the Humanities and Sciences, 23 minutes)
This program shows the reactions of newborns 10 days after birth and important functions of infancy such as sitting, standing, walking, and social contact.

Prenatal Development and the Birth Process (World of Childhood Series #3, University of Nebraska, Great Plains National Instructional Television Library, 1992, 28 minutes)
This video provides an overview of prenatal development, including a live ultrasound sonogram. It takes the viewer through the birth process from different cultural perspectives. It also provides a history of different methods of childbirth.

The Process of Birth (Films for the Humanities and Sciences, 23 minutes)

This program shows how different cultures and different individuals determine the best birth position, whether births should take place in a hospital, who should be in attendance at the birth, and whether mother should breast-feed the newborn.

TEXTBOOK FEATURES

Video Guide

Birth and the Newborn Child (9:03; p. 83)
Labor and Delivery (7:11; p. 86)
Neonatal Reflexes (1:15; p. 106)
Taste (2:02; p. 108)

Cultural Focus

Breast-Feeding Practices Across Cultures (6:19; p. 113)

1. Were you surprised to see that many of the women interviewed have similar reasons for breast-feeding (regardless of their culture)? What are some of the benefits of breast-feeding that they mentioned?

Answers will vary based on personal opinion. The benefits mentioned included:

- breast milk is always with you
- it is less expensive than formula
- more natural
- helps with bonding

Research Focus (pp. 116–117)

Breast-Feeding Benefits: Separating Correlation and Causation (3:45; p. 117)

Research Focus Answers

1. b
2. c

Soothing Methods (p. 121)

Applying Your Knowledge as a Professional

Career Focus: Birth Doula (p. 125)

Critical Thinking Questions and Answers

Section 1

If you were pregnant or the partner of a pregnant woman, how "natural" would you want the childbirth to be, and why? (p. 92)

Students will have many answers to this, based on their own experience, what they have read, and what they desire. As an instructor, you can help students weigh their options by not passing judgment on any particular preference. Some students will want to go completely natural, with no drug intervention, even avoiding the hospital and birthing at home. Other students may want to take advantage of every possible medical intervention, such as using epidurals and birthing at a hospital. There are many options for women, and they should become informed about all their options to make the best choice for them.

Section 2

Given what you have learned here about neonate's sight preferences, how would you design a mobile for your newborn's room? (p. 110)

It is typical for mobiles to have interesting designs, using colors with high contrast, such as black, white, and red. Infants prefer faces over non-faces, and they prefer strong patterns over random ones. They also prefer three-dimensional over two-dimensional objects, so you might consider making a mobile out of small plush toys in black, white, and red patterns.

Section 3

Given that the benefits of breast-feeding in developed countries are genuine but small, should public policies encourage or discourage more women to breast-feed for longer? Consider the arguments that breast-feeding makes returning to the workplace difficult for women and makes it hard for mothers and fathers to share the infant care equally. (p. 116)

Public policies should encourage breast-feeding. A longer period of breast-feeding has been linked to higher IQ in early childhood. Breast-feeding is also linked to the quality of attachment between the mother and child. Public policies that encourage longer breast-feeding could also encourage more flexible design of workspaces to allow for onsite infant daycare, and they can encourage more flexible schedules, so that mothers can breast-feed their children. Although breast-feeding is not an activity a father can actively engage in, a father or other partner can participate in many other aspects of child care that contribute to a secure attachment bond and the child's overall health and well-being.

Considering that colic places neonates at risk for parental maltreatment, how would you design a program to prevent such maltreatment?

Educate prospective parents about what is expectable behavior from an infant (including crying and the symptoms of colic) and give parents coping skills to deal with their own stress and their own reactions to a colicky baby. You might also remind parents that colic is somewhat common (about 1 in 10 Western babies experience it) and usually declines after 3 months of age.