A Dissertation

entitled

Self-Efficacy of School Nurses in Providing Support for Pregnant and Parenting Teenagers

by

Nicole Kolm-Valdivia

Submitted to the Graduate Faculty as partial fulfillment of the requirements for

Doctor of Philosophy Degree in Health Education

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The University of Toledo
December 2012
An Abstract of

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Although teenage pregnancy and birth rates have decreased during the last two decades, there are over 330,000 children born to teenage mothers every year in the United States. This is a significant public health problem, as teenage childbearing is associated with increased risk of dropping out of high school, lower lifetime earnings, and adverse health, developmental, and behavioral problems for their children. Additionally, almost 40% of teenage mothers experience a repeat pregnancy within two years of the birth of their child. Research indicates that school-based programs can be effective in reducing the dropout and subsequent pregnancy rates of teenage mothers. School nurses are in a position to provide school-based support, and are encouraged to do so by the National Association of School Nurses. The purpose of this study was to assess the current practices, self-efficacy, and perceived barriers of high school nurses in the United States in providing support to pregnant and parenting adolescent females. A survey was mailed to a national random sample of 800 high school nurses who belonged to the National Association of School Nurses. With a response rate of nearly 56%, respondents worked
primarily in rural (34.1%) or suburban (41.5%) school settings. More than half of the nurses (55.2%) reported receiving education on pregnant and parenting teenagers, and almost two-thirds worked at a high school five days per week. More than half of the nurses reported assisting the majority of their pregnant and parenting students with referrals to community resources, facilitating safety accommodations, and facilitating academic collaborations, but not teaching positive parenting practices or assisting with obtaining or regularly assessing use of contraceptives. Efficacy expectations scores and outcome expectations scores were significantly higher among nurses who had received training on pregnant and parenting teenagers. Lack of time, lack of cooperation from primary care providers, lack of cooperation from students’ families, and school policy prohibiting contraception discussions were all cited as perceived barriers. Results from this study should be of benefit to school nurses, school administrators, nursing school faculty, and lastly, pregnant and parenting teenage girls.

School nurses should self-evaluate their support of their pregnant and parenting students. Efforts should be made by health departments, colleges, and community organizations to educate school nurses on this topic, and school nurses should seek out this training. Additionally, school nurses and health educators should advocate for repeals of bans that prohibit the discussion of contraception in school settings.
To my husband, Santiago, and soon-to-arrive son, with love. You are the sources of my motivation.
Acknowledgments

First, thank you to my dissertation committee for the long hours they’ve put in reviewing and editing my work. Dr. Joseph Dake has remained my advocate and mentor throughout the doctoral program, graduate assistantship, and dissertation process, and I am deeply appreciative of his humor, diligence, and patience. Dr. James Price is a true expert in the field of public health, and has an “eagle eye” that caught my errors. Dr. Susan Telljohann’s passion for health education and research is contagious, and she provided much thought-provoking feedback. Dr. Candace Hendershot provided insight into the world of school nursing that was enlightening and helpful with my writing.

To my cohort, Jamie, Phil, Molly, and Rob: one of the best things about the PhD program was the wonderful people I’ve met, and that includes all of you!

Thank you to the woman who is a true supporter and advocate for pregnant and parenting teenagers, Joan Durgin. Joan’s selfless dedication and commitment to improving the lives of pregnant and parenting teenage girls is truly admirable, and I am blessed to have worked with her for four years. She taught me more than I ever could have imagined, and I am eternally grateful.

Finally, thank you to my parents, Rick and Patty Kolm, for their support and love. They instilled in me very early the values of education and hard work. Without those characteristics, I never would have made it this far.
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Chapter 1

Introduction

This chapter will provide an overview of the problems and consequences associated with teenage childbearing in the United States and explain the purpose and scope of the study. Specifically, the following sections are presented in this chapter: Epidemiology of Teenage Childbearing, Costs of Teenage Childbearing, Consequences of Teenage Childbearing, Role of School Nurses on Teenage Childbearing, Purpose of the Study, Definition of Terms, Research Questions and Hypotheses, Limitations, and Delimitations.

1.1 Epidemiology of Teenage Childbearing

With the exception of a two-year increase from 2005-2007, the teenage pregnancy and birth rates in the United States have been on a downward trend for the last two decades. From 1990 to 2004, the teenage pregnancy rate for 15-19 year olds in the United States decreased 38%, from 117 pregnancies per 1000 females in 1990 to 72 pregnancies per 1000 females in 2004 (Ventura, Abma, Mosher, & Henshaw, 2008). The teenage birth rate for 15-19 year olds decreased from 62 live births per 1000 females in 1991 (Hamilton, Sutton, & Ventura, 2003) to 31.3 live births per 1000 females in 2011 (Hamilton, Martin, & Ventura, 2012). This represents a 50% decrease in births to teenagers. Between 1991 and 2010, the teenage birth rate decreased by 57% for African
American teens, 47% for Caucasian teens, and 46% among Hispanic teens (Hamilton & Ventura, 2012).

Although the pregnancy and birth rates have decreased in the last two decades, there are still approximately 750,000 teenagers, ages 15-19, that become pregnant each year (Guttmacher Institute, 2006). About 80% of these pregnancies are unintended (Henshaw, 1998). After accounting for miscarriage and abortions, about 330,000 of these pregnancies resulted in live births in 2011 (Hamilton, Martin, & Ventura, 2012).

The birth rate for adolescents in the United States varies widely among the states. Generally, teen birth rates are lowest in the northeastern part of the United States and highest in the southern parts of the United States (Mathews, Sutton, Hamilton, & Ventura, 2010; Hamilton & Ventura, 2012). State data for 2010 indicated that New Hampshire had the lowest teenage birth rate at 15.7 births per 1000 females, while Mississippi had the highest teenage birth rate at 55.0 per 1000 females (Hamilton & Ventura, 2012). Overall, teenage birth rates in 2010 were highest in Mississippi, Arkansas, New Mexico, Oklahoma, and Texas, and lowest in New Hampshire, Connecticut, Vermont, and Massachusetts (Hamilton & Ventura, 2012).

On an international basis, the United States continues to have the highest teenage birth rate among developed countries (United Nations Statistics Division, 2006). In 2009, the birth rate among teenagers in the United States was 39.1 births per 1000 females (Pazol, Warner, Gavin, Callaghan, Spitz, Anderson, Barfield, & Kann, 2010). The United Kingdom had the next highest teenage birth rate of 26.7 births per 1000 females, while the Netherlands had the lowest birth rate among teenagers at 3.8 births per 1000 females (United Nations Statistics Division, 2006). The teenage birth rate in the United States is
more than three times as high as the teenage birth rate in Canada, more than seven times higher than the teenage birth rate in Denmark, and more than eight times as high as the teenage birth rate in Japan (United Nations Statistics Division, 2006).

The teenage birth rate in the United States varies by race and ethnicity, with higher rates for racial/ethnic minorities (Hamilton, Martin & Ventura, 2012). In 2011, the birth rate among non-Hispanic Caucasians ages 15-19 was 21.8 births per 1000 females (Hamilton, Martin, & Ventura, 2012). Teenage birth rates for Caucasian teens were concentrated in the southeastern United States. The birth rate for African American teenagers in 2011 was 47.4 births per 1000 females ages 15-19 (Hamilton, Martin, & Ventura, 2012). The birth rates for African American teenage girls were highest in the southeastern and upper Midwestern parts of the United States. In 2011, the birth rate for Hispanics was 49.4 births per 1000 females ages 15-19, with the highest rates concentrated in the southeastern states (Hamilton, Martin, & Ventura, 2012). The teenage birth rate in the United States also varies by the age of the teenager. In 2011, the birth rate for teenagers ages 14 and younger was 0.4 births per 1000 females (Hamilton, Martin, & Ventura, 2012). The birth rate for teenagers ages 15-17 was 15.4 births per 1000 females (Hamilton, Martin, & Ventura, 2012) with approximately 15% of the births being second or higher order births (Centers for Disease Control and Prevention [CDC], 2009). The birth rate for teens ages 18-19 in 2011 was 54.1 births per 1000 females (Hamilton, Martin, & Ventura, 2012). It is estimated that approximately 33% of those births were second or higher order births (CDC, 2009).
1.2 Costs of Teenage Childbearing

The costs of teenage childbearing to taxpayers at the local, state, and federal level are over $10.9 billion per year (National Campaign to Prevent Teen & Unplanned Pregnancy [NCPTUP], 2011). This is considered a conservative estimate, and accounts only for the costs that are confidently attributed to teenage childbearing. This amount breaks down to over $1,600 per child born to a teenage mother, per year (NCPTUP, 2011). Over 95% of costs are due to childbearing by teens 17 years and under. This amounts to over $4,000 per teenage mother per year for this age group (Hoffman, 2006). The remaining $0.4 billion is due to childbearing by teenagers ages 18 and 19 years old. The costs of teenage childbearing are incurred from two generations: the teenage mother and father, and from their child(ren). Some of the costs associated with teenage mothers and fathers are due to the lower taxes they pay and the public assistance they receive (Temporary Assistance for Needy Family, housing assistance, food stamps, and Medicaid). The costs associated with the children of teenage mothers include public sector health care costs, child welfare costs, foster care costs, state prison system costs, and lower tax revenue when they enter the workforce (Hoffman, 2006; NCPTUP, 2011). From 1991 to 2004, almost 6,775,000 infants were born to teenage mothers, for a total cost to society of over $160 billion (Hoffman, 2006).

1.3 Consequences of Teenage Childbearing

Numerous studies demonstrate negative consequences of teenage childbearing on the teenagers and their children. One consequence is the increased likelihood of teenage mothers dropping out of high school. Research shows teenage mothers and their children
face better outcomes if the young mothers finish their high school education (Hofferth, Reid, & Mott, 2001). Teenage girls who drop out of high school face a lifetime of high rates of unemployment, lower wages, and are more likely to rely on government assistance to care for their families than teenage girls who graduate from high school (National Women’s Law Center, 2007). Hofferth et al. (2001) analyzed longitudinal data of teenage mothers from the birth of their child through age 29 and found that teenage mothers, compared to women who give birth at age 30 or later, were only 10-12% as likely to complete high school. Pfitzner, Hoff, and McElligot (2003) evaluated a 15 year time span of a program involving 1800 teenage mothers. They found that only about 25% of the participants completed high school (Pfitzner, et al., 2003). Levine and Painter (2003) analyzed data from a nationwide, longitudinal study of teenagers from eighth grade through two years after graduation. They reported that teenage, unmarried mothers had a high school dropout rate of 44%, which was five times the rate of teenagers without children (about 9%). They also found that of the teenage mothers who dropped out of high school, only 26% had received a General Educational Development (GED) diploma by age 20 (Levine & Painter, 2003). Levine and Painter (2003) also reported that, while some portion of the high school dropout rate among teenage mothers may be due to childbirth, some of it may also be due to preexisting disadvantages in the lives of the teenage mothers. These disadvantages include low parental education and income, low socioeconomic status, high neighborhood crime rates, few adult role models, and poor schools (Levine & Painter, 2003). They suggest that these factors, along with being a teenage mother, together contribute to the increased likelihood of teenage mothers dropping out of high school. Numerous other studies report to varying degrees what
portion of the high school dropout rate of teenage mothers is attributed to having a child or to preexisting disadvantages. This debate, and the effect of dropping out of high school on future earnings and poverty status, will be explored further in Chapter 2.

Another consequence of teenage childbearing is the potential negative effects on the children. Infants born to teenage mothers are more likely to be premature and low birthweight compared to infants born to older mothers, and are more likely to rate lower on Apgar tests (Partington, Steber, Blair, & Cisler, 2009; Chen, Wen, Fleming, Demissie, Rhoads, & Walker, 2007). One study found that about 12% of infants born to teenage mothers (under age 20) were low birthweight, and 12% were premature, even after adjusting for demographic and behavioral characteristics of the mothers (Partington, et al., 2009). Another national study of birth outcomes found that rates of low birthweight, preterm births, and low Apgar scores were significantly higher among teenagers under age 20 than among women ages 20-24 (Chen, et al., 2007.) They also found that the rates of these health problems of infants were increased with decreasing maternal age, with the highest rates among infants born to mothers under age 15 (Chen et al., 2007). Infants born to mothers 17 years old and younger were significantly more likely to receive an Apgar score of very low (under 4) or low (under 7) compared to infants born to mothers ages 20-24 (Chen et al., 2007). Other studies (DuPlessis, Bell, & Richards, 1997; Gilbert, Jandial, Field, Bigelow, & Danielsen, 2004) have found similar results to Chen et al. (2007) and Partington et al. (2009). It’s important to note that these studies were not causal, but rather correlational. Other factors regarding teenage pregnancy may be related to negative health effects of infants, including limited or delayed prenatal care. Other potential negative effects on the children of teen mothers include mental health,
cognitive, educational, and behavioral outcomes, which will be discussed further in Chapter 2.

To further compound the consequences associated with teenage childbearing, many teenage mothers give birth to a second child within two years of the first. Raneri (2006) conducted a secondary data analysis of teenage mothers, and found that 42% of the mothers experienced a second birth within 24 months of the first. This is in line with the findings of other studies (Critendon, Boris, Rice, Taylor, & Olds, 2009; Gillmore, Lewis, Lohr, Spencer, & White, 1997). Some research shows that infants born in subsequent births to teenagers have poorer health than infants born in a first birth. Partington et al. (2009) found that second-born infants to teenage mothers were significantly more likely to be premature than first births. To teenagers under age 16, second-born infants were more likely to be low birthweight (Partington, et al., 2009).

Since there are numerous negative consequences to teenage childbearing, common goals of programs for teenage mothers are to reduce the high school dropout rate and reduce the repeat pregnancy rate. It is generally within the best interest for the long-term well-being of the student and her child that she receives an education (Stephens, Wolf, & Batten, 1999). The lack of support in the lives of teenage mothers may pose a barrier to finishing high school. Although there is a significant amount of literature on predisposing factors for teenage pregnancy and outcomes of teenage childbearing, there is a limited amount of research on the support of teenage mothers (Bunting & McAuley, 2004). Much of the research that does exist on teenage mothers is centered on family support. However, the available research seems to demonstrate that teenage mothers who maintain a connection with their high school are less likely to drop
out of school and more likely to delay a second pregnancy (Sadler, Swartz, Ryan-Krause, Seitz, Meadows-Oliver, Grey, & Clemmens, 2007). Schools have the opportunity to connect with teenage mothers and support their educational needs before they drop out of school and become distanced from educational goals (Center for Assessment and Policy Development [CAPD], 1997). School-based programs for teenage mothers appear to be effective in keeping young mothers in school, reducing subsequent births, and improving the economic outcomes of the teenagers (Stephens, Wolf, & Batten, 1999). School-based services can also link teenage mothers with health and child development services and with resources to promote good parenting practices (CAPD, 1997). Even if it is not possible for a school to establish a program for teenage mothers, it is important that teenagers are supported through other means. In many schools, it may be the school nurse that provides this support. School nurses have a unique place within the school setting free of grading and administrative discipline that sets them apart from teachers and principals. They often serve as a provider of care during the early pregnancy of a teenager. This position provides school nurses the opportunity to serve as a mentor and health educator to pregnant and parenting teenagers, and develop a relationship of trust and respect (Perrin & Dorman, 2003). However, no research exists regarding school nurses and their support of pregnant and parenting teenagers.

1.4 Role of School Nurses on Teenage Childbearing

The National Association of School Nurses (NASN), a professional organization of almost 14,000 school nurses, developed a position statement on the role of school nurses in supporting teenage mothers. The NASN (2004) states that school nurses play an
important role in supporting teenage parents in three main ways: significantly helping teenage mothers and fathers learn positive parenting practices through school and community-based educational programs; providing counseling and research-based information to parenting teenagers and their families; and supporting responsible parenthood. The NASN (2004) also states that school nurses play an important role in supporting pregnant teenagers in three main ways: providing care and guidance during pregnancy; collaborating with the student, her family, and school personnel to continue academic success throughout and after pregnancy; and recommending necessary modifications for the pregnant teenager for her safety in the school setting. The NASN asserts that school nurses should be supporting teenage mothers in the specific ways listed above, but no research exists on the self-efficacy and perceived barriers of school nurses in providing this support to pregnant and parenting teenagers. If school nurses supported pregnant and parenting teenagers as described above, there are several potential outcomes. First, since teenage mothers are more likely to drop out of school than teenagers without children, school nurses have the potential to decrease this risk by collaborating with the student, her family, and school personnel to ensure continued academic success while the student is on maternity leave (NASN, 2004). High school graduation has societal implications, because a student who graduates from high school would be better able to support herself and her child without governmental assistance than a student who drops out of high school. Second, by encouraging contraceptive use after the child is born, school nurses may have an influential role in preventing subsequent pregnancies among teenage mothers. Third, by recommending modifications to help ensure a pregnant student’s safety and well-being while at school, school nurses
may increase the likelihood of a healthy pregnancy and birth. Fourth, by supporting positive parenting practices and educating young mothers about child development, school nurses may increase the likelihood that the children of teenage mothers will develop properly. Finally, by connecting pregnancy and parenting teenagers with appropriate community resources, school nurses increase the likelihood that the teenagers will receive help with problems they may face, including housing, childcare, and financial concerns. Many problems associated with pregnancy and parenting in teenagers can be reduced by social support and school-based programs (Williams & Sadler, 2001). It is important that school nurses take advantage of their potentially influential position in the lives of pregnant and parenting teenage girls to encourage the teenagers to grow into healthy, productive adults and successful parents.

1.5 Purpose of the Study

The purpose of this study was to assess the efficacy expectations and outcome expectations of high school nurses in the United States in providing support to pregnant and parenting adolescent females. This includes supporting positive parenting practices; connecting pregnant and parenting teenagers with community resources; collaborating with appropriate persons to ensure pregnant teenagers are successful with schoolwork; assisting teenage mothers in obtaining and using contraceptives; and ensuring the safety and well-being of pregnant teenagers in the school setting. This study also assessed the perceived barriers of school nurses in providing support to pregnant and parenting teenagers. Next study assessed the current practices of high school nurses in supporting their pregnant and parenting female students. Finally, this study assessed differences in
support beliefs based on the level of education and certification of the school nurses; geographic location; school setting (urban, rural, or suburban); school type (public, parochial, private, charter); number of pregnant or parenting students within their school; whether the nurses have received training on pregnant and parenting teenagers; age of the nurse, and the nurse-to-student ratio in their school.

1.6 Research Questions and Hypotheses

Research Question 1: Do school nurses report engaging in activities to support pregnant and parenting female students over the past two years?

Hypothesis 1.1: The majority of school nurses do not assist the majority of their pregnant and parenting female students with connecting them to community resources.

Hypothesis 1.2: The majority of school nurses do not assist the majority of their pregnant and parenting female students with facilitating accommodations to help ensure their safety and well-being in the school setting.

Hypothesis 1.3: The majority of school nurses do not assist the majority of their pregnant and parenting female students with facilitating collaboration with the students, their families, and school personnel to help keep students academically on track.

Hypothesis 1.4: The majority of school nurses do not assist the majority of their pregnant and parenting female students with obtaining contraceptives.

Hypothesis 1.5: The majority of school nurses do not assist the majority of their pregnant and parenting female students with a regular assessment of contraceptive compliance.

Hypothesis 1.6: The majority of school nurses do not assist the majority of their pregnant and parenting female students with learning positive parenting practices.
Research Question 2: Do school nurses have high efficacy expectations in their ability to support pregnant and parenting female students?

Hypothesis 2.1: There is no statistically significant difference in efficacy expectations of school nurses by education level.

Hypothesis 2.2: There is no statistically significant difference in efficacy expectations of school nurses by school setting.

Hypothesis 2.3: There is no statistically significant difference in efficacy expectations of school nurses by school type.

Hypothesis 2.4: There is no statistically significant relationship between efficacy expectations of school nurses and the number of pregnant or parenting female students within the school.

Hypothesis 2.5: There is no statistically significant difference in efficacy expectations of school nurses by whether they have received training on pregnant and parenting students.

Hypothesis 2.6: There is no statistically significant relationship between the efficacy expectations of school nurses and the nurse-to-student ratio.

Hypothesis 2.7: There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting.

Hypothesis 2.8: There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to facilitating
collaboration with pregnant students, their families, and school personnel to keep the students academically on track.

**Hypothesis 2.9:** There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to assisting pregnant and parenting students in obtaining contraceptives.

**Research Question 3:** Do school nurses believe that engaging in activities to support pregnant and parenting students will produce positive outcomes, including academic success, healthier pregnancy, reduction in subsequent pregnancies, proper growth and development of the student’s child, and decreased likelihood of school dropout?

**Hypothesis 3.1:** There is no statistically significant difference in outcome expectations of school nurses by education level.

**Hypothesis 3.2:** There is no statistically significant difference in outcome expectations of school nurses by school setting.

**Hypothesis 3.3:** There is no statistically significant difference in outcome expectations of school nurses by school type.

**Hypothesis 3.4:** There is no statistically significant relationship between outcome expectations of school nurses and the number of pregnant or parenting female students within the school.

**Hypothesis 3.5:** There is no statistically significant difference in outcome expectations of school nurses by whether they have received training on pregnant and parenting students.
Hypothesis 3.6: There is no statistically significant relationship between the outcome expectations of school nurses and the nurse-to-student ratio.

Hypothesis 3.7: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting.

Hypothesis 3.8: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to facilitating collaboration with pregnant students, their families, and school personnel to keep students academically on track.

Hypothesis 3.9: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to assisting pregnant and parenting students in obtaining contraceptives.

Research Question 4: Do school nurses perceive barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting?

Hypothesis 4.1: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by education level of school nurses.

Hypothesis 4.2: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by school setting.

Hypothesis 4.3: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by school type.
**Hypothesis 4.4:** The number of pregnant and parenting students in the school is not significantly predictive of the number of perceived barriers to facilitating accommodations.

**Hypothesis 4.5:** There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by whether school nurses have received training on pregnant and parenting students.

**Hypothesis 4.6:** The nurse-to-student ratio is not significantly predictive of the number of perceived barriers to facilitating accommodations.

**Hypothesis 4.7:** The number of days per week worked in a high school is not significantly predictive of the number of perceived barriers to facilitating accommodations.

**Hypothesis 4.8:** The total number of schools served is not significantly predictive of the number of perceived barriers to facilitating accommodations.

**Hypothesis 4.9:** There is no statistically significant relationship between the number of years worked as a school nurse and the number of perceived barriers to facilitating accommodations.

**Research Question 5:** Do school nurses perceive barriers to facilitating collaboration with the pregnant student, her family, and school personnel to keep the student academically on track?

**Hypothesis 5.1:** There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by education level of school nurses.

**Hypothesis 5.2:** There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by school setting.
Hypothesis 5.3: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by school type.

Hypothesis 5.4: The number of pregnant or parenting students within a school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

Hypothesis 5.5: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by whether school nurses have received training on pregnant and parenting students.

Hypothesis 5.6: The nurse-to-student ratio of a school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

Hypothesis 5.7: The number of days per week worked in a high school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

Hypothesis 5.8: The total number of schools served is not significantly predictive of the number of perceived barriers to facilitating collaboration.

Hypothesis 5.9: There is no statistically significant relationship between the number of years worked as a school nurse and the number of perceived barriers to facilitating collaboration.

Research Question 6: Do school nurses perceive barriers to assisting teenage mothers in obtaining contraception?

Hypothesis 6.1: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by education level of school nurses.
Hypothesis 6.2: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school setting.

Hypothesis 6.3: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school type.

Hypothesis 6.4: The number of pregnant or parenting students within a school is not significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

Hypothesis 6.5: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by whether school nurses have received training on pregnant and parenting students.

Hypothesis 6.6: The nurse-to-student ratio of a school is not significantly predictive of the number of perceived barriers to assisting with obtaining contraceptives.

Hypothesis 6.7: The number of days per week worked in a high school is not significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

Hypothesis 6.8: There is no statistically significant difference in the number of perceived barriers to collaboration by the age of a school nurse.

Hypothesis 6.9: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by the institution which employs the school nurse.

1.7 Definition of Terms

Academic success: The graduation of high school or promotion to the subsequent grade level.
Accommodations for pregnant students in school setting: Modifications made by the school to protect the health of a pregnant student during school hours. This includes, but is not limited to: changes in physical education class requirements; increased restroom break allowances; alternative seating arrangements if pregnant student does not fit in traditional desk; allowances to carry food and water in class; exemptions to dress code.

Apgar score: A scoring system used to assess the status of a newborn infant at one minute and five minutes of age (Apgar, 1953). There are five components to the score: heart rate, respiratory effort, muscle tone, reflexes, and color. Each component is given a score of 0, 1, or 2 which are then summed, for a total score of 0 to 10 (American Academy of Pediatrics, 2006).

Barriers: The perceived negative aspects or costs of an action that may act as an impediment to undertaking an action or behavior (Glanz, Rimer, & Lewis, 2002).

Community resources: The resources available for individuals in a particular community that would be of benefit to pregnant or parenting teenagers, including, but not limited to: housing assistance; public sector healthcare; domestic violence counseling; food assistance; childcare vouchers; Women, Infants, and Children (WIC) program; Temporary Assistance for Needy Families (TANF); mental health services; legal advocates.

Contraceptive: A device used to reduce the chances of becoming pregnant.

Efficacy expectations: An individual’s confidence in his or her ability to perform a certain behavior to achieve an outcome (Bandura, 1977c).
High efficacy expectations: Efficacy expectation scores can range from 6 to 24. A high efficacy expectation score is valued at 18 or higher.

High outcome expectations: Outcome expectation scores can range from 0 to 24. A high efficacy expectation score is valued at 18 or higher.

High outcome values: Outcome value scores can range from 5 to 20. A high outcome value score is valued at 15 or higher.

Low birthweight infant: Infants weighing less than 5 pounds, 8 ounces at birth (Chen, 2008)

Majority: 51% or more of the total respondents

Outcome expectations: The anticipated outcomes that an individual believes will occur from performing a specific behavior (Bandura, 1977b)

Outcome values: The perceived value or importance that a person places on given outcomes that may occur from undertaking a behavior (Bandura, 1977c)

Positive parenting outcomes: The outcomes in children that develop from positive parenting practices. These outcomes include cognitive, social, and emotional development that is on track for the child’s age.

Positive parenting practices: Positive parenting practices that are based on the RPM3 model from the National Institute of Child Health and Human Development [NICHD] (2006). The RPM3 model stands for Responding, Preventing, Monitoring, Mentoring, and Modeling. Responding to a child refers to providing a thought-out response, rather than reaction, in an appropriate way; the response is not too late, overblown, or too casual. Preventing refers to stopping problems or risky behaviors before they occur and knowing how to work through them. Mentoring refers to helping a child learn more about himself or herself and the world by developing a child’s strengths, offering support, listening, and giving praise. Monitoring refers to paying careful
attention to a child and his or her surroundings by asking questions, setting limits, and making decisions. Modeling refers to a parent using his or her own actions and words to serve as examples for a child (NICHD, 2006).

**Preterm/Premature infant:** Infants born before 37 weeks of gestation (Premature infant, 2007)

**School nurse:** A professional working within a specialized field of nursing who provides health care services in a school setting, including health care assessment, intervention, and follow-up. A school nurse is dedicated to advancing the well-being, academic success, and life-long achievement of students within the school setting. School nurses also “facilitate positive student responses to normal development; promote health and safety; intervene with actual and potential health problems; provide case management services; and actively collaborate with others to build student and family capacity for adaptation, self management, self advocacy, and learning” (NASN, 2009).

**Self efficacy:** the belief that one can perform a behavior required to achieve a particular outcome (Bandura, 1977c)

**Teenage mothers:** Individuals under age 20 who have given birth to a live infant

### 1.8 Limitations of Study

There were several potential limitations related to this study. One potential limitation of the study is the 55.9% return rate. The further the return rate is from 100%, the greater the potential for bias. A low return rate may indicate a difference between respondents and non-respondents in their beliefs on teenage childbearing. This non-
response bias could threaten the external validity of the findings. A second potential limitation is that the survey questions were based on the literature only, not on focus groups. However, content experts reviewed the instrument to ensure it adequately covered the topic. A third potential limitation is that the monothematic nature of the survey may have caused respondents to think about the topic in an uncharacteristic way. A fourth limitation is that the responses were self-reported, which may have led to a social desirability bias.

1.9 Delimitations of Study

There were several potential delimitations to this study. The first delimitation is that this study only assessed nurses employed in the high school setting. Since the majority of pregnancies occur to teenagers from 15 to 19 years old, resources seem best utilized by surveying nurses in high schools, rather than middle schools. Also, the majority of middle school nurses in the selected sample may not have had pregnant or parenting students in their school. A second delimitation is that this sample was drawn from school nurses who belonged to the National Association of School Nurses (NASN), so any school nurses who did not belong to the NASN were automatically excluded. Thus, this study has limited external validity. Another potential delimitation of this study is that the survey was cross-sectional, so no cause-and-effect can be drawn from the results. A final potential delimitation is that the survey was closed-format, so respondents did not have the opportunity to add comments.
1.10 Summary

Although the teenage pregnancy rate has decreased in the last two decades, the United States continues to have the highest rate among developed countries. The costs of teenage childbearing to society are over $9 billion per year. Teenage mothers are more likely to drop out of school than teenagers without children. This significantly impacts future earnings and dependence on governmental assistance. Infants born to teenage mothers are more likely to be of low birthweight and premature than infants born to older mothers. Additionally, about one-third of teenage mothers experience a second birth within two years of the first, which may compound the problems they face. Teenage mothers who receive school support are less likely to drop out of high school and more likely to delay a second pregnancy. This study will assess high school nurses and their efficacy expectations, outcome expectations, and perceived barriers to supporting pregnant and parenting teenagers.
Chapter 2

Literature Review

This chapter will review the literature related to teenage childbearing and support of pregnant and parenting teenagers. This chapter consists of the following sections: Education and Lifetime Earnings of Teenage Mothers, Health Outcomes in Infants Born to Teenage Mothers, Other Outcomes of Children Born to Teenage Mothers, Contraceptive Use among Teenage Mothers, Secondary Pregnancies Among Teenage Mothers, School-based Support of Pregnant and Parenting Students, Health Belief Model and Self-efficacy Theory, and Summary.

2.1 Education and Lifetime Earnings of Teenage Mothers

High school dropout rates in the United States have decreased over the last three decades (United States Department of Education, 2010). A high school dropout is defined by the Department of Education (2010) as an adolescent ages 16 to 24, who is living in the civilian population and is not currently enrolled in school and has not earned a high school diploma or General Educational Development (GED) certificate. In 1980, the nationwide dropout rate was 14.1%. In 2008, the dropout rate was 8.0%. The rate varies significantly by race and ethnicity status. In 2008, the dropout rate for African Americans was almost twice as high as for Caucasians, while the dropout rate for Hispanics was over
four times higher. In 2008, the dropout rate was slightly higher for males (8.5%) than for females (7.5%) (U.S. Department of Education, 2010).

Regarding post-secondary education, 58.8% of all degrees earned in 2008 were earned by women (U.S. Bureau, 2011b). This is a significant change from 1960, when only 34.2% of all degrees were earned by women. In 2008, 66.8% of all associate’s degrees were earned by Caucasians, while 12.8% were earned by both African Americans and Hispanics. Caucasians earned 71.8% of all bachelor’s degrees, 65.5% of all master’s degrees, and 57.1% of all doctoral degrees (U.S. Census Bureau, 2011b).

As of 2009, the average individual income (for year-round, full-time workers) in the United States was $40,900 (DeNavas-Walt, Proctor, & Smith, 2010). Income varies significantly by gender and race/ethnicity status. As of 2009, women earned 78.2% of men’s earnings. The median earnings for men was $45,485, while the median earnings for women was $35,549 (Getz, 2010). In addition to gender disparities in median earnings, racial and ethnic disparities exist. While the median household income in 2009 was $51,861 for a Caucasian household, the median household income for African American and Hispanic households were $32,584 and $38,039, respectively (DeNavas-Walt, et al., 2010). As there are disparities in the income of different racial and ethnic groups, there are also disparities in the poverty rates among groups. In 2009, 12.3% of Caucasians lived in poverty, while 25.8% of African Americans and 25.3% of Hispanics lived in poverty (DeNavas-Walt, et al., 2010). The average yearly earnings also vary by educational attainment. The average earnings for people with a high school education in 2008 were $43,493 for men and $31,666 for women (United States Census Bureau, 2009). After obtaining a bachelor’s degree level of education or higher, the average
earnings in 2008 for men were $94,206 and $60,203 for women (U.S. Census Bureau, 2009).

Research indicates that there are potential significant consequences of teenage motherhood, several of which relate to educational attainment and lifetime earnings. One consequence is that teen mothers drop out of high school (Ahn, 1994; Perper, Peterson, & Manlove, 2010; Leadbeater, 1996). Overall, about 30% of teen girls cite pregnancy or parenthood as their reason for dropping out of school (National Campaign to Prevent Teen Pregnancy, 2010). One national study found that 51% of women who became mothers as teenagers received a high school diploma by age 22, while another 15% received a GED (Perper, et al., 2010). By comparison, 89% of women who did not become mothers as teenagers received a high school diploma by age 22, while another 5% received a GED. Overall, 34% of teen mothers in this study did not receive a high school diploma or GED, while only 6% of the women who were not teen mothers received neither (Perper, et al., 2010). Researchers also found that teenagers who gave birth before age 18 compared to age 18 or 19 years old, were more likely to drop out of school. By age 22, only 38% of women who had given birth before age 18 had received a high school diploma, while 19% had received a GED. This adds up to 57% of teen mothers who gave birth before age 18 receiving either a diploma or GED. Comparatively, of the women in the study who gave birth at age 18 or 19, 60% received a high school diploma by age 22 and 13% received a GED. The researchers concluded that the age of the teen mothers at time of birth clearly plays a role in educational attainment (Perper, et al., 2010). This study also demonstrated a difference in educational achievement based on race/ethnicity status of teen mothers. By the age of 22, 55% of white women and 46% of
Hispanic women who gave birth as a teen (before age 18) had received a GED or high school diploma. However, 67% of African American women who gave birth as a teen had received either a GED or diploma (Perper, et al., 2010).

Other studies on dropout rates of teen mothers have found similar results. Hofferth, Reed, and Mott (2001) analyzed longitudinal data of teenage mothers from the birth of their child through age 29 and found that teenage mothers, compared to women who gave birth at age 30 or later, were only 10-12% as likely to complete high school. The women who were teenage mothers completed 1.9 to 2.2 fewer years of schooling. This effect was the same for postsecondary schooling, as women who gave birth as teenagers were only 28% as likely to obtain some postsecondary schooling as women who delayed childbearing until after age 30. However, the researchers found that the women who were teenage mothers were more likely to be disadvantaged than the women who were not. They were more likely to have less-educated mothers, be African American, come from single-parent households, and have more siblings. Even after accounting for these factors, women who were teenage mothers were only half as likely to obtain some postsecondary schooling (Hofferth, et al., 2001). Leadbeater (1996) analyzed national, longitudinal data of African American and Puerto Rican teen mothers and found that at one year postpartum, 62% of the teen mothers had graduated or were still enrolled in school. By two to two and a half years postpartum, only 57% of African Americans and 41% of Puerto Rican teen mothers had graduated or were still in school. After controlling for several variables, the researcher found that educational success of the teenager before the pregnancy occurred was associated with likelihood of dropping out of high school (Leadbeater, 1996). These results coincide with Klepinger, Lundberg,
and Plotnik (1998) who found that Caucasian teen mothers completed 2.4 years less of schooling and had wages as adults that were 24% less than women who were not teen mothers. Among African American women, the results were less drastic but remained significant. Women who gave birth as teenagers had 1.6 less years of schooling and 17% lower wages (Klepinger, et al., 1998), a finding similar to Escamilla and Santhiveeran (2005). Although Hispanics were not analyzed in this study, it appears from other studies that the age at which a Hispanic woman first gives birth significantly affects how much schooling she completes (Moore, Myers, Morrison, Nord, Brown, & Edmonston, 1993). Similarly, Groger and Bronars (1993) analyzed national data of Caucasian and African American teen mothers on the outcome measures of high school graduation, labor force participation, labor earnings, and likelihood of living in poverty. The researchers compared teen mothers of twins to teen mothers of one child to determine if having twins further exacerbates the potential negative effects of teenage motherhood. They found that the effects of having twins varied by race, and that African American teenage mothers of twins were 10% less likely to graduate than teen mothers of one child. Compared to African American teen mothers with one child, teen mothers of twins had 13% less labor force participation, made 43% less in annual earnings, and were 7% more likely to live in poverty. Caucasian teen mothers of twins were 8% more likely to live in poverty than mothers with one child, but most other differences were not significant. The authors concluded that African American teenagers may be more disadvantaged to begin with, and so they pay a higher price for teenage pregnancy (Grogger & Bronars, 1993).

Interestingly, one study found the opposite effect, that high school graduation rates by African American teen mothers were not affected by childbearing (Jones, Astone, Keyl,
Kim & Alexander, 1999). However, among Caucasian teen mothers, adolescent childbearing appeared to reduce the likelihood of graduating from high school by 8-10%. The researchers found that the education level of the teenager’s mother and the individual educational aspirations of the teenager played a large role in whether or not a teenager graduated from high school, regardless of motherhood status (Jones, et al., 1999).

Pfitzner, Hoff, and McElligot (2003) evaluated a 16 year time span of a program involving over 1800 teenage mothers enrolled in a multidisciplinary clinic for teen mothers. The mean time of enrollment of teenage mothers in the program was almost two years. The researchers found that only about 25% of the study participants completed high school or were still enrolled at the time the study ended (Pfitzner et al., 2003). Ahn (1994) also found that teen mothers were less likely to graduate from high school. He analyzed national, longitudinal data of teen mothers and found that less than 60% of women who gave birth as teenagers completed high school by age 25, compared to over 90% among women who were not teenage mothers. African American women who were teenage mothers were more likely than Caucasian women to complete high school. After taking into account background characteristics and individual differences among the study participants, the correlation between giving birth as a teenager and dropping out of high school was reduced, but remained significant. Researchers concluded that the negative association between teenage childbearing and high school graduation is due to all three factors: background, individual differences, and the birth itself (Ahn, 1992).

Levine and Painter (2003) analyzed data from a nationwide, longitudinal study of teenagers starting at eighth grade and ending two years after graduation. The researchers found that unmarried teenage mothers had a high school dropout rate of 44%, which was
five times the rate of teenagers without children (about 9%). Of the teenage mothers who dropped out of high school, only 26% had received a GED by age 20. Of the teens who graduated high school, only 3% of teen mothers entered college by age 20, compared to 76% of teens who were not mothers (Levine & Painter, 2003). Other studies have found similar results (Rich & Kim, 1999; Upchurch, 1993). Rich and Kim (1999) analyzed data from the National Longitudinal Study of Youth to determine differences in educational attainment between women who first gave birth as teenagers and women who delayed parenthood until becoming adults. They found that 68% of younger teen mothers (age 17 and younger) and 79% of older teen mothers (ages 18 or 19) completed their high school diploma or GED. Comparatively, among women who delayed childbearing to their twenties, 89% of the women in their early twenties and 96% of the women in their late twenties completed a high school diploma or GED. The researchers also found that women who delayed parenthood to ages 20 to 24 were more likely than women who gave birth as teenagers to be enrolled in post-secondary education. However, those differences were not large. Comparatively, women who first gave birth at age 25 or older were significantly more likely to enroll in postsecondary education than women who were teenage mothers (Rich & Kim, 1999). By age 36, 22% of women who had their first child as a young teenager had completed one year of college. Women who delayed childbearing to their late twenties were significantly more likely to have completed a year of college; however the difference in educational attainment between the two groups narrowed compared to younger ages. The researchers concluded that this indicates that teen mothers perhaps delay their post secondary education until later in life (Rich & Kim, 1999). Upchurch (1993) also analyzed national data and found that about 35% of teen
mothers in the sample dropped out of high school. The researcher noted that, while some
of the teen mothers dropped out of high school after having their child, others dropped
out before having their child. The researcher suggested that those teenagers may have
dropped out of high school, regardless of motherhood. Results also indicated that teen
mothers were significantly less likely to attend college than teenagers who delayed
childbearing until they were older. The author also noted that teens who were from
disadvantaged backgrounds were more likely to become pregnant and to drop out of
school. The author suggested that teenage childbearing may be a strategy to achieve adult
status in women from disadvantaged backgrounds (Upchurch, 1993).

Hofferth, et al. (2001) found that teenage mothers and their children face better
outcomes if the young mothers finish their high school education. One study of a national
sample of teen mothers measured cognitive stimulation and emotional support in the
home (Sullivan, Clark, Castrucci, Samsel, Fonseca, & Garcia, 2011). They found that
adolescent mothers scored significantly lower on the quality of the home environment
than older mothers. However, the researchers found this disparity was mediated by
continuing education. Teen mothers who remained in school (or graduated) provided
home environments for their children that were not significantly different than older
mothers (Sullivan, et al., 2011). This demonstrates another reason behind the importance
of high school completion for teen mothers.

Because teen mothers appear to be more likely to drop out of school, they may
have lower wages and lifetime earnings (Klepinger, Lundberg, & Plotnik, 1998), which
increases the likelihood that they will live in poverty. This means that they are more
likely to rely on government assistance to care for their families than teenage girls who
graduate from high school (National Women’s Law Center, 2007.) Approximately 25% of teen mothers go on welfare within three years of the birth of the child (Kaye & Chadwick, 2006). Obviously, this also affects their children. It is estimated that there is a 27% chance of a child living in poverty if the child is born to a teen mother, has parents who were unmarried at the child’s birth, or has a mother without a GED or diploma (Committee on Ways and Means Democrats, 2004). If two of these factors are present, the likelihood of living in poverty increases to 42%. If all three of these factors are present, then the likelihood increases to 62%, which equates to nine times greater than if none of the factors are present (Committee on Ways and Means Democrats, 2004). The age of a woman at first birth not only affects whether she will live in poverty, but also her future ratio of income to needs (Moore, Myers, Morrison, Nord, Brown, & Edmonston, 1993). This effect appears to be especially pronounced among Hispanic and Caucasian women who were teenage mothers (Moore, et al., 1993).

Levine and Painter (2003) conducted a longitudinal study of teenage mothers using a within-school matching model to serve as a control group. The authors identified pregnant teens, and then matched them with a control group made up of teen girls within the same school with very similar backgrounds and characteristics. The control group also had the same propensity score as the pregnant teens, meaning that they had the same calculated likelihood of becoming pregnant. The researchers found that, while some of the likelihood of dropping out of high school and having lowered earnings was due to teenage motherhood, a significant portion was due to preexisting disadvantages of the teenagers. The pregnant teens were disadvantaged prior to becoming pregnant. They were more likely to smoke, have less socially desirable behaviors, have severe emotional
problems, have lower test scores, and have parents and teachers who reported behavior problems (Levine & Painter, 2003). Therefore, this study indicates that teen childbearing may reduce the likelihood of finishing high school, but preexisting disadvantages may also play a role.

One study found that teenage mothers actually had higher annual earnings and hours worked than women who delayed childbearing. Hotz, Mullin, and Sanders (1997) analyzed data from a “natural experiment” by comparing girls who gave birth as a teenager and girls who experienced a miscarriage as a teenager. The researchers found that teen mothers were more likely to obtain a GED than women who delayed childbearing, but results were inconclusive on the effect of early childbearing on high school completion. Researchers also found that, among Caucasians, women who gave birth as teenagers worked between 420 and 932 more hours per year during early adulthood. Annual earnings through early adulthood were also $4,500 to $6,000 higher for women who gave birth as teenagers (Hotz, et al., 1997). There are two major criticisms of this study (Hoffman, 1998). One is that the study does not take into account women who miscarried but would have otherwise had an abortion. Women who would have otherwise had an abortion may vary from the women who would have carried the pregnancy to full-term. A more significant criticism is that the study does not take into account repeat pregnancies. About half of the women in the study who suffered miscarriages became pregnant again and had a child before age 20, and about one-third of the women had a birth before age 18. Since women who experienced miscarriages served as the “control group,” these subsequent pregnancies occurring after miscarriage may have contaminated the control group (Hoffman, 1998). To address some of the issues
with the initial study, Hotz, McElroy, and Sanders (2008) updated their study by adjusting their analyses and tracking the study participants further, into their mid twenties and early thirties. The researchers also controlled for self-reported information from the group of women who had miscarriages as teenagers to determine if they would have otherwise had abortions. The updated study found similar results to the first study. They found that teenage childbearing only reduced high school graduation by about 10%, and increased the likelihood of receiving a GED by 14%. They also found that, by age 30, women who had their first child as a teenager worked 235 more hours than if they had delayed childbearing because of a miscarriage, although this finding was not statistically significant. The earnings of women who were teenage mothers were higher (from age 20 onward) than women who had miscarriages. Regarding receipt of public assistance, the researchers found that teenage mothers were more likely to rely on cash assistance and food stamps through age 25, but then the trend reverses. Women who delayed childbearing due to miscarriages as teenagers were more likely to receive public assistance in their thirties than women who were teenage mothers (Hotz, et al., 2008).

Hoffman (2008) conducted a further analysis of this data as the participants aged even more, the youngest being 35 years old. He used the same approach, but expanded the analysis somewhat to include postsecondary schooling enrollment. His results were similar to those of Hotz, et al. (2008), but somewhat less positive. Although he found that women who were teenage mothers earned slightly more than women who delayed childbearing, his results were not as dramatic as the previous study. The results also indicated that once women reach their mid-thirties, the difference in earnings decreased. Regarding receipt of public assistance, Hoffman (2008) found that women who were
teenage mothers were slightly less likely to receive public assistance in their thirties, although this finding was not statistically significant. The authors of both studies cite the potential of life cycle differences resulting in this finding; women who delay childbearing may need more public assistance in their thirties because their children are still young.

Regarding postsecondary schooling, Hoffman (2008) found a significant negative effect. Women who were teenage mothers were almost 8% less likely to have completed two years of postsecondary schooling by age 30.

Other studies have found that the effects of teenage pregnancy on life outcomes are minimal, while family background and characteristics play a larger role (Corcoran & Kunz, 1997; Holmlund, 2005; Geronimus & Korenman, 1992; Hoffman, Foster, & Furstenberg, 1993; Hotz, McElroy, & Sanders, 2005). Corcoran and Kunz (1997) analyzed a national sample of pairs of African American sisters in order to control for family background. From each pair, one woman had given birth as a teenager while the other had not. The sisters were examined on several measures, including dependence on AFDC (Aid to Families with Dependent Children), mean family income, and percent of years living in poverty. Researchers found that, generally, there were not significant economic differences between women in the same family, one of whom gave birth as a teenager and the other whom did not. Women who were teen mothers were 1.25 times more likely to live in poverty, and earned about $4,000 per year less. However, women who were teen mothers were no more likely to receive AFDC than their sisters who did not give birth as a teenager. The researchers concluded that a teenage birth may reduce earnings and increase the risk of poverty slightly, but background disadvantages play a larger role in these life outcomes (Corcoran & Kunz, 1997). Holmlund (2005) used a
similar approach of investigating sister pairs. In addition to controlling for family background, the investigator also controlled for pre-motherhood grade point average. Results indicated that teen mothers completed about half of a year less of schooling than their childless sisters (Holmlund, 2005). Ribar (1994) analyzed national data and also concluded that teenage childbearing was not significantly associated with high school completion. Geronimus and Korenman (1992) analyzed three national data sets to determine differences in socioeconomic status between adult women who were teenage mothers and women who were not. Researchers found that women who gave birth as teenagers were significantly more likely to live in poverty and rely on welfare, and were less likely to complete high school or get married. Researchers then controlled for family background by examining pairs of sisters, one of whom gave birth as a teenager. They found that controlling for family background decreased the socioeconomic differences between women who were teen mothers and their sisters in two of the datasets, but not the third, indicating that family background may play a more significant role in life outcomes than teenage childbearing (Geronimus & Korenman, 1992). Hoffman, Foster, and Furstenberg (1993) used a similar approach of Geronimus and Korenman (1992) of analyzing pairs of sisters. They examined national data of pairs of sisters to determine what proportion of the estimated effects of teenage childbearing was due to family background or to teenage motherhood. They found that controlling for family background decreased the previously-reported effects of teenage motherhood, but did not eliminate them. High school graduation rates, family size, and economic well-being remained significantly different between women who were teenage mothers and their sisters who were not (Hoffman, et al., 1993).
The “correlation or causal” argument regarding the consequences of teenage pregnancy remains controversial. Research has not conclusively shown whether the potential consequences related to teenage pregnancy are due to preexisting disadvantages of the teenage mother, the occurrence of having a child while still a teenager, or both (Hoffman, 1998; Hoffman & Maynard, 2008). The circumstances associated with becoming pregnant while a teenager may play a role in life outcomes of a teenage mother and her children. These circumstances and disadvantages may include low socioeconomic status of the family, less educated parents, single-parent households, fewer amenities and support systems in the community, and weaker public school systems (Hoffman & Maynard, 2008). On the other hand, having a child while still a teenager may present challenges that a teenager is not prepared for that could adversely affect life outcomes. Both of these issues could be at play, and a teenage pregnancy may compound the effects of poverty and social disadvantages that are often faced by young mothers (Hoffman, 1998).

2.2 Health Outcomes of Infants Born to Teenage Mothers

There are numerous potential adverse consequences that can affect infants at birth. One such consequence is low birthweight. Infants are classified as having low birthweight if they weigh less than 5 pounds, 8 ounces at birth, while infants classified as very low birthweight weight are less than 3 pounds, 4 ounces at birth (Chen, 2008). In 2009, 8.2% of all infants born in the United States were classified as low birthweight (Pazol, Warner, Gavin, Callaghan, Spitz, Anderson, Barfield, & Kann, 2010). The percentage of babies born at low birthweight actually increased by more than 20% from
the mid 1980s to 2006, but has decreased slightly since then (Pazol, et al., 2010). About 1.45% of infants born in the U.S. in 2009 were classified as very low birthweight, representing a slight decline after decades of increases (Pazol, et al., 2010). Racial and ethnic disparities exist in the incidence of low birthweight infants. African American mothers are significantly more likely to deliver an infant of low birthweight than Hispanic and Caucasian mothers (Pazol, et al., 2010).

Infants may have a low birthweight due to being premature or because of fetal growth restriction (March of Dimes, 2008b). Other factors leading to an increased risk of low birthweight include: birth defects, health problems of the mother, smoking during pregnancy, alcohol and drug use during pregnancy, inadequate maternal weight gain, and socioeconomic factors. These socioeconomic factors include low income, lack of education, race (specifically African American), and age of mother. Women younger than 17 and older than 35 are at a higher risk of delivering an infant of low birthweight (March of Dimes, 2008b). Infants born with a low birthweight can face a variety of health problems. Typically, the lower the birthweight, the more complications the infant will face. Infants born at a low weight may face breathing problems, heart problems, vision problems, and/or bleeding in the brain (March of Dimes, 2008b). There is also some research that infants born at a low birthweight may face health and developmental problems as children and adults (Hack, Schlucuter, Cartar, Rahman, Cuttler, & Borawski, 2003; Mikkola, Ritari, Tommiska, Salokorpi, Lehtonen, Tammela, Paakonen, Olsen, Korkman, & Fellman, 2005; Knops, Sneeuw, Brand, Hille, Ouden, Wit, & Verloove-Vanhorick, 2005; Hack, 2006; Hack, Flannery, Schlucuter, Cartar, Borawski, & Klein, 2002). One study found that males at eight years old who were born at a very low
birthweight had significant lower height, weight, and body mass index (BMI) scores than males born at normal birthweight (Hack, et al., 2003). Females at eight years old who were born at very low birthweight had significant lower weight and BMI scores, but not height. At 20 years old, males who were born at a very low birthweight were still significantly more likely to have a lower height, weight, and BMI than males born at a normal birthweight. By 20 years old, females in the study born at a very low birthweight had caught up on the measures with females born at a normal birthweight (Hack, et al., 2003).

Preterm (or premature) births are also a potential adverse pregnancy outcome. According to the National Institutes of Health [NIH] (2010), newborns can be classified into three categories: premature, full term, or postterm. A newborn is classified as premature when born at less than 37 weeks gestation. A newborn classified as full term is born between 37 and 42 weeks gestation. A newborn born after 42 weeks gestation is classified as postterm (NIH, 2010). There are several factors that increase the risk of preterm labor, including African American ethnicity, low socioeconomic status, use of tobacco or certain illegal substances, lack of prenatal care, health complications, and age. Women who are older than 35 or younger than 16 are more at risk to deliver a premature infant (NIH, 2010). In 2009, 12.2% of all births in the United States were classified as preterm (Pazol, et al., 2010). The percentage of infants born preterm increased significantly from the early 1980s to 2006, but has decreased 5% since then (Martin, Hamilton, Sutton, Ventura, Mathews, & Osterman, 2010).

There are several physical characteristics that premature babies may exhibit at birth. These characteristics include: problems breathing, pneumonia, lower muscle tone,
less body fat, problems feeding, and transparent skin, among others (NIH, 2010). Although prematurity use to be a major cause of death in infants, today at least 90% of babies born after 28 weeks gestation survive (NIH, 2010). Even so, there are long-term effects of prematurity that can either continue into childhood or remain present throughout the lifetime. The more premature a newborn is, the more likely it is that serious complications will result. Short-term complications that a premature newborn may face include anemia, bleeding of the brain, jaundice, lung problems, and low blood sugar. Long-time complications of premature babies include lung problems, delayed growth, mental or physical disabilities, delayed development, and vision problems (NIH, 2010).

The Apgar scoring system is used to assess the status of an infant at birth (American Academy of Pediatrics [AAP], 2006). There are five components that make up an Apgar score, with values of 0, 1, or 2 per component (Apgar, Holaday, James, Weisbrot, Berrien, 1958). The scoring system was designed to serve as a predictor of survival of newborns. The first component is heart rate, the second component refers to respiratory effort, and the third component is muscle tone. The fourth component of the Apgar scale is reflex irritability and the final component is color of infant (Apgar, et al., 1958).

Apgar scores are still used today as an indicator of mortality in infants. One study examined retrospective data from over 150,000 births at an inner-city hospital over a ten year period (Casey, McIntire, & Levino, 2001). For infants born preterm (between 26 and 36 weeks gestation), the neonatal mortality rate was 315 per 1000 births for infants who had a five-minute Apgar score between 0 and 3. Comparatively, the mortality rate was
only 5 per 1000 births for infants who had a five-minute Apgar score between 7 and 10. For infants born full-term, the mortality rate was 244 per 1000 births for infants with a five-minute Apgar score of 0 to 3, and 0.2 deaths per 1000 births for infants with a score between 7 and 10 (Casey, et al., 2001).

Prenatal care refers to the medical care that a woman receives during pregnancy to monitor the pregnancy and identify any problems in the mother or infant, and take care of those problems before they become serious (March of Dimes, 2010b). During prenatal care appointments, women receive information on how to have a healthy pregnancy and birth, including information on smoking, drugs and alcohol, folic acid, nutrition, exercise, and other health-promoting information. It is recommended that women with a normal, healthy pregnancy have a prenatal care appointment one time per month for the first seven months of pregnancy. From weeks 28 to 36, it is recommended that women visit their healthcare provider every two weeks. After 36 weeks of pregnancy, it is recommended that women visit their healthcare provider weekly until the birth of the baby (March of Dimes, 2010b). Because pregnant women receive information on how to improve their health and the health of their baby, prenatal care lowers the risk of delivering a low birthweight or preterm infant (Kogan, Alexander, Kotelchuck, & Nagey, 1994; Barros, Tavares, & Rodrigues, 1996; Vintzileos, Ananth, Smulian, Scorza, & Knuppel, 2002; Debiec, Paul, Mitchell, & Hitti, 2010). One European study examined data from over 3,500 live births to determine if a correlation existed between prenatal care adequacy and adverse birth outcomes (Barros, et al., 1996). The researchers found that adequate and intermediate prenatal care significantly reduced the risk of infants being born at a low birthweight or preterm. This effect remained even after adjusting for
marital status, maternal age, and socioeconomic status (Barros, et al., 1996). Vintzileos, et al. (2002) found similar results, that lack of prenatal care was associated with preterm births in both African American and Caucasian women. Debiec, et al. (2010) analyzed data of only adolescent mothers, and found an inverse linear relationship between number of prenatal care visits and risk of delivering a preterm infant. Pregnant teens in the analysis who received no prenatal care were seven times more likely to deliver a preterm infant compared to adolescents who attended 75%-100% of their prenatal care appointments (Debiec, et al., 2010). Abrevaya’s (2001) analysis of national data revealed that significant disparities in birthweight existed in infants born to mothers with no prenatal care compared to infants born to mothers with pregnancy-long prenatal care.

Unfortunately, research indicates that teen mothers are less likely to receive prenatal care and more likely to delay prenatal care (Hueston, Guesey, & Diaz, 2008). A national analysis of birth data found that there was a significant relationship between age and trimester at which care was initiated. Generally, younger teens were more likely to forgo or delay initiation of prenatal care. Older adolescents (17 and older) were more likely than younger adolescents to seek prenatal care starting in the first trimester. Younger adolescents (15 and 16 years old) were more likely to utilize care in the first trimester than preteens (10 to 14 year olds). Younger adolescents were 1.22 times more likely than older adolescents to delay prenatal care, while preteens were 1.61 times more likely to delay prenatal care than older adolescents (Hueston, et al., 2008). The researchers also found that being unmarried and being less educated was associated with delay of prenatal care among all age groups. Finally, results indicated that Caucasian preteens were more likely than African American preteens to delay prenatal care. However, among younger
and older adolescents, minorities of all race/ethnicity statuses were more likely to delay prenatal care than Caucasian teenagers (Hueston, et al., 2008).

Hueston, Quattlebaum, and Benich (2008) examined the utilization of prenatal care from a cost-benefit analysis perspective. They found that babies born to teenagers were much more likely to be of low birthweight if the mother did not receive prenatal care. The cost-benefit analysis revealed that prenatal care utilization among pregnant teens saves between $2,369 and $3,242, depending upon when the prenatal care is initiated. Because of disparities in birth outcomes, the cost-benefit analysis also revealed that interventions aimed at increasing prenatal care utilization among African American teens would be 30% more cost-beneficial than interventions aimed at Caucasian pregnant teens (Hueston, et al., 2008).

Kaiser and Hays (2005) analyzed the prevalence of health risk behaviors among a convenience sample of pregnant adolescents. They found that about half of the teens smoked before becoming pregnant, and 27% continued to smoke while pregnant. Of those who continued to smoke, 92% smoked less than 10 cigarettes per day (Kaiser & Hays, 2005). Nationwide, 16.7% of teenagers report smoking while pregnant, and are more likely than any other age group to smoke while pregnant (Martin, Hamilton, Ventura, Menacker, & Park, 2002). Caucasian teens are significantly more likely to smoke while pregnant than teens of other races and ethnicities. Smoking while pregnant is known to increase the likelihood of spontaneous abortion, low birthweight, preterm delivery, Sudden Infant Death Syndrome, and asthma (March of Dimes, 2010a; Richardson, 1999; Kilby, 1997; Anderson & Cook, 1997; Cnattingius, 2004; Windham, Hopkins, Fenster, & Swan, 2000; Mathews, 2004; American College of Obstetricians and
Gynecologists, 2008). Kaiser and Hays (2005) also found that while 45% of the teens reported using alcohol before pregnancy, only one teen reported using alcohol while pregnant. Alcohol use during pregnancy is strongly associated with spontaneous abortion, infant mortality, low birthweight, fetal alcohol syndrome, birth defects, and altered neurobehavioral development (Krulwitch, 2001; Richardson, 1999; Centers for Disease Control and Prevention, 2010; March of Dimes, 2008a; American College of Obstetricians and Gynecologists, 2008). About 6% of the pregnant adolescents in the study reported using drugs while pregnant, including marijuana, cocaine, or heroin. Drug use while pregnant increases the chance of the infant facing numerous health problems (March of Dimes, 2008a; Richardson, 1999; American College of Obstetricians and Gynecologists, 2008).

It has been suggested that the costs associated with teenage childbearing are primarily associated with the children born to teen mothers (Terry-Humen, Manlove, & Moore, 2005; Maynard, 1997). One of the significant costs is due to adverse health outcomes. Research has indicated that children born to teenage mothers are at an increased risk of facing adverse health outcomes compared to children born to older mothers (Chen, Wen, Fleming, Demissie, Rhoads, & Walker, 2007; Buschman, Foster, & Vickers, 1999; Delpisheh, Attia, Drammond, & Brabin, 2005; Duplessis, Bell, & Richards, 1997; Gilbert, Jandial, Field, Bigelow, & Danielsen, 2004). One such health outcome is the increased likelihood of a child born to a teen mother being premature, or preterm (Chen, et al., 2007; Delpisheh, et al., 2005; Smith & Pell, 2001; DuPlessis, et al., 1997, Gilbert, et al., 2004). DuPlessis, et al. (1997) examined birth certificate data for California births and found that women of very young maternal age (10 through 13 years
old) were 3.4 times more likely to have a preterm infant than women in their twenties. Overall, 25% of all 10-13 year old mothers delivered a preterm infant, compared to 10% among women ages 20-29. They also found that African American women were two times more likely to have a preterm birth than Caucasian women. The authors concluded that race and age did not appear to interact, but rather exuded independent and significant effects on pregnancy outcomes (DuPlessis, et al., 1997). This is a similar finding from other studies that indicate that very young teenage mothers face an increased risk of delivering a preterm infant (Satin, Leveno, Sherman, Reedy, Lowe, & McIntire, 1994). Another analysis of California birth data (Gilbert et al., 2004) revealed that teen mothers (ages 11-19) were more likely to deliver preterm infants than women in their twenties. Overall, African American teens were most likely to deliver preterm infants (Gilbert et al., 2004).

Research indicates that the risk of preterm births are higher for second births to teen mothers compared to first births (Akinbami, Schoendorf, & Kiely, 2000; Stewart, 1993; Partington, Steber, Blair & Cisler, 2009), especially if the mother is a smoker (Smith & Pell, 2001; Delpisheh, Attia, Drammond, & Brabin, 2005). Akinbami et al. (2000) studied national data of second births to 10 through 20 year old girls. They found that teenagers who had a second birth were at a higher risk for delivering a very preterm infant than the first births. This effect remained even after controlling for education, marital status, prenatal care participation, and previous preterm births. By race and ethnicity, African American teen mothers were at a higher risk for delivering preterm infants than Caucasian or Hispanic mothers. African American women faced the same risk of delivering a preterm infant at age 25 as Caucasian and Hispanic teens at ages 15.
through 17 years. The authors concluded that socioeconomic and health factors explained part of the relationship between young age and risk of preterm birth, but young age remained an independent risk factor (Akinbami, et al., 2000). Stewart (1993) analyzed birth data of low-income, inner city adolescents in Alabama and found that the risk of delivering a preterm infant during the second birth was higher than for the first birth. Among those who delivered a preterm infant during the first birth, 40% delivered a preterm infant during the second birth. The rate of recurrence of preterm delivery was twice the level among teenagers compared to older women. Racial disparities were evident; African American teens were more likely than Caucasian teens to deliver a preterm infant during the second birth (Stewart, 1993). These results were further corroborated by Partington et al. (2009) who examined birth certificate data in Milwaukee and found that second births to teens were more likely to be preterm than first births. This effect was exacerbated if the mother was African American, had a short interval between pregnancies, did not gain enough prenatal weight, smoked during pregnancy, or was younger than 16 years old. Adjusting for socioeconomic status yielded the same results. The researchers also found that teen mothers were less likely to receive prenatal care, less likely to gain adequate prenatal weight, and more likely to smoke during their second pregnancy compared to their first (Partington, et al., 2009). Smith and Pell (2001) also found that smoking during pregnancy affected the likelihood of delivering a preterm infant; a similar finding was reported by Delpisheh, et al. (2005). Smith and Pell (2001) analyzed European birth data and found that, among non-smokers, the risk of adverse pregnancy outcomes during the first pregnancy were similar in adults and teenagers. However, teenager non-smokers were more likely to deliver a very
premature infant than adults. Among females who smoked during pregnancy, teenagers were more likely than adult women to deliver a preterm infant. At the second birth, teenagers who smoked during pregnancy were more likely to deliver a very preterm infant than older women, but less likely to deliver an infant with low birthweight (Smith & Pell, 2001). Interestingly, one study (Klerman, 2006) found that the outcomes of second births to teen mothers are actually better than the first births.

Another adverse health outcome of infants born to teen mothers is the increased likelihood of delivering a low birthweight infant compared to adult women (Chen, et al., 2007; Buschman, Foster, & Vickers, 1999; DuPlessis, Bell, & Richards, 1997; Gilbert, Jandial, Field, Bigelow, & Danielsen, 2004). Buschman, et al. (1999) conducted a study comparing the birthweights of infants born to adolescent mothers (under 16 years old) to the birthweights of infants born to women ages 25 to 30 years old. They also sought to determine if gaining more weight during pregnancy would result in an infant with a larger birthweight. They found that infants born to young teenage girls consistently had lower birthweight values than infants born to older women. This finding is similar to Chen, et al. (2007) and Partington, et al., (2009), the latter study finding that this effect was especially true for second infants born to young teenage mothers. Buschman et al. (1999) found that adequate weight gain during pregnancy did not appear to reduce the relationship between young maternal age and low birthweight risk. The authors suggest that since adolescent girls are still growing and developing, they may need to gain more weight than adult women in order to account for their growing fetus and meeting their own developmental needs (Buschman, et al., 1999). Similarly, DuPlessis’s (1997) analysis of California birth data found that very young teenage mothers (ages 10 to 13)
were 2.5 times more likely to deliver a low birthweight infant than adult women. The researchers also found racial disparities in the birth data; African American women were 1.7 times more likely to have a low birthweight infant than Caucasian women. The authors concluded that race and age were independently correlated with low birthweight in infants (DuPlessis, et al., 1997). Another analysis of California data (Gilbert, et al., 2004) revealed that teenage mothers were more likely to deliver low birthweight infants than older women. Racial disparities also were found in their analysis. Caucasian teens had worse pregnancy outcomes (low birthweight and preterm) than Caucasian adult women, but African American teens were no more likely than adults to deliver low birthweight infants. Overall, African American females had worse pregnancy outcomes than Caucasian and Hispanic females (Gilbert, et al., 2004). Reichman and Pagnini (1997) found the same results in an analysis of New Jersey birth data. In their findings, Caucasian teens were more at risk to deliver low birthweight infants than adults, even after adjusting for background variables. However, among African Americans, teen mothers were significantly less likely than adult mothers to deliver a low birthweight infant (Reichman & Pagnini, 1997). Smoking during pregnancy appears to increase the risk of delivering a low birthweight infant (Dewan, Brabin, Wood, Dramond, & Cooper, 2003; Delpisheh, Attia, Drammond, & Brabin, 2005). Dewan et al. (2003) found that the birthweight of babies born to women who smoked while pregnant was significantly lower than women who abstained from smoking. The risk of having a low birthweight baby was significantly higher in teen smokers than adult smokers (Dewan, et al., 2003) Another study found that about half of the adolescent mothers smoked while pregnant (Delpisheh, et al., 2005). Overall, the birthweight of infants born to teenagers was significantly lower
than the birthweight of infants born to adult women. Among the adolescent mothers, infants born to teens who smoked while pregnant weighed even less at birth (Delpisheh, et al., 2005).

Research indicates that other adverse pregnancy outcomes occur most often in infants born to teenage mothers, including lower Apgar scores and higher infant mortality rates (Delpisheh, et al., 2005; Chen, Wen, Fleming, Demissie, Rhoads, & Walker, 2007; Cowden & Funkhouser, 2001; Gilbert, et al., 2004). Chen, et al. (2007) analyzed national data of women who gave birth in the late 1990s and found that infants born to teen mothers had lower Apgar scores and faced higher risks of infant mortality than infants born to women in their early twenties. This effect remained after controlling for education, prenatal care utilization, marital status, race, and weight gain (Chen, et al. 2007). Although disparities in Apgar scores between infants born to teen mothers and adult mothers have not been studied extensively, Delpisheh, et al. (2005) found that Apgar scores were lower in infants born to adolescent mothers. Regarding infant mortality, Cowden and Funkhouser (2001) analyzed Alabama birth data and found that infant mortality rates were significantly higher among teen mothers who were less than 17 years old. This effect was even more pronounced in teen mothers experiencing a second birth compared to adult women experiencing a second birth. The authors estimated that preventing adolescent pregnancies and repeat pregnancies would have reduced the state infant mortality rates by 8% and 4%, respectively (Cowden & Funkhouser (2001). Gilbert et al. (2004) also found that infant mortality rates were higher among teen mothers compared to adult mothers in an analysis of California birth data. Among Caucasian females, teens of all ages had higher infant mortality rates than adult
women. Among Hispanics, the youngest teens had higher infant mortality rates than older teens and adult women. In African American women, teens faced no higher risk of infant mortality than adults (Gilbert, et al., 2004).

Wolfe and Rivers (2008) analyzed a national dataset to compare children born to older mothers (over 19 years old) to younger mothers on health status, medical care use and expenditures, insurance coverage, and the public cost of medical care. Overall, the researchers found that children of teen mothers, especially younger teens, tend to have more chronic health problems than children born to older mothers. Although the children of teen mothers tend to visit healthcare providers less frequently, and incur total lower medical expenses, a larger percentage of the expenses are paid by the public. The researchers posit that these medical expenses paid by society would be reduced by about 16% if a teen mother would delay childbearing until age 20 or 21 (Wolfe & Rivers, 2008).

Although the studies above generally indicate that younger maternal age is associated with adverse pregnancy outcomes, what role does background play? Chen et al. (2007) aimed to determine if the adverse birth outcomes of children born to teen mothers were due to the social environment, lack of inadequate prenatal care, or age. This analysis of national data took into account the education level, prenatal care utilization, age, marital status, weight gain, tobacco use, and alcohol use of the women. As described above, the research found that the likelihood of adverse health outcomes for infants were higher in teenage mothers, including rates of preterm and very preterm delivery, low birthweight and very low birthweight, lower Apgar scores, and neonatal mortality (Chen, et al., 2007). All of these factors were highest among infants born to mothers aged 15
years or younger. Accounting for education, prenatal care utilization, marital status, race, and weight gain, these factors were still highest among teen mothers. Overall, the authors concluded that infants born to teen mothers are at higher risk of adverse health outcomes, independent of known confounders (Chen, et al., 2007).

Cramer (1995) also analyzed national data of infants and mothers to determine if differences in birthweight between races and ethnicities (independent of age of mother) were due to socioeconomic and demographic factors. He found that infants born into a household with a higher income were born at a higher birthweight. Among women receiving public assistance, mothers who received more public assistance tended to have infants with a higher birthweight than mothers who received less public assistance. Infants born to mothers who smoked while pregnant were born at a significantly lower birthweight than infants born to mothers who were not smokers. Finally, Cramer (1995) found that social, demographic, and psychosocial variables contributed greatly to the differences in birthweight values between minorities and whites, with income contributing the most. However, there still remained a portion of the disparities in birthweight values between minorities and whites that is unaccounted for by these variables. Sheeder, Lezotte, and Stevens-Simon (2006) analyzed Colorado birth data and concluded that race and ethnicity, rather than maternal age, predicted the likelihood of an infant being born at a low birthweight. In their analysis, African American and Hispanic teens were more likely than Caucasian teens to deliver low birthweight infants. While Hispanic teens were more likely than adults to deliver a low birthweight infant, African American teens were actually less likely than adults to have a low birthweight baby. This finding is supported by Reichman and Pagnini (1997), Rauh, Andrews, and Garfinkel
Geronimus (1996) examined Michigan birth data and reported that African Americans in their twenties were more likely than those in their teenage years to have a baby that was of low birthweight. This effect was stronger in women from low socioeconomic status. Other studies have found that socioeconomic status affects birth outcomes (Rich-Edwards, Buka, Brennan, & Earls, 2003; Geronimus & Korenman, 1993). One study of Chicago birth data also found that the risk of low birthweight increases with maternal age among African Americans (Rich-Edwards, et al., 2003). After controlling for prenatal care, education, smoking status, and poverty, they found that the risk of low birthweight rises for maternal age of all disadvantaged women, although the risk was higher for African Americans. The authors suggest that this finding may result from the disproportionate prevalence of disadvantages in this population (Rich-Edwards, et al., 2003). Similarly, Rauh, et al. (2001) conducted an analysis of birth data from New York City and reported that older maternal age was associated with lower birthweight among African American women. They found that this effect was more pronounced in women living in poverty (Rauh, et al., 2001). Geronimus and Korenman (1993) analyzed pairs of sisters, one of whom from each pair experienced a teen birth. They found that background, rather than age, accounted for many of the adverse outcomes experienced by teen mothers.

### 2.3 Other Outcomes of Children Born to Teenage Mothers

In addition to adverse health outcomes, there are other potential negative outcomes in children born to teen mothers, although the research is mixed on whether these are due to young maternal age or maternal disadvantage (Hoffman & Maynard,
2008). Since the majority of teenage mothers come from impoverished backgrounds and faced disadvantages before becoming pregnant (Ryan, Manlove, & Moore, 2004; Haveman, Wolfe, & Peterson, 2008), it is difficult to identify whether the outcomes faced by children of teen mothers are due to the young maternal age or to the preexisting disadvantages, or a combination of both. If the children of young mothers were destined to face adverse outcomes because of preexisting disadvantages, perhaps the young age of the mother further exacerbates these disadvantages (Terry-Humen, Manlove, & Moore, 2005). It is possible that teenage mothers may not have the life experience or maturity necessary to develop necessary parenting skills, or they may be ambiguous about discouraging certain behaviors (Levine, Pollack, & Comfort, 2001). Delaying childbearing until the mid to late twenties may be associated with more positive child outcomes, especially if the delay is accompanied by marriage and an increase in maternal education (Manlove, Terry-Humen, Mincieli, & Moore, 2008). Several studies report that young maternal age exerts an independent effect on outcomes faced by offspring, including decreased cognitive development, increased risk of teen parenthood, and increased criminal activities (Terry-Humen, et al., 2005; Haveman, Wolfe, & Peterson, 1996; Manlove, et al., 2008; Jutte, Roos, Brownell, Briggs, MacWilliam, & Roos, 2010; Kahn & Anderson, 1992; Levine, et al., 2001; Pogarsky, Thornberry, and Lizotte, 2006; Grogger, 1997).

One such outcome that appears to be affected by maternal age is cognitive development (Terry-Humen, et al., 2005; Manlove, et al., 2008; Haveman, Wolfe, & Peterson, 1996; Hardy, Shapiro, Astone, Miller, & Brooks-Gunn, 1997; Jutte, Roos, Brownell, Briggs, MacWilliam, & Roos, 2010). One study analyzed national data of
kindergarten-age children to examine developmental differences between children born to teen mothers and those born to older mothers. They studied several measures, including cognition and knowledge, language and communication skills, approaches to learning, emotional well-being and social skills, and physical health and well-being, while controlling for numerous background characteristics of the child and mother (Terry-Humen, et al., 2005). The results indicated that children born to teenage mothers had lower knowledge test scores, lower math test scores, and slightly lower reading test scores than children of older mothers. They also performed significantly lower on reading and math assessments than children of mothers aged 22 or older. Children born to mothers aged 17 or younger scored significantly lower on all language and communication assessments and interpersonal skills compared to children born to older mothers. Interestingly, children of the youngest mothers scored significantly higher than children of older mothers on social interaction skills and gross motor skills (Terry-Humen, et al., 2005). This study was later followed up with a national study examining kindergarten and adolescent children of teen mothers, as well as using a comparison group of mothers who experienced a first birth at ages 20 or 21 instead of older mothers (Manlove, Terry-Humen, Mincieli, & Moore, 2008). After controlling for background characteristics, the researchers found similar results as above. Kindergarten children of teen mothers scored lower on reading and general knowledge tests, but better on approaches to learning than children born to women ages 20 or 21. No significant differences were found on behavioral outcomes, except that children born to 18 or 19 year old mothers had lower self-control. For adolescents, there were a few significant differences. Children of teen mothers were significantly more likely to be a teen parent.
themselves, and were significantly more likely to marry or cohabitate before the age of 20, compared to children born to women ages 20-21. Also, daughters of teen mothers were less likely to receive a high school diploma than daughters of older mothers.

Overall, Manlove and colleagues (2008) found that increased maternal age was associated with more positive outcomes for the children. Their finding that being a child of a teenage mother increases the risk of being a high school dropout is supported by other studies (Haveman, Wolfe, & Peterson, 1996; Hardy, Shapiro, Astone, Miller, & Brooks-Gunn, 1997; Hoffman & Scher, 2008). Hardy, et al. (1997) found that children born to teen mothers were less likely to graduate from high school and less likely to be self-sufficient in their adult years, compared to children born to women in their twenties, even after controlling for background and demographic factors. Daughters of teen mothers were also more likely to receive public assistance than daughters born to adult women.

The results above are further corroborated by another study that found that maternal age played a significant role in adverse outcomes of children born to teen mothers (Jutte, Roos, Brownell, Briggs, MacWilliam, & Roos, 2010). The researchers analyzed national Canadian data on several measures while controlling for numerous socioeconomic and demographic factors. They found that children born to teen mothers were subject to lower academic achievement, lower ninth-grade grade point averages, and were half as likely to graduate from high school, as compared to children born to adult women. The researchers also found that children of teen mothers were significantly more likely to be placed in foster care, be involved with child protective services, and to receive public assistance as young adults. Finally, girls born to teen mothers were three
times more likely to become teen mothers themselves (Jutte, et al., 2010), a finding supported by other studies (Manlove, et al., 2008; Pogarsky, Thornberry, & Lizotte, 2006; Kahn & Anderson, 1992; Hardy, Shapiro, Astone, Miller, & Brooks-Gunn, 1997; Havemen, et al., 1996; Hoffman & Scher, 2008). One study reported a significant intergenerational pattern of teenage pregnancy among all races, even after controlling for background characteristics (Kahn & Anderson, 1992). Generally, the younger the age of a woman at the birth of her first child, the more likely it was that her daughter would become a teenage mother. Although this relationship was significant across all races, it was particularly strong among Caucasians. Teenage girls in the analysis were more likely to become teenage mothers themselves if their own mother had her first child before age 20. Among Caucasians, daughters of women who first gave birth as young teenagers were 75% more likely to become a teen mother. Among African Americans, this relationship was 34% (Kahn & Anderson, 1992). Studies have also confirmed Jutte and colleague’s (2010) findings that children of teen mothers are more likely to be placed in childcare and be involved with child protective services (Goerge, Harden, & Lee, 2008). The incidence of substantiated abuse or neglect reports among teenage mothers is three times higher than among adult mothers. Children born to teen mothers are twice as likely to spend time in foster care, and spend more time in foster care than children born to adult mothers (Goerge, et al., 2008). These effects remained even after controlling for background and demographic factors, leading researchers to conclude that teenage mothers are more likely to maltreat their children. This is not surprising, considering that past research has indicated that adolescent mothers are more likely to take on a
dysfunctional parenting style, which is more likely to lead to child maltreatment (Brooks-Gunn & Chase-Lansdale, 1995; Stevens-Simon, Nelligan, & Kelly, 2001).

Some studies have found that young maternal age is associated with poor behavioral outcomes for children. Teenage childbearing is both associated with and predictive for aggressive behaviors in children (Nagin & Tremblay, 2001; Tremblay, Nagin, Seguin, Zoccolillo, Zelazo, Boivin, Perusse, & Japel, 2004), as well as conduct disorders in male offspring of teen mothers (Wakschlag, Gordon, Lahey, Loeber, Green, & Leventhal, 2000). Early childbearing is associated with other behavioral outcomes. Levine, Pollack, and Comfort (2001) examined data of over 5,000 youth who were born to teen mothers and compared results of children born to teen mothers to children born to older mothers (22 years or older). After controlling for background characteristics, they found no cognitive differences in youth born to teen mothers, but they did find that the youth were significantly more likely to have sexual intercourse before the age of 16, be involved in a fight, and skip school (Levine, et al., 2001). Pogarsky, Thornberry, and Lizotte (2006) analyzed data from the Rochester Youth Development Study of over 700 youth longitudinally from middle school (average age of 14) through early adulthood (average age of 22). They compared youth born to teen mothers to those born to older mothers. Results indicated that sons of teen mothers faced more adverse outcomes than daughters of teen mothers. Those boys were more likely to use drugs, more likely to be involved in gangs, and more likely to be a teen parent themselves. Daughters of teen mothers were more likely to be a teen mother themselves compared to girls born to older mothers (Pogarsky, et al., 2006). After taking into account several mediating factors, including maternal education, receipt of public assistance, maternal marijuana use, and
ineffective parenting skills, the researchers found that the mediating factors only accounted for about one-quarter of the impacts of teenage childbearing. Therefore, they concluded that maternal age was strongly associated with adverse outcomes of youth, especially young males (Pogarsky, et al., 2006).

Other studies have supported the idea that sons of teen mothers are adversely affected (Nagin, Pogarsky, & Farrington, 1997; Pogarsky, Lizotte, & Thornberry, 2003; Nagin & Tremblay, 2001; Tremblay, Nagin, Seguin, Zoccolillo, Zelazo, Boivin, Perusse, & Japel, 2004). Grogger (1997) analyzed longitudinal data and found that incarceration rates were higher for individuals born to teenage mothers, even after controlling for numerous background characteristics. His analysis found that the incarceration rate for children of young teen mothers was 2.7 times higher than the rate for children born to adult mothers. Grogger estimated that delaying childbearing from age 16 to age 20.5 would reduce the incarceration risk of offspring by 12%, and reduce correctional costs by more than $920 million annually. Grogger (1997) concluded that early childbearing was but one of the differences in circumstances faced by children of teen mothers, and addressing other issues would reduce the incarceration rate even more significantly. Scher and Hoffman (2008) updated Grogger’s study, including an additional decade of data. They also found a significant relationship between young maternal age and risk of incarceration for boys. They estimated that, conservatively, delaying a teen birth would decrease the likelihood of incarceration by 10.6% (Scher & Hoffman, 2008). Nagin and colleagues (1997) also analyzed data of sons of teenage mothers and found that sons born to women who began childbearing as teenagers were significantly more likely to be convicted of crimes than sons born to women who delayed childbearing until their
twenties. However, the authors concluded that this effect was explained mostly by the 
poor parenting and low socioeconomic status associated with teen mothers, rather than 
the maternal age (Nagin, et al., 1997).

Another longitudinal study of boys born to young mothers found similar 
results (Pogarsky, et al., 2003). The researchers analyzed longitudinal data of adolescents and 
found that sons of teen mothers were more likely to be delinquent, violent, and be 
arrested than sons born to older mothers. This effect was more pronounced for Caucasian 
and Hispanic families than African American families. The researchers found that an 
unstable family composition (inconsistent discipline, less discipline, fleeting father 
figures) explained some, but not all, of the likelihood of criminal behaviors in sons of 
teens mothers (Pogarsky, et al., 2003). One long-term longitudinal study followed children 
of teen mothers for 20 years (Jaffee, Caspi, Moffitt, Belsky, & Silva, 2001). The 
researchers found that the children of teen mothers were two to three times more likely to 
drop out of school, face unemployment, become teen parents themselves, and commit 
violent crimes than children born to older mothers. However, after taking into account the 
preexisting demographics of the mother, the only difference that was statistically 
significant was the likelihood to commit violent crimes (Jaffee, et al., 2001).

Some studies have found that maternal age plays no role in the outcomes of their 
children (Turley, 2002; Geronimus, Korenman, & Hillemeier, 1994; Zimmerman, Tuttle, 
Kieffer, Parker, & Caldwell, 2001). Turley (2002) analyzed data from over 7,000 
children, ages 14 to 22, from the National Longitudinal Survey of Youth (NLSY). One of 
the components of the NLSY is a cognitive development assessment, which includes 
vocabulary, math, reading recognition, and reading comprehension. After analyzing the
differences in cognitive development test scores between children born to teenage mothers and children born to older mothers, the results indicated that the effects of maternal age on children’s test scores were greatly reduced after taking maternal background and demographics into account (Turley, 2002). Geronimus, Korenman, and Hillemeier (1994) analyzed national data and assessed how children born to teen mothers compared to their cousins who were born to adult women. They found that there were no adverse effects from being born to a teenage mother. In fact, researchers reported that the children of teen mothers actually performed better on picture vocabulary, math scores, and reading comprehension. The authors concluded that adverse outcomes faced by children born to teen mothers are due to family background disadvantages, not maternal age (Geronimus, et al., 1994). Zimmerman and colleagues (2001) made the same conclusion after conducting a regional study on African American teenagers who were born to teenage mothers. They examined problem behaviors, psychosocial well-being, school variables, and sexual variables and found no differences between children born to teen mothers and children born to adult women (Zimmerman, et al., 2001). Others studies have associated some of the outcomes (especially cognitive) faced by children of teen mothers with low maternal education (Luster, Bates, Fitzgerald, Vandenbelt, & Key, 2000; Guo & Harris, 2000), providing evidence of the importance of teen mothers graduating and pursuing postsecondary education.

Fergusson and Woodward (1999) conducted a longitudinal study of children born to teenage mothers, and compared the children on several measures to older mothers. At 18 years old, the children born to teenage mothers were significantly more likely to drop out of school, commit crimes and be convicted of crimes, report substance abuse and
dependence, and suffer from mental health disorders than children born to older mothers. After controlling for maternal background factors, the researchers found that the differences between the groups of children were diminished, but were still significant. The researchers then examined the role of intervening parenting and family differences between children who were born to teen mothers and children born to older mothers. They found that children born to teen mothers were significantly more likely to have less nurturing environments, including more punitive parenting and less access to early childhood education. Children born to teen mothers were also significantly more likely to face harsher punishments, more likely to be exposed to childhood sexual abuse, and experience less family stability, including changes in parenting figures and frequent residential changes. Finally, children of teen mothers were more likely than children born to older mothers to be exposed to parental problems, including alcoholism, drug use, and criminal acts. The researchers found that these parenting and family differences were intervening factors that contributed significantly to the outcome differences in children born to teen mothers and children born to older mothers. They suggest that maternal age may not play as important a role in outcomes of children as the presence of a positive, nurturing environment (Fergusson & Woodward, 1999). However, teenagers often lack the maturity and parenting skills needed to provide a nurturing environment for their children, so by default, their children may face some of the adverse consequences outlined above. Similar to Fergusson and Woodward (1999), some studies have found that poor parenting or a non-nurturing home environment are associated with adverse outcomes, especially cognitive outcomes, faced by children of teen mothers (Spieker & Oxford, 2006; Keown, Woodward, & Field, 2001; Luster & Vandenbelt, 1999; Cupl,
Osofsky, & O’Brien, 1996; Shapiro, 2003). Luster and Vandenbelt (1999) concluded that both home environment and caregiving practices affect the language abilities in the children born to teenage mothers. Keown, Woodward, and Field (2001) found that parenting practices vary by maternal age, a similar conclusion reached by Shapiro (2003). In Keown and colleagues’ (2001) comparison of preschool-aged children born to teenagers against those born to adults, they found that children of teen mothers performed significantly poorer on measures of expressive language and language comprehension. They concluded that the differences were largely, although not entirely, explained by differences in parenting behaviors of the teenage and adult mothers, especially the maternal verbal stimulation. Similarly, Spieker and Oxford (2006) demonstrated in a longitudinal study that children of teen mothers achieved lower language scores if the mothers had a low verbal ability and a poor language-learning home environment. One comparison of the speech between younger and older mothers found that younger mothers spoke fewer words to their children, described and labeled objects less often, and gave more commands, which resulted in less vocalization of infants born to teen mothers compared to those born to adult mothers (Cupl, Osofsky, & O’Brien, 1996).

2.4 Secondary Pregnancies and Contraceptive Use among Teenage Mothers

Among adolescents in the United States, almost half (47%) report having ever had sexual intercourse, while about one-third (33.7%) report being currently sexually active (Centers for Disease Control and Prevention, 2012). Data from the Youth Risk Behavior Surveillance (CDC, 2012a) also found that the prevalence of ever having had sexual
intercourse varies by race/ethnicity and age. More African American adolescents (60.0%) and Hispanic adolescents (48.6%) report ever having had sexual intercourse than Caucasian adolescents (44.3%). Twelfth-grade students are more likely to report ever having had sex (63.1%) than ninth-grade students (32.9%). Over 6% of students report having had sexual intercourse for the first time before the age of 13. The prevalence of early sexual intercourse varied widely by gender (9.0% of males compared to 3.4% of females) and race/ethnicity status (13.9% of African Americans compared to 3.9% of Caucasians). Over 15% of adolescents report having had sexual intercourse with four or more persons. Among the one-third of adolescents who reported being currently sexually active, 60.2% reported using a condom during their last sexual episode. While 23.3% of currently sexually active students reported using oral contraceptive pills, Depo-Provera, Implanon, NuvaRing, or an intra-uterine device (IUD) during the last sexual episode, only 9.5% used both a condom and another birth control method (CDC, 2012b). Among adolescent females who used contraceptives, 23% reported using condoms, while 54% reported using oral contraceptive pills (Guttmacher Institute, 2010). Almost 20% of adolescent girls reported not using any contraceptive methods, but yet stated they did not desire to become pregnant (Guttmacher Institute, 2010). Teens reported receiving most of their contraception information from school, family, and friends (Jones, Biddlecom, Hebert, & Milne, 2011).

One study indicated that teens do not use contraceptives consistently (Holcombe, Carrier, Manlove, & Ryan, 2008). The study found that 59% of teens reported always using contraceptives in their sexual relationships, while 24% reported never using contraceptives. Teens who were involved in numerous relationships simultaneously were
less likely to consistently use contraceptives, while those involved in one sexual relationship were more likely to always use contraceptives. However, teens who were involved in a romantic sexual relationship were less likely to use contraception during every sexual episode, perhaps due to a more favorable attitude towards pregnancy (Holcombe, et al., 2008).

Overall, adolescents who do not use a contraceptive method at their first sexual episode are twice as likely to become teen mothers as those who use a method (Guttmacher Institute, 2010). It is estimated that 17% of adolescent girls became pregnant during this first sexual relationship (Zavodny, 2001). About 44% of these pregnancies end in a nonmarital birth (Zavodny, 2001). This finding is supported by Zabin, Kantner, and Zelnik (1979) who found that 20% of all adolescent girls became pregnant within six months after their first sexual intercourse. Additionally, about half of all teenage pregnancies (first pregnancies only) occur within the first six months of sexual activity. About one out of five teen pregnancies occur within the first month of sexual activity (Zabin, et al., 1979).

Although access to contraceptives has increased for adolescents (Guttmacher Institute, 2011) about 20% of adolescent girls who do not desire a pregnancy report not using any contraceptive methods (Guttmacher Institute, 2010). Paukku, Quan, Darney, and Raine (2003) conducted a retrospective study of adolescents who stated they did not desire a pregnancy, and found that 27% of them had been pregnant. Of those who had been pregnant, more than half used non-effective contraception, meaning they used an inconsistent method or none at all. About 16% of girls who reported having been pregnant reported using no method at all (Paukku, et al., 2003). One study analyzed
pregnant adolescents to determine why they did not use contraceptives (Stevens-Simon, Kelly, Singer, & Cox, 1996). They found that the most common reasons for not using contraceptives were ambivalence towards or desire to become pregnant. The pregnant teens with positive or ambivalent attitudes towards pregnancy were more likely to have known the father of their children for at least six months, and were more likely to have dropped out of school. Another common reason for not using birth control included perceived insusceptibility to become pregnant (Stevens-Simons, et al., 1996). These findings are supported by Breheny and Stephens (2004) who conducted a small qualitative study of teenage mothers to determine barriers faced to using contraception before and after pregnancy. They also found that ambivalent attitude and perceived insusceptibility to become pregnant were common barriers to using birth control. Additionally, they found that simply forgetting to use birth control was cited by the adolescents. The authors suggested changing teen girls’ views towards pregnancy as well as encouraging multiple contraceptive methods (i.e. hormonal method plus barrier method) would be effective strategies in preventing or delaying teenage pregnancy (Breheny & Stephens, 2004).

One study found that 58% of teen mothers resumed sexual activity within three months postpartum (Kelly, Sheeder, & Stevens-Simon, 2005). The median time between delivery and sexual resumption was 10.7 weeks. Living with a boyfriend or child’s father and having a preterm child were associated with resuming sexual activity sooner. The majority (80%) of teen mothers reported using contraception, and 90% of the teens stated that they did not want another child within the next year (Kelly, et al., 2005). While less than 20% of teen mothers report using condoms at last intercourse (Koniak-Griffin,
Lesser, Uman, & Nyamathi, 2003), they are more likely to use hormonal birth control methods (Paukku, Quan, Darney, & Raine, 2003). However, adolescent mothers often change their hormonal contraceptive method postpartum, as research indicates the use of hormonal contraceptives at late postpartum decreases from use at early postpartum, putting them at risk for repeat pregnancy (Kershaw, Niccolai, Ickovics, Lewis, Meade, & Ethier, 2003; Berenson & Wiemann, 1997). Within 12 months postpartum, 25-40% of teen mothers have experienced another pregnancy (Falk, Ostlunch, Magnuson, Schollin & Nilsson, 2006; Coard, Nitz, & Felice, 2000), while around 40% experience a repeat pregnancy within 24 months postpartum (Crittendon, Boris, Rice, Taylor, & Olds, 2009; Raneri & Wiemann, 2007; Gillmore, Lewis, Lohr, Spencer, & White, 1997).

Stevens-Simon, Kelly, and Kulick (2001) evaluated the effectiveness of a program designated to support thirteen to nineteen year old teenage mothers and their infants and found that 35% of the teenager mothers became pregnant within two years of the first birth. The likelihood of pregnancy varied significantly by the type of contraception used by the teenage mothers. Among teenagers who used Norplant, there were no repeat pregnancies. The repeat pregnancy rates at one year postpartum for teenage mothers who used Depo-Provera, birth control pills, and no contraceptive method were 11%, 25%, and 38%, respectively (Stevens-Simon, et al., 2001). The subsequent pregnancy rates in these studies seems to be in line with previous studies, including Quint (1991) who conducted a quasi-experimental study comparing pregnant and parenting teens who received comprehensive parenting services with a control group and reported that 45% of the treatment group and 49% of the control group experienced a repeat pregnancy. Stevens-Simon, Dolgan, Kelly, and Singer (1997) evaluated a monetary
incentive program for teenage mothers and found that the two-year postpartum repeat pregnancy rate was 39%.

Other studies have examined types of hormonal contraception used by adolescent mothers to determine effectiveness in preventing rapid repeat pregnancies (Thurman, Hammond, Brown, & Roddy, 2007; Lewis, Doherty, Hickey, & Skinner, 2010; Templeman, Cook, Goldsmith, Power, & Hertweck, 2000; Polaneczky, Slap, Forke, Rappaport, & Sondheimer, 1994). A rapid repeat pregnancy is considered a subsequent pregnancy in an adolescent that occurs within 24 months of the previous pregnancy outcome (Mott, 1986; Rigsby, Macones, & Driscoll, 1998). Polaneczky and colleagues (1994) studied the use of Norplant (a long-term hormonal contraceptive rod implanted in the upper arm) in postpartum adolescents and compared them to adolescent mothers taking oral contraceptive pills. They found that those on oral contraceptives were significantly more likely to become pregnant within one year postpartum. Although Norplant is no longer on the market (it was replaced by Implanon), this study was significant to the field of research in identifying that long-acting hormonal methods were more effective in preventing repeat adolescent pregnancies (Polaneczky, et al., 1994).

Most studies have found that using a long-acting hormonal contraceptive is more effective in preventing rapid repeat pregnancies in teens than using a shorter-term method (Berenson & Wiemann, 1997; Templeman, Cook, Goldsmith, Power, & Hertweck, 2000; Thurman, Hammon, Brown, & Roddy, 2007; Lewis, Doherty, Hickey, & Skinner, 2010; Coard, Nitz, & Felice, 2000). DMPA is a contraceptive injection that prevents pregnancy for three months (Pfizer, 2006). Depot medroxyprogesterone acetate (DMPA) is one such method. DMPA is a contraceptive injection that prevented pregnancy for three months
Although DMPA is now off the market, it is similar to Depo Provera in its application, since Depo Provera is also a contraceptive injection that prevents pregnancy for three months (Birth control shot, 2011). Templeman and colleagues (2000) compared adolescent mothers who were using depot medroxyprogesterone acetate (DMPA) to those using oral contraceptive pills. At 12 months postpartum, 27% of teens who started using the pill were still on it, and 55% of teens who had started using DMPA were still using it. Over 90% of the teens who discontinued using DMPA cited side effects as the reason, compared to 58% of those who discontinued using the pill. The overall incidence of repeat pregnancy at 12 months postpartum was 10.6%, but this varied widely by contraceptive method; 24% of pill users became pregnant within one year postpartum compared to 2.6% of DMPA users (Templeman, et al., 2000). Berenson and Wiemann (1997) found similar results, although they were measured at six months postpartum. Only about half of the girls who started on the pill were still on it at six months postpartum, and about 20% of those reported currently using no method. About 10% of the girls on DMPA failed to get a second injection (injections are given every 12 weeks). About half of the girls who reported using condoms as their birth control method admitted that they did not use them consistently. Overall, almost 20% of the girls admitted not using contraception at their last intercourse (Berenson & Wiemann, 1997).

Thurman and colleagues (2007) compared the rapid repeat pregnancy rates of teen mothers who were using oral contraceptive pills to the contraceptive patch (Ortho Evra), and Depo Provera. At one year postpartum, repeat pregnancy rates were 14.2%, 29.7%, and 31.8% among the Depo, pill, and patch users, respectively. Users of Depo were significantly less likely to become pregnant within one year postpartum than users of
other, shorter-acting methods (Thurman, et al., 2007). Lewis and colleagues (2010) conducted a small study of teen mothers comparing repeat pregnancy rates on various birth control methods, including DMPA, oral contraceptive pills, Implanon, barrier methods, and no contraceptive method. Implanon is a small hormonal contraceptive rod that is inserted into the upper arm and can remain in place for up to three years (Shering Corporation, 2009). The researchers found that the overall repeat pregnancy rate at two years postpartum was 35%. Users of Implanon were significantly less likely to become pregnant, more likely to delay a pregnancy, and more likely to continue using Implanon at 24 months postpartum, as compared to users of other methods (Lewis, et al., 2010).

Nationally, about 20% of all teen births that occur in the United States are repeat births (Schelar, Franzetta, & Manlove, 2007). Repeat births to teens have decreased from 25% of all teen births in 1990 to 20% in 2004. The proportion of teen births that are repeat births are highest in the southern states. Typically, the states with the highest teen birth rates also have the highest repeat birth rates (Schelar, et al., 2007). In 2008, Cincinnati had the highest percentage of teen births that were repeat births at 28%. Comparatively, Boston’s proportion of teen births that were repeats was 12% (ChildTrends, 2011). Repeat teen births have declined among all racial and ethnic groups, but these declines have not been uniform. Repeat births to Caucasian and Asian Americans are below the national average of 20%, while repeat births to African American and Hispanic teen girls are above the national average. However, among African American teen girls, repeat births declined 30% from 1990 to 2004, compared to 15% among Hispanic teens and 11% among Caucasians (Schelar, et al., 2007).
Repeat pregnancies to teen mothers are particularly important to prevent because they tend to compound the already adverse outcomes faced by teen mothers, including adverse health outcomes of the infants (Akinbami, Schoendorf, & Kiely, 2000; Stewart, 1993; Partington, Steber, Blair & Cisler, 2009). Second births to teen mothers are more at risk for preterm delivery, even after controlling for numerous background variables (Akinbami, et al., 2000; Stewart, 1993). In addition to adverse health outcomes, teen mothers often find that struggling to balance raising two children, often on limited resources and without significant social support, while attending school is difficult to manage.

Numerous studies have sought to determine predictive factors associated with repeat teen pregnancies in order to determine how to best prevent these pregnancies (Barnet, Liu, & DeVoe, 2008; Sims & Luster, 2002; Pfitzner, Hoff, & McElligott, 2003; Coard, Nitz, & Felice, 2000; Haamid & Wiemann, 2010; Gillmore, Lewis, Lohr, Spencer, & White, 1997; Jacoby, Gorenflo, Black, Wunderlich, & Eyler, 1999; Raneri & Wiemann, 2007; Crittendon, Boris, Rice, Taylor, & Olds, 2009; Rowlands, 2010; Bull & Hogue, 1998; Kalmuss & Namerow, 1994). Barnet, Liu, and DeVoe (2008) conducted a secondary analysis of a longitudinal study of teen mothers and found that depressive symptoms were associated with an increased risk of secondary pregnancies. The risk of experiencing a second pregnancy was 40% higher among teen mothers who reported depressive symptoms at baseline, a finding corroborated by Sims and Luster (2002). Adolescent mothers are more likely to experience depression than adult mothers (Deal & Holt, 1998), with approximately half of teen mothers experiencing moderate to severe depression during the first year postpartum (Schmidt, Wiemann, Rickert, & Smith, 2006).
Other emotional and psychiatric issues are associated with repeat pregnancy, including self-report of suicidal thoughts and attempts (Pfitzner, et al., 2003), and self-report of aggressive behavior (Crittendon, et al., 2009). Another important factor associated with repeat pregnancy among teen mothers is when the first pregnancy ends in miscarriage or stillbirth (Pfitzner, et al., 2003; Coard, et al., 2000). Coard, Nitz, and Felice (2000) found that, among urban adolescents, over 20% of teen girls who experienced a miscarriage became pregnant again within one year of the miscarriage. It is possible that these girls may intentionally become pregnant again to deal with their grief from losing their child.

Studies have indicated that another factor associated with repeat pregnancy in adolescent mothers is the influence of the father of the child. Haamid and Wiemann (2010) found that a factor associated with multiple subsequent pregnancies among teen mothers was if the father of the child was three or more years older than the teenager, a finding similar to Raneri and Wiemann (1997). Bull and Hogue (1998) conducted an exploratory analysis of factors associated with repeat teenage childbearing and found that teen mothers were more likely to become pregnant again if the father of the child or the current boyfriend encouraged pregnancy. Teen mothers who have experienced sexual or physical violence are also at an increased risk of rapid repeat pregnancy (Jacoby, et al., 1999). Finally, a last significant predictor of repeat pregnancy among teen mothers relates to school. Teen mothers who have previously repeated a grade in school (Haamid & Wiemann, 2010) or have faced problems in school (Gillmore, et al., 1997) are at an increased risk of subsequent pregnancies. Teen mothers who do not return to school within three months postpartum are also more likely to experience a repeat pregnancy (Raneri & Wiemann, 2007). Bull and Hogue’s (1998) exploratory analysis found that
teen mothers who had a more favorable attitude towards completing their family than finishing high school were more at risk for rapid repeat pregnancies.

A series of interventions have been implemented to attempt to reduce repeat pregnancies among adolescents. Sims and Luster (2002) evaluated data collected on 99 teenage mothers participating in the Family TIES (trust, information, encouragement, support) program, and reported a repeat pregnancy rate of 58% in the treatment group and 63% in the control group. Research indicates that some repeat pregnancy prevention programs appear to be more effective than others. Pfitzner, Hoff, and McElligot (2003) evaluated over 1800 pregnant teenagers participating in the Teen Mother and Child Program (TMCP) at the University of Utah from 1985 to 2000. One of the program objectives was to provide services to reduce subsequent pregnancies among the teenage mothers. The subsequent pregnancy rate was 10.6% for teenagers participating in the program, which is lower than the average rate found in many studies (Pfitzner et al., 2003). Key, Barbosa, and Owens (2001) analyzed the “Second Chance Club,” a high school-based program aimed at reducing subsequent pregnancies among pregnant and parenting adolescent teenagers. Of the 50 participants in the program, only three (6%) experienced a subsequent pregnancy, compared to 37% of the 255 teenagers in the control group (Key, et al., 2001).

### 2.5 School-Based Support of Pregnant and Parenting Students

The passage of Title IX of the Education Act of 1972 provided the right of pregnant and parenting teenagers to continue their education (Wolf, 1999). Although the
pregnant and parenting teenagers have the right to public education, there is a significant amount of variance in how school districts serve them (SmithBattle, 2006). Pregnant and parenting students remain a vulnerable part of society, but virtually invisible within some school systems. School attendance and participation often become a challenge during pregnancy, resulting in restriction from activities and failing because of excessive absences (Wolf, 1999). Typically, schools do little to retain their pregnant and parenting population. The focus of school administration on attendance and grades, without recognizing the realities of teen motherhood, can lead to the alienation of teen mothers from the school system (SmithBattle, 2006). Changes to the welfare system in the form of the Personal Responsibility and Work Opportunity Reconciliation Act (PWORA) of 1996 required that teen mothers (under age 18) must attend school in order to receive cash assistance (SmithBattle, 2006; Offner, 2005). Since the PWORA was passed, school attendance among teen mothers has increased (Offner, 2005). Schools would be wise to capitalize on this requirement to keep teen mothers in their system, and serve them in a way that enables them to remain in school to receive a diploma. It is important that school administrators understand and try to meet the needs of young mothers, as increasing their involvement in the school may decrease their risk of dropping out (McGaha-Garnet & Burley, 2009).

School-based programs for pregnant and parenting teenagers often aim to provide support for the students to: remain in school; decrease the risk of delivering a low birthweight or preterm infant; delay subsequent pregnancies; increase the use of prenatal care; and increase access to community resources. Amin and Sato (2004) evaluated a school-based comprehensive program for pregnant and parenting teens in Baltimore to
determine its impact on contraceptive use. The researchers compared the participants to a control group made up of over 500 pregnant and parenting students not involved in the program. The program provided numerous services to the participants to meet their needs, including family planning and access to obstetric services. The results indicated that students involved in the program were significantly more likely to currently use contraceptives (especially Depo-Provera) and significantly less likely to desire more children. The authors concluded that this program is an example of the relationship between school continuation and delay of subsequent pregnancies among teen mothers (Amin & Sato, 2004). Other studies evaluating comprehensive school-based programs for pregnant and parenting teens have found that they were effective in several ways. Key, Barbosa, and Owens (2001) evaluated The Second Chance Club, a school-based program for pregnant and parenting teens located within the school clinic. The Club met weekly to discuss parenting, career planning, and other issues. It also included case management, home visits, and medical care. Results were compared to a control group of closely-matched pregnant and parenting teens. The results indicated that the subsequent pregnancy rates (within three years) were significantly lower for participants in the Second Chance Club, 6%, compared to the control group, 37% (Key, et al., 2001).

Another study aimed to evaluate school-based programs for pregnant and parenting teens in ten high-risk schools (Weinman, Solomon, & Glass, 1999). The authors reported that the students in the programs were more likely to pass their grade level at the end of the year. Also, 78% of the participants used birth control, and 90% of their infants received medical care in a timely manner. Qualitatively, the students indicated that they desired to remain in school (Weinman, et al., 1999). Similarly, an evaluation of school-based
programs for pregnant and parenting adolescents in Arizona indicated that one program was especially successful in keeping the participants in school (Warrick, Christianson, Walruff, & Cook, 1993). The program provided health care, day care, parenting classes, counseling, and case management. The evaluators found that 20% of the participants in the program dropped out of school within 12 months, compared to 40-48% of the comparison programs (Warrick, et al., 1993). Williams and Sadler (2001) conducted a retrospective study of a child care center located within an urban high school that served the children of teen mothers. To receive childcare, the teen parents were required to regularly attend school, take a daily parent education class, and spend an hour per week in parenting skills workshops. The daycare also included a home visitation and outreach component that assisted the families in addressing barriers to remaining in school. The results indicated that the students showed an increase in grade point average compared to pre-enrollment, and 100% of the students were promoted to the next grade level or graduated. Additionally, there were no repeat pregnancies during the study period, and 90% of the children of the students were up to date on their immunizations and pediatrician visits (Williams & Sadler, 2001).

Some studies have examined the effects of school-based prenatal care and found that they were effective in improving outcomes of teen mothers and their children. One study retrospectively examined whether school-based health clinics reduced school absenteeism and dropout rates among pregnant teens (Barnet, Arroyo, Devoe, & Duggan, 2004). The school-based health clinic provided prenatal care to the pregnant students. The researchers compared absenteeism and dropout rates of the students receiving school-based prenatal care with those receiving care from non-school-based facilities.
During the school year that they were pregnant, students who received school-based care were absent 12 fewer days compared to those who received non-school-based care. Also, the dropout rate for students who received prenatal care at school was only half of the rate (6% compared to 15%) of those who received prenatal care elsewhere. These findings persisted even after controlling for potential confounders, including age, socioeconomic status, pre-pregnancy attendance, and race (Barnet, et al., 2004). A similar study retrospectively examined birth outcomes of pregnant teenagers in Boston receiving school-based prenatal care compared to hospital-based care (Barnet, Duggan, & Devoe, 2003). The study found that pregnant teens receiving school-based prenatal care were three times less likely to deliver a low birthweight infant compared to those receiving hospital-based prenatal care, a finding similar to older studies (Setzer & Smith, 1992; Berg, Taylor, Edwards, & Hakanson, 1979).

One component that all effective school-based programs for pregnant and parenting teens have in common is providing support. These programs help teens feel connected to the school and to trusted adults, while providing access to services that meet their needs as parenting teenagers. Social support is defined as the interactions with friends, family, peers, and professionals that communicate information, provide aid, and are understanding (Letourneau, Stewart, & Barnfather, 2004). For teen mothers, social support can range from receiving childcare assistance, to learning parenting skills, to positive reinforcement. Social support can serve as a buffer of protection for teen mothers, who are at a transitional time in their lives in which they are reconciling being a teenager with their newfound adult roles of parenthood (Kalil, 2002). They are also faced with the looming responsibilities of having to provide, both financially and emotionally,
for themselves and their children. This may make them seriously consider the value of education and reaffirm their commitment to school completion (Kalil, 2002). Schools should make substantial efforts to retain these students, by connecting with them and supporting them before they drop out due to barriers that may preclude going to school (Center for Assessment and Policy Development [CAPD], 1997). During the period of adolescence, youth often seek nonparental adults for support and guidance. This may be especially true for youth from impoverished backgrounds (including most teen mothers), whose home lives may include family instability, stressful situations, and little parental support (Letourneau, Stewart, & Barnfather, 2004). One study found that the social support networks of teen mothers is small, which makes it especially important that schools are available to provide support to teen mothers (Sadler, Swartz, Ryan-Krause, Seitz, Meadows-Oliver, Grey, & Clemmens, 2007).

The psychological environment of the school perceived by teen mothers can affect their educational motivation, as evidenced in a study by Kalil (2002). The study found that teen mothers perceived that teachers devalued them intellectually, which was a significant predictor in the decline of educational expectations. The teens in the study also indicated that they were able to access social support at the school if needed, which was important since an indicator of the psychological environment of the school is the perception of the availability of the school staff as sources of support (Kalil, 2002). Another study examined the perceptions of support received by teenagers, comparing pregnant and parenting teens to non-pregnant or parenting teens (Crase, Hockaday, & McCarville, 2007). The pregnant and parenting adolescents in the study reported that they received more support from teachers than the non-pregnant or parenting adolescents, and
less support from best friends or sisters. These studies all indicate that the perceived support from the school, whether positive or negative, can play an important role in the lives of pregnant and parenting teens. McGaha-Garnet and Burley (2009) conducted a longitudinal study of teen mothers and concluded that adolescent mothers with multiple needs benefit from receiving preventive services of schools. They also found that adolescent mothers who report having supportive individuals in their lives may be more successful academically, personally, and socially (McGaha-Garnet & Burley, 2009). On the contrary, a lack of social support, along with stress and feelings of low self-efficacy, are major risk factors for mental health issues (Romo & Nadeem, 2007). The support network of a teen mother impacts her psychological well-being, and is associated inversely with depressive symptoms (Panzarine, Slater, & Sharps, 1995). Other studies have also found an association between mental health problems and lower social support (Cox, Buman, Valenzuela, Joseph, Mitchell, & Woods, 2008). In Cox and colleagues’ study (2008), they found that over 50% of the teen moms in the parenting program had depressive symptoms. After controlling for numerous variables, they found that increased depressive symptoms were associated with decreased perceived caretaking ability and lower social support. The researchers concluded that connecting teen moms with caring adults is an essential factor in decreasing the impact of depression (Cox, et al., 2008).

Spear (2002) conducted a qualitative study of an alternative school for pregnant and parenting teen girls, and found that the students stated that they experienced academic success for the first time, were able to provide appropriate care for their newborn, and developed positive relationships with both their peers and their teachers. Spear (2002) concluded that the supportive and nurturing learning environment of the
school was conducive to success of the students. Alternative schools for pregnant and parenting teens have a “built-in” system for providing social support for their students, but there are strategies that traditional schools can utilize to support their pregnant and parenting population and keep them engaged in the school, and that require few resources. These strategies of providing social support are particularly important in the absence of positive social support from a student’s family (Romo & Nadeem, 2007). One such strategy that schools can implement is a teen parent support group, as reported by pregnant and parenting students in numerous studies (Romo & Nadeem, 2007; Stephens, Wolf, & Batten, 1999; Camarena, Minor, Melmer, & Ferrie, 1998; Stiles, 2005). Another strategy is to make sure that school counselors and psychologists appear available, interested, and supportive of the problems of teen mothers (Kalil, 2002; Camarena, Minor, Melmer, & Ferrie, 1998). A third strategy is to ensure that pregnant and parenting students are included in career or life skills courses, as studies have indicated that these courses and programs are beneficial to and desired by teen mothers (Hellenga, Aber, & Rhodes, 2002; Stiles, 2005). A fourth important strategy is that schools have a staff member that serves as a key figure in supporting and advocating for pregnant and parenting teens (Stephens, Wolf, & Batten, 1999). Nurses, social workers, or counselors are in an ideal position to take on this role, and can work to help the school meet the needs of the pregnant and parenting students by connecting them with community resources and keeping them on track for graduation (Stephens, et al., 1999).

School nurses have a role that makes them a natural advocate for pregnant and parenting teen mothers within a school. School nurses often provide care during early pregnancy, sometimes from the very beginning if the student takes the pregnancy test in
the nurse’s office. A school nurse’s background and education in health and communication, as well as their compassion, allows them to play the role of mentor, confidant, and health professional to their pregnant and parenting students (Perrin & Dorman, 2003). As demonstrated above, school-based health clinics have the potential to reduce many of the negative outcomes typically associated with adolescent childbearing. Williams and Sadler (2001) reported that three components of school-based health clinics that have the most long-term impact on the life outcomes of an adolescent mother and her child are: 1) prenatal care; 2) continuing educational support; 3) postpartum family planning. In addition to the above, school nurses in the school-based clinics can provide knowledge about child development and links to community resources. They can guide in decision-making regarding labor and delivery, breastfeeding, childcare, and other important parenting decisions (Strunk, 2008). The school nurses, as they become trusted and respected by the teen mothers, are in a position to support high school completion and career or postsecondary aspirations (SmithBattle, 2006). School-based health clinics and school nurses are the beginning place of breaking the intergenerational cycle of adolescent pregnancy by supporting teen mothers and helping them plan for their future (Strunk, 2008).

As of 2008, there were over 73,000 registered nurses working as school nurses within the United States (United States Department of Health and Human Services, 2010). The role of school nurses is diverse, and includes facilitating normal development of students, promoting health and safety of the school environment, intervening with actual or potential health issues of the students, providing case management, and collaborating to promote the health and well-being of the students and their families.
(National Association of School Nurses [NASN], 2010). As discussed in chapter 1, the NASN (2004), a professional nursing organization of almost 14,000 school nurses nationwide, advises school nurses to support teenage parents by promoting positive parenting practices, providing counseling and research-based information to the students and their families, and supporting responsible parenthood. The NASN (2004) also advises school nurses to support their pregnant students by providing prenatal care and guidance, collaborating with necessary persons to promote academic success, and recommending modifications to the school environment to ensure the safety of the pregnant students. The Arkansas School Nurses Association (2011) states that school nurses should provide and facilitate support groups for pregnant adolescents. Additionally, SmithBattle (2006) suggests that school nurses conduct comprehensive assessments of the needs, concerns, strengths, and challenges of teen mothers to determine what barriers must be overcome for teen mothers to become successful students and parents. She also suggests that school nurses assess the physical and social environment of the school and help facilitate necessary accommodations for pregnant or parenting students. This might include finding desks that fit pregnant bodies, gaining permission for additional restroom breaks, finding alternative activities during gym class, and advocating for the student in the case of significant absences due to pregnancy complications or child illnesses (SmithBattle, 2006). All of the above strategies utilized by school nurses may help reduce the negative consequences associated with teen pregnancy (NASN, 2004). Currently, no research exists on whether school nurses follow these recommended practices by the NASN, or what practices, if any, they engage in to support the pregnant and parenting teens in their school.
Overall, schools, and nurses in particular, are in a position to provide support to pregnant and parenting adolescents as they transition from teenagers to mothers. Social support is crucial during this time as they adjust to their lives as mothers. A push from people in their lives who care about them can make a world of difference in providing the motivation necessary to work past their hurdles and pursue their life goals.

2.6 Health Belief Model and Self-Efficacy Theory

This study uses components of the Health Belief Model (HBM) to identify school nurses’ perceived barriers and self-efficacy in engaging in specific practices that support pregnant and parenting teens. The HBM is a widely-used framework in health behavior interventions that is used to try to explain and predict behaviors. It was developed in the 1950s by social psychologists to explain why people were not participating in disease prevention and detection programs (Hochbaum, 1958; Rosenstock, 1960, 1974). The HBM is made up of several components, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. One of the components used in this study, perceived barriers, refers to the potential impediments, both tangible and psychological, of undertaking a behavior (Glanz, Rimer, & Lewis, 2002). Only perceived barriers of the Health Belief Model were used in this study because it is one of two components that have been most predictive of behavior change in adults (Harrison, Muller, & Green, 1992).

The concept of self-efficacy was added to the model in 1988 as a separate construct from susceptibility, severity, benefits, and barriers (Rosenstock, Strecher, & Becker, 1988). Self-efficacy refers to the confidence that a person feels about performing
a particular behavior (Bandura, 1977c). Bandura’s construct of self-efficacy was used to assess the efficacy expectations, outcome expectations, and outcome values of school nurses in supporting pregnant and parenting adolescents. Outcome expectations refer to the anticipated outcomes that an individual believes will occur from performing a behavior while efficacy expectations refer to the belief that a person can perform the behavior in order to achieve those outcomes (Bandura, 1977c). Outcome values refer to the perceived value or importance that a person places on given outcomes that may occur from undertaking a behavior (Bandura, 1977c).

Bandura and colleagues (1977c, 1978, 1982, 1986, 1997) state that self-efficacy is an important prerequisite for behavior change because the self-efficacy of a person determines how much effort they are willing to put into the behavior change.

The concept of perceived barriers from the Health Belief Model has been used in other studies regarding school nurses. One study examined the perceived barriers of school nurses to discussing weight with children and their families (Steele, Wu, Jensen, Pankey, Davis, & Aylward, 2011). Another study examined the perceived barriers of school nurses to diabetes knowledge, communication, and management of children with diabetes (Joshi, Komlodi, & Arora, 2008). The self-efficacy model has been used recently in other studies regarding school nurses, including an assessment of self-efficacy of school nurses in providing diabetes education to children (Fisher, 2006), an assessment of self-efficacy of school nurses in teaching asthma management behaviors to children (Winkelstein, Quartey, Pham, Lewis-Boyer, Lewis, Hill, Butz, 2006), and an assessment of self-efficacy of school nurses in measuring body mass index in children (Hendershot, Telljohann, Price, Dake, & Mosca, 2008).
2.7 Summary

The purpose of this chapter was to review the literature related to the consequences of teenage childbearing, contraceptive use and secondary pregnancies among teenage mothers, and school-based support of pregnant and parenting teens. The research indicates that there are potential serious consequences associated with early childbearing, including increased risk of school dropout, adverse health outcomes of the infants, and developmental delays of children born to teen mothers. However, the literature is split on whether these consequences were *caused* by early childbearing or were due to predisposing disadvantages in the life of the teen mothers. No matter the cause, these consequences are often exasperated by subsequent pregnancies to teen mothers, which occur to about 40% of teen mothers within two years of the first birth.

Many of the consequences associated with teen pregnancy can be reduced by continuing education and support of the teen mother. Schools are in a position to provide this support since teen mothers under 18 are mandated to attend school in order to receive cash assistance. Schools should take advantage of this opportunity to provide support to pregnant and parenting students to help negate some of the potential negative consequences. School nurses are in a prime position to provide support and serve as an advocate for teen mothers in schools. School nurses can develop a supportive and caring relationship with teen moms, serving as a mentor, confidant, and buffer against some of the challenges of teen pregnancy. They can provide not only medical care and resources, but also help guide this at-risk population towards graduation. A pregnant teen’s dreams do not end with early parenthood, so it’s important that there are supportive people in their lives to help them continue along a path to success.
Chapter 3

Methods

This chapter will discuss the methods that were used in this study. The topics that are addressed include: Subjects; Instrument; Instrument Testing; Data Collection; Data Analysis; and Summary.

3.1 Subjects

A membership list from the National Association of School Nurses (NASN) was purchased to obtain the sample for this study. There were approximately 15,000 school nurses in the United States who belonged to the NASN (Galemore & Schoessler, 2011). From that list, 1,000 high school nurses were included in this study. An a priori power analysis was performed to calculate the suggested sample size, and it indicated that 374 responses were needed. To minimize the chance of a Type II error, the sample size was based on a 95% confidence level, a 5% sampling error, and a 50/50 split (Price, Dake, Murnan, Dimmig, & Akpanudo, 2005). A response rate of greater than 50% was sought to decrease the threat to external validity. Previous studies of surveys postal mailed to school nurses have yielded response rates ranging from 22% to 81% (Fisher, 2006; Kubik, Story, & Davey, 2007; Huss, Winkelstein, Calabrese, Nanda, Quartey, Butz, Resto, Huss, & Rand, 2001; McCarthy, Kelly, Reed, 2000; Price, Telljohann, & King,
2001; Cavendish, Lunney, Luise, & Richardson, 2001; Hendershot, Dake, Price, & Lartey, 2006). Considering this, to obtain the sample size that was determined by the power analysis, the number of surveys sent out was doubled the suggested sample size (n=800).

### 3.2 Instrument

A 22-item survey instrument was created for this study to assess high school nurses’ efficacy expectations, outcome expectations, outcome values, current practices and perceived barriers concerning their support of pregnant and parenting teenagers. The instrument was created based on a comprehensive review of the literature. The instrument was also developed using the Self–Efficacy Theory components of the Social Cognitive Theory (efficacy expectations, outcome expectations, and outcome values) and one component of the Health Belief Model (perceived barriers). Questionnaire items assessing current practices examined what percent of pregnant and parenting teens the school nurses engaged in various support activities during the past two years. These activities included: referring students to community resources; facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting; facilitating collaboration with the student, her family, and school personnel to keep students academically on track during and after their pregnancies; assisting teenage mothers in obtaining contraception; regularly assessing contraceptive compliance; and teaching positive parenting practices. The response format for these questions was a 4-point scale (All- 100% to None-0%). Questionnaire items assessing efficacy expectations examined how confident school nurses were in their ability to
support pregnant and parenting students through a variety of support methods. These methods included those listed above. The response format for these questions was a 4-point Likert-type scale (not at all confident to very confident). Outcome expectations were assessed to determine the expected outcomes that school nurses believed would occur if they supported pregnant and parenting students through the support methods listed above. The response format for this question was a 24-point matrix in which the school nurses placed an “X” in boxes that corresponded to the outcomes they believed would occur from supporting pregnant and parenting teens. Outcome values of the school nurses were assessed to determine the value that the school nurses placed on the outcomes potentially achieved by supporting pregnant and parenting teens, including academic success, reduction of subsequent pregnancy, proper growth and development of the teenager’s child, a healthy pregnancy, and decreased likelihood of dropping out of school. The response format was a 4-point Likert-type scale (not at all important to very important). Perceived barriers of school nurses were assessed to determine any barriers that prohibited school nurses from supporting pregnant and parenting students. This included barriers to facilitating accommodations to ensure the safety and well-being of pregnant students, barriers to facilitating collaboration with the appropriate persons to ensure a pregnant teenager stays academically on track, and barriers to assisting teenage mothers in obtaining contraception. The response format for these questions was a multiple-response scale with an open-format option for the respondents to include any barriers not listed on the instrument. Finally, a question was included that asked respondents to describe the overall attitude of school administration and staff towards
pregnant and parenting students in their school. The response format for this question was a Likert-type scale ranging from very positive to very negative.

The instrument also included information on the participants’ background and demographic characteristics, which was placed at the end of the instrument. This included: school type (public, parochial, private, charter/alternative, other), school setting (rural, urban, suburban, other), whether a school nurse had state and/or national certification as a school nurse, level of education, student-to-nurse ratio, number of days per week served in a high school, number of schools served, number of pregnant and parenting students within the school, whether training was received on pregnant and parenting teenagers, agency which employed the respondent, number of years spent as a school nurse, and age range.

3.3 Instrument Testing

To establish face validity, the instrument was developed based on a comprehensive review of the literature in the areas of teenage childbearing and school nursing. In order to establish content validity, the instrument was mailed to a panel of experts (n=8) on the topics of school nursing, pregnant and parenting teenagers, and survey research. Survey content experts were identified based on publication records and expertise in these areas. The experts were mailed or emailed a copy of the instrument with a cover letter explaining the study. They were asked to suggest changes to the instrument, including the addition, modification, or deletion of items. Necessary changes to the survey occurred based on the experts’ recommendations. This helped ensure that
the survey was a valid measure of school nurses’ self-efficacy and perceived barriers regarding their support of pregnant and parenting teenagers.

Principal components analysis (PCA), or factor analysis, was conducted on the final answers to establish construct validity, which tests how well the created scales of an instrument were measuring the theoretical constructs. Exploratory PCA using Varimax rotation was conducted on the final data to determine construct validity of the instrument. Item loadings of less than 0.40 were excluded from loading on the factors. Three theoretical subconstructs were developed \textit{a priori}, including “current practices”, “efficacy expectations”, and “outcome values”. The PCA revealed a different factor model. A total of four factors emerged, which were interpreted to fit into four categories labeled “efficacy expectations,” “outcome values,” “current practices, environmental,” and “current practices- behavioral.” In items that loaded on more than one factor, the stronger factor loading value was retained for analysis. Table 3.1 depicts the findings.

Before distribution to the sample, the instrument was pilot tested with a convenience sample of high school nurses (n=15). This sample of local high school nurses was obtained through personal phone calls and emails. The nurses were mailed the survey on two occasions, approximately one week apart. Pearson product moment correlation coefficients were calculated to determine the stability reliability of the instrument. Stability reliability of an instrument refers to the reliability of an instrument over time. The Pearson product moment correlation ranged from .65 to 1.0. Results are shown in Table 3.2. The pilot test helped ensure readability and comprehensibility of the final instrument. Once final responses were collected, the internal consistency reliability of the subscales were calculated using Cronbach alpha calculations and Kuder-
Richardson calculations. Values ranged from 0.61 (barriers to assisting with contraceptives) to 0.88 (outcome expectations).

3.4 Data Collection

The design and protocol of this study was sent to the University of Toledo Human Subjects Institutional Review Board (IRB) for approval before beginning data collection. Once IRB approval was obtained, a two-wave mailing procedure was used to collect the data. The first wave consisted of the instrument, a personalized and signed cover letter, a self-addressed stamped return envelope, and a $1 bill. The second wave was mailed out approximately three weeks after the first wave. It consisted of the instrument, the personalized and signed reminder letter, and a self-addressed stamped return envelope. Typically, a third wave consisting of a postcard reminder is mailed out two weeks after the second wave (Price, Murnan, Dake, Dimmig, & Hayes, 2004). However, since the first and second waves yielded a response rate of nearly 56%, it was determined by the committee members that a third wave was not necessary.
Table 3.1: Principal Components Analysis

<table>
<thead>
<tr>
<th></th>
<th>Factor 1 (Efficacy expectations)</th>
<th>Factor 2 (Outcome values)</th>
<th>Factor 3 (Current practices - Environmental)</th>
<th>Factor 4 (Current Practices - Behavioral)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a. Referred to community resources</td>
<td></td>
<td></td>
<td>.642</td>
<td></td>
</tr>
<tr>
<td>3b. Facilitated accommodations</td>
<td></td>
<td></td>
<td>.802</td>
<td></td>
</tr>
<tr>
<td>3c. Facilitated collaboration</td>
<td></td>
<td></td>
<td>.791</td>
<td></td>
</tr>
<tr>
<td>3d. Assisted in obtaining contraception</td>
<td></td>
<td></td>
<td>.780</td>
<td></td>
</tr>
<tr>
<td>3e. Assessed contraceptive compliance</td>
<td></td>
<td></td>
<td>.847</td>
<td></td>
</tr>
<tr>
<td>3f. Taught parenting practices</td>
<td></td>
<td>.470</td>
<td>.583</td>
<td></td>
</tr>
<tr>
<td>4a. Refer to community resources</td>
<td>.684</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4b. Facilitate accommodations</td>
<td>.667</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4c. Facilitate collaboration</td>
<td>.601</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4d. Assist in obtaining contraception</td>
<td></td>
<td>.748</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4e. Assess contraceptive compliance</td>
<td></td>
<td>.764</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4f. Teach parenting practices</td>
<td>.693</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5a. Succeed academically</td>
<td>.777</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5b. Reduce subsequent pregnancy</td>
<td>.682</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5c. Ensure growth &amp; development of child</td>
<td></td>
<td>.842</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5d. Ensure healthy pregnancy</td>
<td>.751</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5e. Decrease likelihood of dropping out of school</td>
<td></td>
<td>.760</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n=346
The three-wave mailing procedure is one method that was utilized to maximize the response rate in order to reduce the threat to external validity (Price, Murnan, Dake, Dimmig, & Hayes, 2004). The instrument was printed as a four-page booklet on pastel blue paper. The personalized cover letter was printed on University of Toledo letterhead, and the letter stressed the importance of participation. The letter was also hand-signed by a faculty member. Research indicates that the above methods, along with a monetary incentive, increases the response rate of mailed surveys (King, Pealer, & Bernard, 2001; Edwards, Roberts, Clarke, DiGuiseppi, Pratap, Wentz & Kwan, 2002).

### 3.5 Data Analysis

The data from this study was analyzed using the Statistical Package for the Social Sciences (SPSS) 17.0 for Windows. Descriptive statistics, including means, percentages,
and standard deviations were used to describe the findings for hypotheses 1.1, 1.2, 1.3, 1.4, 1.5, and 1.6. Independent sample t-tests were used to calculate differences in the hypotheses containing a dichotomous independent variable and a continuous dependent variable (hypotheses 2.5, 3.5, 4.5, 5.5, 6.5). Analyses of variance tests (ANOVA) were used to determine differences in the hypotheses containing a categorical independent variable and a continuous dependent variable (hypotheses 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 6.2, 6.3, 6.8, 6.9). Pearson correlation coefficients were calculated to determine a correlation between an independent and dependent variables (hypotheses 2.4, 2.6, 2.7, 2.8, 2.9, 3.4, 3.6, 3.7, 3.8, 3.9, 4.9, 5.9). Linear regression was used to test hypotheses 4.4, 4.6, 4.7, 4.8, 5.4, 5.6, 5.7, 5.8, 6.4, 6.6, 6.7. If the statistical analyses conducted revealed that data was skewed, only nonparametric statistics were used to interpret the data.

### 3.6 Summary

This chapter described the methods used to conduct the present study, including subjects, instrument, instrument testing, data collection, and data analysis. This sample was randomly drawn from a list of high school nurses who currently belong to the National Association of School Nurses. The sample completed a 22-item instrument. Data were collected using a two-wave mailing technique and analyzed using independent sample t-tests, Pearson correlations, ANOVAs, and linear regression.
Chapter 4

Results

The results from the statistical analyses of the research data are presented in this chapter. This chapter consists of the following sections: Response Rate; Demographic and Background Characteristics of the Respondents; Current Practices Supporting Pregnant and Parenting Female Students; Efficacy Expectations Regarding Support of Pregnant and Parenting Female Students; Outcome Expectations Regarding Support of Pregnant and Parenting Students; Outcome Values Regarding Support of Pregnant and Parenting Students; Perceived Barriers to Facilitating Accommodations to Ensure Safety of Pregnant Students; Perceived Barriers to Facilitating Collaboration to Keep Pregnant Students Academically on Track; Perceived Barriers to Assisting Teen Mothers in Obtaining Contraception; Hypotheses Testing and Summary.

4.1 Response Rate

The potential participants for this study were selected from the National Association of School Nurses database of members. There were 800 surveys that were mailed to respondents. After a two-wave mailing, the final tally included: 24 individuals who were not eligible and 5 that were returned as undeliverable. Of the original mailing
of 800, there were 770 that were eligible. A total of 431 respondents returned the completed, eligible survey for a response rate of 55.9% (431/770).

4.2 Demographic and Background Characteristics of Respondents

The demographic characteristics of the respondents are shown in Table 4.1. Over 85% of the respondents reported working in a public school. About one-third (34.1%) of respondents worked in a rural school setting, while 41.5% of respondents worked in a suburban school setting. Over two-thirds (67.7%) of respondents reported that they were certified as a school nurse. Over half (55.7%) were certified by the state, and about one-quarter (23.7%) were nationally-certified. The majority of respondents (85.1%) had either a bachelor’s or master’s degree. Over half (55.2%) of respondents have received training on the topic of pregnant and parenting teenagers. Respondents could indicate multiple sources of training, and many indicated that they received training on serving pregnant and parenting teenagers from undergraduate education, professional journals, and inservice education or workshops. Most (92.6%) respondents were employed by the school district. The majority of respondents (58.2%) were between 50 and 59 years old. Almost half of responding nurses (49.4%) reported serving as a school nurse between 11 and 20 years. Almost two-thirds of the nurses (65.9%) worked at a high school 5 days per week. Half of the responding nurses (50.9%) reported a nurse-to-student ratio of one nurse to 1000 or less students.
<table>
<thead>
<tr>
<th>Item</th>
<th>Total n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School Type</strong></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>368 (85%)</td>
</tr>
<tr>
<td>Charter/Alternative</td>
<td>29 (6.7%)</td>
</tr>
<tr>
<td>Private</td>
<td>14 (3.2%)</td>
</tr>
<tr>
<td>Parochial</td>
<td>10 (2.3%)</td>
</tr>
<tr>
<td>Other</td>
<td>10 (2.3%)</td>
</tr>
<tr>
<td><strong>School Setting</strong></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>96 (22.3%)</td>
</tr>
<tr>
<td>Rural</td>
<td>147 (34.1%)</td>
</tr>
<tr>
<td>Suburban</td>
<td>179 (41.5%)</td>
</tr>
<tr>
<td>Other</td>
<td>6 (1.4%)</td>
</tr>
<tr>
<td><strong>School Nursing Certification</strong></td>
<td></td>
</tr>
<tr>
<td>State certified as a school nurse</td>
<td>240 (55.7%)</td>
</tr>
<tr>
<td>Nationally certified as a school nurse</td>
<td>102 (23.7%)</td>
</tr>
<tr>
<td>Both state- and nationally-certified as a school nurse</td>
<td>58 (13.3%)</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
</tr>
<tr>
<td>Diploma program</td>
<td>22 (5.1)</td>
</tr>
<tr>
<td>Associate’s degree</td>
<td>30 (7.0)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>182 (42.2)</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>185 (42.9)</td>
</tr>
<tr>
<td>Doctoral degree</td>
<td>9 (2.1)</td>
</tr>
<tr>
<td><strong>Received Training on Pregnant/Parenting Teens</strong></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>193 (44.8)</td>
</tr>
<tr>
<td>Yes</td>
<td>238 (55.2)</td>
</tr>
<tr>
<td>Undergraduate education</td>
<td>149</td>
</tr>
<tr>
<td>Graduate education</td>
<td>69</td>
</tr>
<tr>
<td>National or state conferences</td>
<td>117</td>
</tr>
<tr>
<td>Professional journals</td>
<td>126</td>
</tr>
<tr>
<td>In-service education or workshop</td>
<td>180</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
</tr>
<tr>
<td><strong>Employer</strong></td>
<td></td>
</tr>
<tr>
<td>School/school district</td>
<td>399 (92.6)</td>
</tr>
<tr>
<td>Local health department</td>
<td>9 (2.1)</td>
</tr>
<tr>
<td>Local hospital</td>
<td>4 (1.9)</td>
</tr>
<tr>
<td>Other</td>
<td>19 (4.4)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>Younger than 30</td>
<td>3 (.7)</td>
</tr>
<tr>
<td>30 – 39 years</td>
<td>21 (4.9)</td>
</tr>
<tr>
<td>40-49</td>
<td>51 (11.8)</td>
</tr>
<tr>
<td>50-59</td>
<td>251 (58.2)</td>
</tr>
<tr>
<td>60 or older</td>
<td>104 (24.1)</td>
</tr>
</tbody>
</table>
Table 4.1 (continued): Demographic and Background Characteristics of the Respondents

<table>
<thead>
<tr>
<th>Item</th>
<th>Total n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of years worked as a school nurse</strong></td>
<td></td>
</tr>
<tr>
<td>1 to 10 years</td>
<td>103 (23.9)</td>
</tr>
<tr>
<td>11 to 20 years</td>
<td>213 (49.4)</td>
</tr>
<tr>
<td>21 to 30 years</td>
<td>95 (22.0)</td>
</tr>
<tr>
<td>30 or more years</td>
<td>20 (4.6)</td>
</tr>
<tr>
<td><strong>Number of days per week worked at a high school</strong></td>
<td></td>
</tr>
<tr>
<td>0 days</td>
<td>21 (4.8)</td>
</tr>
<tr>
<td>1 day</td>
<td>55 (12.8)</td>
</tr>
<tr>
<td>2 days</td>
<td>36 (8.3)</td>
</tr>
<tr>
<td>3 days</td>
<td>18 (4.1)</td>
</tr>
<tr>
<td>4 days</td>
<td>13 (3.0)</td>
</tr>
<tr>
<td>5 days</td>
<td>64 (65.9)</td>
</tr>
<tr>
<td><strong>Approximate number of students served</strong></td>
<td></td>
</tr>
<tr>
<td>1 to 500 students</td>
<td>83 (19.3)</td>
</tr>
<tr>
<td>501 to 1000</td>
<td>136 (31.6)</td>
</tr>
<tr>
<td>1001 to 1500</td>
<td>73 (16.9)</td>
</tr>
<tr>
<td>1501 to 2000</td>
<td>53 (12.3)</td>
</tr>
<tr>
<td>2001 to 2500</td>
<td>33 (7.7)</td>
</tr>
<tr>
<td>2500 and above</td>
<td>53 (12.3)</td>
</tr>
</tbody>
</table>

\[n=431\]

Note: Percentages may not equal 100% due to rounding and/or non-reported answers

4.3 **Total Number of Pregnant and Parenting Students within the School**

School nurses were asked to list the approximate total number of pregnant or parenting female students within the high school(s) they served within the last two years. The group mean was 12.3 students (sd = 23.8) with a range from 0 students to 150 students. Approximately three-quarters (75.8%) of school nurses reported 12 or fewer pregnant or parenting students within their high schools within the last two years. Eighty-five nurses (19.7%) reported no pregnant or parenting students in their high schools within the last two years.
4.4 Total Number of Pregnant and Parenting Students Personally Assisted by School Nurses

School nurses were asked to approximate how many of the pregnant or parenting students in the school they had personally assisted regarding their pregnant or parenting issues within the last two years. The mean number of students assisted was 8.2 (sd = 15.4) with a range from 0 to 150. The majority of nurses (94%) reported assisting 30 or less pregnant or parenting students in the last two years. About one-quarter of nurses (25.6%) reported assisting no pregnant or parenting students with issues related to pregnancy or parenting.

4.5 Current Practices Supporting Pregnant and Parenting Female Students

Responding nurses were asked about what current practices they engaged in to support the pregnant and parenting students in their schools (Table 4.2). The majority of respondents (69.4%) reported that they referred most or all of their pregnant and parenting students to community resources. Over 54% of responding nurses stated that they facilitated the process of making accommodations for the safety of all of their pregnant and parenting students. About 40% of the respondents reported facilitating collaborations to keep all of their pregnant and parenting students academically on track. Over half (52.0%) of the responding nurses reported assisting none of their pregnant and parenting students in obtaining contraception. Over 40% of respondents reported that they did not engage in regularly assessing contraceptive compliance with any of their
pregnant or parenting students. Less than one-fifth (17.9%) of respondents stated that they taught positive parenting practices to most or all of their students.

Table 4.2: High School Nurses’ Current Practices Supporting Pregnant and Parenting Female Students

<table>
<thead>
<tr>
<th>Current/past practices in supporting pregnant/parenting students:</th>
<th>All (100%)</th>
<th>Most (99-50%)</th>
<th>Some (49-0%)</th>
<th>None (0%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referred to community resources</td>
<td>174 (50.3%)</td>
<td>66 (19.1%)</td>
<td>63 (18.2%)</td>
<td>34 (9.8%)</td>
</tr>
<tr>
<td>Facilitated accommodations</td>
<td>189 (54.6%)</td>
<td>76 (22.0%)</td>
<td>48 (13.9%)</td>
<td>24 (6.9%)</td>
</tr>
<tr>
<td>Facilitated collaboration</td>
<td>145 (41.9%)</td>
<td>70 (20.2%)</td>
<td>76 (22.0%)</td>
<td>48 (13.9%)</td>
</tr>
<tr>
<td>Assisted in obtaining contraception</td>
<td>42 (12.1%)</td>
<td>39 (11.3%)</td>
<td>78 (22.5%)</td>
<td>180 (52.0%)</td>
</tr>
<tr>
<td>Regularly assessed contraceptive compliance</td>
<td>21 (6.1%)</td>
<td>22 (6.4%)</td>
<td>62 (17.9%)</td>
<td>231 (66.8%)</td>
</tr>
<tr>
<td>Taught positive parenting practices</td>
<td>61 (17.6%)</td>
<td>51 (14.7%)</td>
<td>80 (23.1%)</td>
<td>145 (41.9%)</td>
</tr>
</tbody>
</table>

n = 337

Note: Percentages may not equal 100% due to rounding and/or non-reported answers

4.6 Efficacy Expectations Regarding Support of Pregnant and Parenting Female Students

Respondents were asked about how confident they felt in their ability to support pregnant and parenting female students (Table 4.3). Almost two-thirds (65.9%) of
responding nurses stated that they felt “very confident” in their ability to refer pregnant and parenting students to community resources. The majority of the respondents (70.2%) also stated that they were “very confident” in their ability to facilitate making accommodations to ensure the safety of pregnant students in the school setting. Slightly less than half (47.4%) of the nurses stated that they were “very confident” in their ability to facilitate a collaboration with students, their families, and school personnel to ensure that students remain academically on track during and after pregnancy. Over one-quarter (28.6%) of respondents stated that they felt “not at all confident” or “not very confident” in their ability to assist pregnant and parenting students in obtaining contraceptives. Only 15.0% of nurses stated that they were “very confident” in their ability to regularly assess the contraceptive compliance of their pregnant and parenting students. Overall, having received training on the topic of pregnant and parenting teens produced statistically significant differences (t = 5.954, df = 344, p < .001) regarding efficacy expectations scores.

4.7 Outcome Expectations Regarding Support of Pregnant and Parenting Students

Respondents were queried about their outcome expectations of engaging in support activities (Table 4.3). This 24-item matrix required respondents to check each outcome they believed would result from engaging in a particular supportive activity. Regarding the activity of referring pregnant and parenting teens to community resources, the majority of respondents indicated that doing so would result in the decreased likelihood of student dropout (73.7%), a healthier pregnancy (97.4%), reduction in

99
Table 4.3: Efficacy Expectations Regarding Support of Pregnant and Parenting Female Students

<table>
<thead>
<tr>
<th>How confident in ability to:</th>
<th>Not at all Confident</th>
<th>Not Very Confident</th>
<th>Confident</th>
<th>Very Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to community resources</td>
<td>0 (0%)</td>
<td>12 (3.5%)</td>
<td>106 (30.6%)</td>
<td>228 (65.9%)</td>
</tr>
<tr>
<td>Facilitate Accommodations</td>
<td>0 (0%)</td>
<td>9 (2.6%)</td>
<td>93 (26.9%)</td>
<td>243 (70.2%)</td>
</tr>
<tr>
<td>Facilitate collaboration</td>
<td>2 (0.6%)</td>
<td>31 (9.0%)</td>
<td>145 (41.9%)</td>
<td>164 (47.4%)</td>
</tr>
<tr>
<td>Assist in obtaining contraception</td>
<td>43 (12.4%)</td>
<td>56 (16.2%)</td>
<td>144 (41.6%)</td>
<td>90 (26.0%)</td>
</tr>
<tr>
<td>Regularly assess contraceptive compliance</td>
<td>57 (16.5%)</td>
<td>104 (30.1%)</td>
<td>120 (34.7%)</td>
<td>42 (15.0%)</td>
</tr>
<tr>
<td>Teach positive parenting practices</td>
<td>15 (4.3%)</td>
<td>53 (15.3%)</td>
<td>155 (44.8%)</td>
<td>115 (33.2%)</td>
</tr>
</tbody>
</table>

n = 346

Note: Percentages may not equal 100% due to rounding and/or non-reported answers

subsequent pregnancies (74.0%), and the proper growth and development of the student’s child (90.8%). The majority of responding nurses believed that facilitating accommodations to ensure the safety of a pregnant student in the school setting would result in academic success (83.5%), decrease likelihood of student dropout (93.4%), and promote a healthier pregnancy (80.6%). Most (93.1%) of the responding nurses indicated that facilitating a collaboration between school staff, the student, and the student’s family to keep the student academically on track would result in academic success, and 94.5% believed it would result in the decreased likelihood of student dropout. Most (91.9%) of school nurses indicated that assisting pregnant and parenting teens with obtaining
contraception would result in a reduction in subsequent pregnancies, but not in academic success (37.9%) or a healthier pregnancy (15.0%). Similarly, most (88.4%) of the nurses stated that regularly assessing contraceptive compliance of parenting teens would result in the reduction of subsequent pregnancies. Finally, the majority (87.9%) of responding nurses indicated that teaching positive parenting practices to pregnant and parenting teenagers would result in the proper growth and development of the student’s child.

4.8 Outcome Values Regarding Support of Pregnant and Parenting Students

Nurses were asked to indicate how important it is to them, as a school nurse, to assist pregnant and parenting teenagers with obtaining certain outcomes. Almost all (98.9%) of the nurses indicated that it was important or very important to assist pregnant and parenting teenagers to succeed academically. The majority of nurses stated that it was very important to them to assist parenting students to reduce subsequent pregnancies (80.6%) and ensure a healthy pregnancy (86.1%). The majority (87.9%) of nurses stated that it was very important to them to decrease the likelihood of pregnant and parenting students dropping out of school, and 75.7% of nurses stated it was very important to them to ensure the proper growth and development of the student’s child.
Table 4.4: School Nurses’ Outcome Expectations Regarding Support of Pregnant and Parenting Students. n= number reporting yes (%)

<table>
<thead>
<tr>
<th>Do you believe that the activities below will lead to the corresponding outcomes to the right?</th>
<th>Academic success</th>
<th>Decreased likelihood of student dropout</th>
<th>Healthier pregnancy</th>
<th>Reduction in subsequent pregnancies</th>
<th>Proper growth &amp; development of the student’s child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referring to community resources</td>
<td>210 (60.7%)</td>
<td>255 (73.7%)</td>
<td>337 (97.4%)</td>
<td>256 (74.0%)</td>
<td>314 (90.8%)</td>
</tr>
<tr>
<td>Facilitating accommodations</td>
<td>289 (83.5%)</td>
<td>323 (93.4%)</td>
<td>279 (80.6%)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Facilitating collaboration</td>
<td>289 (93.1%)</td>
<td>323 (94.5%)</td>
<td>N/A</td>
<td>141 (40.8%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Assisting in obtaining contraception</td>
<td>131 (37.9%)</td>
<td>202 (58.4%)</td>
<td>52 (15.0%)</td>
<td>318 (91.9%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Regularly assessing contraceptive compliance</td>
<td>102 (29.5%)</td>
<td>160 (46.2%)</td>
<td>47 (13.6%)</td>
<td>306 (88.4%)</td>
<td>N/A</td>
</tr>
<tr>
<td>Teaching positive parenting practices</td>
<td>138 (39.9%)</td>
<td>177 (51.2%)</td>
<td>171 (49.4%)</td>
<td>131 (37.9%)</td>
<td>304 (87.9%)</td>
</tr>
</tbody>
</table>

n = 345

### 4.9 Perceived Attitude of School Staff toward Pregnant and Parenting Students

School nurses were asked to describe their perceptions of the overall attitude of school administration and staff toward pregnant and parenting female students. About one-third (34.4%) of nurses described the overall attitude as “neutral”, while about one-fifth described it as “very positive” (24.0%) or “somewhat positive” (24.3%). While
15.0\% of nurses felt the attitude was “somewhat negative,” only one respondent (0.3\%) felt that overall attitude of school administration and staff was “very negative” toward pregnant and parenting students.

Table 4.5: School Nurses’ Outcome Values Regarding Support of Pregnant and Parenting Students

<table>
<thead>
<tr>
<th>How important is it to you to assist pregnant/parenting students to:</th>
<th>Not at all Important</th>
<th>Not very important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Succeed academically</td>
<td>3 (0.9%)</td>
<td>1 (0.3%)</td>
<td>49 (14.2%)</td>
<td>293 (84.7%)</td>
</tr>
<tr>
<td>Reduce subsequent pregnancy</td>
<td>1 (0.3%)</td>
<td>2 (0.6%)</td>
<td>61 (17.6%)</td>
<td>279 (80.6%)</td>
</tr>
<tr>
<td>Ensure proper growth &amp; development of the student’s child</td>
<td>1 (0.3%)</td>
<td>8 (2.3%)</td>
<td>72 (20.8%)</td>
<td>262 (75.7%)</td>
</tr>
<tr>
<td>Ensure a healthy pregnancy</td>
<td>1 (0.3%)</td>
<td>0 (0%)</td>
<td>47 (13.6%)</td>
<td>298 (86.1%)</td>
</tr>
<tr>
<td>Decreased their likelihood of dropping out of school</td>
<td>2 (0.6%)</td>
<td>1 (0.3%)</td>
<td>38 (11.0%)</td>
<td>304 (87.9%)</td>
</tr>
</tbody>
</table>

n=346

4.10 Perceived Barriers to Facilitating Accommodations

Respondents were asked to identify potential barriers they perceived related to facilitating the issuance of accommodations to ensure the safety of pregnant students in their school (Table 4.6). Almost half (47.4\%) of nurses indicated that there were no barriers to them facilitating accommodations for pregnant students. Almost one-third
(32.4%) of nurses stated that lack of time was a barrier. Slightly over one-fifth (22.0%) of nurses indicated that accommodations must be prescribed by a primary care provider or that they had problems communicating with a primary care provider (21.4%). Nurses had the option to write-in any additional barriers or comments, and the following themes were found: nurses are not always informed of student pregnancies (n=6); lack of nursing staff or only serving at high school part-time (n=3); lack of family support of students (n=3).

Table 4.6: Barriers to Facilitating Accommodations to Ensure Safety of Pregnant Students

<table>
<thead>
<tr>
<th>Barriers to facilitating accommodations to ensure safety of pregnant student in school setting</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no barriers to facilitating accommodations</td>
<td>164 (47.4)</td>
</tr>
<tr>
<td>Lack of time</td>
<td>112 (32.4)</td>
</tr>
<tr>
<td>Accommodations must be prescribed by primary care provider (PCP)</td>
<td>76 (22.0)</td>
</tr>
<tr>
<td>Problems communicating with PCP</td>
<td>74 (21.4)</td>
</tr>
<tr>
<td>Have not been approached by pregnant students regarding safety concerns</td>
<td>68 (19.7)</td>
</tr>
<tr>
<td>Lack of cooperation from school employees/administrators</td>
<td>38 (11.0)</td>
</tr>
<tr>
<td>Prohibited by school policy</td>
<td>19 (5.5)</td>
</tr>
<tr>
<td>Do not want other students to see special treatment of pregnant students</td>
<td>16 (4.6)</td>
</tr>
<tr>
<td>Unsure about what accommodations should be made</td>
<td>8 (2.3)</td>
</tr>
<tr>
<td>Do not believe accommodations should be made</td>
<td>1 (0.2)</td>
</tr>
</tbody>
</table>

n=346
4.11 Perceived Barriers to Facilitating Collaborations

School nurses were asked to identify barriers that they perceived related to facilitating collaboration between the student, her family, and school staff to keep students academically on track (Table 4.7). About one-quarter (26.9%) of nurses indicated that there were no barriers to facilitating a collaboration. While 132 nurses (38.2%) indicated that lack of cooperation of student’s families was a barrier, slightly less than one-third (32.3%) of nurses stated that lack of cooperation of the students was a barrier. Lack of time was again indicated as a barrier by 30.1% of the nurses. Almost one-quarter (24.3%) of nurses indicated that pregnant students have not approached them about academic concerns. Nurses had the option to write in any additional barriers or comments, and the following were frequently listed: pregnant students are referred to guidance counselor for academic concerns (n=9); language or cultural barriers (n=3); student absenteeism (n=3).

4.12 Perceived Barriers to Assisting Pregnant and Parenting Students in Obtaining Contraception

School nurses were queried on barriers that they perceived that prevented them from assisting pregnant and parenting students with obtaining contraception (Table 4.8). About one-quarter (25.4%) of the respondents indicated that there were no barriers to assisting their parenting students in obtaining contraception. Twenty-five percent (25.1%) of the responding nurses stated that school policy prohibits the discussing of contraception. Almost one-quarter of the nurses stated that lack of time (23.7%) and the
fact that contraception was discussed in health classes (24.6%) were barriers that they faced. Having received training on the topic of pregnant and parenting teenagers had a statistically significant effect on the number of perceived barriers to assisting pregnant and parenting students with obtaining contraception ($t = -2.596$, df = 344, $p < 0.01$).

Table 4.7: Barriers to Facilitating Collaboration to Keep Pregnant Students Academically on Track

<table>
<thead>
<tr>
<th>Barriers to facilitating collaboration</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no barriers to facilitating collaboration</td>
<td>93 (26.9)</td>
</tr>
<tr>
<td>Lack of cooperation of the students’ families</td>
<td>132 (38.2)</td>
</tr>
<tr>
<td>Lack of cooperation of the pregnant students</td>
<td>113 (32.7)</td>
</tr>
<tr>
<td>Lack of time to facilitate the collaboration</td>
<td>104 (30.1)</td>
</tr>
<tr>
<td>Difficulty in scheduling meetings with pregnant students’ families because of work schedules</td>
<td>90 (26.0)</td>
</tr>
<tr>
<td>Pregnant students have not approached me about academics</td>
<td>84 (24.3)</td>
</tr>
<tr>
<td>Lack of cooperation of school employees/administrators</td>
<td>32 (9.2)</td>
</tr>
<tr>
<td>Not within the scope of a school nurse’s responsibilities</td>
<td>24 (6.9)</td>
</tr>
<tr>
<td>I am unsure about how this collaboration should occur</td>
<td>14 (4.0)</td>
</tr>
<tr>
<td>I believe that it is the student’s or her family’s responsibility to initiate this collaboration</td>
<td>13 (3.8)</td>
</tr>
</tbody>
</table>

Nurses who reported receiving education on the topic of pregnant and parenting teenagers had significantly fewer perceived barriers ($\overline{x} = 1.15$, sd = .80) to assisting in obtaining
contraception than those who had not received training ($\bar{x} = 1.38$, sd = .87). Nurses were asked to write-in any additional barriers or comments. Barriers that were frequently listed included: lack of community resources for contraception (n=12); parental permission issues (n=6); students faced transportation issues to obtain contraception at outside agencies (n=6); cost prohibited distribution (n=4); students did not follow through on referrals to outside agencies (n=2).

Table 4.8: Perceived Barriers to Assisting Pregnant and Parenting Students in Obtaining Contraception

<table>
<thead>
<tr>
<th>Barriers to assisting in obtaining contraception</th>
<th>*n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no barriers to facilitating collaboration</td>
<td>88 (25.4)</td>
</tr>
<tr>
<td>School policy prohibits discussing contraception</td>
<td>87 (25.1)</td>
</tr>
<tr>
<td>Contraception is discussed in health class</td>
<td>85 (24.6)</td>
</tr>
<tr>
<td>Lack of time</td>
<td>82 (23.7)</td>
</tr>
<tr>
<td>Contraception discussions should only occur when students ask for information</td>
<td>34 (9.8)</td>
</tr>
<tr>
<td>Parenting students should talk to their health care provider about contraception</td>
<td>33 (9.5)</td>
</tr>
<tr>
<td>Lack of personal expertise on contraceptive options for teenagers</td>
<td>10 (2.9)</td>
</tr>
<tr>
<td>Personal religious/spiritual beliefs prohibit contraception</td>
<td>7 (2.9)</td>
</tr>
<tr>
<td>Teen mothers in my school do not want to use contraception</td>
<td>6 (1.7)</td>
</tr>
</tbody>
</table>

n=346
4.13 Testing the Research Questions and Hypotheses

The research questions and hypotheses as stated in Chapter 1 are answered in this section as they relate to final data analyses.

**Research Question 1:**

*Do school nurses report engaging in activities to support pregnant and parenting female students over the past two years?*

**Hypothesis 1.1:** The majority of school nurses do not assist the majority of their pregnant and parenting female students with connecting them to community resources.

Descriptive statistics indicated that 40.0% of school nurses reported connecting all (100%) of their pregnant and parenting students with community resources, while 15.2% reported connecting most (50-99%) students. Since the majority (55.2%) of nurses reported that they connect all or the majority of their pregnant and parenting students with community resources, the null hypothesis was rejected.

**Hypothesis 1.2:** The majority of school nurses do not assist the majority of their pregnant and parenting female students with facilitating accommodations to help ensure their safety and well-being in the school setting.

Descriptive statistics indicated that 43.4% of the respondents reported facilitating accommodations for all of their pregnant students, while 17.5% of nurses facilitated accommodations for most (50-99%) of their students. Since all or the majority (60.9%) of school nurses reported facilitating accommodations to help ensure the safety and well-being of the majority of their pregnant students, the null hypothesis was rejected.
Hypothesis 1.3: The majority of school nurses do not assist the majority of their pregnant and parenting female students with facilitating collaboration with the students, their families, and school personnel to help keep students academically on track.

Descriptive statistics indicated that 33.3% of responding nurses reported facilitating collaboration with all of their pregnant and parenting students, while 16.1% assisted most (50-99%) of their students. Since all or the majority (49.4%) of nurses did not report facilitating a collaboration with the majority of their pregnant and parenting students, the null hypothesis was accepted.

Hypothesis 1.4: The majority of school nurses do not assist the majority of their pregnant and parenting female students with obtaining contraceptives.

Descriptive statistics indicated that 9.7% of nurses reported assisting all of their pregnant and parenting students in obtaining contraception, while 9.0% reported assisting most (50-99%) of their students. Since the majority of the nurses reported not assisting the majority of their pregnant and parenting students with obtaining contraception, the null hypothesis was accepted.

Hypothesis 1.5: The majority of school nurses do not assist the majority of their pregnant and parenting female students with a regular assessment of contraceptive compliance.

Descriptive statistics indicated 4.8% of school nurses assisted all of their pregnant and parenting students with regularly assessing contraceptive compliance, while 5.1% assist most of their pregnant and parenting students. Since the majority of school nurses did not assist their pregnant and parenting students in regularly assessing contraceptive compliance, the null hypotheses was accepted.
Hypothesis 1.6: The majority of school nurses do not assist the majority of their pregnant and parenting female students with learning positive parenting practices.

Descriptive statistics indicated that 14.0% of respondents reported teaching positive parenting practices to all of their parenting female students, while 11.7% of nurses taught most (50-99%) of their parenting female students. Since the majority of school nurses did not report teaching positive parenting practices to the majority of their parenting female students, the null hypothesis was accepted.

Research Question 2:

Do school nurses have high efficacy expectations in their ability to support pregnant and parenting female students?

Hypothesis 2.1: There is no statistically significant difference in efficacy expectations of school nurses by education level.

An ANOVA was calculated for this hypothesis (F = 3.752, df = 4, p = .005), and the hypothesis was rejected. A Bonferroni post hoc t-test indicated where there was a statistically significant difference in efficacy expectations of school nurses by education level. The difference was between diploma level of education and the bachelor’s, master’s, and doctoral degree levels of education. The descriptive statistics indicated that nurses with a diploma had significantly lower efficacy expectations than (\( \bar{x} = 16.11, \text{ sd} = 4.1 \)), nurses with an associate’s degree (\( \bar{x} = 18.81, \text{ sd} = 3.4 \)), nurses with a bachelor’s degree (\( \bar{x} = 18.77, \text{ sd} = 3.55 \)), nurses with a master’s degree (\( \bar{x} = 19.10, \text{ sd} = 3.20 \)), and nurses with a doctoral degree (\( \bar{x} = 20.50, \text{ sd} = 3.38 \)).
Hypothesis 2.2: There is no statistically significant difference in efficacy expectations of school nurses by school setting.

An ANOVA was calculated for this hypothesis (F = .658, df = 3, p = .58). No statistically significant difference was found in efficacy expectations of school nurses by school setting. The null hypothesis was accepted.

Hypothesis 2.3: There is no statistically significant difference in efficacy expectations of school nurses by school type.

An ANOVA was calculated (F = .196, df = 4, p = .94) and no statistically significant difference was found in efficacy expectations of school nurses by school type. The null hypothesis was accepted.

Hypothesis 2.4: There is no statistically significant relationship between efficacy expectations of school nurses and the number of pregnant or parenting female students within the school.

The null hypothesis was rejected. A Pearson product moment correlation coefficient was calculated (r = .115, p < 0.05) and a significant correlation was found between efficacy expectations and number of pregnant or parenting female students within the school.

Hypothesis 2.5: There is no statistically significant difference in efficacy expectations of school nurses by whether they have received training on pregnant and parenting students.

This hypothesis was rejected. An independent samples t-test was calculated and a statistically significant difference was found (t = 5.95, df = 344, p < 0.001) for whether school nurses had received training on the topic of pregnant and parenting students and their efficacy expectations. Nurses who reported receiving
training had significantly higher mean efficacy expectations ($\bar{x} = 19.75$, sd = 3.0),
than did nurses who have not received training on pregnant and parenting
teenagers ($\bar{x} = 17.60$, sd = 3.8).

**Hypothesis 2.6:** There is no statistically significant relationship between the efficacy
expectations of school nurses and the nurse-to-student ratio.

A Pearson product moment correlation was calculated ($r = .045$, p = .41) for this
hypothesis. No significant relationship was found between the efficacy
expectations of school nurses and the nurse-to-student ratio. The null hypothesis
was accepted.

**Hypothesis 2.7:** There is no statistically significant relationship between efficacy
expectations of school nurses and the number of perceived barriers to facilitating
accommodations to help ensure the safety and well-being of pregnant students in the
school setting.

A Pearson product moment correlation was calculated ($r = -.034$, p = .52) and no
statistically significant relationship was found between the efficacy expectations
of the school nurses and the number of perceived barriers to facilitating
accommodations to help ensure the safety and well-being of pregnant students in
the school setting. The null hypothesis was accepted.

**Hypothesis 2.8:** There is no statistically significant relationship between efficacy
expectations of school nurses and the number of perceived barriers to facilitating
collaboration with pregnant students, their families, and school personnel to keep the
students academically on track.
A Pearson product moment correlation was calculated ($r = .005, p = .93$) for this hypothesis. There was no correlation between the efficacy expectations of the school nurses and the number of perceived barriers to facilitating collaboration with pregnant students, their families, and school personnel to keep the students academically on track. The null hypothesis was accepted.

**Hypothesis 2.9:** There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to assisting pregnant and parenting students in obtaining contraceptives.

The null hypothesis was rejected. A Pearson product moment correlation was calculated ($r = -.22, p < 0.001$) and a statistically significant inverse correlation was found between efficacy expectations and the number of perceived barriers to assisting pregnant and parenting students with obtaining contraception. In other words, as efficacy expectations increased, the number of perceived barriers decreased.

**Research Question 3:**

Do school nurses believe that engaging in activities to support pregnant and parenting students will produce positive outcomes, including academic success, healthier pregnancy, reduction in subsequent pregnancies, proper growth and development of the student’s child, and decreased likelihood of school dropout?

**Hypothesis 3.1:** There is no statistically significant difference in outcome expectations of school nurses by education level.
This hypothesis was rejected. An ANOVA was calculated (F = 2.92, df = 4, p < 0.05) and a statistically significant difference was found in outcome expectations of school nurses by education level. Post-hoc Bonferroni t-tests showed that nurses who had a diploma degree ($\bar{x} = 12.26, sd = 5.2$) had significantly lower outcome expectations than did nurses with a master’s degree ($\bar{x} = 15.85, sd = 5.2$). No other significant differences were found among education levels.

**Hypothesis 3.2:** There is no statistically significant difference in outcome expectations of school nurses by school setting.

An ANOVA was calculated (F = .935, df = 3, p = .42) and no statistically significant difference was found in outcome expectations of school nurses by school setting. The null hypothesis was accepted.

**Hypothesis 3.3:** There is no statistically significant difference in outcome expectations of school nurses by school type.

An ANOVA (F = 2.17, df = 4, p = .07) found that no statistically significant difference existed in outcome expectations of school nurses by school type. This hypothesis was accepted.

**Hypothesis 3.4:** There is no statistically significant relationship between outcome expectations of school nurses and the number of pregnant or parenting female students within the school.

A Pearson product moment correlation was calculated (r = .038, p = .49) and no significant correlation existed between the outcome expectations of school nurses and the number of pregnant or parenting female students within the school. The null hypothesis was accepted.
Hypothesis 3.5: There is no statistically significant difference in outcome expectations of school nurses by whether they have received training on pregnant and parenting students.

This null hypothesis was rejected. An independent samples t-test was calculated (t = 3.83, df = 344, p < 0.001). Outcome expectations of school nurses were significantly different by whether school nurses had received training on the topic of pregnant and parenting students. Nurses who reported receiving training had significantly greater outcome expectations (\( \bar{x} = 6.19, s_d = 4.9 \)) than did nurses who had not received training on pregnant and parenting teenagers (\( \bar{x} = 14.18, s_d = 4.79 \)).

Hypothesis 3.6: There is no statistically significant relationship between the outcome expectations of school nurses and the nurse-to-student ratio.

A Pearson product moment correlation was calculated (r = .069, p = .21) and no statistically significant relationship was found between outcome expectations of school nurses and the nurse-to-student ratio. The null hypothesis was accepted.

Hypothesis 3.7: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting.

A Pearson product moment correlation was calculated (r = .044, p = .42). There was no statistically significant correlation between outcome expectations of school nurses and the number of perceived barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting. The null hypothesis was accepted.
Hypothesis 3.8: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to facilitating collaboration with pregnant students, their families, and school personnel to keep students academically on track.

A Pearson product moment correlation was calculated ($r = .064$, $p = .23$) and no significant correlation was found between outcome expectations of school nurses and the number of perceived barriers to facilitating a collaboration with pregnant students, their families, and school personnel to keep students academically on track. This hypothesis was accepted.

Hypothesis 3.9: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to assisting pregnant and parenting students in obtaining contraceptives.

A Pearson product moment correlation found that a statistically significant correlation existed between outcome expectations of school nurses and the number of perceived barriers to assisting teen moms in obtaining contraceptives ($r = -.107$, $p < .05$). In other words, as nurses’ outcome expectations increased their level of perceived barriers to assisting students decreased. Therefore, this hypothesis was rejected.

Research Question 4:
Do school nurses perceive barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting?
Hypothesis 4.1: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by education level of school nurses.

An ANOVA was calculated for this hypothesis. There was no statistically significant difference ($F = .212, df = 4, p = .93$) in the number of perceived barriers to facilitating accommodations to ensure the safety of pregnant students by the education level of school nurses. The null hypothesis was accepted.

Hypothesis 4.2: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by school setting.

An ANOVA was calculated ($F = .416, df = 3, p = .74$) and there was no statistically significant difference in the number of perceived barriers to facilitating accommodations by the school setting of the nurses. The null hypothesis was accepted.

Hypothesis 4.3: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by school type.

An ANOVA found that there were no statistically significant difference in the number of perceived barriers of nurses to facilitating accommodations by the type of school in which they practiced ($F = .306, df = 4, p = .87$). This hypothesis was accepted.

Hypothesis 4.4: The number of pregnant and parenting students in the school is not significantly predictive of the number of perceived barriers to facilitating accommodations.

A linear regression was calculated ($R^2 = -.002$) and the number of pregnant and parenting students in the school was not a significant predictor of the number of
perceived barriers to facilitating accommodations \[F(2, 342) = .168, p = .68\].

Therefore, this null hypothesis was accepted.

**Hypothesis 4.5:** There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by whether school nurses have received training on pregnant and parenting students.

An independent samples t-test was calculated \(t = -1.298, \text{df} = 344, p = .20\) and there was no statistically significant difference in the number of perceived barriers to facilitating accommodations by whether school nurses have received training on pregnant and parenting students. The null hypothesis was accepted.

**Hypothesis 4.6:** The nurse-to-student ratio is not significantly predictive of the number of perceived barriers to facilitating accommodations.

A linear regression was calculated \(R^2 = .005\) and the nurse-to-student ratio of the school was not significantly predictive of the number of perceived barriers of the nurses to facilitating accommodations \[F(1, 341) = 2.81, p = .10\]. The null hypothesis was accepted.

**Hypothesis 4.7:** The number of days per week worked in a high school is not significantly predictive of the number of perceived barriers to facilitating accommodations.

This hypothesis was rejected. A linear regression was calculated \(R^2 = .033\) and the number of days per week worked in a high school was a significant predictor of the number of perceived barriers of school nurses to facilitating accommodations \[F(1, 336) = 12.54, p < .001\]. In other words, as the number of days per week worked in a high school decreased, the number of barriers increased.
Hypothesis 4.8: The total number of schools served is not significantly predictive of the number of perceived barriers to facilitating accommodations.

This hypothesis was rejected. A linear regression was calculated ($R^2 = .009$) and the total number of schools served was predictive of the number of perceived barriers of the school nurses to facilitating accommodations [$F(1, 341) = 4.26$, $p < .05$]. In other words, as the number of schools served increased, there were significantly more perceived barriers.

Hypothesis 4.9: There is no statistically significant relationship between the number of years worked as a school nurse and the number of perceived barriers to facilitating accommodations.

A Pearson product moment correlation was calculated and no statistically significant relationship was found between the number of years worked as a school nurse and the number of perceived barriers to facilitating accommodations ($r = -.019$, $p = .73$). This hypothesis was accepted.

Research Question 5:

Do school nurses perceive barriers to facilitating collaboration with the pregnant student, her family, and school personnel to keep the student academically on track?

Hypothesis 5.1: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by education level of school nurses.

An ANOVA was calculated ($F = 1.387$, $df = 4$, $p = .24$) and no statistically significant difference was found in the number of perceived barriers to facilitating collaboration by education level of nurses. The null hypothesis was accepted.
**Hypothesis 5.2:** There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by school setting.

An ANOVA was calculated \((F = 1.26, df = 3, p = .29)\) for this hypothesis. No statistically significant difference was found in the number of perceived barriers to facilitating collaboration by school setting of the nurses. This hypothesis was accepted.

**Hypothesis 5.3:** There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by school type.

An ANOVA found that there was no statistically significant difference \((F = 1.036, df = 4, p = .39)\) in the number of perceived barriers to facilitating collaboration by school type. The null hypothesis was accepted.

**Hypothesis 5.4:** The number of pregnant or parenting students within a school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

This hypothesis was rejected. A linear regression was calculated \((R^2 = .010)\) and the number of pregnant or parenting students within the school was predictive of the number of perceived barriers of the nurses to facilitating collaboration \([F(1, 342) = 4.34, p < .05]\).

**Hypothesis 5.5:** There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by whether school nurses have received training on pregnant and parenting students.

An independent samples t-test was calculated and no statistically significant difference was found in the number of perceived barriers to facilitating
collaboration by whether school nurses have received training on pregnant and parenting teenagers ($t = .648, df = 344, p = .52$). This hypothesis was accepted.

**Hypothesis 5.6:** The nurse-to-student ratio of a school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

A linear regression was calculated ($R^2 = .006$) and the nurse-to-student ratio was not significantly predictive of the number of perceived barriers to facilitating collaboration [$F(1, 341) = 2.97, p = .09$]. The null hypothesis was accepted.

**Hypothesis 5.7:** The number of days per week worked in a high school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

This hypothesis was rejected. A linear regression ($R^2 = .025$) found that the number of days per week worked in a high school was a significant predictor of the number of perceived barriers to facilitating collaboration [$F(1, 336) = 9.71, p < .005$]. In other words, as the number of days per week worked in a high school increased, the number of perceived barriers to facilitating a collaboration decreased.

**Hypothesis 5.8:** The total number of schools served is not significantly predictive of the number of perceived barriers to facilitating collaboration.

A linear regression was calculated ($R^2 = .001$) and the total number of schools served was not significantly predictive of the number of perceived barriers to facilitating collaboration [$F(1, 341) = 1.35, p = .25$]. The null hypothesis was accepted.
Hypothesis 5.9: There is no statistically significant relationship between the number of years worked as a school nurse and the number of perceived barriers to facilitating collaboration.

A Pearson product moment correlation was calculated (r = .087, p = .12) and the total number of years worked as a school nurse was not significantly correlated with the number of perceived barriers to facilitating collaboration. This hypothesis was accepted.

Research Question 6:

Do school nurses perceive barriers to assisting teenage mothers in obtaining contraception?

Hypothesis 6.1: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by education level of school nurses.

An ANOVA was calculated (F = .46, df = 4, p = .77) and there was no statistically significant difference in the number of perceived barriers to assisting pregnant or parenting students in obtaining contraceptives by the education level of school nurses. This null hypothesis was accepted.

Hypothesis 6.2: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school setting.

An ANOVA found that there was no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school setting of the nurses (F = .811, df = 3, p = .49). This null hypothesis was accepted.
Hypothesis 6.3: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school type.

An ANOVA was calculated (F = .314, df = 4, p = .87) and there was no statistically significant difference in the number of perceived barriers to assisting in obtaining contraception by school type of the nurses. This hypothesis was accepted.

Hypothesis 6.4: The number of pregnant or parenting students within a school is not significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

A linear regression was calculated ($R^2 = -.002$) and the number of pregnant or parenting students within a school was not significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives [F(1, 342) = .179, p = .67]. This null hypothesis was accepted.

Hypothesis 6.5: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by whether school nurses have received training on pregnant and parenting students.

This null hypothesis was rejected. An independent samples t-test was calculated (t = -2.596, df = 344, p < .01) and there was a significant difference in the number of perceived barriers to assisting in obtaining contraceptives by whether school nurses had received training on pregnant and parenting teenagers. Nurses who reported receiving training on the topic of pregnant and parenting teenagers perceived significantly lower barriers ($\bar{x}$=1.15, sd = .795) compared to nurses who had not received training ($\bar{x}$=1.38, sd = .865).
Hypothesis 6.6: The nurse-to-student ratio of a school is not significantly predictive of the number of perceived barriers to assisting with obtaining contraceptives.

A linear regression was calculated ($R^2 = .003$) and the nurse-to-student ratio of a school was not a statistically significant predictor of the number of perceived barriers to assisting with obtaining contraceptives [$F(1, 341) = .003$, $p = .96$]. The null hypothesis was accepted.

Hypothesis 6.7: The number of days per week worked in a high school is not significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

This hypothesis was rejected. A linear regression was calculated ($R^2 = .013$) and the number of days per week worked in a high school was significantly predictive of the number of perceived barriers to assisting pregnant or parenting students with obtaining contraceptives [$F(1, 336) = 5.315$, $p < .05$]. Those who worked more days per week in a high school reported fewer barriers to assisting with obtaining contraceptives.

Hypothesis 6.8: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraception by the age of a school nurse.

An ANOVA was calculated ($F = 1.39$, $df = 4$, $p = .24$) and there was no statistically significant difference in the number of perceived barriers to assisting in obtaining contraception by the age of the school nurse. This hypothesis was accepted.

Hypothesis 6.9: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by the institution which employs the school nurse.
An ANOVA was calculated ($F = .194, df = 3, p = .90$) and there was no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by the institution which employs the school nurse. This null hypothesis was accepted.

### 4.14 Summary

A total of 431 surveys were returned out of 770 eligible surveys for a response rate of 55.9%. Respondents worked primarily in public schools in a suburban or rural setting, and were employed by the school district. Most of the nurses were certified, either by the state or nationally. The majority of respondents had either a bachelor’s or master’s degree. Over half of respondents had received training on the topic of pregnant and parenting teenagers. The majority of respondents were between 50 and 59 years old, and about half reported working as a school nurse between 11 and 20 years. Almost two-thirds of the nurses worked at a high school 5 days per week, and half of the responding nurses reported a nurse-to-student ratio of one nurse to 1000 or less students. The majority of nurses reported assisting the majority of their pregnant or parenting students with referrals to community resources, facilitating accommodations to ensure the safety of students, and facilitating collaboration to keep the students academically on track. Most nurses reported that they did not assist pregnant or parenting students with obtaining or regularly assessing use of contraceptives, or teaching positive parenting practices. Nurses had high efficacy expectations in their ability to refer pregnant or parenting students to community resources, facilitating accommodations and collaborations, and teach parenting practices. However, low efficacy expectations were
reported regarding assisting with obtaining contraceptives and regularly assessing use of contraceptives. The majority of nurses had high outcome values regarding the importance of assisting pregnant or parenting students with various outcomes. Regarding barriers to supporting pregnant and parenting students, lack of time was a commonly-reported barrier. School nurses reported that lack of cooperation from students’ families was a barrier to facilitating a collaboration to keep a pregnant student academically on track. School policy prohibiting the discussion of contraception was a common barrier to assisting pregnant and parenting students with obtaining contraceptives. Nurses who reported receiving training on pregnant and parenting teenagers had significantly higher efficacy expectations and outcome values, and reported fewer barriers to assisting pregnant and parenting students with obtaining contraceptives, than nurses who had not received training. Linear regression revealed that the number of days per week worked in a high school was predictive of number of perceived barriers to facilitating accommodations, facilitating collaboration, and obtaining pregnant and parenting students with obtaining contraceptives. Nurses who worked less days per week in a high school reported significantly more barriers. The total number of schools served was predictive of the number of barriers to facilitating accommodations, and the total number of pregnant and parenting students within a school was predictive of the number of barriers to facilitating collaboration. Nurses who served more schools and nurses who reported a high number of pregnant and parenting students reported more barriers.
Chapter 5

CONCLUSIONS

This chapter contains the following sections: Summary of the Study, Accepted Hypotheses, Rejected Hypotheses, Discussion, Implications, Recommendations for the Health Profession, Recommendations for Future Research, and Conclusion.

5.1 Summary of the Study

Although teenage childbearing in the United States has decreased 44% in the last two decades (Hamilton & Ventura, 2012), it is still a significant public health problem costing over $10.9 billion per year (National Campaign to Prevent Teen and Unplanned Pregnancy, 2011). Approximately 750,000 teenagers, ages 15-19, become pregnant each year (Guttmacher Institute, 2006), which resulted in over 367,000 live births to teenage girls in 2010 (Hamilton & Ventura, 2012). Teenage childbearing varies by race and ethnicity, with minorities having higher teenage pregnancy and birth rates (Hamilton & Ventura, 2012). Research indicates that teenage mothers are more likely to drop out of high school (Ahn, 1994; Perper, Peterson, & Manlove, 2010; Leadbeater, 1996; Hofferth, Reed, & Mott, 2001), have lower lifetime wages (Klepinger, Lundberg, & Plotnik, 1998), and rely on governmental assistance (National Women’s Law Center, 2007; Kaye & Chadwick, 2006). Children born to teenage mothers are more likely to be born
prematurely (Chen, Wen, Fleming, Demissie, Rhoads, & Walker, 2007; Delpisheh, Attia, Drammond, & Brabin, 2005; DuPlessis, Bell, & Richards, 1997; Gilbert, Jandial, Field, Bigelow, & Danielsen, 2004; Smith & Pell, 2001), have a low birthweight (Chen, et al., 2007; Buschman, Foster, & Vickers, 1999; DuPlessis, et al., 1997; Gilbert, et al., 2004) and lower Apgar score at birth (Delpisheh, et al., 2005; Chen, et al., 2007; Cowden & Funkhouser, 2001; Gilbert, et al., 2004). These problems are often compounded by a subsequent pregnancy, which occurs in about 40% of teenage mothers within two years of having their first child (Raneri, 2006; Crittendon, Boris, Rice, Taylor, & Olds, 2009; Gillmore, Lewis, Lohr, Spencer, & White, 1997). Teenage mothers who receive support are less likely to be affected by these negative consequences (Weinman, Solomon, & Glass, 1999; Warrick, Christianson, Walruff, & Cook, 1993; Williams & Sadler, 2001; Barnet, Arroyo, Devoe, & Duggan, 2004; Setzer & Smith, 1992; Berg, Taylor, Edwards, & Hakanson, 1979; Kalil, 2002; Sadler, Swartz, Ryan-Krause, Seitz, Meadows-Oliver, Grey, & Clemmens, 2007). Teenage mothers who maintain a school connection are less likely to drop out of school and more likely to delay a second pregnancy (Sadler, et al., 2007; Stephens, Wolf, & Batten, 1999). School nurses are in a position within the school to provide support, since they often provide care to students during early pregnancy. The National Association of School Nurses (2004) suggests that school nurses support their pregnant and parenting students several ways, including: teaching positive parenting practices and supporting responsible parenthood; providing research-based information and referrals to community resources; providing care and guidance during pregnancy; collaborating with the student, her family, and school staff to ensure continuing academic success; recommending modifications for the safety of pregnant students in the school
setting. No published research exists on the support that high school nurses provide to their pregnant and parenting students. The purpose of the study was to answer the following questions:

1. Do school nurses report engaging in activities to support pregnant and parenting female students over the past two years?
2. Do school nurses have high efficacy expectations in their ability to support pregnant and parenting female students?
3. Do school nurses believe that engaging in activities to support pregnant and parenting students will produce positive outcomes, including academic success, healthier pregnancy, reduction in subsequent pregnancies, proper growth and development of the student’s child, and decreased likelihood of school dropout?
4. Do school nurses perceive barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting?
5. Do school nurses perceive barriers to facilitating collaboration with the pregnant student, her family, and school personnel to keep the student academically on track?
6. Do school nurses perceive barriers to assisting teenage mothers in obtaining contraception?

A 22-item questionnaire was created to assess high school nurses’ current practices, efficacy expectations, outcome expectations, outcome values, and perceived barriers concerning their support of their pregnant and parenting female students. The survey was sent to a random, nationwide sample of 800 high school nurses who were members of the National Association of School Nurses. There were 431 completed,
eligible questionnaires returned for a response rate of 55.9%. School nurses were asked to report their current practices regarding their support of pregnant and parenting female students, their perceived efficacy expectations regarding supportive activities, and perceived outcome values. The response format for these questions was a Likert-type scale. Nurses were also asked to report their perceived efficacy expectations of supportive activities on a 24-point matrix. Other questions identified the school nurses’ perceived barriers to supportive activities. Finally, the survey contained questions about the nurses’ background and demographic characteristics.

Regarding current practices supporting pregnant and parenting female students, the majority of school nurses reported that they assisted the majority of the students with community resource referrals, facilitating safety accommodations, and facilitating academic collaborations, but not with obtaining or assessing use of contraceptives or teaching positive parenting practices (Table 5.1). The school nurses had high efficacy

<table>
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<tr>
<th>NASN</th>
<th>Current Practices</th>
<th>Efficacy Expectations</th>
<th>Perceived barriers</th>
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<td>Referring to community resources</td>
<td>65.2%</td>
<td>77.5%</td>
<td>Not assessed</td>
</tr>
<tr>
<td>Collaborating to ensure continuing academic success</td>
<td>49.4%</td>
<td>71.7%</td>
<td>2</td>
</tr>
<tr>
<td>Recommending safety accommodations</td>
<td>60.9%</td>
<td>78.0%</td>
<td>1.7</td>
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<tr>
<td>Teaching positive parenting practices</td>
<td>25.7%</td>
<td>62.7%</td>
<td>Not assessed</td>
</tr>
</tbody>
</table>
expectations in their ability to refer pregnant or parenting students to community resources, facilitate safety accommodations and academic collaborations, and teach parenting practices. Low efficacy expectations were reported for assisting students with obtaining and regularly assessing use of contraceptives. The majority of nurses had high outcome values regarding the importance of assisting pregnant or parenting students. Lack of time was a commonly-reported barrier to supporting their pregnant and parenting students. Lack of cooperation from students’ families was a barrier to facilitating an academic collaboration. School policies prohibiting the discussion of contraception was a common barrier to assisting with obtaining contraceptives. Whether or not nurses reported receiving training on pregnant and parenting teenagers affected their efficacy expectations, outcome values, outcome expectations, and perceived barriers. Linear regression revealed that the number of days per week worked in a high school and the total number of schools served were predictive of number of perceived barriers to facilitating safety accommodations. Nurses who served more schools reported more barriers, as did nurses who worked fewer days per week in a high school. The total number of pregnant and parenting students and the number of days per week worked in a high school were predictive of number of barriers to facilitating academic collaborations. Nurses who reported more pregnant and parenting students and who worked fewer days per week in a high school reported more barriers. The majority (85%) of respondents worked in suburban (41.5%) or rural (34.1%) schools. More than half of the school nurses had received training on the topic of pregnant and parenting teenagers. Over 65% of the nurses worked in a high school 5 days per week.
5.2 Accepted Hypotheses

The following 36 out of 51 (71\%) null hypotheses were accepted:

**Hypothesis 1.3:** The majority of school nurses do not assist the majority of their pregnant and parenting female students with facilitating collaboration with the students, their families, and school personnel to help keep students academically on track.

**Hypothesis 1.4:** The majority of school nurses do not assist the majority of their pregnant and parenting female students with obtaining contraceptives.

**Hypothesis 1.5:** The majority of school nurses do not assist the majority of their pregnant and parenting female students with a regular assessment of contraceptive compliance.

**Hypothesis 1.6:** The majority of school nurses do not assist the majority of their pregnant and parenting female students with learning positive parenting practices.

**Hypothesis 2.2:** There is no statistically significant difference in efficacy expectations of school nurses by school setting.

**Hypothesis 2.3:** There is no statistically significant difference in efficacy expectations of school nurses by school type.

**Hypothesis 2.6:** There is no statistically significant relationship between the efficacy expectations of school nurses and the nurse-to-student ratio.

**Hypothesis 2.7:** There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting.
Hypothesis 2.8: There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to facilitating collaboration with pregnant students, their families, and school personnel to keep the students academically on track.

Hypothesis 3.2: There is no statistically significant difference in outcome expectations of school nurses by school setting.

Hypothesis 3.3: There is no statistically significant difference in outcome expectations of school nurses by school type.

Hypothesis 3.4: There is no statistically significant relationship between outcome expectations of school nurses and the number of pregnant or parenting female students within the school.

Hypothesis 3.6: There is no statistically significant relationship between the outcome expectations of school nurses and the nurse-to-student ratio.

Hypothesis 3.7: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting.

Hypothesis 3.8: There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to facilitating collaboration with pregnant students, their families, and school personnel to keep students academically on track.

Hypothesis 4.1: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by education level of school nurses.
Hypothesis 4.2: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by school setting.

Hypothesis 4.3: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by school type.

Hypothesis 4.4: The number of pregnant and parenting students in the school is not significantly predictive of the number of perceived barriers to facilitating accommodations.

Hypothesis 4.5: There is no statistically significant difference in the number of perceived barriers to facilitating accommodations by whether school nurses have received training on pregnant and parenting students.

Hypothesis 4.6: The nurse-to-student ratio is not significantly predictive of the number of perceived barriers to facilitating accommodations.

Hypothesis 4.9: There is no statistically significant relationship between the number of years worked as a school nurse and the number of perceived barriers to facilitating accommodations.

Hypothesis 5.1: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by education level of school nurses.

Hypothesis 5.2: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by school setting.

Hypothesis 5.3: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by school type.
Hypothesis 5.5: There is no statistically significant difference in the number of perceived barriers to facilitating collaboration by whether school nurses have received training on pregnant and parenting students.

Hypothesis 5.6: The nurse-to-student ratio of a school is not significantly predictive of the number of perceived barriers to facilitating collaboration.

Hypothesis 5.8: The total number of schools served is not significantly predictive of the number of perceived barriers to facilitating collaboration.

Hypothesis 5.9: There is no statistically significant relationship between the number of years worked as a school nurse and the number of perceived barriers to facilitating collaboration.

Hypothesis 6.1: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by education level of school nurses.

Hypothesis 6.2: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school setting.

Hypothesis 6.3: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by school type.

Hypothesis 6.4: The number of pregnant or parenting students within a school is not significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

Hypothesis 6.6: The nurse-to-student ratio of a school is not significantly predictive of the number of perceived barriers to assisting with obtaining contraceptives.
Hypothesis 6.8: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraception by the age of a school nurse.

Hypothesis 6.9: There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by the institution which employs the school nurse.

5.3 Rejected Hypotheses

The following 15 out of 51 (29%) null hypotheses were rejected:

Hypothesis 1.1: The majority of school nurses do not assist the majority of their pregnant and parenting female students with connecting them to community resources.

Hypothesis 1.2: The majority of school nurses do not assist the majority of their pregnant and parenting female students with facilitating accommodations to help ensure their safety and well-being in the school setting.

Hypothesis 2.1: There is no statistically significant difference in efficacy expectations of school nurses by education level.

Hypothesis 2.4: There is no statistically significant relationship between efficacy expectations of school nurses and the number of pregnant or parenting female students within the school.

Hypothesis 2.5: There is no statistically significant difference in efficacy expectations of school nurses by whether they have received training on pregnant and parenting students.
**Hypothesis 2.9:** There is no statistically significant relationship between efficacy expectations of school nurses and the number of perceived barriers to assisting teen moms in obtaining contraceptives.

**Hypothesis 3.1:** There is no statistically significant difference in outcome expectations of school nurses by education level.

**Hypothesis 3.5:** There is no statistically significant difference in outcome expectations of school nurses by whether they have received training on pregnant and parenting students.

**Hypothesis 3.9:** There is no statistically significant relationship between outcome expectations of school nurses and the number of perceived barriers to assisting teen moms in obtaining contraceptives.

**Hypothesis 4.7:** The number of days per week worked in a high school is significantly predictive of the number of perceived barriers to facilitating accommodations.

**Hypothesis 4.8:** The total number of schools served is significantly predictive of the number of perceived barriers to facilitating accommodations.

**Hypothesis 5.4:** The number of pregnant or parenting students within a school is significantly predictive of the number of perceived barriers to facilitating collaboration.

**Hypothesis 5.7:** The number of days per week worked in a high school is significantly predictive of the number of perceived barriers to facilitating collaboration.

**Hypothesis 6.5:** There is no statistically significant difference in the number of perceived barriers to assisting in obtaining contraceptives by whether school nurses have received training on pregnant and parenting students.
Hypothesis 6.7: The number of days per week worked in a high school is significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

5.4 Discussion

There were several important findings in this study that will contribute to the body of knowledge regarding support of pregnant and parenting teenagers. School nurses were asked about their current practices regarding the support of their pregnant and parenting female students. The National Association of School Nurses (2004) recommends that school nurses support their pregnant and parenting students by providing research-based counseling and information; providing care during pregnancy; supporting positive parenting practices and responsible parenthood; facilitating collaborations to keep pregnant students academically on track; facilitating safety accommodations for pregnant students within the school setting; connecting pregnant and parenting students with community resources. Nurses were queried about these practices, as well as the support they provide in obtaining and assessing contraceptive use. Over 50% of the school nurses reported supporting the majority (50% or greater) of their pregnant and parenting students by providing referrals to community resources (69.4%), facilitating safety accommodations (76.6%), and facilitating academic collaborations (62.1%). Close to half (47.4%) of nurses reported no barriers to facilitating safety accommodations for pregnant students in the school setting. The biggest barriers that were identified were lack of time (32.4%), accommodations must be prescribed by a primary care provider (22.0%), problems communicating with primary care provider
(21.4%), and not being approached by pregnant students with safety concerns (19.7%). The total number of days per week worked in a high school and the total number of schools served were predictive of the number of perceived barriers to facilitating safety accommodations. Over one-quarter (26.9%) of nurses reported no barriers to facilitating academic collaborations. The biggest barriers identified were lack of cooperation from students’ families (38.2%), lack of cooperation from students (32.7%), lack of time (30.1%), and difficulty in scheduling because of students’ families’ work schedules (26.0%). A common barrier that was written in by respondents was that pregnant students were referred to the guidance counselor for academic support. The number of pregnant or parenting students within a school and the number of days per week worked in a high school were significantly predictive of the number of perceived barriers to facilitating academic collaborations. Nurses who worked fewer days in a high school reported more barriers, as did nurses who worked in schools with higher numbers of pregnant and parenting students. Lack of time emerged as a common barrier for both facilitating safety accommodations and academic collaborations. This is not surprising considering that almost half (49.2%) of school nurses reported a nurse-to-student ratio of 1 nurse per 1000 or more students. Although perceived barriers to teaching positive parenting practices were not assessed in this study, it is likely that lack of time would be a commonly-reported barrier. Only 32.3% of nurses reported teaching positive parenting practices to the majority of their pregnant and parenting students. Although it may seem out of the realm of a school nurses’ responsibility, it is within the proposed supportive strategies suggested by NASN (2004).
Regarding contraception, only 23.4% of nurses stated that they assisted the majority of their pregnant and parenting students with obtaining contraception, and 12.5% reported regularly assessing contraceptive use. This is significant because approximately 40% of teenage mothers experience a second birth within 24 months of the first pregnancy (Raneri, 2006; Crittendon, Boris, Rice, Taylor, & Olds, 2009; Gillmore, Lewis, Lohr, Spencer, & White, 1997). Overall, teenagers report receiving most of their contraception information from school, family, and friends (Jones, Biddlecom, Hebert, & Milne, 2011). Since school nurses are often involved in providing care to pregnant students, it provides an opportunity to discuss contraceptive use to prevent subsequent pregnancies. Almost 60% of teenage mothers report resuming sexual activity within three months of the birth of their child, so it is important that these discussions take place prenatally so teenagers have time to assess what contraceptive option is best for them (Kelly, Sheeder, & Stevens-Simon, 2005). Regarding barriers to assisting with and assessing contraceptive use, 25.4% of nurses reported no barriers. The most common barrier was that school policy prohibits the discussion of contraceptives (25.1%). Several nurses wrote in comments that the discussion of contraception is prohibited by school policy, but they talk to their pregnant students about it anyway. Other nurses indicated that they do not agree with the school policy prohibiting the discussion of contraception. Since postpartum teenagers may have unique contraceptive needs (for example, if they are breastfeeding), school nurses should ideally talk to them about contraception or refer them to community resources. Lack of time was reported as the third top barrier (23.7%). Another common barrier that was written in the comments section included the lack of community resources for contraception (n=12). Many nurses indicated that there were no
close facilities where they could refer students for contraceptive needs. A second common barrier that was written in was that parental permission was required to discuss contraception in school (n=6). The number of days per week worked in a high school and whether or not nurses had received training on pregnant and parenting teenagers were both significantly predictive of the number of perceived barriers to assisting in obtaining contraceptives.

School nurses were asked about their efficacy expectations regarding supporting pregnant and parenting female students. Efficacy expectations refer to the beliefs that a person can perform a behavior in order to achieve certain outcomes (Bandura, 1977c). Nurses who reported receiving training on pregnant and parenting teenagers had significantly higher efficacy expectation scores. Over 55% of nurses reported receiving training. It is possible that training provided the knowledge and skills necessary for a nurse to feel confident in her ability to support her pregnant and parenting students. There was also a significant correlation between the number of pregnant and parenting students in the school and efficacy expectation scores. Almost two-thirds (65.9%) of respondents stated that they felt “very confident” in their ability to refer pregnant and parenting students to community resources and to facilitate safety accommodations for pregnant students. Almost half of nurses stated that they were “very confident” in their ability to facilitate academic collaborations for their pregnant and parenting students. Efficacy expectations were lowest related to assisting with contraceptives. About one-quarter of nurses stated that they felt “very confident” in their ability to assist pregnant and parenting students with obtaining contraceptives and with regularly assessing use. A chi square revealed that efficacy expectations for assisting in obtaining contraceptives were
significantly different based on whether school policy prohibited contraception discussions (Pearson $\chi^2=72.98$, df=4, $p<0.000$). Since this was reported as the most common barrier by nurses (25.1%), it’s not surprising that efficacy expectations were lower. If nurses are not allowed to discuss contraceptive use with students, it makes sense that they would not feel confident in their ability to do so. Also, they may be less motivated to stay current on contraceptive research and options. In those situations, nurses should make efforts to refer students to outside resources or their primary care providers.

Another research question examined the outcome expectations of school nurses related to supporting their pregnant and parenting students. Outcome expectations are the anticipated outcomes that a person believes will occur from performing a behavior (Bandura, 1977c). The majority of school nurses stated that they believed that referring pregnant and parenting students to community resources would result in: academic success; decreased likelihood of dropout; healthier pregnancies; reduction in subsequent pregnancies; proper growth and development of a student’s child. The majority of nurses also believed that facilitating safety accommodations for pregnant students would result in: academic success; decreased likelihood of dropout; healthier pregnancies. The majority of nurses stated that facilitating academic collaborations would result in academic success and decreased likelihood of dropout, but not a reduction in subsequent pregnancies. Research indicates that maintaining a connection with high school reduces the risk of subsequent pregnancies in teenage mothers (Sadler, Swartz, Ryan-Krause, Seitz, Meadows-Oliver, Grey, & Clemmens, 2007). Schools have an opportunity to connect with pregnant and parenting students to support their educational goals before
they drop out of school (CAPD, 1997). Therefore, it is important that nurses understand the importance of assisting their pregnant and parenting students in maintaining that connection and facilitating an academic collaboration. Overall, it is not surprising that most nurses identified several anticipated outcomes from the above support activities. Based on the nurses’ reported current practices, these three activities (referring to community resources, facilitating academic collaborations, and facilitating safety accommodations) were performed by the majority of the nurses with the majority of their pregnant and parenting students. Also, efficacy expectations were higher for these activities.

Slightly over one-third of nurses indicated that assisting students with obtaining contraception would result in academic success, while less than 30% believed that regularly assessing contraceptive compliance would result in academic success. Approximately 40% of teenage mothers experience a subsequent birth within two years of the first (Raneri, 2006; Crittendon, Boris, Rice, Taylor, & Olds, 2009; Gillmore, Lewis, Lohr, Spencer, & White, 1997). About 30% of teenage girls cite pregnancy as the reason they dropped out of school (National Campaign to Prevent Teen and Unplanned Pregnancy, 2010). A second birth to teenage mothers makes it even more difficult to manage school responsibilities, and may further increase the risk of dropping out. About 12% of respondents stated that assisting pregnant and parenting students with obtaining contraception would result in a healthier pregnancy. A few nurses wrote question marks next to this item. It is possible that the term “contraception” made them think solely of pregnancy prevention, rather than prevention of pregnancy and prevention of sexually transmitted diseases. Sexually transmitted diseases during pregnancy can be passed from
the pregnant woman to her baby before, during, and after childbirth. Consequences can include premature labor, uterine infection, stillbirth, low birth weight, conjunctivitis, blindness, pneumonia, and many others (CDC, 2012b). It is important that school nurses talk to their pregnant students about using condoms if they are sexually active during pregnancy. Most nurses (more than two-thirds) agreed that assisting pregnant and parenting students with obtaining and regularly assessing use of contraceptives would result in reduction in subsequent pregnancies. Research indicates that teenagers often do not use contraceptives consistently (Holcombe, Carrier, Manlove, & Ryan, 2008). Teenage mothers are more likely to use hormonal birth control methods than condoms during sexual activity (Paukku, Quan, Darney, & Raine, 2003). Research also shows that teenage mothers are less likely to use hormonal contraceptive methods at late postpartum compared to early postpartum, which puts them at risk for repeat pregnancy (Kershaw, Niccolai, Ickovics, Lewis, Meade, & Ethier, 2003; Berenson & Wiemann, 1997). Since teenage mothers appear to change their postpartum contraceptive methods, it is important that contraceptive compliance is regularly assessed to prevent repeat pregnancies. In schools where discussion of contraception is prohibited, nurses should refer students to their primary care provider or community resources.

Almost 88% of school nurses indicated that teaching positive parenting practices to students would result in the proper growth and development of students’ children. Although this may seem out of the realm of the responsibilities of a school nurse, the NASN (2004) position statement suggests that school nurses support positive parenting practices and responsible parenthood. One study found that children born to teenage mothers were more likely to be placed in foster care and be involved with child protective
services, even after controlling for numerous demographic and socioeconomic factors (Jutte, Roos, Brownell, Briggs, MacWilliam, & Roos, 2010; Goerge, Harden, & Lee, 2008). The incidence of substantiated abuse or neglect reports among teenage mothers is three times higher than substantiated reports among adult mothers (Goerge, et al., 2008). Teenage mothers are more likely to take on a dysfunctional parenting style, which can lead to child maltreatment, including abuse and neglect (Brooks-Gunn & Chase-Lansdale, 1995; Stevens-Simon, Nelligan, & Kelly, 2001). Children born to teenage mothers are at higher risk for displaying aggressive behaviors (Nagin & Tremblay, 2001; Tremblay, Nagin, Seguin, Zoccolillo, Zelazo, Boivin, Perusse, & Japel, 2004), and conduct disorders (Wakschlag, Gordon, Lahey, Loeber, Green, & Leventhal, 2000). Research suggests that teenage mothers may not have the life experience or maturity necessary to develop parenting skills, or they may be ambiguous about discouraging certain behaviors (Levine, Pollack, & Comfort, 2001). Therefore, it is important that they receive all the support they can get to develop positive parenting skills. If school nurses do not feel comfortable or have a lack time to discuss positive parenting practices with students, efforts should be made to identify other school staff or community resources where assistance is available.

A third component of the theory of self-efficacy is outcome values. Outcome values are the perceived value or importance that a person places on given outcomes that may occur from undertaking a behavior (Bandura, 1977c). Nurses were queried about their perceived level of importance, as a school nurse, in assisting pregnant and parenting students with obtaining certain outcomes. Overall, outcome value composite scores were high ($\bar{x} = 19.02$, $sd = 1.9$, potential range = 5 to 20). The majority of nurses indicated that
it was important or very important to them as a nurse to assist pregnant and parenting teenagers to succeed academically, reduce subsequent pregnancies, ensure a healthy pregnancy, decrease the likelihood of students dropping out of school, and ensure the proper growth and development of students’ children.

One question asked school nurses to describe their perception of the overall attitude of school administration and staff toward the pregnant and parenting female students in their school. Almost 50% of nurses stated that administration and staff were “very positive” or “somewhat positive” towards pregnant and parenting students, while about one-third of nurses stated that administration and staff were “neutral.” Research indicates that there is a significant amount of variance in how school districts serve their pregnant and parenting students (SmithBattle, 2006). This population is virtually invisible within some school systems, and can easily fall through the cracks. Pregnancy complications and daycare issues can make attendance difficult, which can lead to excessive absences and failing classes (Wolf, 1999). This can lead to teenage mothers being further alienated from their schools (SmithBattle, 2006). If school nurses are involved in facilitating an academic collaboration between the student, her family, and school personnel, it may help the pregnant or parenting teenager remain connected with the school, decreasing the risk of drop out. School nurses should serve as an advocate for their pregnant and parenting students.

Several demographic variables emerged as significant in this study. Whether school nurses had received training on the topic of pregnant and parenting teenagers was an important variable. Slightly over 55% of school nurses reported having received training, with most receiving training during an in-service education workshop (n = 180),
undergraduate education (n = 149), or from professional journals (n = 126). School nurses who reported receiving training on the topic of pregnant and parenting teenagers had significantly higher efficacy expectation scores, outcome value scores, and outcome expectation scores than those who had not received training. Nurses who received training also reported significantly less barriers to assisting pregnant and parenting students with contraception, but not with facilitating safety or academic collaborations. School nurses should make efforts to obtain training on the best ways to work with and support their pregnant and parenting students. The National Association of School Nurses should provide training and professional development on providing support to pregnant and parenting students, as outlined in their recommendations.

Education level was also an important variable. Efficacy expectations scores were significantly different based on education level. Nurses who reported having a nursing diploma had significantly lower efficacy expectations scores than nurses who had an associate’s, bachelor’s, master’s, or doctoral degree. Outcome expectations scores were significantly lower for nurses with a nursing diploma compared to a master’s degree. Since a large portion of the nurses who reported receiving training on pregnant and parenting teenagers stated that they received training during undergraduate education, these results are not surprising. Nursing program administrators should ensure that the topic of unique needs of pregnant and parenting teenagers is included in nursing classes.

The number of days per week worked in a high school was a significant predictor of the number of perceived barriers to facilitating safety accommodations, facilitating academic collaborations, and assisting with obtaining contraceptives. Over 25% of nurses reported working in a high school three or less days per week. Since “lack of time” was
reported as a common barrier, it is likely that school nurses who only spend a limited amount of days in a high school setting do not have the time available to assist their students with these activities. This may be especially true if they have a large population of pregnant or parenting students.

5.5 Implications

This study attempted to assess high school nurses’ support of their pregnant and parenting students. Knowing how school nurses are supporting their pregnant and parenting population, and their self-efficacy and perceived barriers in doing so, is important to guide education and research related to this topic, as no current published research exists. Although the teenage pregnancy and birth rates have decreased in the last two decades, there were about 330,000 children born in 2011 to teenage mothers (Hamilton, Martin, & Ventura, 2012). Since teenage girls cite pregnancy as a reason for dropping out of school, schools have a vested interest in supporting this population (National Campaign to Prevent Teen and Unplanned Pregnancy, 2010).

This study found that the majority of school nurses supported the majority of their pregnant and parenting students with referrals to community resources, facilitating safety accommodations for the school setting, and facilitating academic collaborations to keep pregnant students academically on track. However, the majority of school nurses did not assist the majority of their pregnant and parenting students with assisting with obtaining contraception, regularly assessing contraceptive use, or teaching positive parenting practices. Despite low rates in current practices, nurses had high outcome values scores for the importance of preventing subsequent pregnancies. This indicates that it was
important to them to prevent subsequent pregnancies. However, a school policy prohibiting discussions of contraception was cited as a common barrier to assisting with obtaining and assessing use of contraceptives. Therefore, even though nurses see the importance of preventing subsequent pregnancies, their efforts at assisting their students are hampered by school policies prohibiting contraception discussions. Efficacy expectations scores, outcome values scores, and outcome expectations scores were significantly higher for nurses who reported receiving training on the topic of pregnant and parenting teenagers. It is possible that training provides nurses with the skills and knowledge necessary to support their pregnant and parenting students, which increases their overall self-efficacy. Efficacy expectations scores were also higher based on education level. Many nurses who received training stated that it was through undergraduate education. The number of days per week worked in a high school was significantly predictive of the number of perceived barriers to facilitating safety accommodations, facilitating academic collaborations, and assisting with obtaining contraception. Since “lack of time” was cited as a common barrier, it is likely that nurses who are not in a high school on a daily basis have a more difficult time connecting with their pregnant and parenting students.

5.6 Recommendations to the Health Profession

Based on the results of this study, there are several recommendations for the public health and school nurse profession. School nurses should make every effort to talk to their pregnant and parenting students about contraception options. In schools where policy prohibits these discussions, nurses should refer their students to community
resources or their primary care provider. It is important that the school nurses then follow up with the students to ensure that they choose, and are properly using some form of contraception. If school or state policies ban discussions of contraception, school nurses are in a good position to join forces with school health educators to advocate for a repeal of the ban. Since many teenagers reported getting contraceptive information from schools (Jones, et al., 2011), it is important that this information be available there. School nurses should remain current on data regarding teenage sexual practices and contraceptive use, as well as contraceptive options. Since pregnant teenagers may work closely with the school nurse, nurses are in a good position to discuss preventing sexually transmitted infections during pregnancy, and to prevent subsequent pregnancies after delivery.

In this study, approximately 55% of the nurses had received training on pregnant and parenting teenagers. Nurses who reported having receiving training had higher efficacy expectations scores, higher outcome values scores, and higher outcome expectations scores. This indicates the importance of providing more training on this topic for school nurses. This training should include the practices suggested by the NASN as outlined in this study, as well as the importance of providing assistance with obtaining contraception. Many of the nurses who received training indicated that it was through undergraduate education, in-service workshops, or professional journals. The population of school nurses in this study all belonged to the National Association of School Nurses, the organization which publishes the Journal of School Nursing. This journal would be a good way to disseminate information to school nurses on how to better serve and support their pregnant and parenting students. Health departments, hospitals, colleges, and community organizations are in a position to provide in-service workshops to school
nurses. Since nurses are in need of continuing education hours, the topic of supporting pregnant and parenting teenagers could be an appealing option. It is likely that other school staff members could benefit from receiving training on pregnant and parenting teenagers, as well. Since school nurses stated that “lack of time” was a common barrier to support this population, a collaboration with a school counselor or social worker might be another option in providing support to a school’s pregnant and parenting students. If school staff are educated on the importance of supporting pregnant and parenting students, they may be more inclined to assist school nurses in this endeavor.

Although this study did not assess whether or not schools provided a support group for pregnant and parenting students, school nurses are in a good position to facilitate this. A support group could be held during lunch once a week (so as not to take up too much time), and nurses could provide information on prenatal nutrition and health, childbirth, contraception, and positive parenting practices, among other relevant topics. This would provide nurses the opportunity to support the students, keep the students engaged with the school, and allow students to form connections with each other and the nurse. If the nurse is not able to facilitate this group, a collaboration with a community partner (e.g. health department) might be an option.

5.7 Recommendations for Future Research

There is a very limited amount of research on the support of pregnant and parenting teenagers. Before this study, no research existed on school nurses and their support of pregnant and parenting teenagers. The small amount of research that is available on school-based support groups for pregnant and parenting students indicates
that they are successful in reducing dropout rates and subsequent pregnancies. However, no research exists on how many schools or districts offer these groups. There is also no research on school counselors, social workers, or psychologists and their interactions with pregnant and parenting students. Overall, the topic of school-based support for pregnant and parenting teenagers should be investigated further to determine how schools can better serve this population to reduce the risk of drop out and repeat pregnancies.

This study focused on the support of teenage mothers. There is very limited research on teenage fathers. Admittedly, this can be a difficult population to reach. Some teenage fathers may not even be aware that they have a child. Others may not play an active role in their child’s life, for numerous reasons. However, teenage fathers would likely benefit from support. More research is needed on this specific population.

5.8 Conclusion

Teenage pregnancy is a complex problem in this country with multiple causes and multiple solutions. Schools have an opportunity to engage this population. School nurses are in a position to support their pregnant and parenting students in a way that could potentially reduce their risk of dropping out of school, reduce subsequent pregnancies, increase their likelihood of having a healthier pregnancy, and ensure the proper growth and development of their children. Before this study, no research existed on this topic. This study found that the majority of school nurses supported their pregnant and parenting students in some, but not all, of the support methods suggested by the National Association of School Nurses (2004) position statement. Several barriers were identified by the nurses, including lack of time, difficulty in working with students’ primary care
providers, difficulty in working with students’ families, and school policy prohibiting contraception discussions. Whether or not nurses had received training on pregnant and parenting teenagers was an important variable that significantly affected school nurses’ self-efficacy.

School nurses should self-evaluate their support of their pregnant and parenting students, and advocate on behalf of this often-overlooked population. School health educators, public health educators and school nurses should advocate for repeals of state and school bans that prohibit the discussion of contraception in schools. Health departments, community agencies, colleges, and hospitals should collaborate with schools to provide support to their pregnant and parenting students, in conjunction with support offered by school nurses. Although teenage childbearing may be impossible to completely prevent, it is important that these teenagers receive the support they need to become successful, productive members of society, as well as nurturing and loving mothers.
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Appendix A

Survey Instrument
SCHOOL NURSES’ SUPPORT OF PREGNANT AND PARENTING FEMALE TEENAGERS

Directions: This survey is targeting the high school female students in the building where you spend most of your time. Your responses will be confidential. Thank you for your professional courtesy.

1. Approximately how many pregnant/parenting females have been enrolled in your school in the past two years?
   _______ Number of pregnant/parenting female students in past two years
   _______ We have had no pregnant/parenting female students in the past two years. (Please complete just the demographic section on page 4 and return the survey. Thank you.)

2. Of those pregnant/parenting students enrolled in the past two years, how many have you personally assisted regarding their pregnant/parenting issues?
   _______ Number of pregnant/parenting students assisted in past two years

Please circle the appropriate response for each letter below

3. Of all the pregnant/parenting female students you have worked with during the past two years, with what portion have you:

   a. Referred to community resources (WIC, infant immunizations, childcare, social service agencies, etc.)?
      All (100%)  Most 99-50%  Some 49-0%  None 0%
   b. Facilitated accommodations to help ensure their safety and well-being in the school setting (this may include exclusion from physical education class, elevator exceptions, increased restroom break exceptions, etc.)?
      All  Most  Some  None
   c. Facilitated collaboration between the students, their families, and school personnel to keep students academically on track during and after pregnancy?
      All  Most  Some  None
   d. Assisted in obtaining contraception (e.g. referrals, condom distribution, etc.)?
      All  Most  Some  None
   e. Regularly assessed contraceptive compliance?
      All  Most  Some  None
   f. Taught positive parenting practices (beyond responding to students’ questions)?
      All  Most  Some  None

Please circle the appropriate response for each letter below

4. How confident are you in your ability to perform the following actions with pregnant/parenting female students in your school:

   a. Refer them to community resources of benefit
      Not at all Confident  Not Very Confident  Confident  Very Confident
      NAAC  NVC  C  VC
   b. Facilitate accommodations to help ensure their safety and well-being in the school setting
      NAAC  NVC  C  VC
   c. Facilitate collaboration between the student, her family, & school personnel to keep student academically on track during & after pregnancy
      NAAC  NVC  C  VC
   d. Assist in obtaining contraception
      NAAC  NVC  C  VC
   e. Regularly assess contraceptive compliance
      NAAC  NVC  C  VC
   f. Teach positive parenting practices (beyond responding to questions)
      NAAC  NVC  C  VC
### Potential Outcomes

5. **How important is it to you, as a school nurse, to assist pregnant/parenting students to:**

<table>
<thead>
<tr>
<th></th>
<th>Not at all Important</th>
<th>Not Very Important</th>
<th>Important</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Succeed academically</td>
<td>NAAI</td>
<td>NVI</td>
<td>I</td>
<td>VI</td>
</tr>
<tr>
<td>b. Reduce subsequent pregnancy</td>
<td>NAAI</td>
<td>NVI</td>
<td>I</td>
<td>VI</td>
</tr>
<tr>
<td>c. Ensure proper growth and development of the student’s child</td>
<td>NAAI</td>
<td>NVI</td>
<td>I</td>
<td>VI</td>
</tr>
<tr>
<td>d. Ensure a healthy pregnancy</td>
<td>NAAI</td>
<td>NVI</td>
<td>I</td>
<td>VI</td>
</tr>
<tr>
<td>e. Decrease their likelihood of dropping out of school</td>
<td>NAAI</td>
<td>NVI</td>
<td>I</td>
<td>VI</td>
</tr>
</tbody>
</table>

6. To the right of each school nurse activity below, place an X in the box(es) that correspond to what you believe are likely outcomes (identified in the grey boxes)

<table>
<thead>
<tr>
<th>Academic success</th>
<th>Decreased likelihood of student dropout</th>
<th>Healthier pregnancy</th>
<th>Reduction in subsequent pregnancies</th>
<th>Proper growth and development of the student’s child</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Referring pregnant/parenting female students to community resources will result in:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Facilitating accommodations for pregnant/parenting female students to help ensure their safety and well-being in the school setting will result in:</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>c. Facilitating collaboration between the pregnant/parenting female students, their families, and school personnel to keep student academically on track will result in:</td>
<td></td>
<td>N/A</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>d. Assisting pregnant/parenting female students in obtaining contraception will result in:</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>e. Regularly assessing contraceptive compliance of pregnant/parenting female students will result in:</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>f. Teaching positive parenting practices to pregnant/parenting female students will result in:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. What barriers do you face in facilitating accommodations to help ensure the safety and well-being of pregnant students in the school setting? (check all that apply)
   ___ a) There are no barriers to my facilitating accommodations to help ensure the safety and well-being of pregnant students.
   ___ b) School policy prohibits treating pregnant students different from other students
   ___ c) Accommodations for any health condition must be prescribed by the primary care provider
   ___ d) Communicating with student’s primary care provider regarding needed accommodations
   ___ e) Pregnant students have not approached me with safety or well-being concerns
   ___ f) Lack of time to spend with pregnant students to determine what accommodations must be made
   ___ g) Lack of cooperation from other school employees/administrators
   ___ h) I am unsure about what accommodations should be made
   ___ i) I do not believe that accommodations should be made for pregnant students
   ___ j) I do not want other students to see the special treatment of pregnant students and then desire to become pregnant themselves
   ___ k) Other (please specify) ______________________________________________________

8. What barriers do you face in facilitating collaboration between pregnant students, their families, and school personnel to keep them academically on track? (check all that apply)
   ___ a) There are no barriers to me facilitating collaboration with pregnant students, their families, and school personnel
   ___ b) Pregnant students have not approached me about their academic success
   ___ c) Lack of cooperation of school employees/administrators
   ___ d) Lack of cooperation of the students’ families
   ___ e) Lack of cooperation of the pregnant students
   ___ f) Difficulty in scheduling meetings with pregnant students’ families because of their work schedules
   ___ g) Lack of time to facilitate the collaboration
   ___ h) I am unsure about how this collaboration should occur
   ___ i) This is not within the scope of a school nurse’s responsibilities
   ___ j) I believe that it is the student’s or her family’s responsibility to initiate this collaboration
   ___ k) Other (please specify) ______________________________________________________

9. What barriers do you face in assisting parenting students in your school in obtaining contraception? (check all that apply)
   ___ a) There are no barriers to my assisting parenting teenagers in obtaining contraception.
   ___ b) School policy prohibits discussing contraception
   ___ c) Contraception is discussed in health class
   ___ d) Lack of time to spend with teen mothers to discuss contraception
   ___ e) My lack of personal expertise on contraceptive options for teenagers
   ___ f) I believe parenting students should talk to their health care provider instead of the school nurse about contraception
   ___ g) I believe contraception discussions should occur only when students ask for information
   ___ h) I do not believe that teen mothers in my school want to use contraception
   ___ i) My personal religious/spiritual beliefs prohibit it (i.e. I do not believe in using contraception)
   ___ j) Other (please specify): ______________________________________________________

10. How would you describe the overall attitude of school administration and staff towards pregnant/parenting female students? (circle one)

   Very Positive Somewhat Positive Neutral Somewhat Negative Very Negative
1. School type:
   _______ Public
   _______ Charter OR Alternative
   _______ Private
   _______ Parochial
   _______ Other (Please describe): ____________________

2. School setting:
   _______ Urban
   _______ Rural
   _______ Suburban
   _______ Other (Please describe): ____________________

3. Are you certified as a school nurse?   ______ Yes   ______ No

   3a. If yes, which certification(s) do you have?   ______ State   ______ National

4. What is your highest level of education?
   ______ Diploma Program
   ______ Bachelor’s Degree
   ______ Doctoral Degree
   ______ Associate’s Degree
   ______ Master’s Degree

5. What is the approximate student-to-nurse ratio in the school(s) you serve? One school nurse to ___

6. How many days per week do you work at a high school? __________

7. How many different schools do you serve?
   ______ Number of High Schools served
   ______ Number of Middle Schools/Junior High Schools served
   ______ Number of Elementary Schools served

8. Have you ever received training on the topic of how to assist pregnant/parenting teenagers?   ______ Yes   ______ No

9. If you answered yes to number 8, where did you receive your training? (check all that apply)
   ______ Undergraduate education
   ______ Graduate education
   ______ National or state conferences
   ______ Professional journals
   ______ In-service education or workshop
   ______ Other (please identify): ____________________

10. Who are you employed by?
     ______ School / School District
     ______ Local health department
     ______ Local hospital
     ______ Other (please specify: ____________________)

11: How many years have you worked as a school nurse? __________

12: Age:
     ______ Younger than 30
     ______ 30-39
     ______ 40-49
     ______ 50-59
     ______ 60 or older

Thank you for completing this survey!
Appendix B

Expert Review Panel
School Nursing

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Survey Research

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Pregnant and Parenting Teenagers

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Appendix C

Cover Letter for Panel of Experts
Dear Dr. NAME:

Recently I contacted you about a doctoral dissertation at the University of Toledo that I am planning to conduct on “The Self-Efficacy of School Nurses in Supporting Pregnant and Parenting Teens.” Thank you for agreeing to serve as a member of an expert review panel to provide feedback about the content validity and design of the enclosed survey instrument. Your opinion is vital to the success of the study.

The study uses the Self-Efficacy Theory as a framework, as well as the construct of perceived barriers from the Health Belief Model. We have included a brief summary of the constructs as they relate to each question on the instrument. Please mark on the questionnaire: 1) Any needed changes in wording; 2) Lines through items that are not needed; and 3) Add additional items that you perceive are needed.

We appreciate your busy schedule and thank you again for taking the time to review this questionnaire and provide constructive feedback. Your response within the next two weeks would be greatly appreciated.

Sincerely,

Nicole Kolm-Valdivia, MPH
Doctoral Student
nicole.kolm@utoledo.edu
419-250-0466

Joseph A. Dake, PhD, MPH
Chair, Dissertation Committee
jdake@utnet.utoledo.edu
419-530-2767
<table>
<thead>
<tr>
<th>Constructs and Definitions</th>
<th>Survey question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Efficacy expectations</strong> – defined as an individual’s confidence in his or her ability to perform a certain behavior to achieve an outcome</td>
<td>Efficacy expectations: sum of 4 a-f</td>
</tr>
<tr>
<td><strong>Outcome values</strong> – defined as the perceived value that a person places on given outcomes that may occur from undertaking a behavior</td>
<td>Outcome values: sum of 5 a-f</td>
</tr>
<tr>
<td><strong>Outcome expectations</strong> – defined as the anticipated outcomes that an individual believes will occur from performing a specific behavior</td>
<td>Outcome expectations: sum of 6 a-f</td>
</tr>
<tr>
<td><strong>Perceived barriers</strong> – defined as the perceived negative aspects or costs of an action that may act as an impediment to undertaking an action or behavior</td>
<td>Perceived barriers: sum of items 7, 8, and 9</td>
</tr>
</tbody>
</table>
Appendix D

Cover Letter for Test/Retest
Dear NAME:

Hello, I am a doctoral student at the University of Toledo working on my dissertation titled "The Self-Efficacy of School Nurses in Supporting Pregnant and Parenting Teens". The goal of my study is to better understand school nurses’ practices, self-efficacy, and barriers to supporting pregnant and parenting female students. This will be a nationwide study using a mailing list from the National Association of School Nurses. One requirement for my dissertation is to assess the reliability of my dissertation questionnaire. This assessment entails the questionnaire being completed twice by a small sample of local school nurses. I am asking for 10-15 minutes of your time to fill out my brief, four page questionnaire on two separate occasions.

Your responses on the questionnaire will be used to test the reliability of the instrument and will NOT be seen by anyone other than myself. Your name will ONLY be used to match the first survey to the second survey. Upon completion of reliability testing, I will permanently delete your survey data from my database. In return for your time, I would like to send you an executive summary of the main findings once my separate national study of school nurses has been completed.

I have included the survey, along with a self-addressed stamped envelope. I will send you the exact same questionnaire to complete again one week after I receive your first completed survey. If you have questions, please call me at 419-250-0466, or email me at nicole.kolm@utoledo.edu.

Thank you very much for your time!
Nicole Kolm-Valdivia, MPH, CHES
Doctoral Candidate
University of Toledo
Appendix E

Cover Letter: Wave One
Dear,

We request your participation in a national research study of high school nurses’ support of pregnant and parenting teens. The **purpose** of this study is to ascertain the practices, self-efficacy, and barriers of high school nurses from all 50 states in providing support to their pregnant and parenting students.

We ask for approximately **10 – 15 minutes** of your time to complete the enclosed questionnaire. Please **do not** write your name or any other information that could be used to personally identify you on the survey form. All responses are **strictly confidential** and only group answers will be analyzed.

We realize that the $1 enclosed does not reimburse you for your time, but we hope that you can use this token of our appreciation to purchase a bottle of water, cup of coffee, or a soda to drink while completing the survey. Your refusal to participate in this study will involve no penalty or loss of benefits to which you are otherwise entitled and will not affect your relationship with the University of Toledo.

If you have any questions before, during, or after your participation in this study, please contact the Principal Investigator, Dr. Joseph Dake at (419) 530-2743. If you have questions beyond those answered by Dr. Dake, or questions about your rights as a research subject or research-related injuries, please feel free to contact Dr. Jeffrey Busch, SBE IRB coordinator at (419) 530-2844.

We have included a self-addressed, stamped envelope for your convenience. Your response within the next week would be greatly appreciated. Thank you for your time and professional courtesy.

Sincerely,

Joseph Dake, PhD
Department Chair
Health & Recreation Professions
University of Toledo

Nicole Kolm-Valdivia, MPH
Doctoral Candidate
Health Education
University of Toledo
Appendix F

Cover Letter: Wave Two
Dear,

Recently, we mailed you a survey regarding high school nurses’ support of pregnant and parenting teens. If you already returned the survey, thank you very much.

If you did not return the original survey, it is not too late to participate in this national study. We are enclosing another copy of the survey and a self-addressed, stamped envelope. Please complete and return the survey at your earliest convenience.

We would like to remind you that responses are strictly confidential and only group data will be analyzed and reported. The purpose of this study is to ascertain the practices, self-efficacy, and barriers of high school nurses from all 50 states in providing support to their pregnant and parenting students. The 10 – 15 minutes it will take you to complete the survey is greatly appreciated.

Your response within the next week would be fantastic. Thank you for your time and professional courtesy, and for your work as a school nurse to promote the health of school children.

Sincerely,

Joseph Dake, PhD, MPH
Department Chair
Health & Recreation Professions
University of Toledo

Nicole Kolm-Valdivia, MPH
Doctoral Candidate
Health Education
University of Toledo