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Factors Influencing Attendance, Postpartum Follow-up, and Contraceptive Usage among Teenage CenteringPregnancy® Participants

Latia Hickerson

FACTORS INFLUENCING ATTENDANCE, FOLLOW-UP AND CONTRACEPTIVE USAGE IN TEENAGE CENTERINGPREGNANCY® PARTICIPANTS

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN NURSING

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SCHOOL OF NURSING

BY

LATIA M. HICKERSON, MSN, MPH

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The University of Texas Health Science Center at Houston
School of Nursing
Houston, Texas

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Date

To the Dean for the School of Nursing:

I am submitting a dissertation written by Latia Hickerson and entitled "Factors Influencing Attendance, Postpartum Follow-up and Contraception Usage Among Teenage CenteringPregnancy® Participants." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing.

Diane Wardell
Committee Chair

We have read this dissertation
and recommend its acceptance:

Lori L. Wood

Ruth S. Buri

Accepted

Lorraine Frazier
Dean for the School of Nursing

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Abstract

Factors Influencing Attendance, Postpartum Follow-up, and Contraceptive Usage among

Teenage CenteringPregnancy® Participants

By Latia Hickerson

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Background: Teenage mothers are less likely to obtain postpartum examinations and contraception, increasing risks for negative social and health outcomes. The CenteringPregnancy® prenatal care model has been found to improve outcomes. However, little is known about factors influencing CenteringPregnancy® attendance or how this attendance impacts future pregnancy rates among teenagers.

Aim: The purpose of this study was to explore the association between CenteringPregnancy® attendance, postpartum return, contraception initiation and method selection. Additionally, the Group Care and Perinatal Behaviors Framework was used to assess the association between food insecurity, housing insecurity, intimate partner violence relationship status, partner group attendance and total CenteringPregnancy® sessions attended.

Methods: A retrospective record review was conducted on a consecutive sample of (n=83) pregnant and parenting teenagers, between the ages of 13-19 years, seen at a community based teen health clinic.

Analysis: Bivariate relationships between variables were analyzed using Fisher's exact test, independent t-test and one-way ANOVA.

Results: Housing insecurity, food insecurity, intimate partner violence, marital status and partner session attendance were not significant factors associated with participant CenteringPregnancy® attendance. Total CenteringPregnancy® attendance was significantly (p=.04) associated with return for postpartum exam, but not contraception initiation or effectiveness of selected methods. Attendance at session 9 appears to be significantly (p=.041) linked to postpartum contraceptive initiation, with attendance at sessions 9 and 10 also significantly linked to postpartum return (p=.032 and p=.033 respectively).

Discussion: While the complex social and economic factors addressed within this study did not impact CenteringPregnancy® attendance in this group of teens, the identification of overall attendance and specific session attendance as significant factors influencing postpartum exam utilization and contraceptive uptake, allows for CenteringPregnancy® delivery sites to make accommodations that may promote teenage patient retention.

Keywords: CenteringPregnancy®, birth control, teenagers

TABLE OF CONTENTS

Summary of Study

The focus of this study was to explore the association between total CenteringPregnancy© sessions attended, postpartum return, postpartum contraception initiation and contraceptive method selection, among low income teenage girls. An additional focus of this retrospective record review is to assess the association between food insecurity, housing insecurity, intimate partner violence (IPV), relationship status, partner group attendance and total CenteringPregnancy© sessions attended.

The study was conducted as stated in the proposal, with one alteration to the proposed data analyses methods. Due to the relatively small sample size, multivariate analyses were not used to analyze data.

Proposal

Specific Aims

Teenage pregnancy and childbearing are associated with adverse health, social, and economic consequences, for both the teenage mother and child, contributing to slightly over nine billion dollars in annual public spending (The National Campaign to Prevent Teen and Unplanned Pregnancy, 2013). The consequences of teenage pregnancy and childbearing are greater among teenagers experiencing a subsequent pregnancy within 24 months of the prior pregnancy's resolution, commonly called a rapid repeat pregnancy (RRP) (Barnet et al., 2009; Boardman, Allsworth, Phipps, & Lapane, 2006; Klerman, 2004; Milne & Glasier, 2008). Approximately 33% of teenage mothers will experience a RRP, highlighting the need for contraceptive initiation soon after delivery (Thurman, Hammond, Brown, & Roddy, 2007).

An ideal target for reducing RRPs is to increase the number of teenage mothers who are actively attempting to prevent additional pregnancies in the postpartum period, by using effective contraception methods (Centers for Disease Control and Prevention (CDC), 2013). However, only 1 in 5 postpartum teenage mothers report using the most effective contraceptive methods (Centers for Disease Control and Prevention (CDC), 2013). Additionally, even though the postpartum period has been traditionally highlighted as the key time for contraceptive initiation, it is estimated that 39% of women under the age of 20 do not return for this examination (Wilcox, Levi, & Garrett, 2016). Participation in the evidence based prenatal care model, CenteringPregnancy® (CP) provides a standardized approach and timing for the delivery of contraceptive information. A variety of beneficial reproductive outcomes have been associated with

the CP model among adolescents, including an increase postpartum attendance and postpartum contraception use, while decreasing the occurrence of RRP (Ickovics et al., 2016a; Shakespear, Waite, & Gast, 2010). Furthermore, these reproductive benefits have been shown in one study to exist with exposure to only five CP sessions (Ickovics et al., 2016a).

While prior research has identified that participation in CP can increase postpartum contraceptive use and reduce RRP occurrence, few studies have evaluated the dosage effect of CP attendance on such outcomes, particularly in a teenage population. Additionally, engagement in CP can impact contraceptive usage and pregnancy spacing outcomes among adolescents, yet few studies have assessed the factors that may influence teenagers' attendance in this program. The primary focus of this study is to explore the association between total CP sessions attended, postpartum return, postpartum contraception initiation and contraceptive method selection, among low income teenage girls. An additional focus of this retrospective record review is to assess the association between food insecurity, housing insecurity, intimate partner violence (IPV), relationship status, partner group attendance and total CP sessions attended.

Specific Aim 1: To explore the association between CP sessions completed and:

1a.Food insecurity

Hypothesis 1a: Food insecurity will be associated with less CP completion.

1b.housing insecurity

Hypothesis 1b. Housing insecurity will be associated with less CP completion.

1c. Intimate Partner Violence (IPV)

Hypothesis 1c. IPV will be associated with less CP completion.

1d. relationship status

Hypothesis 1d. Being in a relationship will be associated with more CP completion.

1e. Partner group attendance

Hypothesis 1e. More partner group attendance will be associated with more CP completion

Specific Aim 2: To explore the association between the CP sessions completed and:

2a. Postpartum exam return

Hypothesis 2a: Teenagers who completed more CP sessions will have higher odds for postpartum exam completion than those who completed less CP sessions.

2b. Postpartum contraception initiation

Hypothesis 2b: Teenagers who completed more CP sessions will have increased odds for postpartum contraception initiation than those who completed less complete CP sessions.

Specific Aim 3: To compare postpartum contraception methods selected by teenage mothers by:

3a. total CP sessions completed

3b. Attendance at Group Session 4, the contraception discussion

Hypothesis 3a: Teenagers who complete more CP sessions will select more effective contraceptive methods than teenagers who complete less CP sessions

Hypothesis 3b: Teenagers who attended Group Session 4 will select more effective contraceptive methods than teenagers who did not complete Group Session 4.

Significance

National teenage birth rates have reached record breaking lows(Martin, Hamilton, Osterman, Curtin, & Matthews, 2015). However, in the midst of this declining prevalence, the United States remains a leader for total teenage births among developed countries, demonstrating large racial and social disparities between populations (Hamilton, Matthews, & Ventura, 2013). Another outcome of concern is the occurrence of repeat pregnancies and births, which occur when teenagers experience a subsequent pregnancy (rapid repeat pregnancy[RRP]) or birth (rapid repeat birth [RRB]), within 24 months of the prior pregnancy's resolution; which are decreasing at a slower rate than first teen births (Ventura, Hamilton, & Matthews, 2014).

Teenage pregnancy and childbearing are associated with a variety of adverse health, social, and economic consequences, for both the teen mom and child (Barnet et al., 2009; Boardman et al., 2006; Centers for Disease Control and Prevention (CDC), 2013; Klerman, 2004; Milne & Glasier, 2008; Raneri & Wiemann, 2007) all of which are magnified among those experiencing RRPs (Barnet et al., 2009; Boardman et al., 2006; Centers for Disease Control and Prevention (CDC), 2013; Klerman, 2004; Milne & Glasier, 2008; Raneri & Wiemann, 2007). Risks for adverse birth outcomes tend to increase as the timing between pregnancies decrease (Thoma, Copen, & Kirmeyer, 2016).

Approximately 50% of formerly pregnant teenagers experience a RRP (Barnet et al., 2009; Richio, Phipps, & Raker, 2010). One study reported that up to 63% of teenage mothers become pregnant again within 18 months of the prior pregnancy's resolution, with up to 37% experiencing a RRP within 24 months (Meade & Ickovics, 2005). Another study found that up to one-third of teenage mothers became pregnant again,

within 12 months of pregnancy resolution. Such high occurrences of RRP particularly so soon after pregnancy resolution, highlights the need for effective postpartum contraception (Thurman et al., 2007).

Early initiation and continuation of effective postpartum contraception, particularly the most effective contraceptive methods, long acting reversible contraceptives (LARC), is a strong preventative measure against RRP (Raneri & Wiemann, 2007). One study found that teenagers with contraceptive initiation within 3 months of the prior pregnancy's resolution reduced the risks for RRP more than 2 fold (Raneri & Wiemann, 2007). The receipt of prenatal contraceptive counseling and returning for the postpartum visit was associated with postpartum contraception initiation (Wilson, Fowler, & Koo, 2013). Therefore, increasing the quantity of teenage mothers who are actively attempting to prevent additionally pregnancies in the postpartum period, by using effective contraception methods, is critical for RRP reduction (Centers for Disease Control and Prevention (CDC), 2013).

The most effective contraceptive methods, LARC methods, remain underutilized in the United States, among all reproductive age groups, especially among teenagers (Peipert, Madden, Allsworth, & Secura, 2012). Approximately 91% of sexually active teenage mothers report using some type of contraceptive, between 2- 6 months following delivery, yet, only 22% report using LARC methods (Centers for Disease Control and Prevention (CDC), 2013). Another study, evaluating teenage contraceptive use at 4 months following delivery, found that 11% of teenagers reported resumption of sexual activity, with no use of a contraceptive method, with an additional 15% relying solely on condoms or withdrawal. Only 12% of adolescent mothers, in this population, reported

using LARC (Wilson et al., 2013). A study that assessed intended postpartum contraception use among pregnant teenagers found that 76% of the teenagers intended to use a form of hormonal contraception at postpartum, with only 23% reporting intent to use a LARC method (Chacko et al., 2016). Another study, which assessed teenage postpartum contraception intent versus actual use, found that 91% of teenagers reported intent to use a contraceptive method following delivery, when 78% actually initiated their intended method (Ortiz-Gonzalez, Benabe, Rivera-Rosa, Negron, & Romaguera, 2014). Potter et al (2016) found that by 6 months postpartum, 23% of women were not using their preferred method of contraception, with close to 70% of women encountering at least one barrier in accessing their preferred contraceptive method. Initiating contraceptive discussions during the perinatal period, specifically during prenatal care, increases a woman's likelihood of initiating their desired contraceptive method during the postpartum period (Committee opinion no. 666: Optimizing postpartum care.2016). One study found that the strongest predictor of perinatal contraception counseling was attendance at 10 or more prenatal visits (Day, Raker, & Boardman, 2008). Additionally, the postpartum period has been traditionally highlighted as the key time for contraceptive initiation, yet it is estimated that 23 to 40% of women and up to 42% of teenagers do not return for this examination, particularly women with limited resources are less likely to return for the postpartum exam (ACOG, 2016; NCQA, 2010; Wilcox, Levi, & Garrett, 2016).

CenteringPregnancy. Participation in evidence based prenatal care models, such as CenteringPregnancy® (CP) provides an alternate approach for the delivery of contraceptive information, during the perinatal period. This model of care has been

shown to reduce RRP by 51%, among teenage and young adult populations (Ickovics et al., 2016a). Prenatal care, which is defined by the American Academy of Pediatrics and the American Congress of Obstetricians and Gynecologists as a management plan for pregnant women and her family, that encompasses their "medical, nutritional psychological, and educational needs", is traditionally based on an individual model, in which a health care provider delivers 1- on -1 care, at 1 to 4 week intervals, in an office or clinic setting (2012). In contrast, women participating in CP still receive private medical care, following the same intervals as traditional prenatal care, but within a group setting. Women receive their initial obstetric visit in a traditional clinical or office setting, following the individual care model. Following the initial exam, participants are assigned to Centering groups, according to their estimated due dates. The results are groups of 8 to 12 pregnant women, with similar gestational ages. Participants receive their group's schedule, which includes meeting days, times, and session topics, at their initial obstetrics visit.

Each group is scheduled to meet for ten, two hour sessions, in a designated location within the clinic. The two hour Centering group is designed to designate the first 30 to 40 minutes towards clinician delivered health assessments. In the Centering groups, women are taught self-assessment activities for weight and blood pressure measurement. The participants' partner with their clinician, by completing their self-assessments, tracking them in a Centering Book, and presenting the results to their clinician during their private health assessment time. During the health assessment, participants receive a brief, private health assessments, by a clinician, which typically includes a review of concerns, fundal height measurement, and fetal heart tone

assessment. If participants have more complex concerns or require an exam, this is done in the clinic, following the group session.

Following the health assessments, the remaining group time is devoted to a facilitated discussion, with a specific, assigned topic for each session. Topics are structured to address a variety of topics, including pregnancy and prenatal care issues, childbirth preparation, and postpartum care and contraception. Each group session is facilitated by a prenatal clinician, such as an obstetrician, nurse midwife, or nurse practitioner and a co-facilitator, a nurse, social worker, or medical assistant. The facilitator and co-facilitator have an outline of discussion points and activities to guide the group discussion, however, facilitators are trained to allow the group to flow based on the participants' discussion and engagement in topics. The result is a structured, yet fluid discussion, based on the group's composition and interest (Centering Healthcare Institute, 2016).

When compared to traditional care, the CP model of prenatal care has been shown to improve maternal and fetal outcomes, such as preterm birth and low birth weight incidence, breastfeeding incidence, and maternal pregnancy knowledge and compliance, in addition to increasing postpartum contraceptive initiation and reducing RRP occurrence among participants (Baldwin, 2006; Picklesimer, Billings, Hale, Blackhurst, & Covington-Kolb, 2012; Shakespear et al., 2010). According to the Centering Healthcare Institute, CP has been shown to nearly eliminate the racial disparities in preterm birth and the model of prenatal care is estimated to save the health care system close to $8 billion dollars annually, in preterm birth prevention alone (Centering Healthcare Institute, 2016). Outcomes among adolescents have shown that participants

are more likely to comply with prenatal and postpartum visits, breastfeed, select a LARC method at postpartum, and are less likely to suffer from postpartum depression, compared to those receiving traditional care (Trotman et al., 2015). Grady & Bloom (2004), who compared CP participants to traditional prenatal care participants, found that only 6.3% of teenagers who participated in CP and received continued care following delivery, experienced a RRP within 12 months of delivery. The clinical and behavioral benefits of CP and RRP reduction are positively related to better CP attendance (Ickovics et al., 2016a). Ickovics and associates (2016a) found better health outcomes among adolescents with more group visits. The research team reported that adolescents who attended at least 5 group sessions were significantly less likely than those attending 4 or less sessions to have small for gestational age babies or a preterm birth. Their babies had increased birth weights and spent less days in the neonatal intensive care unit. Additionally, adolescents attending at least 5 sessions experienced less RRP, less unprotected sex, and more condom use (Ickovics et al., 2016a).

Group models of care. Several studies evaluating CP outcomes have reported an average attendance rate of close to 50% among participants (Cunningham et al., 2016; Ickovics et al., 2016a). Additionally, the Centering Healthcare Institute recognizes the attendance of 5 sessions as CP completion (Centering Healthcare Institute, 2016). The possible intra and intergroup variability in the discussion content, coupled with the empirical evidence that most participants do not attend all 10 group sessions, highlights the presence of an intangible, beneficial property specific to group models of care.

The use of group models of care is not a new concept. Group models have been used in the perinatal period since the 1970s (Rising, 1998). In the realm of teenage

pregnancy, group models have been used to provide education and support during pregnancy and in the postpartum period, breastfeeding education and support, and parenting skills, (Carrington et al., 1994; Key, Barbosa, & Owens, 2001; Rising, 1998; Volpe & Bear, 2000). Within the discipline of psychiatry, treatment plans for adolescents are encouraged to include a comprehensive biopsychosocial, temporal and developmental diagnostic formulation, including physical, psychological, and social components. Group therapy models, which are enveloped in the social component of a treatment plan, have the aims of providing a social experience, while allowing for the expression of feelings and emotions, in an accepting environment. Group therapy also fosters awareness of common experiences, promoting cohesiveness while allowing the group to consider solutions to commonly presented problems. Group therapy models are considered useful in helping adolescents who share the same problem or condition, as they focus on mutual support and sharing (Nurcombe, 2008). Sharon Rising, the creator of CenteringPregnancy, details that groups contain specific values, which include community building, attitude change, insight development, social learning, problem solving skill development, and mutual support(Rising, 1998).

The provision of social support through group sessions is an important element for group models of care (Mittal &Hutchinson, 2016). Social support in coping with pregnancy related changes, has been recognized as critical to individual wellbeing (Biaggi, Conroy, Pawlby, & Pariante, 2016). According to Steinburg (2008), the provision of social support is a positive strategy that can impact new mothers, who may face a variety of challenges. One study found that single, low-income African American adolescent mothers were at risk for lacking a consistent support system, which led to

lower self-esteem and increased loneliness (Hudson et al., 2016). Gilligan (1993) posits that women are relational beings, who create identities through relationships with others. Klima (2003) suggests that this developmental interaction may be a key aspect to understanding the importance of peer groups for adolescent girls.

Conceptual framework. The literature identifies multiple factors that influence postpartum care utilization, postpartum contraceptive initiation, and CP attendance. The initiation of postpartum contraception has been associated with prenatal contraceptive counseling, postpartum visit uptake, age, race, contraceptive use at conception, and months since delivery (Wilson et al., 2013). Previous studies evaluating a variety of demographic and social variables influencing CP attendance among young women, found that young women only attended half of the recommended group sessions, but only found country of nativity and group composition by age as significant factors impacting CP attendance (Cunningham et al., 2016; Earnshaw et al., 2016; Ickovics et al., 2016b) Considering the profound benefits of the CP model of prenatal care, very few studies have assessed the social and economic factors that may influence CP visit attendance, particularly among a low income, teenage population, who stand to benefit greatly from the aforementioned outcomes.

Theories and models are important for predicting and explaining behavior (Glanz, Rimer, & Viswanath, 2008). Social-cognitive-ecological models have been used to explain and predict risks for RRP among teenagers (Porter & Holness, 2011; Raneri & Wiemann, 2007). Through the influence of previous empirical research and the theoretical foundations of Bandura's Social Cognitive Theory and Ecological Theory, the Model for Rapid Repeat Teen Pregnancy (RRTP) Influence, Action, and Prevention is

proposed, as a means for explaining the demographic and social factors that influence teenage postpartum care utilization, postpartum contraception usage, and RRP occurrence (see *Figure 1*).

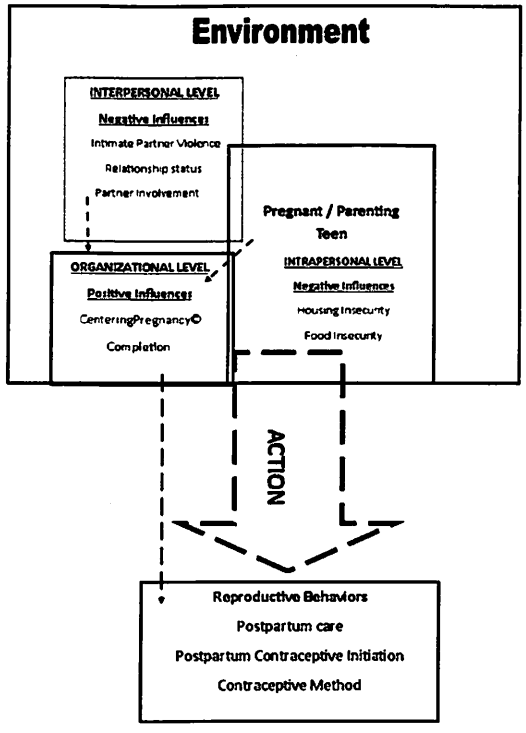

Figure 1. The Model for Rapid Repeat Teen Pregnancy (RRTP) Influence, Action, and Prevention

The Model for RRTP Influence, Action, and Prevention acknowledges Ecological Theory, acknowledging the multiple layers environmental influence that directly impact the individual's behavior, such that positive and negative environmental factors exist at multiple levels such as intrapersonal, social, and organizational levels, all of which can positively or negatively influence health behaviors(Glanz, Rimer, & Viswanatha, 2008). Additionally, the proposed model relies heavily on the SCT concept of reciprocal determinism, in which these environmental factors can positively or negatively influence

individuals' or group behavior, but individuals and groups can also influence their environments and regulate their behavior (Glanz, Rimer, & Viswanatha, 2008). The model suggests that positive environmental influences will lead to positive behaviors, whereas negative influences contribute to negative behavior. Previous studies focused on teenage girls' reproductive decision making found the most statistically significant factors influencing reproductive decision-making to be categorized as financial problems, home life, romantic and interpersonal relationships, and social life (Magaya, Asner-Self, & Schreiber, 2005; Mitic, McGuire, & Neumann, 1987; Moksnes, Espnes, & Haugan, 2013). Consequently, the Model for RRTP Influence, Action, and Prevention focuses on factors within those categories, proposing that intrapersonal factors(housing insecurity and food insecurity)social factors (intimate partner violence, relationship status) and organizational factors(CenteringPregnancy attendance) can influence and explain teenage reproductive behaviors, such as postpartum care uptake, postpartum contraceptive initiation and continuation, and contraceptive method selection.

Intrapersonal factors. The intrapersonal factors included in the proposed model include food insecurity and housing insecurity. Socioeconomic status and poverty remain an unclear predictor of reproductive behavior as indicated by one systematic review that found that poverty was not a statistically significant factor for RRP occurrence among teenagers (Klerman, 2004). Additionally, Potter, Trussell, & Moreau (2009) who explored trends and determinants for reproductive health services us among young, American women, also found that poverty was not a significant factor. They did report that young women of low SES experienced less utilization of reproductive services and suggest that patterns of less reproductive service use may be linked to social inequalities.

The proposed model addressing poverty and SES by focusing on the potential impact and perception that limited income may have on the individual, by means of housing insecurity and food insecurity. These measures may present a more thorough picture of the consequences of poverty, particularly among a teenage population, who may be unaware of the gross financial status of their household.

Interpersonal factors. The proposed interpersonal factors of interest are intimate partner violence (IPV), relationship status, and partner group attendance. IPV, defined as the experience of physical, sexual, or psychological violence or threats by a current or former intimate partner, has been previously identified as a factor impacting adverse birth outcomes among teenage mothers (Madkour, Xie, & Harville, 2013). Also concerning the partner, involvement of the father of the baby throughout the pregnancy may be an important factor. Prior research had identified that teenagers who live with the father of the baby, receive childcare for their child by way of the father of the baby, or have partners that desire another baby are more likely to have a RRP (Klerman, 2004).

Organizational factor- CenteringPregnancy©. The cumulative impact of a prenatal care delivery model may be important in influencing postpartum care return, postpartum contraceptive uptake and continuation, as the multiple encounters with clinicians and peers in group sessions may influence behavior. One study found that early initiation of prenatal care, during the first trimester was not associated with improved birth outcomes in teenage mothers, but inadequate prenatal care was strongly associated with adverse birth outcomes in teenagers (Debiec, Paul, Mitchell, & Hitti, 2010). According to the Centering Institute, the completion of at least 5 of the 10 CenteringPregnancy sessions is needed for an individual to have successfully completed

the CenteringPregnancy program. The beneficial outcomes of CP do not seem to be dependent on session content, but on overall involvement in the program. Few studies have explored the factors that influence CP group attendance. Earrnshaw et al., (2016) who examined the impact of group composition on group attendance found that women attending more diverse groups, in terms of age and race/ethnicity, had more group attendance.

Literature Gaps

While multiple studies identify the need for postpartum contraception to prevent RRP, very few studies were found to evaluate the social factors that may influence postpartum care utilization among teenagers. Similarly, many studies were found to assess postpartum contraceptive use patterns among young women and teens, but not many explored social determinants of contraceptive use. CP has been found to reduce RRP and impact contraceptive usage, yet not much is known about the factors that influence attendance, particularly among a teenage population. Prior studies fail to assess the impact of various complex social factors, faced by many low income teenage mothers, on behavioral outcomes such as postpartum return, postpartum contraception initiation and method selection. Lastly, few studies have used a theoretical framework to attempt to explain the social factors influencing teenage postpartum care use and contraceptive usage. The proposed model attempts to explain postpartum reproductive behavior by addressing some of these complex factors. The primary focus of this secondary data analysis is to gain a better understanding of the social factors that influence attendance for CenteringPregnancy® (CP) and CPs role in influencing

postpartum return, postpartum contraception initiation and contraceptive method selection among low income teenage girls, aged 13-19.

Innovation

This study is innovative because exploring the concepts of postpartum utilization, postpartum contraception selection and initiation, among a teenage population, solely receiving prenatal care using the group model, CenteringPregnancy© has not been previously assessed. Additionally, this study will be conducted among a population that can receive contraceptive methods at no-cost, eliminating a major barrier to contraceptive uptake. This study will provide insight about the factors that may impact adverse reproductive-behavioral outcomes among low-income teenagers, in addition to factors that may influence teenagers' participation in proven solutions. The results of this study can inform the manner in which perinatal care providers and organizations recruit, engage, retain, and support patients in group prenatal care, through their pregnancies and during the postpartum period. Additionally, this study will provide insight to the extent to which CP, an evidence based prenatal care model can influence contraceptive method selection among teenagers. The results of this study will further contribute to the body of literature focused on techniques to promote teenagers to the most effective forms of contraception, as recommended by the American College of Obstetrics and Gynecologist (2012).

Approach

Research Design and Setting

The proposed study will be a retrospective record review, assessing patients seen at the Baylor Teen Health Clinic's CenteringPregnancy Program for their prenatal care, from October 2013 through January 2016. The Baylor Teen Health Clinic , which started as a once a week, adolescent maternity service in the 1970s, has since grown into a system of 2 hospital- based, 3 community- based, and 5 school- based clinics.

The Baylor Teen Health Clinic system provide primary care, reproductive health services, and counseling services to Houston's indigent and or medically underserved adolescents and young adults, between the ages of 13-24, at little to no cost. In 2014, the Baylor Teen Health Clinic system impacted the community, by administering over 22,000 preventative medical visits and providing maternity and postpartum care to 123 women, through its Centering Pregnancy Program (CPP) (Texas children's hospital community benefit report.2015).

Population, Sample, Sampling Procedures

The population of interest are pregnant and parenting teenagers, between the ages of 13-19. The sample consists of adolescents who received their prenatal care through the Baylor Teen Health Clinic's- CenteringPregnancy Program (BTHC-CPP), which provides prenatal care to approximately 100 adolescents per year. The Baylor Teen Health Clinic does not offer traditional prenatal care. Therefore, patients interested in receiving prenatal care at the BTHC-CPP, are screened for program eligibility (gestation less than 26 weeks), by a Baylor Teen Health Clinic social worker. Patients must agree

to participation in the Centering Model, prior to being scheduled for their initial obstetrics appointment. Patients who opt out of the BTHC-CPP, are referred to external obstetric services.

The sample will consist of patients attending the BTHC-CPP from October 2013 through January 2016. This timeframe was selected because it reflects the time period in which the clinic was administering the questionnaire that measures the variables of interest for this study. Participants will be included in the study if they: 1) have attended at least one CenteringPregnancy group session 2) are between the ages of 13-19 at the time of intake, and 3) were less than 26 weeks gestation at the time of intake. The occurrence of a prior pregnancy loss (miscarriage or stillbirth) has been previously found to be a risk factor for intended and unintended rapid repeat pregnancy (Boardman, Allsworth, Phipps, & Lapane, 2006). Consequently, participants will be excluded if the current pregnancy resulted in a miscarriage or stillbirth. An a priori sample size was determined, using the G Power 3.1.9.2 statistical software. Where appropriate, two tail testing will be done, in order to assess the direction of the relationship between CP attendance on the reproductive behavioral outcomes of interest. One prior study, which examined the impact of CP on health behavior outcomes, reported a medium effect size (Shakspear, Waite, & Matern, 2010). As a result, a medium effect size of 0.5 (odds ratio of 1.5), according to Cohen's rule, will be applied to this study. In order to reduce the amount of type two error, or the likelihood of false negative results, this study has set an a priori power of 0.80. Similarly, in order to reduce the amount of type one error or the likelihood of false positive results, an a priori alpha value of 0.05 will be utilized. The statistical tests selected for this study will depend on the quality and distribution of the

available data. As such, using the aforementioned a priori criteria for effect size, power, and the alpha value, the following sample sizes are needed for the listed statistical test.

Statistical Test	Test Specifics	Sample Size
Chi Square /Fisher's Exact	Df= 5, two tail, 0.5 effect	52
Logistic Regression	OR 1.5	308

Instruments

The following tools will be utilized to extract information specific to the variables of interest for this study.

The Strong Start for Mothers and Newborns Initiative surveys and form were completed by patients from October 2013- January 2016, as a requirement for the evaluation of outcomes that were being collected by a grant funded to Baylor Teen Clinic. These tools collected information that was utilized by the funder to for evaluation purposes.

Strong Start for Mothers and Newborns Initiative Patient Intake Form. This 67 item evaluation survey was administered to patients by the CPP social workers, on the day of the new patient obstetric exam. This paper and pencil form collects information about patient demographics, relationship status, living conditions, pregnancy intention, reproductive and obstetric history, emotional status, smoking status, alcohol use, intimate partner violence occurrence, housing insecurity, food insecurity, and financial insecurity. The form is completed by the patient, within the first 26 weeks of gestation and will be used to collect information about all the baseline variables: demographics, housing insecurity, food insecurity, relationship status, and intimate partner violence.

Strong Start for Mothers and Newborns Initiative Third Trimester Survey. This 13 item evaluation form was administered to patients by the CPP social workers, when the patient is between 28-32 weeks gestation. This paper and pencil form collects information about patient demographics, relationship status, intimate partner violence occurrence, labor and delivery experiences, birth outcomes, smoking status, relationship status, newborn feeding, pregnancy intention, birth control, social support, and overall satisfaction with received prenatal care. This form will be utilized, for this study, to collect information about relationship status and intimate partner violence at a second time point.

Strong Start for Mothers and Newborns Initiative Postpartum Survey. This 52 item evaluation form was administered to patients by the CPP social workers, following the patients' delivery. This paper and pencil form collects information about patient demographics, relationship status, living conditions, smoking status, relationship status, intimate partner violence occurrence, newborn feeding plans, social support, and overall satisfaction with the received prenatal care attendance for individual and group prenatal visits, and received enhanced care services. This form is completed by patients in person, when they return for the postpartum exam. If the patient does not return for the postpartum exam, it is completed by a CPP social worker, via the telephone, if the patient can be contacted. This form will be used to collect information about relationship status at a third time point.

Relationship Assessment Tool. Imbedded within the Intake and third trimester forms, is the first 6 items of the 10-item, Relationship Assessment Tool(RAT). The RAT, developed by Smith, Earp, & DeVellis (1995), originally named the Women's

Experience with Battering Scale (WEB), was developed to measure non-physical markers of violence, in attempts to capture the chronic vulnerable nature of women's' experiences of battering (Smith, Earp, & DeVellis, 2015). Psychometric testing of the 10 item tool was performed among a racially and socioeconomically diverse population of women between the ages of 18-80. The tool demonstrates sufficient evidence of construct validity and internal consistency, with Cronbach alphas ranging from .95-.99 (Smtih, Earp, & DeVellis, 1995; Smith, Smith, & Earp, 1999). A higher score on the tool is representative of stronger IPV exposure, with a score of 20 or greater being considered IPV(Smith, Smith, & Earp, 1999). Like the 10 item tool, the 6 item toool, which was assembled by the Strong Start for Mothers and Newborns Initiative, captures five of the six domains of the battering framework, identified by the creators: perceived threat, altered identity, managing, entrapment, and disempowerment. According to Smith et al., (1999) the sixth domain, the yearning domain is not included in the tool because it is not unique to battered women. Evidence of sufficient psychometric properties have not been presented for the six item tool. As a result, stability reliability will be assessed during this study. Additionally, internal consistency will be measured to assess for random error (Ferguson & Cox, 1993; Nunnally & Bernstein, 1994). The acceptable criterion for evidence of reliability will be an internal consistency estimate of $\geq .80$ (Nunnally & Bernstein, 1994). Failure to achieve this a priori standard will result in the statistical analyses of the six items as individual factors, as opposed to a total score on the scale.

Data Collection

Participant records will be reviewed for factors including: sociodemographic factors, including housing and food insecurity status, reproductive history, intimate

partner abuse history, relationship status with the father of the baby, CP session attendance, and postpartum and contraceptive outcomes. Information pertaining to patient demographics, housing and food insecurity, intimate partner violence, and relationship status with the father of the baby, and CP attendance will be extracted from the Strong Start Mothers and Newborns Initiative Intake, Third Trimester, and Postpartum surveys, by the principle investigator. These original forms are housed by group session and patient name, within a locked file cabinet, within the Baylor Teen Health Clinic Social Services office. The remaining patient information will be extracted from patient records. All extracted data will be recorded in a new database, created specifically for this study. All extracted data entries will be checked for errors by two University of Texas Houston Health Science Center School of Nursing honor students, who will adhere to the instructions of a manual of operations prepared by the Principle Investigator.

Demographics. Patient demographics, such as age, race, school status, gravity and parity will be extracted from patient charts.

Housing insecurity. Information about housing insecurity will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form and/ or Strong Start for Mothers and Newborns Initiative Third Trimester Survey, at baseline and in the third trimester. Answering "yes" to the following question will constitute the presence of housing insecurity.

Are you homeless or living in a shelter right now?

Food insecurity. Information about food insecurity will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form, at baseline. Answering "yes" to the following question will constitute the presence of food insecurity.

In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

Intimate partner violence. Information about physical intimate partner violence will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form, at baseline. Answering 'yes' to any of the following questions will constitute the presence of intimate partner violence.

Have you ever been in a relationship where your partner has thrown, broken or punched things?

Have you ever been in a relationship where your partner threatened you with violence?

Have you ever been in a relationship where your partner has pushed or slapped you?

Emotional intimate partner violence will be assessed at baseline and in the third trimester, by the 6 item RAT, using 6 point, Likert type responses, ranging from "disagree strongly" to "agree strongly", to the following questions:

-My spouse/partner/boyfriend makes me feel unsafe even in my home.

-I feel ashamed of the things he does to me.

-I try not to rock the boat because I am afraid of what he might do.

-I feel like he keeps me prisoner.

-He makes me feel like I have no control over my life, no power, no protection.

Higher total scores will be indicative of increased degree of IPV.

Relationship status. Relationship status and quality will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form and/ or Strong Start for Mothers and Newborns Initiative Third Trimester Survey, at baseline and the third trimester.

Relationship status will be determined by a response to the following question:

What is your relationship status now?

-Married, living with spouse

-Married, not living with spouse

-In a relationship but not living together

-Living with a partner

-If yes, have you been living together for more than one year? Yes or No

-Not in a relationship right now

CenteringPregnancy© attendance. Group session attendance and prenatal sessions attended outside of group are collected as a mandatory measure for sites offering CenteringPregnancy, by the Centering Institute's evaluation and recertification process. Overall attendance and visitor attendance is collected by clinic social services staff and maintained in the Centering Pregnancy Outcome Database. Information pertaining to CenteringPregnancy groups attended will be extracted the Centering Pregnancy Outcome Database, and cross referenced with patient charts and group sign in sheets. The

Centering Institute defines the completion of CenteringPregnancy as attendance to 5 or more group sessions. For this study, group completion will be assessed as a continuous variable, based on total sessions attended.

Partner group attendance. Partner attendance to group sessions will be collected from the Centering Pregnancy Outcome Database. This information will be cross referenced with group sign-in sheets.

Postpartum visit return. Any return visit occurring within 8 weeks of delivery will be considered a postpartum exam. Information pertaining to the return for the postpartum visit will be extracted patient charts.

Postpartum contraceptive initiation. Any initiation of a contraceptive method, within 8 weeks of delivery, will be considered postpartum contraceptive initiation. Information pertaining to postpartum contraceptive initiation will be extracted from patient charts.

Contraceptive method. Contraception methods started within 8 weeks of delivery will be Identified and extracted from patient charts and categorized into the following groups:

0-No method

1-Condoms

2-OCPS

3- Patch/Ring

4-IUD

5-Implant

Data Collection Table

Variable	Variable Type	Collection Time Points		
		Baseline	Third-Trimester	Postpartum
Demographics	Categorical	X		
Food Insecurity	Categorical	X		
Housing Insecurity	Categorical	X	X	
IPV- Physical	Categorical	X		
IPV Emotional	Continuous	X	X	
Relationship Status	Categorical	X	X	
Partner Group Attendance	Continuous			X
CP Completion	Continuous			X
Postpartum Return	Categorical			X
PP Contraceptive Initiation	Categorical			X
Session 4 Attendance	Categorical			X
Contraceptive Method	Categorical			X

Data Analysis

The statistical analyses will be dependent upon the quality of resulting data in the newly created study database. Multivariate analyses will examine the association between housing insecurity, food insecurity, relationship status and quality, IPV occurrence, partner group attendance, and CP session completion. Generalized linear models will be used, as it will allow for linear and non-linear assessment of the independent variables, which are continuous and categorical, on the continuous dependent variable.

To assess the association between CP session completion, postpartum visit return, and postpartum contraceptive method initiation and selection, the data will again be assessed for distribution patterns and data quality characteristics. To assess CP session completion, postpartum visit return and contraceptive method initiation, logistic regression will be performed. This test will allow for the comparison of dichotomous dependent variables to a continuous independent variables. The association between CP session completion and contraceptive method selection will be assessed using bivariate analysis. Either Fisher's exact tests or Chi-Square analyses will be used to determine the strength of relationship between CP session completion and contraceptive method selection. Both statistical analyses are appropriate to assess differences between independent groups.

Specific Aim 1: To explore the association between CP sessions completed and:

1a. Food insecurity

Hypothesis 1a: Food insecurity will be associated with less CP completion.

1b. housing insecurity

Hypothesis 1b. Housing insecurity will be associated with less CP completion.

1c. Intimate Partner Violence (IPV)

Hypothesis 1c. IPV will be associated with less CP completion.

1d. relationship status

Hypothesis 1d. Being in a relationship will be associated with more CP completion.

1e. Partner group attendance

Hypothesis 1e. More partner group attendance will be associated with more CP completion

Analysis 1: Generalized linear models will be the most appropriate form of analyses, as it allows for linear and non-linear assessment of continuous and categorical independent variables, on continuous or discrete dependent variables.

Specific Aim 2: To explore the association between the CP sessions completed and

2a. Postpartum exam return

Hypothesis 2a: Teenagers who completed more CP sessions will have higher odds for postpartum exam completion than those who completed less CP sessions.

2b. Postpartum contraception initiation

Hypothesis 2b: Teenagers who completed more CP sessions will have increased odds for postpartum contraception initiation than those who completed less complete CP sessions.

Analysis 2: Logistic regression would be most appropriate because the dependent variables are nominal and the independent variable is continuous. This analysis will also account for confounding demographic variables.

Specific Aim 3: To compare postpartum contraception methods selected by teenage mothers by:

3a. total CP sessions completed

3b. Attendance at Group Session 4, the contraception discussion

Hypothesis 3a: Teenagers who complete more CP sessions will select more effective contraceptive methods than teenagers who complete less CP sessions

Hypothesis 3b: Teenagers who attended Group Session 4 will select more effective contraceptive methods than teenagers who did not complete Group Session 4

Analysis 3: Bivariate analyses, using Fisher's exact tests or Chi-squared analyses will be the most appropriate form of analyses to reveal significant contraceptive method selection by session completion.

Timeline

TIMELINE									
	2016				2017				
	FALL					SPRING			
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Prepare Proposal	X								
Proposal Defense	X								
IRB & CPHS	X	X							
Complete Database		X	X						
Data Preparation		X	X	x					
Statistical Analyses			X	X	X				
Prepare/submit Reports				X	X	X			
Presentation Defense						X	X Last day: 3/10/17		
Prepare/submit Manuscripts							X	X	X
Graduation									X

Study Limitations

Several limitations may arise in this study, particularly working with secondary data. Errors may be identified in the patient record that cannot be corrected. Additionally, application of the inclusion criteria and the data cleaning process may result in a sample too small to generated sufficient power. Similarly, an insufficient sample of participants returning for the postpartum follow up may limit the analyses performed for contraceptive outcomes.

Human Subjects Protection

IRB approval will be obtained from the Baylor College of Medicine research department and The University of Texas Houston Health Science Center's CPHS. No direct contact will be made with participants during this study. All patient information contained within the database will be de-identified, for patient protection.

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Manuscript

Factors Influencing Attendance, Postpartum Follow-up, and Contraceptive Usage among Teenage CenteringPregnancy® Participants

Teenage pregnancy and childbearing are associated with a variety of adverse health, social, and economic consequences, for both the teenage mother and child (Barnet, Liu, DeVoe, & Duggan, 2009; Boardman, Allsworth, Phipps, & Lapane, 2006; Milne & Glasier, 2008; Raneri & Wiemann, 2007). These consequences are magnified for teenagers under the age of 19 experiencing rapid repeat pregnancies (RRP), defined as a subsequent pregnancy within 24 months of the prior pregnancy's resolution (Centers for Disease Control and Prevention (CDC), 2013; Klerman, 2004; Milne & Glasier, 2008). RRP is a national problem that close to 50% of formerly pregnant teenagers experience (Richio, Phipps, & Raker, 2010). Up to 30% of teenagers experience a RRP within the first year postpartum (Mosher, Jones, & Abma, 2012). Such high occurrences of RRP, particularly so soon after pregnancy resolution, highlights the need for effective postpartum contraception (Thurman, Hammond, Brown, & Roddy, 2007).

Early initiation and continuation of postpartum contraception, particularly the most effective contraceptive methods, long acting reversible contraceptives (LARC), are strong preventative measures against RRP; with contraceptive initiation within three months of the prior pregnancy's resolution reducing risks for RRP more than two fold (Raneri & Wiemann, 2007). The receipt of prenatal contraceptive counseling and returning for the postpartum visit are associated with postpartum contraception initiation (Wilson, Fowler, & Koo, 2013). Therefore, increasing the number of teenage mothers

who are actively attempting to prevent additional pregnancies in the postpartum period, by using effective contraception methods, is critical for RRP reduction (CDC, 2013).

CenteringPregnancy® (CP), an evidence based model for prenatal care delivery, has been shown to reduce RRP by 51%, among teenage and young adult populations (Ickovics et al., 2016a). However, very few studies have evaluated the roles of social and economic factors on CP attendance. Similarly, few studies have assessed the impact of CP session attendance on postpartum return, postpartum contraception initiation and contraceptive method selection, among a teenage population.

The primary focus of this retrospective record review was to gain a better understanding of the social and economic factors that influence CP attendance and to assess CP's role in influencing postpartum return, postpartum contraception initiation and contraceptive method initiation among low income teenage girls, aged 13-19, utilizing a conceptual framework. The three aims of this study were to explore the association between CP sessions attended, food insecurity, housing insecurity, intimate partner violence (IPV), relationship status, and partner group attendance. The second aim was to explore the association between CP sessions attended, postpartum return and postpartum contraception initiation, within eight weeks of delivery. Lastly, the third aim was to compare postpartum contraception methods selected by total CP sessions attended and attendance at session 4, which is the contraceptive content session.

Background

The most effective contraceptive methods, LARC methods, remain underutilized in the United States, among all reproductive age groups, especially among teenagers (Peipert, Madden, Allsworth, & Secura, 2012). Approximately 91% of sexually active

teenage mothers report using some type of contraceptive, between two to six months following delivery, yet, only 22% report using LARC methods (CDC, 2013). Wilson et al, (2013), evaluated teenage contraceptive use at four months following delivery, and found that 11% of teenagers reported resumption of sexual activity without contraceptive usage, with an additional 15% reporting reliance solely on condoms or withdrawal. Further, only 12% of adolescent mothers reported using LARC.

Chacko et al. (2016) assessed intended postpartum contraception use among pregnant teenagers and found that 76% of the teenagers intended to use a form of hormonal contraception at postpartum, with only 23% reporting intentions of using a LARC method. Another study, which assessed teenage postpartum contraception intent versus actual use, found that 91% of teenagers reported intent to use a contraceptive method following delivery, but 78% actually initiated their intended method (Ortiz-Gonzalez, Benabe, Rivera-Rosa, Negron, & Romaguera, 2014). It is likely that initiating contraceptive discussions during the perinatal period, specifically during prenatal care, increases women's likelihood of initiating their desired contraceptive methods during the postpartum period (Committee opinion no. 666: Optimizing postpartum care, 2016). Additionally, the postpartum period has been traditionally highlighted as the key time for contraceptive initiation, yet it is estimated that up to 42% of teenagers do not return for this examination, especially those with limited resources (Committee opinion no. 666: Optimizing postpartum care, 2016;Wilcox, Levi, & Garrett, 2016).

CenteringPregnancy®

Participation in evidence based prenatal care models, such as CP, provides an alternate approach for the delivery of contraceptive information during the perinatal

period. Prenatal care is traditionally based on an individual model, in which a health care provider delivers one- on -one care, at one to four week intervals, in an office or clinic setting (AAP/ACOG, 2012). In contrast, women participating in CP still receive private medical care, following the same intervals as traditional prenatal care, but within a group setting. According to the Centering Healthcare Institute (2016) participants are given an initial exam within a traditional/office setting and are then assigned to Centering groups, based on their estimated due dates, usually with eight to 12 pregnant women with similar gestational ages.

Each group is scheduled to meet for 10, two hour sessions, with the first 30 to 40 minutes comprised of clinician delivered health assessments. In the Centering groups, women are taught self-assessment activities for weight and blood pressure measurement. The participants partner with their clinician, by completing their self- assessments, tracking them in a Centering Book and presenting the results to their clinician during their private health assessment time. If participants have more complex concerns or require an exam, this is done in an examination room, following the group session.

Following the health assessments, the remaining group time is devoted to a facilitated discussion, with a specific, assigned topic for each session. Topics are structured to address a variety of content, including pregnancy and prenatal care issues, childbirth preparation, and postpartum care and contraception. Each group session is facilitated by a prenatal clinician and co-facilitator. The facilitators have an outline of discussion points and activities to guide the group discussion, however, facilitators are trained to allow the group to flow based on the participants' discussion and engagement

in topics. The result is a structured, yet fluid discussion, based on the group's composition and interest.

When compared to traditional care, the CP model of prenatal care has been shown to improve maternal and fetal outcomes, such as preterm birth and low birth weight incidence (Picklesimer, Billings, Hale, Blackhurst, & Covington-Kolb, 2012). The model has also been found to increase breastfeeding incidence, maternal pregnancy knowledge and compliance, in addition to increasing postpartum contraceptive initiation and reducing RRP occurrence among participants (Baldwin, 2006; Shakespear, Waite, & Gast, 2010; Trotman et l., 2015). According to the Centering Healthcare Institute (2016), CP has been shown to nearly eliminate the racial disparities in preterm birth and the model of prenatal care is estimated to save the health care system close to $8 billion dollars annually, in preterm birth prevention alone.

Outcomes among adolescents have shown that participants are more likely to comply with prenatal and postpartum visits, breastfeed, select a LARC method at postpartum, and are less likely to suffer from postpartum depression, compared to those receiving traditional care (Trotman et al., 2015). Grady & Bloom (2004), who compared CP participants to traditional prenatal care participants, found that only 6.3% of teenagers who participated in CP and received continued care following delivery, experienced a RRP within 12 months of delivery.

The clinical and behavioral benefits of CP and RRP reduction were found to be positively related to better CP attendance (Ickovics et al., 2016a). Several studies evaluating CP outcomes have reported an average attendance rate of close to 50% among participants (Cunningham et al., 2016; Ickovics et al., 2016a). Additionally, the

Centering Healthcare Institute (2016) recognizes the attendance of five sessions as CP completion. Ickovics and associates (2016a) found better health outcomes among adolescents with more group visits. The research team reported that adolescents who attended at least five group sessions were significantly less likely than those attending four or less sessions, to have small for gestational age babies or a preterm birth. Additionally, adolescents attending at least five sessions experienced less RRP, less unprotected sex, and more condom use (Ickovics et al., 2016a). The possible intra and intergroup variability in the discussion content, coupled with the empirical evidence that most participants do not attend all 10 group sessions, highlights the presence of an intangible, beneficial property specific to group models of care.

Group Models of Care

Group therapy models, which are enveloped in the social component of a treatment plan, have the aim of providing a social experience, while allowing for the expression of feelings and emotions, in an accepting environment (Nurcombe, Leckman, & Loosen, 2008). Group therapy also fosters awareness of common experiences, promoting cohesiveness while allowing the group to consider solutions to commonly presented problems and are considered useful in helping adolescents, who share the same problem or condition, as they focus on mutual support and sharing (Nurcombe, Leckman, & Loosen, 2008). In CP, groups contain specific values, which include community building, attitude change, insight development, social learning, problem solving skill development, and mutual support (Rising, 1998).

Factors Influencing Perinatal Care Utilization

Literature pertaining to determinates of prenatal care utilization and factors that influence CP attendance is lacking among this population. However, the literature does suggest that race/ethnicity is a determinant for prenatal care utilization among teenagers. Generally, African American teenagers and teenagers of Hispanic ethnicity have been found to have lower utilization of prenatal care. Among teenage girls; financial problems, home life, romantic and interpersonal relationships, and social life factors have been found to be statistically significant factors influencing reproductive related decision-making (Magaya, Asner-Self, & Schreiber, 2005). Factors of interest for this study within these categories include food and housing insecurity, partner related issues, like relationship status, intimate partner violence (IPV), and support.

In the lack of population specific literature about factors influencing CP attendance, a variety of determinants for overall perinatal care utilization among women of other populations have been identified in the literature. Economic concerns and their consequences are common factors associated with decreased prenatal care (Heaman et al., 2014; Phillippi, 2009). One study reported that pregnant women experiencing homelessness or those who moved frequently had 9.93 and 11.01 more odds of inconsistent prenatal care, respectively (Heaman et al., 2014). Another study, evaluating determinants of inadequate prenatal care use among African American women, reported less utilization among women not receiving supplemental nutritional support, suggesting that food availability may influence prenatal care utilization and attendance (Johnson, Hatcher, El-Khorazaty, & Milligan, 2007).

Another category pertains to interpersonal relationships. One literature review reported marital status to be a determinant of prenatal care utilization, with unmarried, adult women being more likely to attend less prenatal care visits or to receive no prenatal care, when compared to their married counterparts (Feijen-de et al., 2011). Cha and Masho (2014)found that adult women reporting IPV prior to or during pregnancy had 1.4 more odds of having inadequate prenatal care. Close to 23% of adolescent, female IPV victims are first victimized before the age of 18 years (Black et al.,2011). Higher prevalence of IPV has been reported among socioeconomically disadvantaged populations (Hickman, Jaycox, & Aronoff, 2004; Teitelman, Ratcliffe, Morales-Aleman, & Sullivan, 2008).

In summary, empirical evidence supports the CP model as beneficial for adolescent populations, particularly in increasing contraceptive utilization and subsequently reducing RRP rates. While many social and economic factors have been found to influence traditional prenatal care uptake, little is known about factors influencing CP session attendance. Similarly, not much is known about the impact of CP participation on postpartum and contraceptive uptake behaviors, particularly among populations under the age of 19, who are at the greatest risk for RRP and the associated consequences (Klerman, 2004).

Conceptual Framework

The Group Care and Perinatal Behaviors Framework (Figure 1), developed by the first author, was used to guide the study. The framework utilizes theoretical constructs from Ecological Theory developed by Bronfenbrenner (1994/1993), which states that multiple environmental layers directly influence individual behavior. As such, positive

and negative environmental factors exist at the intrapersonal, social, and organizational levels, all of which can positively or negatively influence health behaviors (Glanz, Rimer, & Viswanatha, 2008). Additionally, Social Cognitive Theory's concept of reciprocal determinism (Bandura, 1977) is also used, as this framework depicts that environmental factors can positively or negatively influence individuals' behavior, but individuals can also influence their environments and regulate their own behavior (Glanz, Rimer, & Viswanatha, 2008).

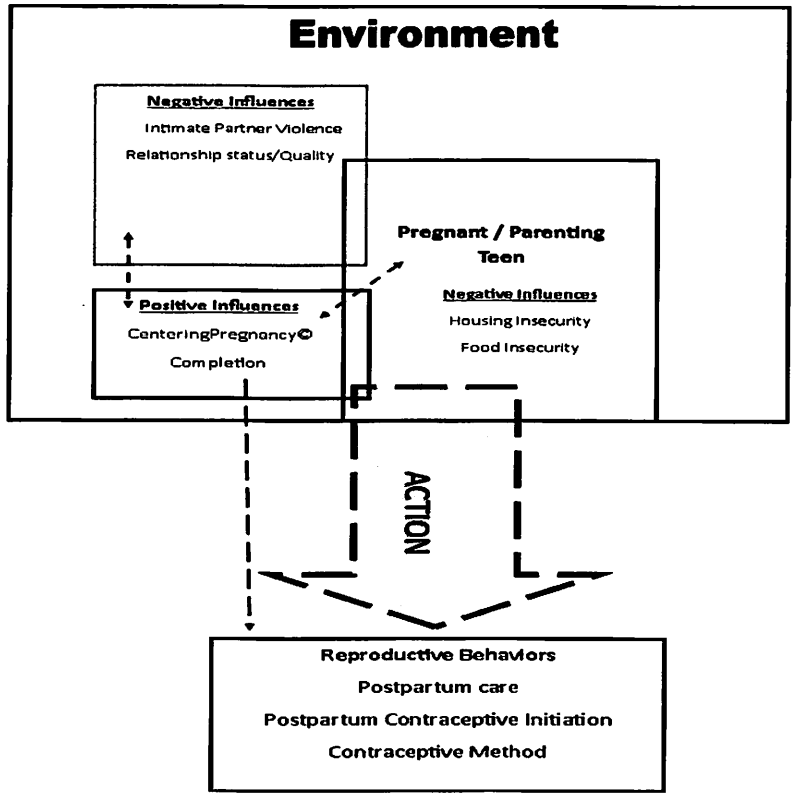

Figure 1. The Group Care and Perinatal Behaviors Framework

The framework indicates that positive and negative environmental influences are weighed at the intrapersonal level, subsequently contributing to positive and negative

reproductive decision making behavior. The Group Care and Perinatal Behaviors Framework represents the factors that could potentially influence participant involvement in CP, including: intrapersonal factors (housing insecurity and food insecurity); and social factors (intimate partner violence, relationship status, and partner support. Involvement in CP can therefore influence and explain teenage reproductive behaviors, such as postpartum care uptake, postpartum contraceptive initiation and continuation, and contraceptive method selection.

Methods

The study design was a retrospective record review of 83 pregnant and parenting teenagers, between the ages of 13-19 years, seen at a community based teen health clinic.

Sample and Participant Selection

Institution Review Board approval was granted by Baylor College of Medicine and the University of Texas Houston Health Science Center Committee for the Protection of Human Subjects.

The medical records of pregnant and parenting patients receiving group prenatal care (CP), at a Southwestern adolescent health clinic in a large metropolitan city, were retrospectively reviewed. Eligible participant initiated prenatal care between October 2013- January 2016, attended at least one CP group session, were between the ages of 13-19 at the time of intake, and were less than 26 weeks gestation at the time of intake. These dates reflect the time period for which the questionnaires measuring the variables of interest for this study were administered by the health clinic, as required by a grantor. Participant records were excluded if patients did not complete the intake survey or if their pregnancy did not result in a live birth.

Procedure

One master list of patients participating in the CP from October 2013- January 2016 was generated from the CP outcomes database and served as a guide for identifying patient records that were screened for eligibility criteria.

Once screened for eligibility, information pertaining to patient demographics, housing and food insecurity, intimate partner violence, and relationship status with the father of the baby were extracted from the three Strong Start Mothers and Newborns Initiative surveys, which were housed within the clinic's social services office. From the surveys, specific responses pertaining to patient demographics: age, race, ethnicity, gestational age at intake, school status, highest completed grade, total pregnancies, and total live births; food and housing insecurity; relationship status throughout the pregnancy; and IPV were selected after review by the first author.

Postpartum return and contraceptive initiation within eight weeks of delivery were identified and extracted from patient charts. Contraception methods were characterized as 'no method', 'condoms only', 'oral contraceptive pills(OCPs)', 'patch/ring', 'injectable contraception', 'intrauterine device (IUD)', or 'contraceptive implant'. Participant and partner CP attendance data were extracted from the clinic's CP outcome database. All data for the study variables were numerically coded, according to the codes assigned in the study's manual and code book. Extracted data were randomly checked for errors by a clinic project manager, with a 0.5% error rate. If the outlined data sources do not contain the necessary information for extraction, the case was cross referenced to verify the missing data. Unclear participant responses on the surveys and absent or

missing data were left blank and the statistician was consulted to determine if the entire case should be excluded from the study.

Measures

Three grantor initiated, grantee administered surveys (the Strong Start for Mothers and Newborns Initiative surveys) were completed by patients as required for evaluation of program outcomes.

Strong Start for Mothers and Newborns Initiative: Intake Survey. This non-validated, 67 item survey was created by the Strong Start Initiative, to be used by the health facility to measure achievement outcomes. The survey utilized a combination of fill in the blank, multiple choice, yes and no questions, and Likert type response options to collect information from the patient about their demographics, relationship status, living condition, pregnancy intention, reproductive and obstetric history, emotional status, smoking status, alcohol use, intimate partner violence occurrence, housing insecurity, food insecurity and financial insecurity. The intake survey was administered to patients by clinic social workers, on the day of the new patient obstetric exam.

For this study, there were 23 items from the survey that were used that addressed demographics and information about housing insecurity, food insecurity, relationship status, and physical and emotional intimate partner violence. Housing insecurity was defined as respondents' answering 'yes' to "*Are you homeless or living in a shelter right now?*". Food insecurity was defined as respondents' response of 'yes' to "*In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food.* Physical intimate partner violence was defined as respondents' answering 'yes' to any of the following questions: *"Have you ever been in a relationship where your*

partner has thrown, broken or punched things?", "Have you ever been in a relationship where your partner threatened you with violence?", or "Have you ever been in a relationship where your partner has pushed or slapped you?".

Evidence of sufficient psychometric properties have not been presented for the three physical IPV questions. As a result, exploratory factor analysis was used to identify the underlying constructs of the unofficial tool. Principal axis factoring (PAF) was conducted in SPSS (version 23, SPSS Inc., Chicago, IL), using an unrotated model. Responses from the 83 participants at baseline were used for analysis. The total factors were determined by scree plot, confirmed with eigenvalues ≥ 1 (Ford, MacCallum, & Tait, 1986). Consistent with Ferguson & Cox's recommendations, item allocation to factors was established by primary factor loadings $\geq .40$ and a difference of $\geq .20$ for cross-loadings (As cited in Watson & Thompson, 2006). A factor was identified to constitute a minimum of three loaded items (Watson & Thompson, 2006).

PAF identified one underlying factor, yielding an eigenvalue total ≥ 1, among the three physical IPV questions. All three items loaded heavily on the factor, explaining 74.5% of the total variance. Rotations were not conducted in the absence of additional factors. The three items met the a priori criteria, with the loadings exceeding .69. Additionally, the responses were analyzed for evidence of internal consistency reliability, using Cronbach's alpha. The acceptable criterion for evidence of reliability was an internal consistency estimate of $\geq .80$ (Nunnally & Bernstein, 1994). The Alpha coefficient for the three questions was .829.

Relationship Assessment Tool (RAT). Emotional IPV was captured with the RAT. Imbedded within the Strong Start for Mothers and Newborns Initiative surveys (at

intake and the third trimester), was the first six items of the 10-item, RAT. The RAT, developed by Smith, Earp, and DeVellis (1995), originally named the Women's Experience with Battering Scale (WEB). This scale was developed to measure non-physical markers of violence, in attempts to capture the chronic vulnerable nature of women's experiences of battering. Psychometric testing of the 10 item tool was performed among a racially and socioeconomically diverse population of women between the ages of 18-80 and demonstrated sufficient evidence of construct validity and internal consistency, with Cronbach alphas ranging from .95-.99 (Smtih, Earp, & DeVellis, 1995; Smith, Smith, & Earp, 1999). A higher score on the tool is representative of stronger IPV exposure (Smith, Smith, & Earp, 1999). Like the 10 item tool, the six item tool, which was assembled by the Strong Start for Mothers and Newborns Initiative, captures five of the six domains of the battering framework: perceived threat, altered identity, managing, entrapment, and disempowerment. According to Smith et al., (1999) the sixth domain, the yearning domain is not included in the tool because it is not unique to battered women. Evidence of sufficient psychometric properties have not been presented for the six item tool. As a result, internal consistency was measured to assess for random error (Ferguson & Cox, 1993; Nunnally & Bernstein, 1994). The Alpha coefficient for six item RAT, in this study was .61. The acceptable criterion for evidence of reliability was an Alpha coefficient estimate of $\geq .80$ (Nunnally & Bernstein, 1994). Since the a priori criteria was not met for this study, emotional IPV was measured as a dichotomous and continuous variable.

Strong Start for Mothers and Newborns Initiative: Third Trimester Survey. This non-validated, 13 item, paper and pencil survey was created by the Strong Start

Initiative, to be used by the health facility to measure achievement outcomes during the third trimester. The survey utilized a combination of fill in the blank, multiple choice, yes and no questions, and Likert type response options, to collect information about relationship status, living conditions, smoking status, newborn feeding plans, social support, and overall satisfaction with the received prenatal care. The third trimester survey was administered to patients by clinic social workers, between 28-32 weeks gestation. For this study, there were seven items from the survey that were used that addressed changes to relationship status and emotional intimate partner violence.

Strong Start for Mothers and Newborns Initiative: Postpartum Survey. This non-validated 52 item, paper and pencil survey was also created by the Strong Start Initiative, to be used by the health facility to measure postpartum outcomes and is similar in design as the intake and third trimester surveys. The survey collected information about labor and delivery experiences, birth outcomes, smoking status, relationship status, newborn feeding, pregnancy intention, birth control, social support, and overall satisfaction with received prenatal care. The postpartum survey was completed by participants at the postpartum visit or via telephone, if they did not return for the visit. For this study, there was one item from the survey that was used that addressed changes to participant relationship status at the end of the pregnancy.

CenteringPregnancy© outcome database. The database includes group session attendance, visitor attendance, and prenatal care received outside of CP sessions. This information was documented by clinic social services staff.

Analysis

The strategy for inferential analysis relied on multiple tests for each research aim. Bivariate relationships between variables were analyzed using Fisher's exact test, t-test and ANOVA. Due to small sample size, checking assumptions of these tests was not feasible. As a result, nonparametric counterparts of t-test and ANOVA were run to validate results of the parametric tests. Analyses were conducted using SPSS (version 23, SPSS Inc., Chicago, IL).

Although, the use of parametric tests could have been avoided, they were still used because of higher statistical power that they provide (Howell, 2013). The issue of statistical power was relevant for this study due to the relatively small available sample size. Significant parametric tests suggest a potential presence of the effect even if a nonparametric test showed otherwise.

Results

A total of 83 participants were included in this study. Participant demographics are summarized in Table 1. The majority of participants were minorities [Black (53%) and Hispanic (39.8%)], attended school (63.9%) and had no prior children (77.1%), with close to 22% reporting a prior pregnancy resolving within the last six months. The mean and standard deviation of the sample distribution for the number of sessions completed were $M = 6.17$, $SD = 2.79$. The median number of sessions completed was 6.0 (Figure 1). Attrition was high, as only 14.5% of participants attended all 10 sessions.

Table 1

Demographic Characteristics of the Participants (N = 83)

	n	Percent		n	Percent
Ethnicity			**School status**		
White non-Hispanic	5	6.0%	Not at school	30	36.1%
White Hispanic	33	39.8%	At school	53	63.9%
Black	44	53.0%	**Highest grade completed**		
Asian / Pacific Islander	1	1.2%	5	5	6.4%
Age			6	6	7.7%
13	2	2.4%	7	7	9.0%
14	3	3.6%	8	8	10.3%
15	8	9.6%	9	9	11.5%
16	11	13.3%	10	10	12.8%
17	17	20.5%	11	11	14.1%
18	20	24.1%	12	12	15.4%
19	22	26.5%	**Previous pregnancy ended ≤6 months ago**		
Number of Live Children			No	65	78.3%
0	64	77.1%	Yes	18	21.7%
1	17	20.5%			
2	2	2.4%			

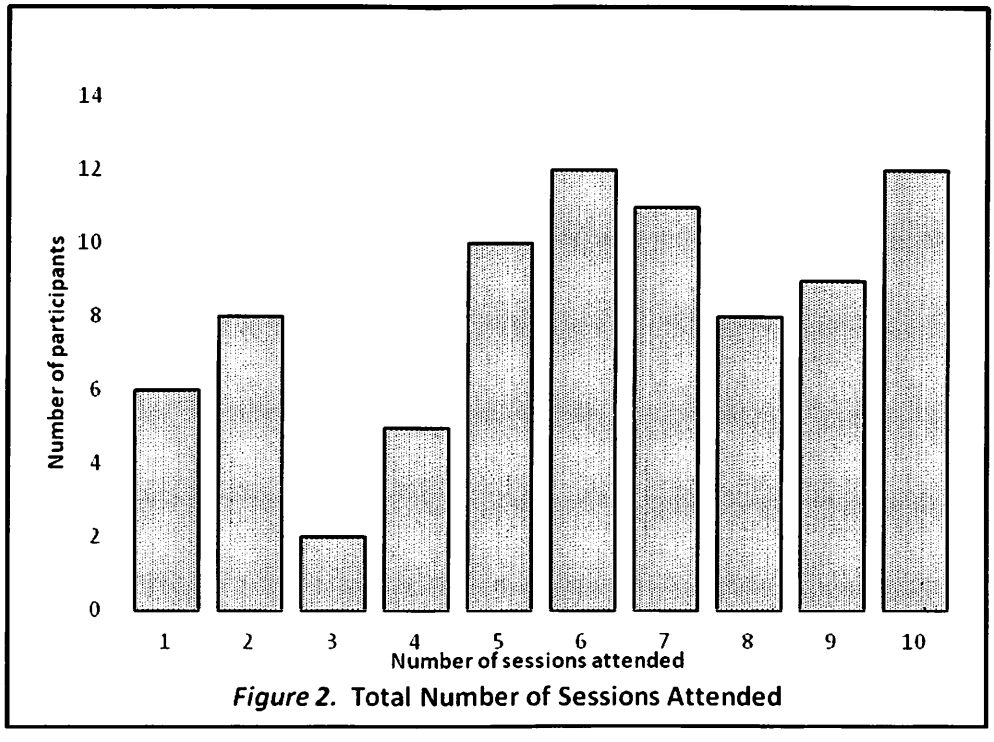

Figure 2. Total Number of Sessions Attended

Food Insecurity and CP Session Attendance

Overall, 14 (17%) out of 83 participants reported food insecurity. The independent sample t-test results demonstrated no statistically significant difference between participants experiencing food insecurity and the average number of participant group sessions completed t (80) = -0.97, p = 0.33. To validate the t-test results, a nonparametric Mann-Whitney test was utilized and it was also not statistically significant z = -0.999, p =0.318. Fisher's exact test of independence between the two variables also indicated the lack of association between these them (p = 0.78).

Housing Insecurity and CP Session Attendance

Information pertaining to housing insecurity was collected at the baseline and during the third trimester. At the baseline, only one participant out of 83 reported housing insecurity. The single participant who reported housing insecurity attended all 10 sessions. Housing insecurity data at both time points was only available for 52 participants. There was no change in housing insecurity status among participants. Since only one participant reported, the low number of participants reporting housing insecurity contributed to the lack of relationship between program attendance and housing insecurity(p=1.00).

Physical and Emotional IPV and CP Session Attendance

At baseline, 23 (27.7%) participants of the 83 reported physical IPV. Twelve participants reported feeling threatened. Among the twelve, nine participants reported that a partner had thrown items or pushed or slapped them, while three participants reported feeling threatened, but did not report acts of overt violence.

However, there was no evidence to support the association between reports of physical violence and session attendance. On average, those who did not report physical IPV, attended $M = 5.92$, $SD = 2.89$ sessions, while those reporting physical IPV attended more sessions $M = 6.83$, $SD = 2.46$ with no significant difference between the two groups (t (81) = -1.33, $p = 0.19$). To validate the results of the t-test, a nonparametric Mann-Whitney test was utilized, which also yielded no statistically significant results z = -1.245, p =0.21. The conclusion of statistical independence between the number of sessions attended and physical violence still stands when the Fisher's exact test was used to analyze the cross-tabulated data ($p = 0.93$).

Not all participants provided responses regarding emotional IPV. At baseline eight (9.6 %) participants reported emotional violence, while at the third semester the number dropped to four (4.8%). Changes to reports of emotional IPV between baseline and the third trimester were uncommon. The three participants who reported emotional abuse at baseline, no longer raised this concern in the third trimester. On the other hand, one participant, who did not report emotional violence at the baseline reported it in the third trimester.

Those who reported no emotional violence at baseline attended on average M = 6.38, $SD = 2.95$ sessions, while those who reported it attended $M = 5.00$, $SD = 2.33$ sessions. This difference, however, was not statistically significant t (64) = 1.27, p = 0.21. The nonparametric Mann-Whitney test was utilized to validate the t-test results and it also was not statistically significant (z = -1.535, p =0.13). Fisher's exact test also supports the conclusions of t-test and Mann-Whitney tests ($p = 0.27$).

Table 2

Social and Economic Factors Influencing CP Session Attendance

			t-test		Mann-Whitney		Fisher's Exact	
Variable	**Time point**	**n (%)**	**P value**	**(CI)**	**P value**	**Effect Size (r)**	**P Value**	**Cramer's V Effect Size Measure**
Food Insecurity	Baseline	14(17)	.33	(-2.4 – 0.84)	.318	.11	.78	.263
Housing Insecurity	Baseline & Third-Trimester	1(1.9)	–	–	–	–	1.00	.306
IPV-Physical	Baseline	23(27)	.19	(-2.3-.45)	.21	-0.14	.93	.24
IPV-Emotional	Baseline	8(9.6)	.21	(-.80-3.55)	.13	-0.19	.27	.40
	Third-Trimester	4(4.8)	.57	(-2.04-3.64)	.435	-0.12	.29	.53

Relationship Status and CP Sessions Attended

Descriptive statistics for the relationship status at the three analyzed time points are presented in Table 3. Marital relationships were infrequent, although the majority of participants were in some form of a relationship during the study period.

Table 3

Relationship Status

	Baseline		**Third-Trimester**		**Postpartum**	
	Frequency	%	Frequency	%	Frequency	%
Not in a relationship right now	23	27.7 %	13	25.0 %	14	25.5%
Married, living with spouse	2	2.4%	1	1.9%	4	7.3%
Married, not living with spouse	0	0.0%	0	0.0%	0	0.0%
In a relationship but not living together	39	47.0 %	24	46.2 %	23	41.8%
Living with a partner	19	22.9 %	14	26.9 %	14	25.5%

Because the number of participants who were married was small (two at baseline, one at the third trimester, and four at postpartum) these participants were excluded from the analysis of the association between relationship status and the number of sessions attended. To conduct this analysis, the average number of sessions attended by each group was compared using one-way ANOVA test. Descriptive statistics for the number of sessions attended by relationship status is presented in Table 4. The difference in mean number of sessions attended were not statistically significant at any of the time points, with the respective values of test statistics being equal to $F(2, 78) = 0.07$, $p = 0.94$, $F(2, 48) = 1.48$, $p = 0.24$ and $F(2, 34) = 1.88$, $p = 0.17$. To validate the results of ANOVA, a series of nonparametric Kruskal-Wallis tests were utilized. None of Kruskal-Wallis tests were statistically significant, with respective values of test statistic for the baseline, third trimester and postpartum being equal to $\chi^2(3) = 2.46$, $p = 0.48$, $\chi^2(3) = 5.25$, $p = 0.16$ and $\chi^2(3) = 2.10$, $p = 0.55$. Because there is no difference in outcomes between ANOVA and Kruskal-Wallis tests, there is no reason to believe that violations of ANOVA assumption were relevant.

Table 4

Personal Relationships and the Number of Sessions Attended

	Baseline		**Third-Trimester**		**Postpartum**	
	Mean	Std.Dev.	Mean	Std.Dev.	Mean	Std.Dev
Not in a relationship right now	6.26	2.49	5.54	2.37	5.78	2.73
In a relationship but not living together	6.08	2.94	7.08	2.36	7.63	1.77
Living with a partner	5.95	2.93	6.64	3.20	7.44	3.24
P values for differences in mean number of sessions attended	0.94		0.24		0.17	

Partner Group Attendance and CP Sessions Attended

In the dyads where a participant's partner attended at least one session, the average number of sessions attended was slightly higher $M = 5.88$, $SD = 2.99$ versus $M = 6.45$, $SD = 2.59$. However, the difference between subgroups was not statistically significant $t\ (81) = -0.94$, $p = 0.35$. To validate the results of t-test, a nonparametric Mann-Whitney test was utilized and it also was not statistically significant $z = -0.848$, $p = 0.40$. Fisher's exact test for the cross tabulated data were also not statistically significant, $p = 0.59$ (detailed in Table 5).

Table 5

Number of Sessions Attended When Partner Attended at Least One Session

	Number of sessions completed										*Statistical Tests+*		
	1	2	3	4	5	6	7	8	9	10	T-test	M-W	Fisher
Partner attended													
No	5(83.3%)	4(50%)	1(50%)	1(20%)	6(60%)	7(58.3%)	3(27.3%)	4(50%)	4(44.4)	6(50%)	.35	.40	.59
Yes	1(16.7%)	4(50%)	1(50%)	4(80%)	4(40%)	5(41.7%)	8(72.7%)	4(50%)	5(55.6%)	6(50%)			

+P values for statistical analyses of differences among dyads with partner attendance for at least one session

CP Sessions and Postpartum Return

Of the 83 participants, 57 (69%) returned for a post-partum exam. To identify the presence of an association between number of sessions attended and postpartum return, Fisher's exact test, independent t-test and Mann-Whitney test were utilized. Independent t-test ($t\ (81) = -2.11$, $p = 0.04$) and Mann-Whitney test ($z = -2.06$, $p = 0.04$) both indicate a

statistically significant difference in the number of sessions attended between those who returned to post-partum visit (M =6.60, SD = 2.69) and those who did not (M = 5.23, SD = 2.85), suggesting the presence of a relationship between the number of sessions attended and likelihood of returning for the postpartum exam. However, the Fisher's exact test found no relationship between the two variables p =0.07 although it did trend toward significance. Frequency data appeared to indicate that attendance to at least two sessions had the most impact on participants' intent to return for the postpartum exam. To investigate this relationship further, analyses were conducted between individual session attendance and postpartum return, using the Fisher's exact test and statistically significant relationships were found between participants attending session 9 (p= .032) and session 10 (p=.033), with postpartum return. See Table 6.

Table 6

Cross-tabulation for Return for Postpartum Exam

	Number of sessions completed									
	1	2	3	4	5	6	7	8	9	10
Counts										
No	5	1	1	3	2	5	3	2	3	1
Yes	1	7	1	2	8	7	8	6	6	11
Percentages										
No	83.3%	12.5%	50.0%	60.0%	20.0%	41.7%	27.3%	25.0%	33.3%	8.3%
Yes	16.7%	87.5%	50.0%	40.0%	80.0%	58.3%	72.7%	75.0%	66.7%	91.7%

Table 7

Individual Session Attendance, PP Return and Contraceptive Initiation and Effectiveness

n=57	Postpartum Return		Contraceptive Initiation		LARC Initiation	
	n	P value	**n**	P value	**n**	P value
CP Session						
1	46	.17	39	1.00	7	.19
2	39	.58	33	1.00	6	.06
3	46	.27	39	1.00	7	.22
4	39	.80	34	1.00	5	.16
5	34	.34	29	0.47	5	.26
6	36	.34	31	0.25	4	.89
7	35	.06	30	0.70	4	.65
8	31	.35	28	1.00	3	.98
9	37	.032*	29	.04*	5	.59
10	33	.033*	26	.12	2	.61

*indicates significant p values < 0.05 PP=Postpartum LARC= Long Acting Reversible Contraception

Table 8

CP Sessions Attended, Postpartum Return and Contraceptive Initiation

			t-test		Mann-Whitney		Fisher's Exact	
		n (%)	**P value**	**(CI)**	**P value**	**Effect Size (r)**	**P value**	**Cramer's V Effect Size Measure**
Postpartum Return N=83		57(69)	.04*	(-2.65--0.08)	.04*	-0.22	.07	.43
Contraceptive Initiation N=57		49(86)	.17	(-.59-3.36)	.19	-0.17	.81	.32

The conclusions from the Fisher's exact test and independent samples t-test suggests there might be an association between total CP attendance and postpartum return, with sessions 9 and 10 attendance showing significance for postpartum return.

CP Sessions Attended and Postpartum Contraception Initiation

Data for contraception initiation were available for 57 participants. Of the 57 participants, 49 (86%) initiated contraception within eight weeks postpartum. According to Fisher's exact test there was no relationship between number of sessions attended and contraception initiation ($p = 0.81$), with t-test indicating the same (t (55) = 1.40, p = 0.17). To validate the results of t-test, a Mann-Whitney test was utilized and it was also not statistically significant z = -1.334, p =0.19.

Analyses were conducted between individual session attendance and contraceptive selection at postpartum, using Fisher's exact test. A statistically significant relationship was found between participants attending session 9 and postpartum contraceptive method selection, p=.041.

CP Sessions Attended and Contraceptive Effectiveness

Data for contraception methods was available for 50 participants. The majority of patients (64%) preferred injectable contraception (Table 9). In this table, the methods are ordered from the least effective to the most effective according to Trussell (2011).

Table 9

Contraception Methods Initiated at 8 weeks Postpartum

	n	Percent	Effectiveness*
No method	1	2.0%	0
Condoms	3	6.0%	1
OCPS	6	12.0%	2
Patch/Ring	1	2.0%	2
Injectable contraception	32	64.0%	3
IUD	1	2.0%	4
Implant	6	12.0%	5

**0=least effective, 5=most effective*

Spearman correlation coefficient was computed to identify the presence of a relationship between the number of session attended and the effectiveness of selected contraception methods. The coefficient was not statistically significant r = - 0.103, $p = 0.48$ and thus there was no association between session attendance and choice of contraception method. To validate this analysis, a one-way ANOVA test and the Kruskal-Wallis test were utilized to identify differences between the average numbers of sessions attended for each contraception methods. No statistically significant differences were found $F\ (5, 44) = 1.48$, $p = 0.22$ and $\chi^2\ (5) = 5.92$, p = 0.31, respectively.

Lastly, to test the presence of a relationship between attendance to CP Session 4 (the contraceptive session) and choice of a contraception method, Fisher's exact test was utilized. The test indicated that there was no relationship between the two variables ($p = 0.16$).

Discussion

This retrospective study examined the role of social and economic factors on CP attendance, in addition to examining the role of CP attendance on postpartum return and postpartum contraceptive initiation and method selection. This study was the first to explore factors influencing CP attendance in a solely teenage population.

Factors Influencing Attendance

This study found that only 14.5% of participants attended all 10 CP sessions. This large decline in CP participation is consistent with prior studies, which report low rates of prenatal care utilization among African American teenagers and teenagers of Hispanic descent (Frisbie, Echevarria, Hummer, 2001; Laditka, Laditka, & Probst, 2006). The low percentage of total session attendance suggest the possible presence of factors influencing attendance, participation, and perinatal care utilization among these populations, not evaluated in this study. Although no significant relationships were identified between CP session attendance and food insecurity, housing insecurity, IPV, relationship status, and partner group attendance, several patterns were identified that may be of clinical importance. These factors are detailed below.

Food and Housing Insecurity

Seventeen percent of participants reported food insecurity, with less than two percent reporting housing insecurity at both time points. A recent study evaluating the role of various factors influencing CP attendance among a similar population, reported 40% food insecurity and 28% housing insecurity and also found no significant relationships (Cunningham et al., 2016).

The question of association between housing insecurity and CP session attendance appears to be irrelevant in this study as housing insecurity was an extremely rare problem. However, the small number of participants reporting housing insecurity may indicate that current homelessness or shelter living does not capture the true concept of housing insecurity among this population. Definitions for homelessness and housing insecurity remain inconsistent, with other measures quantifying other concepts, such as moving frequency, street dwelling, and couch surfing (Carrion et al., 2015, Narendorf, Santa Maria, Ha, Cooper, & Schieszler, 2016). Using a measure that captures the multiple aspects of housing insecurity may have yielded different results.

IPV

The overall prevalence for physical IPV was 27%, with reports of emotional IPV being 9.6% and 4.8% on intake and the third trimesters respectively. Although no significant relationships were noted, those reporting more physical IPV attended more CP sessions. Inversely, those reporting more emotional IPV attended less CP sessions. A similar pattern was observed in a study of help-seeking behaviors among Brazilian women experiencing violence. Women who experienced more severe levels of violence or those who were severely injured were more likely to seek assistance from formal health, legal or social agencies (Kiss et al., 2012).

These findings may suggest the beneficial impact of the social support provided by CP for those who have experience physical IPV, but not for those who have experienced emotional IPV. These differences in CP session attendance may reflect differences in appraisal of physical and emotional IPV. While prior research provides possible rationales for observed differences in support networks among women who have

experience IPV, these findings are not stratified by physical or emotional violence exposure (Levendosky, Bogat, Theran, Trotter, von Eye, & Davidson, 2004). As a result, some hypothesis to this pattern are expressed here from clinical experience. Physical IPV can be an episodic or acute injury or form of debilitation. After physical injuries heal, the outward evidence of violence may be less apparent, possibly allowing for the ability to engage with individuals outside of the relationship. Additionally, the physical evidence of physical IPV may make detection of violence more likely, thus increasing the teenager's chances of getting help and support from an outside source. It may also be that group sessions provide a form of escape for women experiencing physical violence. Inversely, one may be less able to escape from the psychological impacts of emotional violence, as emotional violence may represent a more covert state of chronic vulnerability, associated with psychological wounds that have less opportunity to heal without third party attention. Fewer opportunities for detection of emotional abuse may impact the teenager's ability to engage in relationships and activities outside of the abusive relationship. This is consistent with prior research, which suggests that the consequences of abuse can persist long after the violence has ended, with more severe violence exposure creating greater impacts on women's mental and physical health (WHO, 2012).

Concerns with the manner of measurement for both concepts of IPV should be addressed. Three participants expressed feeling threatened with violence by a partner, on the physical IPV questions, but did not report the actual occurrence of a physical violent encounter. This may highlight the measurement of an additional concept other than just

physical IPV, such as perceived violence or partner aggression, with the three questions used to capture physical IPV in the dispensed survey.

As it pertains to emotional IPV, a six-item version of the RAT was utilized. The RAT has not been validated among individuals under the age of 18. While it was the intention to conduct psychometric testing, during this study, on this modified version of the RAT, the lack of variability in participant responses made such analyses impossible. To account for possible measurement flaws, emotional IPV was analyzed as a continuous and dichotomous variable, both of which yielded no significant results.

While food and housing insecurity, and IPV have been shown to negatively impact prenatal care initiation among individuals in a traditional model of prenatal care the same pattern does not seem to be the case with a group model of prenatal care. As a result, the lack of significant relationship with CP session attendance and complex social factors, such as food and housing insecurity and IPV is a reassuring sign that CP may be an appropriate model for teenagers facing complex circumstances.

As it pertains to relationship status and partner attendance at CP session, it should be highlighted that several patterns were identified. Participants who were not in relationships during their pregnancy had lower likelihood of postpartum return, compared those reporting being in some type of relationship during their pregnancy. Similar patterns where identified among partner/participant dyads. Dyads where partners attended at least one session had slightly higher average of total CP sessions attended when compared to participants that had no partner attendance. Therefore, promoting partner attendance for a minimum of one session may have a clinically significant impact in the overall attendance of the pregnant teenager. The knowledge that this can possibly

impact the large attrition rates often experienced in CP delivery, can allow for the integration of partner specific incentives or recruitment tactics, by CP locations.

Postpartum Return and Session Attendance

Among this population, 69% of participants returned for the postpartum exam, this exceeds the previously identified prevalence of 58% for teenage postpartum return (Committee opinion no. 666: Optimizing postpartum care, 2016). The finding of a significant relationship between increased CP session attendance and postpartum return is consistent with previously identified benefits of CP (Trotman et al., 2016). This result supports the existence of this relationship among a mostly minority teenage population. The conflicting results of the Fisher's exact test results warrants the need for more evaluation of this relationship, although the marginally significant results may show significance among a population with a larger sample size.

Contraceptive Initiation, Efficacy and CP Session Attendance

A prior study (Trotman et al., 2015) found CP to be associated with postpartum contraceptive initiation among adolescents, with reports of the selection of more effective contraceptive methods by participants. The lack of similar findings in this study may be the result of the small sample size and reflect the existence of personal or organizational barriers or factors that may have impacted participants' ability to initiate a contraceptive at the time of postpartum return. This study did not assess participant intentions for future pregnancies, as previous studies have found intention status to impact the initiation of a contraceptive method (Frost, Lindburg, & Finer, 2012, Higgins, Popkin, & Santelli, 2012, Tucker et al, 2012). Additionally, the study did not assess the initiation of contraceptive methods outside of the first eight weeks following delivery. It is possible

that participants were unable to start a method on the day of the postpartum exam. Some possible examples include: the inability to rule out pregnancy for contraceptive initiation, indecisiveness about method type, and the lack of or limited availability of same day LARC insertion for participants who may have desired a LARC method.

Sessions of Importance

Only one prior study (Trotman et al., 2015), reporting significant outcomes pertaining to postpartum return, postpartum contraceptive uptake and effectiveness, was identified to report a minimum CP exposure or session cutoff point, for which participants experience these outcomes. Information pertaining to recommended CP exposure is of particular importance when the group model is utilized among populations with higher rates of attrition. Of interest in this study, is the identification of attendance at sessions 9 and 10 as significant predictors for postpartum return and the identification of attendance at session 9 as a significant predictor of postpartum contraceptive initiation Content in session 9 pertains to newborn safety and infant massage. Similarly, content in session 10 pertains to newborn care, newborn growth and development, home and family changes, and when to contact a health care provider for newborn and postpartum concerns.

It may be possible that as the proximity to delivery and motherhood approaches, the maternal necessity to make plans for the postpartum exam and contraceptive initiation becomes more of a reality. The content of the latter two sessions, although not specific to birth control, may provide a reminder of the maternal tasks that are recommended in the first weeks following delivery. The concept of maternal tasks is reminiscent of two of Thornton and Nardi's (1975) four stages of role acquisition, which were used by Mercer

(1980) to describe the process of maternal role adjustment. The anticipatory stage, leading up to pregnancy, characterized by behavioral and psychosocial preparation for motherhood, includes preparatory steps. The second stage, the formal stage, is assumed at birth and is characterized by the reliance of advice from those in the maternal social network to influence behaviors (Nursing Theory, 2016). The maternal decision to take the necessary steps to set up the appointment for the postpartum visit may reflect the identification of the visit as a preparatory step in the anticipatory stage and the influence of advice from the social network, recommending the return for the postpartum visit following birth.

The reported statistical significance between postpartum return and attendance at sessions 9 and 10 may also be the result of increased health care provider exposure during the end of pregnancy. This is because the frequency of medical visits the occur outside of the group sessions, tend to increase during the last month of pregnancy. This assumption about the increased frequency of medical visits towards the end of CP completion is only appropriate if participants are assigned to CP groups according to their due dates, as recommended by the Centering Institute. Such group assignments may not always be a clinical reality in different settings.

No individual sessions were found to be associated with the efficacy of contraceptive initiation. This is of particular interests when it pertains to attendance at session 4, which is a session with content dedicated to contraceptive method exploration.

Session Cutoff Total

The data suggests that attendance at more than one session leads to a greater probability of postpartum return. When considering a possible cutoff for sessions, which

is generally considered to be five completed sessions, this data points to the possibility that attending only one or two sessions may have the greatest impact on subsequent behaviors, specifically postpartum return. This is evident is the cross tabulation results (Table 6.) which indicates that 16.7% of participants attending one CP session returned for the postpartum visit, compared to 87.5% of participants attending two CP sessions returned for the postpartum exam. This holds great implications for practitioners, as it could imply that the most important content and materials should be included within the earlier CP sessions. This is of particular interest when attrition is a concern. This pattern may not be the case for other behavioral outcomes of interest among this population. Additionally, this trend does not align with the identification of the significance of attendance at sessions 9, on postpartum return and contraceptive initiation, and session 10 for postpartum return; which occur towards the end of pregnancy. These relationships should be explored in more detail in future studies.

Rapid Repeat Pregnancy (RRP)

The rate of repeat pregnancy, within 6 months of prior pregnancy resolution, among study participants was 22%. This exceeds the national repeat birth rate, of approximately 20%, for teenagers under the age of 20 (CDC, 2013). Unlike the national prevalence, the RRP prevalence in this study is in reference to prior pregnancies that may have resulted in a live birth, miscarriage or abortion. This data suggests that the actual RRP, if defined as a repeat pregnancy within 24 months greatly exceeds the national rates and that teenagers with similar demographics may be at greater risk for RRP than anticipated. As previously mentioned, teenagers experiencing RRP face multiple social and economic hardships and may lack social support (Klerman, 2004; Milne & Glasier,

2008). One possible explanation for the high RRP rate could be result of attraction to the social support system created by the CP group sessions and participants. Future studies should further evaluate relationships between CP attendance, RRP, with consideration of teenagers' intentions for future pregnancies.

Limitations

There are several notable limitations to this study. The study utilized secondary data, which limited the variables that could be analyzed and the manner in which the variables were measured. The initial data were not collected using standardized instruments. As a result, the variables of interested were defined specifically for this study and operationalized based on the availability of survey items that could capture the underlying concepts of interest.

The large amounts of attrition impacted the types of analyses that could be conducted during the third trimester and postpartum time period. Additionally, this data is specific to participants who returned to the clinic system from which they received their prenatal care. Therefore, the analysis may underestimate rates of postpartum return and contraceptive initiation for participants who may have initiated these services elsewhere. There is no way to distinguish between either scenario.

The analyses of this study were also limited due to the small sample size and possible lack of statistical power. The sample size could have been improved by extending inclusion criteria for age to 21, but this would remove the importance of such analyses in among a strictly teenage population.

Conclusion

This study found that housing insecurity, food insecurity, IPV, marital status and partner session attendance were not significant factors associated with participant CP attendance. Total CP attendance was significantly associated with return for postpartum, but not contraception initiation or effectiveness of selected methods. Attendance at session 9 appears to be significantly linked to postpartum return, with attendance at sessions 9 and 10 linked to postpartum return. This study supports CP as a viable model of prenatal care for teenagers experiencing complex social and economic issues. This study does suggest the possible restructuring of CP content delivery timing and possible incentive targets that may help improve overall CP attendance. This study provides a good exploratory data for future studies pertaining to observed outcomes among teenagers participating in CP. Future research could focus on further evaluation a possible two session cutoff for postpartum reproductive behavioral outcomes among teenagers. Additionally, future research can focus on assessing the influence of pregnancy intention status on CP participation and postpartum reproductive behaviors. Lastly, although not significant in this study, future studies can evaluate differences in reproductive and support behavioral patterns among teenagers experiencing physical and emotional IPV.

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Appendix A

Baylor IRB Protocol

✓Compare

Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals

Protocol Number: H-35246
Status: Approved
Initial Submit Date: 2/11/2015
Approval Period: 1/29/2016 - 1/28/2017

Section Aa: Title & PI

A1. Protocol Title

MEASURES OF SUCCESS: CENTERING PREGNANCY OUTCOMES IN THE HARRIS COUNTY ADOLESCENT POPULATION

A2. Principal Investigator

Name:	MAAME ABA COLEMAN	Phone:	832-826-7454
Id:	159821	Fax:	832-825-9348
Department:	OB-GYN: ADMINISTRATIVE	Email:	macolema@bcm.tmc.edu
Center:		Mail Stn:	BCM610

A3. Administrative Contact

Name:	LINDA D. MUNIZ	Phone:	832-826-7454
Id:	038483	Fax:	832-825-9348
		Email:	lmuniz@bcm.tmc.edu
		Mail Stn:	BCM610

A3a. Financial Conflict of Interest

Does any member of study personnel (Investigator (including investigator's spouse and/or dependent children)) that are involved in the design, conduct, or reporting of the research have a Significant Financial Interest (SFI) that would reasonably appear to be affected by the research for which funding is sought and/or associated with an entity/business that would reasonably appear to be affected by the research?

No

Section Ab: General Information

A4. Co-Investigators

Name:	HALEH SANGI-HAGHPEYKAR	Phone:	832-826-7348
Id:	033873	Fax:	832-825-9354
Department:	OB-GYN: ADMINISTRATIVE	Email:	halehs@bcm.tmc.edu
Center:		Mail Stn:	BCM610
Name:	RUTH S BUZI	Phone:	713-873-3601
Id:	035532	Fax:	
Department:	BAYLOR POPULATION PROGRAM	Email:	rbuzi@bcm.tmc.edu
Center:		Mail Stn:	BCM610
Name:	KAMILAH ONI DIXON-SHAMBLEY	Phone:	713-798-5505
Id:	174234	Fax:	713-798-5000
Department:	OB-GYN: ADMINISTRATIVE	Email:	kodixon@bcm.tmc.edu
Center:		Mail Stn:	BCM610
Name:	ROSHUNDA R ROBERTS	Phone:	713-787-1756

Id:	175604	Fax:	713-787-1713
Department:	BAYLOR POPULATION PROGRAM	Email:	roshundr@bcm.tmc.edu
Center:		Mail Stn:	BCM610
Name:	NEELAM JAY MISTRY	Phone:	713-798-4600
Id:	178525	Fax:	
Department:	STUDENT AFFAIRS	Email:	mistry@bcm.tmc.edu
Center:		Mail Stn:	BCM368
Name:	LATIA M.W HICKERSON	Phone:	713-440-7313
Id:	178964	Fax:	713-440-0916
Department:	BAYLOR POPULATION PROGRAM	Email:	lmwade@bcm.tmc.edu
Center:		Mail Stn:	BCM610
Name:	PEGGY B SMITH	Phone:	713-873-3601
Id:	895684	Fax:	713-873-3608
Department:	OB-GYN: ADMINISTRATIVE	Email:	peggys@bcm.tmc.edu
Center:		Mail Stn:	BCM610

A5. Funding Source:

Baylor College of Medicine (Internal Funding Only)

A6a. Institutions where work will be performed:

BCM: Teen Health Clinics

A6b. Research will be conducted outside of the United States:

Country:
Facility/Institution:
Contact/Investigator:
Phone Number:

If documentation of assurances has not been sent to the Office of Research, please explain:

A7. Research Category:

A8. Therapeutic Intent

Does this trial have therapeutic intent?
No

Section B: Exempt Request

B. Exempt From IRB Review

Not Applicable

Section C: Background

Centering Pregnancy (CP) is a group model of prenatal care that allows the physician and the patient to address both medical and psychosocial needs in a group setting.

The three major components of care include health assessment, education, and support. The team leading the CP group typically consists of a physician, a nurse, and a social worker, but may include other personnel as well. The 8-10 participants of each CP group are mothers-to-be with similar gestational ages, so that the discussion at each group session can focus on important aspects of the pregnancy during those weeks. Participants meet with their CP group each month through the pregnancy and one time postpartum. The group leaders facilitate the session with a designated topic, but the goal is for the participants to spark discussion by sharing their thoughts, concerns, and experiences.

The goal of centering pregnancy is not only to provide medical assessment, but also to establish a safe support group and a place for education. The CP group setting allows women to share their experience with previous pregnancies, along with worries about their current one. By having other women and medical personnel present, everyone works together to provide support.

Through each session, self care is encouraged for the participants. At the beginning of each session, CP participants measure their own weight and blood pressure. This information is reviewed by the healthcare provider for the group. During each visit, the provider also conducts a prenatal health visit. Through the sessions, the importance of maintaining good health during and after the pregnancy is emphasized. With the CP group approach, participants feel a sense of community and are encouraged to have a healthy pregnancy with the support of those around them.

CP seeks to impact positive outcomes in several areas, including reduction of preterm delivery, increased birth weight, ideal total pregnancy weight gain, increased rates of breastfeeding, exercise in pregnancy, and increased knowledge about contraceptive options.

At the Baylor Teen Clinic, the Centering model has been utilized for the past few years, with approximately 60-100 pregnant teens enrolling in the program each year.

REFERENCES http://centeringhealthcare.org/pages/centering-model/pregnancy-overview.php

Ickovics, J. R., Kershaw, T. S., Westdahl, C., Rising, S. S., Klima, C., Reynolds, H., & Magriples, U. (2003). Group prenatal care and preterm birth weight: Results from a matched cohort study at public clinics. Obstetrics & Gynecology, 102(5, Part 1), 1051-1057.

Grady, M. A., & Bloom, K. C. (2004). Pregnancy outcomes of adolescents enrolled in a CenteringPregnancy program. Journal of Midwifery & Women's Health, 49(5), 412-420.

Baldwin, K. A. (2006). Comparison of selected outcomes of CenteringPregnancy versus traditional prenatal care. Journal of Midwifery & Women's Health, 51(4), 266-272.

Dobak, W., Kershaw, T., Fogle, D., Lindsay, M., Westdahl, C., Ickovics, J., & Rising, S. S. (2006). Effect of coital frequency, sexually transmitted infections (STI's), and number of partners during pregnancy on length of gestation, birthweight, and intrauterine growth restriction (IUGR). American Journal of Obstetrics & Gynecology, 195(6), S221.

Ickovics, J. R., Kershaw, T. S., Westdahl, C., Magriples, U., Massey, Z., Reynolds, H., & Rising, S. S. (2007). Group prenatal care and perinatal outcomes: A randomized controlled trial. Obstetrics and Gynecology, 110(2 Pt 1), 330.

Section D: Purpose and Objectives

The objectives of this protocol are to assess the effects of an alternative method of prenatal care, Centering Pregnancy, on patient outcomes.

Our goals are as follows: 1) Analyze our patient data to assess whether the central tenets of Centering Pregnancy are being achieved in our patient population 2) Determine whether dosage (i.e. total number of Centering visits) plays a role in pregnancy outcomes 3) Utilize our findings to direct development of pertinent Centering pregnancy curricula

Section E: Protocol Risks/Subjects

E1. Risk Category

Category 1: Research not involving greater than minimum risk.

E2. Subjects

Gender:
Both

Age:
Adolescent (13-17 yrs), Adult (18-64 yrs)

Ethnicity:
All Ethnicities

Primary Language:
English

Groups to be recruited will include:
Asymptomatic patients with chronic conditions, healthy; Patients

Vulnerable populations to be recruited as subjects:
Children, Pregnant women

Vulnerable populations require special protections. How will you obtain informed consent, protect subject confidentiality, and prevent undue coercion?

Our protocol involves review of patient charts of pregnant women, recently pregnant women, and their recently delivered infants. Reviewers of the chart are individuals in the investigative team, who have been involved in the patients' care. No identifying information will be linked to the data. As the data will be collated, and summarized, we perceive no known direct risk to our participants.

E3. Pregnant woman/fetus

Will pregnant women and/or fetuses (as described in 45 CFR 46 Subpart B) be enrolled in the research?

Yes

E4. Neonates

Will neonates of uncertain viability or nonviable neonates (as described in 45 CFR 46 Subpart B) be enrolled in the research?

No

E5. Children

Will children be enrolled in the research?

Yes

Section F: Design/Procedure

F1. Design

Select one category that most adequately describes your research:

a) Chart/scan/record review

Discuss the research design including but not limited to such issues as: probability of group assignment, potential for subject to be randomized to placebo group, use of control subjects, etc.

Our protocol involves a chart review, with collection of data including patient vital statistics, medical information, and pregnancy outcome information.

Inclusion Criteria:

All patients enrolling in the Baylor Teen Health Clinic Centering Pregnancy program between January 2012-August 2016.

Exclusion Criteria:

Patients withdrawing from the Centering Pregnancy program prior to the end of pregnancy.

F2. Procedure

A retrospective chart review will be conducted of the patients enrolled in the Baylor Teen Health Clinic Centering Pregnancy program between January 2012 and August 2016.

Identifiers/Information collected: Teen Clinic Centering Pregnancy Patient ID Number Harris Health Medical Record Number Centering Pregnancy Group Number from Teen Clinic Date of 1st Social Work Encounter Home Zip Code Medicaid Status Medicaid ID # CHIP ID# Race Hispanic (Y or N) Highest Education Marital Status Pregnancy Test Date Age at New OB Visit Gestational Age at New OB Visit Dad of Delivery/Estimated Date of Delivery Menarche Regular Menstruation - yes or no Coitarche Last menstrual period History of Chronic Illness Chronic Illness Details Family History of Chronic Illness Past Psychiatric History Past Psychiatric History Detail History of Trauma Gravida/Para at time of Centering Enrollment Number of abortions Maternal Age at each delivery Outcome of prior pregnancies Birth Control use prior to CURRENT pregnancy Form of BC Prior to conception Number of lifetime partners Social history: tobacco, alcohol, drug/substance abuse Number of +UDS History of previous preterm delivery Previous low birth weight delivery Pre-pregnancy weight STDs during pregnancy Follow-up for STDs History of STDs Prior High Risk pregnancy, details if true History of bacterial vaginosis, Group B Strep Bacteruria during pregnancy Previous pregnancy ended <6 months Date of Centering Drop Out Pregnancy terminated Gestational Age at terminal Medicaid/CHIP loss Date of Medicaid/CHIP loss Reason for drop-out Date of CHW Encounter, location, date screening form was administered, 1st OB appointment made, date intake form was administered Sccial work (SW) services: date of 1st SW encounter, type of encounter, date screening form was administered, psychosocial risk assessment administration Prenatal screening tests administered, which tests were administered Results Pregnancy complications, in detail Due Date Month Number of completed centering sessions Centering Session dates/attendance at each session Number of Sessions missed OB Untrasound Date (Growth Ultrasound) OB Anatomy scan New date by Anatomy ultrasound OB New date (if determined by anatomy ultrasound) Total OB Visits Postpartum visit completion Actual delivery date Delivery location Location type Single vs multiple gestation Pregnancy outcome Elective Induction Delivery Method Delivery complications Gestation age at birth in weeks Birth weight of baby Breastfeeding at discharge NICU admission for baby Post partum visit date Number of repeat pregnancies after current pregnancy Weight post partum BMI post partum Breastfeeding at pospartum visit Birth Control selected at post partum visit Type of birth control selected Follow up on pregnancy complications

Section G: Sample Size/Data Analysis

G1. Sample Size

How many subjects (or specimens, or charts) will be used in this study?
Local: 280 Worldwide: 280

Please indicate why you chose the sample size proposed:
The sample size was based on the number of patients who completed their care with the Baylor Teen Clinic. Approximately 60 adolescents and young women receive prenatal care at the Baylor Teen Clinic, annually. Increasing the time range for the inclusion criteria from January of 2015 to August of 2016 allows for the possible inclusion of an additional 100 participants. Thus the proposed sample size is 280. This increase of the sample size will provide more power to detect statistically significant differences related to the main study variables.

G2. Data Analysis

Provide a description of your plan for data analysis. State the types of comparisons you plan (e.g. comparison of means, comparison of proportions, regressions, analysis of variance). Which is the PRIMARY comparison/analysis? How will the analyses proposed relate to the primary purposes of your study?
We plan to compare rates and proportions of the identified outcomes across our target population. The primary comparison will be between outcomes and dosage (i.e. exposure to Centering pregnancy sessions). Such a comparison will allow us to identify links between outcomes and exposure to the key tenets of Centering pregnancy.

Section H: Potential Risks/Discomforts

H1. Potential Risks/Discomforts

Describe and assess any potential risks/discomforts and assess the likelihood and seriousness of such risks:
There is minimal to no risk for the patients, as the data are not linked to patients personal information, nor are the patients specifically asked to participate in the protocol. However, there is a potential risk of loss of confidentiality due to affiliation with the Centering Pregnancy program at the Teen Clinic. However, this risk is minimized by using only patient identifier numbers and NOT names.

H2. Data and safety monitoring plan

Do the study activities impart greater than minimal risk to subjects?
No

H3. Coordination of information among sites for multi-site research

Is the BCM Principal Investigator acting as the SPONSOR-INVESTIGATOR for this multi-site research?
No or Not Applicable

Is BCM the COORDINATING CENTER for this multi-site research?
No or Not Applicable

Section I: Potential Benefits

Describe potential benefits to be gained by the individual subject as a result of participating in the planned work.
There may be no benefit for patients that have already completed the program. However, future participants with pregnancies who receive care at Baylor Teen Clinic would benefit from an adapted Centering Pregnancy curriculum based on the findings of this research study.

Describe potential benefits to society of the planned work.
Learning more about the effectiveness of our Centering Pregnancy protocol will help develop a more pertinent curriculum, and further enable the goal of achieving favorable pregnancy outcomes.

Do anticipated benefits outweigh potential risks? Discuss the risk-to-benefit ratio.
The potential risks to the study participants are negligible as this is a retrospective chart review. The information will be de-identified and the patients will have a minimal risk of release of their medical information. Given the small risks, the benefits will certainly outweigh the potential risks.

Section J: Consent Procedures

J1. Waiver of Consent

Will any portion of this research require a waiver of consent and authorization?
Yes

Describe the portion of the research for which a waiver is required(example: chart review to determine subject eligibility)
This is a chart review study.

Explain why the research and the use or disclosure of protected health information involves no more than minimal risk (including privacy risks) to the individuals.
The study does not include identifying information. The study only collects ethnicity and age. Measures are taken to prevent any other information to be shared.

Explain why the waiver will not adversely affect the privacy rights and the welfare of the research subjects.
The study only collects limited information from medical charts.

Explain why the research could not practicably be conducted without the waiver and could not practicably be conducted without access to and use of the protected health information.
The scientific validity of centering pregnancy as an effective way of improving birth outcomes among pregnant teens would be compromised if the Investigators are not able to conduct this research. In order for the investigators to conduct research on how centering pregnancy programs affect the outcomes of the current pregnancy and future pregnancies, accessing patient data is essential to evaluate the present state of the program and its validity in helping decrease rates of poor outcomes in current and future pregnancies.

Describe how an adequate plan exists in order to protect identifiers from improper use and disclosure.
Only limited patient identifiers are collected . Only the PI and investigators have access to these charts.

Describe how an adequate plan exists in order to destroy identifiers at the earliest opportunity consistent with conduct of the research, unless there is a health or research justification for retaining the identifiers or such retention is otherwise required by law.
This is not collected in the study.

Describe how adequate written assurances exist in order to ensure that the PHI will not be reused or disclosed to (shared with) any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of the PHI would be permitted under the Privacy Rule.
No PHI collected for this study.

Information from health records such as diagnoses, progress notes, medications, lab or radiology findings, etc.
Yes

Specific information concerning alcohol abuse:
Yes

Specific information concerning drug abuse:
Yes

Specific information concerning sickle cell anemia:
No

Specific information concerning HIV:
No

Specific information concerning psychiatry notes:
No

Demographic information (name, D.O.B., age, gender, race, etc.):
Yes

Full Social Security #:
No

Partial Social Security # (Last four digits):
No

Billing or financial records:
No

Photographs, videotapes, and/or audiotapes of you:
No

Other:

No

Will additional pertinent information be provided to subjects after participation?
No

If No, explain why providing subjects additional pertinent information after participation is not appropriate.
This information will only be used for a program evaluation to assess the Centering Pregnancy program validity for future program participants. Providing information to subjects would violate confidentiality, by identifying subjects as previous patients.

J1a. Waiver of requirement for written documentation of Consent

Will this research requires a waiver of requirement for written documentation of informed consent?
No

J2. Consent Procedures

Who will recruit subjects for this study?

Describe how research population will be identified, recruitment procedures, and consent procedures in detail.

Are foreign language consent forms required for this protocol?
No

J3. Privacy and Intrusiveness

Will the research involve observation or intrusion in situations where the subjects would normally have an expectation of privacy?
No

J4. Children

Will children be enrolled in the research?
No

J5. Neonates

Will non-viable neonates or neonates of uncertain viability be involved in research?
No

J6. Consent Capacity - Adults who lack capacity

Will Adult subjects who lack the capacity to give informed consent be enrolled in the research?
No

J7. Prisoners

Will Prisoners be enrolled in the research?
No

Section K: Research Related Health Information and Confidentiality

Will research data include identifiable subject information?
Yes

Information from health records such as diagnoses, progress notes, medications, lab or radiology findings, etc.
Yes

Specific information concerning alcohol abuse:
Yes

Specific information concerning drug abuse:
Yes

Specific information concerning sickle cell anemia:
No

Specific information concerning HIV:
No

Specific information concerning psychiatry notes:
No

Demographic information (name, D.O.B., age, gender, race, etc.):
Yes

Full Social Security #:
No

Partial Social Security # (Last four digits):
No

Billing or financial records:
No

Photographs, videotapes, and/or audiotapes of you:
No

Other:
No

At what institution will the physical research data be kept?
BCM

How will such physical research data be secured?
Computer password secured with limited access to PI and staff.

At what institution will the electronic research data be kept?
BCM

Such electronic research data will be secured via BCM IT Services- provided secured network storage of electronic research data (Non-Portable devices only):
Yes

Such electronic research data will be secured via Other:
No

Will there be anyone besides the PI, the study staff, the IRB and the sponsor, will have access to identifiable research data?
No

Please describe the methods of transmission of any research data (including PHI, sensitive, and non-sensitive data) to sponsors and/or collaborators.
N/A

Will you obtain a Certificate of Confidentiality for this study?
No

Please further discuss any potential confidentiality issues related to this study.
N/A

Section L: Cost/Payment

Delineate clinical procedures from research procedures. Will subject's insurance (or subject) be responsible for research related costs? If so state for which items subject's insurance (or subject) will be responsible (surgery, device, drugs, etc). If appropriate, discuss the availability of financial counseling.
No

If subjects will be paid (money, gift certificates, coupons, etc.) to participate in this research project, please note the total dollar amount (or dollar value amount) and distribution plan (one payment, pro-rated payment, paid upon completion, etc) of the payment.

Dollar Amount:
0

Distribution Plan:

Section M: Genetics

How would you classify your genetic study?

Discuss the potential for psychological, social, and/or physical harm subsequent to participation in this research. Please discuss, considering the following areas: risks to privacy, confidentiality, insurability, employability, immigration status, paternity status, educational opportunities, or social stigma.

Will subjects be offered any type of genetic education or counseling, and if so, who will provide the education or counseling and under what conditions will it be provided? If there is the possibility that a family's pedigree will be presented or published, please describe how you will protect family member's confidentiality?

Section N: Sample Collection

None

Section O: Drug Studies

Does the research involve the use of ANY drug* or biologic? (*A drug is defined as any substance that is used to elicit a pharmacologic or physiologic response whether it is for treatment or diagnostic purposes)

No

Does the research involve the use of ANY gene transfer agent for human gene transfer research?

No

O1. Current Drugs

Is this study placebo-controlled?

No

Will the research involve a radioactive drug that is not approved by the FDA?

No

Section P: Device Studies

Does this research study involve the use of ANY device?

No

Section Q. Consent Form(s)

None

Section R: Advertisements

None

Appendix B

Baylor IRB Protocol Amendment

Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals

AMENDMENT

Protocol Number:	H-35246
Principal Investigator:	MAAME ABA COLEMAN
Initial Submit Date:	02/11/2015
Amendment Submit Date:	09/14/2016
Protocol Title:	MEASURES OF SUCCESS: CENTERING PREGNANCY OUTCOMES IN THE HARRIS COUNTY ADOLESCENT POPULATION

Reason: Change Title

Description:

Amendment to Inclusion Criteria:
Participants enrolled in Centering Pregnancy from January 2012 to August 2016

Amendment to the Sample Size:
The Teen Clinic Centering Pregnancy program provides care for approximately 60 adolescents and young women annually. Increasing the time range for the inclusion criteria from January 2015 to August of 2016 allows or the possible inclusion of an additional 100 participants. Thus the proposed sample size is 280 patient records for the study. The increase of the sample size will provide more power to detect statistically significant differences related to the main study variables.

Appendix C

Baylor IRB Approval Letter

October 11, 2016

Baylor College of Medicine
Office of Research
One Baylor Plaza, 600D
Houston, Texas 77030
Phone: (713) 798-6970
Fax: (713) 798-6990
Email: irb@bcm.tmc.edu

MAAME ABA COLEMAN
BAYLOR COLLEGE OF MEDICINE
OB-GYN: ADMINISTRATIVE

H-35246 - MEASURES OF SUCCESS: CENTERING PREGNANCY OUTCOMES IN THE HARRIS COUNTY ADOLESCENT POPULATION

APPROVAL VALID FROM 1/29/2016 TO 1/28/2017

Dear Dr. COLEMAN

The Institutional Review Board for Human Subject Research for Baylor College of Medicine and Affiliated Hospitals (BCM IRB) is pleased to inform you that the research protocol named above was reviewed and approved by Expedited procedures on 1/29/2016 by Board 3.

The study may not continue after the approval period without additional IRB review and approval for continuation. You will receive an email renewal reminder notice prior to study expiration; however, it is your responsibility to assure that this study is not conducted beyond the expiration date.

Please be aware that only IRB-approved informed consent forms may be used when written informed consent is required.

Any changes in study or informed consent procedure must receive review and approval prior to implementation unless the change is necessary for the safety of subjects. In addition, you must inform the IRB of adverse events encountered during the study or of any new and significant information that may impact a research participants' safety or willingness to continue in your study.

The BCM IRB is organized, operates, and is registered with the United States Office for Human Research Protections according to the regulations codified in the United States Code of Federal Regulations at 45 CFR 46 and 21 CFR 56. The BCM IRB operates under the BCM Federal Wide Assurance No. 00000286, as well as those of hospitals and institutions affiliated with the College.

Sincerely yours,

Gabriel Habib

GABRIEL HABIB, M.D.
Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals

Appendix D

Baylor IRB Amendment Letter

BCM
Baylor College of Medicine

Baylor College of Medicine
Office of Research
One Baylor Plaza, 600D
Houston, Texas 77030
Phone : (713) 798-6970
Fax: (713) 798-6990
Email: irb@bcm.tmc.edu

MEMORANDUM

TO: MAAME ABA COLEMAN
OB-GYN: ADMINISTRATIVE

FROM: GABRIEL HABIB, M.D.
Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals

DATE: October 11, 2016

RE: **H-35246 - MEASURES OF SUCCESS: CENTERING PREGNANCY OUTCOMES IN THE HARRIS COUNTY ADOLESCENT POPULATION**

Your amendment, detailed below, was reviewed by Expedited procedures on October 11, 2016 by Board 1 and is now approved.

NOTE: Approved advertisement(s) should only be posted at the institution(s) where the research is being performed including approved recruitment site(s).

This is not applicable to the following advertisement modes: billboards, radio, television, internet, or website.

Description:
Amendment to Inclusion Criteria:
Participants enrolled in Centering Pregnancy from January 2012 to August 2016

Amendment to the Sample Size:
The Teen Clinic Centering Pregnancy program provides care for approximately 60 adolescents and young women annually. Increasing the time range for the inclusion criteria from January 2015 to August of 2016 allows or the possible inclusion of an additional 100 participants. Thus the proposed sample size is 280 patient records for the study. The increase of the sample size will provide more power to detect statistically significant differences related to the main study variables.

Appendix E

Baylor IRB Consent Waiver

Baylor College of Medicine

GIVING LIFE TO POSSIBLE

MEMORANDUM

TO: MAAME ABA COLEMAN
OB-GYN: ADMINISTRATIVE

FROM: GABRIEL HABIB, M.D.
Institutional Review Board for Baylor College of Medicine and Affiliated Hospitals

DATE: October 11, 2016

RE: **H-35246 - MEASURES OF SUCCESS: CENTERING PREGNANCY OUTCOMES IN THE HARRIS COUNTY ADOLESCENT POPULATION**

The IRB, through expedited procedures has approved on 1/29/2016, a consent procedure which waives the requirement to obtain informed consent/HIPAA authorization for this research, and hereby describes how both of the following are found and documented in this protocol:

Waiver of consent and HIPAA authorization has been approved for the research as described here: This is a chart review study.

a) The research and the use or disclosure of protected health information involves no more than minimal risk (including privacy risks) to the individuals because:

The study does not include identifying information. The study only collects ethnicity and age. Measures are taken to prevent any other information to be shared.

1. An adequate plan exists in order to protect health information identifiers from improper use and disclosure, because:

   Only limited patient identifiers are collected . Only the PI and investigators have access to these charts.

2. An adequate plan exists in order to destroy identifiers at the earliest opportunity consistent with conduct of the research (absent a health or research justification for retaining them or a legal requirement to do so), because:

   This is not collected in the study.

3. Adequate written assurances exist in order to ensure that the PHI will not be reused or disclosed to (shared with) any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of the PHI would be permitted under the Privacy Rule, because:

   No PHI collected for this study.

b) The informed consent waiver will not adversely affect the rights and welfare of the subjects, because:

The study only collects limited information from medical charts.

c) The research could not practicably be carried out without the waiver or alteration, and the research could not practicably be conducted without access to and use of the requested information because:

The scientific validity of centering pregnancy as an effective way of improving birth outcomes among pregnant teens would be compromised if the Investigators are not able to conduct this research. In order for the investigators to conduct research on how centering pregnancy programs affect the outcomes of the current pregnancy and future pregnancies, accessing patient data is essential to evaluate the present state of the program and its validity in helping decrease rates of poor outcomes in current and future pregnancies.

d) Informed consent is being waived, and providing participants with additional pertinent information after participation is not appropriate, because:

This information will only be used for a program evaluation to assess the Centering Pregnancy program validity for future program participants. Providing information to subjects would violate confidentiality, by identifying subjects as previous patients.

The following is a brief description of the PHI and the specific subject identifiers for which the IRB has determined use or disclosure to be necessary:

- Information from health records such as diagnoses, progress notes, medications, lab or radiology findings, etc.
- Specific information concerning alcohol abuse
- Specific information concerning drug abuse
- Demographic information (name, D.O.B., age, gender, race, etc.)

Given the assurances provided above, this memorandum serves as documentation that the BCM IRB has approved a waiver of consent/HIPAA authorization and has determined that all requirements are met by this protocol in order to grant the waiver.

Appendix F

UTHSC Permission to Rely on Baylor IRB

UTHealth
The University of Texas
Health Science Center at Houston

Committee for the Protection of Human Subjects
6410 Fannin Street, Suite 1100
Houston, Texas 77030

Latia Hickerson
School of Nursing

NOTICE OF PERMISSION TO RELY ON BAYLOR COLLEGE OF MEDICINE IRB October 20, 2016

HSC-SN-16-0901 - Factors Influencing Attendance, Postpartum Follow-up, and Contraceptive Use among Teenage_CenteringPregnancy Participants

CHAIRPERSON: L. Maximilian Buja, L. Maximilian Buja

PROVISIONS: This permission relates to the research to be conducted under the above referenced title.

CPHS has reviewed the above submission and determined that it meets the criteria for being reviewed by Baylor IRB. Please submit an application to Baylor IRB via their electronic system and await written approval.

Research participants must sign authorization for release of medical records unless such authorization is waived by Baylor IRB or UT Houston CPHS.

The research should not be initiated until all necessary institutional approvals and signatures have been obtained.

Appendix G

Baylor Reliance Letter

Baylor College of Medicine

GIVING LIFE TO POSSIBLE

OFFICE OF RESEARCH

One Baylor Plaza, BCM310
Houston, Texas 77030-3411

(713) 798 – 6983
(713) 798 – 2721 FAX
sberg@bcm.edu

CONFIDENTIAL

October 25, 2016

Mrs. Latia Hickerson,

Baylor College of Medicine continues to serve as the IRB of record for the following study:

Protocol:

- Baylor Tracking: H-35246: MEASURES OF SUCCESS: CENTERING PREGNANCY OUTCOMES IN THE HARRIS COUNTY ADOLESCENT POPULATION (most recent BCM approval dates: (1/29/2016 - 1/28/2017)

Funding Source: Baylor College of Medicine (Internal Funding Only)

The reliance of The University of Texas Health Science Center at Houston (UTHSC) on Baylor College of Medicine for the review and approval of this protocol was determined and conducted according to the reciprocal agreement between UTHSC and Baylor College of Medicine.

Please do not hesitate to contact me if you have any questions.

Sincerely,

Luke Jumper
Senior Research Subject Protection Analyst | Reliance
Baylor College of Medicine
Office of Sr. VP & Dean of Research
713.798.5842
Luke.jumper@bcm.edu

Appendix H

UTHSC CPHS Approval

UTHealth™
The University of Texas
Health Science Center at Houston

Committee for the Protection of Human Subjects
6410 Fannin Street, Suite 1100
Houston, Texas 77030

TO: Dr. Latia Hickerson

FROM: Sylvia Romo
CPHS Office

DATE: October 27, 2016

RE: HSC-SN-16-0901
"Factors Influencing Attendance, Postpartum Follow-up, and Contraceptive Use among Teenage_CenteringPregnancy Participants"

Reference number: 144325

Dear Dr. Hickerson

The CPHS has received the letter from Baylor College of Medicine agreeing to be IRB of Record for UTHealth. CPHS has reviewed the Miscellaneous Submission form and determined that no further action is required.

Please feel free to contact the Committee for the Protection of Human Subjects (CPHS) if you have any additional questions or concerns at (713) 500-7943.

Appendix I

Study Manual

1.0 Introduction

The purpose of this document is to provide a reference guideline, for data collectors, during the data collection process. This document will provide step-by-step instructions for the data collection process and is intended for use, to reduce error during the data collection process.

2.0 Overview of the study

The primary focus of this study is to explore the association between total CenteringPregnancy (CP) sessions attended, postpartum return, postpartum contraception initiation and contraceptive method selection, among low income teenage girls. An additional focus of this retrospective record review is to assess the association between food insecurity, housing insecurity, intimate partner violence (IPV), relationship status, partner group attendance and total CP sessions attended. The complete study proposal is presented in the appendix and provides a scientific rationale for the proposed study.

3.0 Study Staff

The staff for this study includes the principle investigator and data collectors. The study staff will be responsible for:

-Collecting study data

-Data management: which includes data entry, error identification and correction

-Complying with instructions included in the study manual

-Protecting patients' privacy

4.0 Study Population

The population of interest for this study are pregnant and parenting teenagers, between the ages of 13-19, who received their prenatal care through the Baylor Teen Health Clinic's- CenteringPregnancy Program (BTHC-CPP), from October 2013 through January 2016.

One master list of patients participating in the CPP from October 2013- January 2016 will be obtained from BTHC-CPP Outcomes Database. The master list will include patient names, medical record numbers, and CPP group number. The list will serve as a guide for identifying patient records that need to be screened for eligibility criteria.

4.1 Assessing Eligibility Criteria

The master list will be used to identify patient charts eligible for review. Each chart will be screened for eligibility criteria. Information specific to the eligibility criteria can be found in the ACOG prenatal record, on page 1 of the patient chart. A secondary source of this information can be found in the BTHC-CPP Outcomes Database.

Inclusion Criteria

Patient charts will be included for the study if the following criteria are met:

1) Attendance at least one CenteringPregnancy group session

2) Between the ages of 13-19 at the time of enrollment into the CPP

3) Less than 26 weeks gestation at the time of enrollment into the CPP.

Exclusion Criteria

Patient records will be excluded from the study if the following criteria occur:

1) The current pregnancy resulted in miscarriage, abortion, or stillbirth.

If the exclusion criteria is met, the data collector should mark the "excluded" box on the master list and no further action is needed.

4.2 Assigning a Study ID to Included Records

If the inclusion criteria are met, the data collector should mark the "inclusion criteria met" box on the master list. The record should then be assigned a study ID. The first four digits of the study ID will represent the study year. The remaining digits will represent a consecutive, running list of included records. For example, the first included record screened from 2013 would be coded as: 201301.

The study ID will be documented on the master list, next to the appropriate patient identifiers. This will be the only connection between patient identifiers and the study ID. As a result, the master list will be stored in a locked file cabinet, in the PI's office.

The study ID will then be entered into the study database, under the "study ID" column. The remaining variables for the study should then be extracted from the patient records.

5.0 Study Variables

This section describes the variables of interest for this study.

Demographic variables

The following patient demographics will be extracted from the patient records: age, race, ethnicity, gestational age at intake, school status, highest completed grade, total pregnancies, and total live births will be extracted from patient charts.

Housing Insecurity

Information about housing insecurity will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form and/ or Strong Start for Mothers and Newborns Initiative Third Trimester Survey, at baseline and in the third trimester. Answering "yes" to the following question will constitute the presence of housing insecurity.

Are you homeless or living in a shelter right now?

Food Insecurity

Information about food insecurity will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form, at baseline. Answering "yes" to the following question will constitute the presence of food insecurity.

In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

Intimate Partner Violence

Information about physical intimate partner violence will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form, at baseline. Answering 'yes' to any of the following questions will constitute the presence of intimate partner violence.

Have you ever been in a relationship where your partner has thrown, broken or punched things?

Have you ever been in a relationship where your partner threatened you with violence?

Have you ever been in a relationship where your partner has pushed or slapped you?

Emotional intimate partner violence will be assessed at baseline and in the third trimester, by the 6 item RAT, using 6 point, Likert type responses, ranging from "disagree strongly" to "agree strongly", to the following questions:

-My spouse/partner/boyfriend makes me feel unsafe even in my home.

-I feel ashamed of the things he does to me.

-I try not to rock the boat because I am afraid of what he might do.

-I feel like he keeps me prisoner.

-He makes me feel like I have no control over my life, no power, no protection.

Higher total scores will be indicative of increased degree of IPV.

Relationship Status

Relationship status and quality will be extracted from the Strong Start for Mothers and Newborns Initiative Patient Intake Form and/ or Strong Start for Mothers and Newborns Initiative Third Trimester Survey, at baseline, the third trimester, and at postpartum.

Relationship status will be determined by a response to the following question:

What is your relationship status now?

-Married, living with spouse

-Married, not living with spouse

-In a relationship but not living together

-Living with a partner

-Not in a relationship right now

CenteringPregnancy Attendance

Group session attendance and prenatal sessions attended outside of group are collected as a mandatory measure for sites offering CenteringPregnancy, by the Centering Institute's evaluation and recertification process. Overall attendance and visitor attendance is collected by clinic social services staff and maintained in the Centering Pregnancy Outcome Database. Information pertaining to CenteringPregnancy groups attended will be extracted the Centering Pregnancy Outcome Database, and cross referenced with patient charts and group sign in sheets. The Centering Institute defines the completion of CenteringPregnancy as attendance to 5 or more group sessions. For this study, group completion will be assessed as a continuous variable, based on total sessions attended.

Partner Group Attendance

Partner attendance to group sessions will be collected from the Centering Pregnancy Outcome Database. This information will be cross referenced with group sign-in sheets.

Postpartum Visit Return

Any return visit occurring within 8 weeks of delivery will be considered a postpartum exam. Information pertaining to the return for the postpartum visit will be extracted patient charts.

Postpartum Contraceptive Initiation

Any initiation of a contraceptive method, within 8 weeks of delivery, will be considered postpartum contraceptive initiation. Information pertaining to postpartum contraceptive initiation will be extracted from patient charts.

Contraceptive Method

Contraception methods started within 8 weeks of delivery will be Identified and extracted from patient charts and categorized into the following groups:

0-No method

1-Condoms

2-OCPS

3- Patch/Ring

4-IUD

5-Implant

Table 1
Overview of Study Variables and Data Extraction Time Points

Variable	Variable Type	Collection Time Points		
		Baseline	Third-Trimester	Postpartum
Demographics	Categorical	X		
Food Insecurity	Categorical	X		
Housing Insecurity	Categorical	X	X	
IPV- Physical	Categorical	X		
IPV Emotional	Continuous	X	X	
Relationship Status	Categorical	X	X	X
Partner Group Attendance	Continuous			X
CP Completion	Continuous			X
Postpartum Return	Categorical			X
PP Contraceptive Initiation	Categorical			X
Session 4 Attendance	Categorical			X
Contraceptive Method	Categorical			X

Parity	# of live children (excluding current pregnancy)	Numerical Value		Strong Start Intake Form: Question 23a
RRP	Previous pregnancy ended ≤6 months ago	1= Yes 0=No Calculate if the provided date is less than or equal to 6 months from the date of intake		Strong Start Intake Form: Question 25
Food_Insec	Food Insecurity	1= Yes 0=No	Food Insecurity	Strong Start Intake Form: Question 67

6.0 Variable Codebook

Coded Variable	Variable	Code	Variable Category	Data Source
Collect_ID	Collector ID	01= PI 02= Collector 1 03=Collector 2	Identifiers	Generated
Study_ID	Study ID	XXXXXX		Generated See section 4.2
Race	Race	1- White 2- Black 3- Asian/PI 4- Other	Demographics	Strong Start Intake Form: Question 4a
Hisp_Org	Hispanic Origin	1-Hispanic 0-Non-Hispanic		Strong Start Intake Form: Question 4
Age	Age	Numerical value: 13-19		Patient Chart: ACOG form page 1
Gest_Age	Gestational age at enrollment	Numerical value: 4-26		Patient Chart: ACOG form page 1
Comp_Grade	Highest school grade completed	Numerical value 1-16	Number corresponds to completed grade. College and beyond is denoted by the number 13 and higher	Strong Start Intake Form: Question 13/14
In_School	Current School Status	1=Yes 0= No		Strong Start Intake Form: Question 12
BCM_atCon	Birth control method used at pregnancy start	1=Yes 0=No 2= Unsure		Strong Start Intake Form: Question 20
Trying4Preg	Intended Pregnancy	1=Yes 0=No		Strong Start Intake Form: Question 21
Gravida	# of total pregnancies(excluding current)	Numerical Value		Strong Start Intake Form: Question 23

House_Insec1	Housing Insecurity at baseline	1= Yes 0= No	Housing Insecurity	Strong Start Intake Form: Question 10
House_Insec2	Housing Insecurity at time point 2: third trimester scree	1= Yes 0= No 2=Prefer not to answer		Strong Start Third Trimester Form: Question 3
P_IPV	Physical Intimate Partner Violence	1=Yes 0=No	IPV- Physical	Calculate: Yes if any yes to 44,45,or 46
Push_slap	Partner has pushed or slapped	1=Yes 0=No		
Threats	Patient feels threatened	1=Yes 0=No		Strong Start Intake Form: Question 44
Throws	Partner throws items	1=Yes 0=No		Strong Start Intake Form: Question 45 Strong Start Intake Form: Question 46
Emo_IPV	Emotional Intimate Partner Violence at baseline	1=Yes 0=No	IPV Emotional	Calculate: Yes if any yes to 47-52
Unsafe Home_1 Ashamed_1 Rock the boat_1 Program_RXn_1 Prisoner_1 Powerless_1	Six Individual questions assessing emotional IPV at baseline	1= Disagree strongly 2= Disagree somewhat 3=Disagree a little 4= Agree a little 5= Agree somewhat 6= Agree strongly		Strong Start Intake Form: Question 47-52
Emo_IPV2	Emotional Intimate Partner Violence at time point 2: third trimester	1=Yes 0=No		Calculate: Yes if any yes to 6a-6f
Unsafe Home_2 Ashamed_2 Rock the boat_2 Program_RXn_2 Prisoner_2 Powerless_2	Six Individual questions assessing emotional IPV at time point 2: third trimester	1= Disagree strongly 2= Disagree somewhat 3=Disagree a little 4= Agree a little 5= Agree somewhat 6= Agree strongly		Strong Start Third Trimester Form: Question s 6a-6f

Relat_Stat1	Relationship Status at baseline	1=Married, living with spouse 2=Married, not living with spouse 3=In a relationship but not living together 4=Living with a partner 0=Not in a relationship right now	Relationship Status	Strong Start Intake Form: Question 16
Relat_Stat2	Relationship Status at time point 2: Third trimester	1=Married, living with spouse 2=Married, not living with spouse 3=In a relationship but not living together 4=Living with a partner 0=Not in a relationship right now		Strong Start Third Trimester Form: Question 5
Relat_Stat3	Relationship Status at time point 3: Postpartum	1=Married, living with spouse 2=Married, not living with spouse 3=In a relationship but not living together 4=Living with a partner 0=Not in a relationship right now		Strong Start Third Trimester Form: Question 10

P_Session 1 P_Session 2 P_Session 3 P_Session 4 P_Session 5 P_Session 6 P_Session 7 P_Session 8 P_Session 9 P_Session 10 P_Session_Comp	Partner attendance at individual sessions: 1-10 Total partner attendance at group sessions	1=Yes 0=No Numerical value from 0-10	Partner Group Attendance	Centering Pregnancy Outcomes Database Caluculate
Session 1 Session 2 Session 3 Session 4 Session 5 Session 6 Session 7 Session 8 Session 9 Session 10 CP_completion	CP individual sessions: 1- 10 Total CP sessions attended by participant	1=Yes 0=No Numerical value: 1-10	CP Completion	Centering Pregnancy Outcomes Database, Cross reference with patient chart: visit dates Calculate
PP_Comp	Postpartum return visit completed	1=Yes 0=No	Postpartum Return	Patient Chart: Postpartum exam form
PP_BCM	Postpartum contraception initiated within 8 weeks	1=Yes 0=No	Postpartum Contraception Initiation	Patient Chart: Postpartum exam form and/or progress notes
BCM_Type	Birth control method initiated by participant within 8 weeks of delivery	0-No method 1-Condoms 2-OCPS 3- Patch/Ring 4-IUD 5-Implant	PP Method Selection	Patient Chart: Postpartum exam form and/or progress notes

7.0 Data Management

All data extracted from patient records will be entered into the Data Extraction EXCEL sheet. Data should be entered into the row corresponding to the records' study ID.

All data for the study variables should numerically coded, according to the codes outlined in the Study Code Book (See Section 6.0).

7.1 Data Sources

The location of all data sources is linked to the variable of interest, in the Code Book. The Code Book should be used as a guide for data extraction and data source identification.

Data will be extracted from the following data sources:

> The Strong Start for Mothers and Newborns Initiative surveys and form were completed by patients from October 2013- January 2016, as a requirement for the evaluation of outcomes that were being collected by a grant funded to Baylor Teen Clinic. These tools collected information that was utilized by the funder to for evaluation purposes.

Strong Start for Mothers and Newborns Initiative Patient Intake Form

This 67 item, evaluation survey was administered to patients by the CPP social workers, on the day of the new patient obstetric exam. This paper and pencil form collects information about patient demographics, relationship status, living conditions, pregnancy intention, reproductive and obstetric history, emotional status, smoking status, alcohol use, intimate partner violence occurrence, housing insecurity, food insecurity, and financial insecurity. The form was completed by the patient, within the first 26 weeks of gestation and will be used to collect information about all the baseline variables: demographics, housing insecurity, food insecurity, relationship status, and intimate partner violence.

Strong Start for Mothers and Newborns Initiative Third Trimester Survey

This 13 item, evaluation form was administered to patients by the CPP social workers, when the patient is between 28-32 weeks gestation. This paper and pencil form collects information about patient demographics, relationship status, intimate partner violence occurrence, labor and delivery experiences, birth outcomes, smoking status, relationship status, newborn feeding, pregnancy intention, birth control, social support, and overall satisfaction with received prenatal care. This form will be utilized, for this study, to collect information about relationship status and intimate partner violence at a second time point.

Strong Start for Mothers and Newborns Initiative Postpartum Survey

This 52 item, evaluation form was administered to patients by the CPP social workers, following the patients' delivery. This paper and pencil form collects information about patient demographics, relationship status, living conditions, smoking status, relationship status, intimate partner violence occurrence, newborn feeding plans, social support, and overall satisfaction with the received prenatal care attendance for individual and group prenatal visits, and received enhanced care services. This form is completed by patients in person, when they return for the postpartum exam. If the patient does not return for the postpartum exam, it is completed by a CPP social worker, via the telephone, if the patient can be contacted. This form will be used to collect information about relationship status at a third time point.

Relationship Assessment Tool. Imbedded within the Intake and third trimester forms, is the first 6 items of the 10-item, Relationship Assessment Tool(RAT). The RAT, developed by Smith, Earp, & DeVellis (1995), originally named the Women's Experience with Battering Scale (WEB), was developed to measure non-physical markers of violence, in attempts to capture the chronic vulnerable nature of women's' experiences of battering (Smith, Earp, & DeVellis, 2015). Psychometric testing of the 10 item tool was performed among a racially and socioeconomically diverse population of women between the ages of 18-80. The tool demonstrates sufficient evidence of construct validity and internal consistency, with Cronbach alphas ranging from .95-.99 (Smtih, Earp, & DeVellis, 1995; Smith, Smith, & Earp, 1999). A higher score on the tool is representative of stronger IPV exposure, with a score of 20 or greater being considered IPV (Smith, Smith, & Earp, 1999). Like the 10 item tool, the 6 item tool, which was assembled by the Strong Start for Mothers and Newborns Initiative, captures five of the six domains of the battering framework, identified by the creators: perceived threat, altered identity, managing, entrapment, and disempowerment. According to Smith et al., (1999) the sixth domain, the yearning domain is not included in the tool because it is not unique to battered women. Evidence of sufficient psychometric properties have not been presented

for the six item tool. As a result, stability reliability will be assessed during this study. Additionally, internal consistency will be measured to assess for random error (Ferguson & Cox, 1993; Nunnally & Bernstein, 1994). The acceptable criterion for evidence of reliability will be an internal consistency estimate of ≥ .80 (Nunnally & Bernstein, 1994). Failure to achieve this a priori standard will result in the statistical analyses of the six items as individual factors, as opposed to a total score on the scale.

Patient Charts

Patient charts will be used to extract the listed demographic variables and postpartum outcomes.

Centering Pregnancy Outcomes Database

Excel file, which houses information about CPP attendance and partner attendance, will be used to cross reference attendance information with the patient chart.

7.2.1 Data Extraction Verification

The PI will cross reference every fifth record entered into the database to assess for errors. Identified errors will be documented in the study log and the correct information will be entered into the database.

7.2.2 Study Log

The Centering Measures Study Log will be used by data collectors to track the data entry process. At the conclusion of each data collection session, each data collector must indicate the date, time, collector ID, number of charts and range of study IDs entered during that session. The data collector should also denote any challenges faced during the session. The completed log forms will be stored in the Centering Measures Study Log binder. The binder will be stored in the office drawer of the PI.

7.2.3 Trouble Shooting for Missing Records/ Data

Missing data. If the outlined data sources do not contain the necessary information for extraction, the case should be highlighted for PI review. The PI will cross reference all data sources to verify the missing data. Absent data will be left blank. The data collector should indicate the occurrence in the study log and on the Master List.

The statistician will be consulted and statistical analyses performed, to determine if the entire case should be excluded from the study.

Missing Records

Missing patient charts. If the hard copy patient chart cannot be located, the case should be flagged and the PI notified. The PI will attempt to extract the missing data from the patient's electronic medical record. All available data should be entered into the database. Absent data will be left blank. The data collector should indicate the occurrence in the study log and on the Master List. The statistician will be consulted and statistical analyses performed, to determine if the entire case should be excluded from the study.

Missing Strong Start Forms

If the hard copy Strong Start Forms cannot be located, the case should be flagged and the PI notified. All available data should be entered into the database. Absent data will be left blank. The data collector should indicate the occurrence in the study log and on the Master List. The statistician will be consulted and statistical analyses performed, to determine if the entire case should be excluded from the study.

Unclear Item Selections on Questionnaires

If participant sections on the included questionnaires is unclear and cannot be legibly determined, the data collector should leave the item blank on the data extraction Excel. The data collector should indicate the occurrence in the study log and on the Master List. The statistician will be consulted and statistical analyses performed, to determine if the entire case should be excluded from the study.

8.0 Protecting Patient Information

-In order to protect patients' identity, no identifiable patient information should be extracted from the chart.

-Upon completion of data extraction and coding, patient records should be returned to their designated storage facilities

-Taking photocopies or removing information from the patients' records for purposes outside of the aims of this study, are prohibited.

-Patient records should not be left unattended

-Extracted data should not be saved on personal computers, laptops, or other electronic devices. Only designated BCM computers should be used.

-Patients should NOT be contacted under ANY circumstances.

9. Contact Information

Should the study's PI or BTHC-CPP staff be needed for any questions or concerns, please contact them in the respective order.

Appendix J

Sample Data Log

Centering Measures Study Log						
Date	**Time**	**Collector**	**Records Logged**	**Action Items**	**Problems Identified**	**Notes**

Appendix K

Strong Start for Mothers and Newborns Intake Survey

Intake Form—English

Strong Start for Mothers and Newborns Initiative Patient Intake Form

Place Study ID label in box

Instructions: Please mark your answer by placing a ☒ in the appropriate box with a black pen.

Correct ☺	Incorrect ☹
☒	[☐no] or [☐X] or [◯] or [☐ X]

Enter Today's Date, using the following number format: MM/DD/YYYY

_____/_____/_____

1. Were you on Medicaid when you became pregnant with this pregnancy? ☐ Yes ☐ No ☐ Not Sure

2. Did you have other health insurance when you became pregnant with this pregnancy? ☐Yes ☐ No ☐ Not Sure

3. Are you in the WIC program right now (do you get food for yourself from WIC)? ☐ Yes ☐ No

4. Are you of Hispanic, Latina, or Spanish origin?

(One or more categories may be selected)

- ☐ No, not of Hispanic, Latina, or Spanish origin
- ☐ Yes, Mexican, Mexican American, Chicana
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latina, or Spanish origin

4.a. What is your race?

(One or more categories may be selected)

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native
- ☐ Asian Indian
- ☐ Chinese
- ☐ Filipino
- ☐ Japanese
- ☐ Korean
- ☐ Vietnamese
- ☐ Other Asian
- ☐ Native Hawaiian
- ☐ Guamanian or Chamorro
- ☐ Samoan
- ☐ Other Pacific Islander

5. Do you speak a language other than English at home? ☐ Yes ☐ No

6. If yes, what is this language? ☐ Spanish ☐ Other language (Identify) _____

7. How many adults (people 18 and older) live in your home besides you? ☐

8. How many children (people 17 and younger) live in your home? ☐

9. What are the ages (in years) of those children?

Child 1: ☐ Child 2: ☐ Child 3: ☐ Child 4: ☐

Child 5: ☐ Child 6: ☐ Child 7: ☐ Child 8: ☐

9.a. If more than 8 children live in your home, please list their ages here: ☐

10. *Check here if you are homeless or living in a shelter right now:* ☐

11. Do you have a job right now? ☐ Yes ☐ No

11.a. If yes, what is your job? ☐

11.b. How many hours (#) do you usually work each week? ☐

12. Are you in school right now? ☐ Yes ☐ No

12.a. If yes, are you in: ☐ High School ☐ GED ☐ Training ☐ College
☐ Other _____ (please explain)

12.b. If you are in school, are you: ☐ Full time ☐ Part time

13. Do you have: ☐ A high school diploma ☐ A GED ☐ Neither

14. Do you have a college degree? ☐ Yes ☐ No

14.a. If yes, what college degrees do you have? (Please check all that apply)

☐ Associate's Degree (from a community college or other two year college program)
☐ Bachelor's Degree (from a four year college or university)
☐ Yes, other (please explain) ☐

15. Please put a check next to any of these things that make it hard for YOU to come to appointments.

- ☐ I do not have a car
- ☐ The bus or train is hard to use to get to my appointment
- ☐ I do not have enough money to pay for a ride to the appointment
- ☐ My work hours make it hard to come to appointments
- ☐ I do not always have someone I trust to watch my older children
- ☐ My spouse/partner/boyfriend does not want me to come to appointments
- ☐ Other reason(s) (Please list them below.)

15.a. Other reason 1: _____

15.b. Other reason 2: _____

15.c. Other reason 3: _____

16. What is your relationship status now?

- ☐ Married, living with spouse
- ☐ Married, not living with spouse
- ☐ In a relationship but not living together
- ☐ Living with a partner
  - 16.a. If yes, have you been living together for more than one year? ☐ Yes ☐ No
- ☐ Not in a relationship right now

17. Have you ever been divorced? ☐ Yes ☐ No

18. Have you ever been widowed? ☐ Yes ☐ No 18.a. If yes, year spouse died: _____ YYYY

19. During the last 12 months, have you been to the dentist and had a dental check-up? ☐ Yes ☐ No

20. Were you using birth control when you became pregnant with this pregnancy? ☐ Yes ☐ No ☐Sometimes

21. Were you trying to become pregnant? ☐ Yes ☐ No

22. When you have this baby, do you hope to have a: ☐ Vaginal birth ☐ Cesarean (c-section) ☐Unsure

23. How many times have you been pregnant before this pregnancy? _____

23.a. How many babies did you have who were born alive? _____

24. Did you ever have a baby who was born too early (preterm or "preemie," before 37 weeks)? ☐ Yes ☐ No

25. If you have had a baby, when was your last baby born? (Please give the date) __/__/____ MM/DD/YYYY

The following questions address how you have been feeling during the past week (7 days).

Question	Rarely or none of the time (less than 1 day)	Some or a little of the time (1–2 days)	Occasionally or a moderate amount of time (3–4 days)	Most or all of the time (5–7 days)
26. I felt depressed.	☐	☐	☐	☐
27. I felt that everything I did was an effort.	☐	☐	☐	☐
28. My sleep was restless.	☐	☐	☐	☐
29. I was happy.	☐	☐	☐	☐
30. I felt lonely.	☐	☐	☐	☐
31. People were unfriendly.	☐	☐	☐	☐
32. I enjoyed life.	☐	☐	☐	☐
33. I felt sad.	☐	☐	☐	☐
34. I felt that people disliked me.	☐	☐	☐	☐
35. I could not get "going."	☐	☐	☐	☐

Over the last 2 weeks (14 days), how often have you been bothered by the following problems?

Question	Not at all	Several days	Over half the days	Nearly every day
36. Feeling nervous, anxious, or on edge.	☐	☐	☐	☐
37. Not being able to stop or control worrying.	☐	☐	☐	☐
38. Worrying too much about different things.	☐	☐	☐	☐
39. Trouble relaxing.	☐	☐	☐	☐
40. Being so restless that it's hard to sit still.	☐	☐	☐	☐
41. Becoming easily annoyed or irritable.	☐	☐	☐	☐
42. Feeling afraid as if something awful might happen.	☐	☐	☐	☐

43. If you checked off any problems, how difficult have these made it for you to do your work, take care of things at home, or get along with other people?

☐ Not difficult at all
☐ Somewhat difficult
☐ Very difficult
☐ Extremely difficult

Relationships can be hard. Sometimes arguments get out of control. Sometimes a woman might be afraid of her partner, or she might get hurt. The next questions will ask about things like this that might have happened to you.

Question		
44. Have you ever been in a relationship where your partner has pushed or slapped you?	☐ Yes	☐ No
45. Have you ever been in a relationship where your partner threatened you with violence?	☐ Yes	☐ No
46. Have you ever been in a relationship where your partner has thrown, broken or punched things?	☐ Yes	☐ No

If you have a spouse, partner, or boyfriend right now, please answer the following questions.

Question	Disagree strongly	Disagree somewhat	Disagree a little	Agree a little	Agree somewhat	Agree strongly
47. My spouse/partner/boyfriend makes me feel unsafe even in my own home.	☐	☐	☐	☐	☐	☐
48. I feel ashamed of the things he does to me.	☐	☐	☐	☐	☐	☐
49. I try not to rock the boat because I am afraid of what he might do.	☐	☐	☐	☐	☐	☐
50. I feel like I am programmed to react a certain way to him.	☐	☐	☐	☐	☐	☐
51. I feel like he keeps me prisoner.	☐	☐	☐	☐	☐	☐
52. He makes me feel like I have no control over my life, no power, no protection.	☐	☐	☐	☐	☐	☐

53. If you do smoke cigarettes, **how many** cigarettes or packs do you smoke on most days?

☐ cigarettes ☐ packs of cigarettes ☐ I do not smoke cigarettes

54. Which best describes the rules about smoking inside your home now?

☐ No one is allowed to smoke anywhere inside my home
☐ Smoking is allowed in some rooms or at some times
☐ Smoking is permitted anywhere inside my home
☐ I am homeless or live in a shelter right now

Note: 1 Drink = 12 oz beer (one regular can)= 12 oz cooler = 5 oz wine = 1 mixed drink (1.5 oz. hard liquor)

55. How many drinks does it take to make you feel high? ☐ One or 2 drinks ☐ More than 2 drinks ☐ I do not drink alcohol

56. Have people annoyed you by criticizing your drinking? ☐ Yes ☐ No

57. Have you felt you ought to cut down on your drinking? ☐ Yes ☐ No

58. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover? ☐ Yes ☐ No

59. Did any of your parents have a problem with drug use? ☐ Yes ☐ No

60. Does your partner have a problem with drug use? ☐ Yes ☐ No

61. In the past, have you had problems in your life because of drugs? ☐ Yes ☐ No

How true were each of these statements for you and your household during the past 12 months (since this time last year)?

62. I worried about whether {my/our} food would run out before {I/we} got money to buy more.

☐ Often true ☐ Sometimes true ☐ Never true

63. The food that {I/we} bought just didn't last, and {I/we} didn't have enough money to get more food.

☐ Often true ☐ Sometimes true ☐ Never true

64. {I/we} couldn't afford to eat balanced meals. ☐ Often true ☐ Sometimes true ☐ Never true

65. Since this time last year, did {you/you or other adults in your household} ever cut the size of your meals or skip meals because there wasn't enough money for food? ☐ Yes ☐ No

65.a. How often did this happen?

☐ Almost every month ☐ Some months but not every month ☐ In only 1 or 2 months

66. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? ☐ Yes ☐ No

67. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

☐ Yes ☐ No

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Completed by:

- ☐ Patient on paper
  - ☐ With Assistance
- ☐ Patient electronically
  - ☐ With Assistance
- ☐ Healthcare worker in person
- ☐ Healthcare worker on the phone
- ☐ Other

"The project described was supported by Funding Opportunity Number CMS-1D1-12-001 from the Centers for Medicare & Medicaid Services, Center for Medicare & Medicaid Innovation. The contents of this Intake Form do not necessarily represent the official views of HHS or any of its agencies. This project does not limit a fee-for-service Medicare, Medicaid, or CHIP patient's freedom to choose a particular health care provider."

Appendix L

Strong Start for Mothers and Newborns Third Trimester Survey

Third Trimester Survey—English

Strong Start for Mothers and Newborns Initiative Third Trimester Survey

Place Study ID label in box

Instructions: Please mark your answer by placing ☒ in the appropriate box with a **black pen**. When appropriate, use numbers (0, 1, 2, 3 etc.,) to answer questions

Correct ☺	Incorrect ☹
[X]	[☐no] or [☐X] or [◯] or [☐ X]

Your responses are voluntary and will be kept confidential.

Today's Date
__/__/____
MM/DD/YYYY

Estimated Due Date
__/__/____
MM/DD/YYYY

1. **How many adults (people 18 and older) live in your home? (Do not count yourself.)** ☐
2. **How many children (people 17 and younger) live in your home? (Do not count yourself.)** ☐
3. **Are you homeless or living in a shelter right now?** ☐ Yes ☐ No ☐ Prefer not to answer
4. **Please choose the statement that best describes you. (Select one answer. ☒)**

☐	I have never smoked or I stopped smoking before I became pregnant.
☐	I stopped smoking when I found out I was pregnant.
☐	I have cut down on my smoking since I found out I was pregnant.
☐	I smoke about the same as before I found out I was pregnant.
☐	Prefer not to answer

5. **What is your relationship status now? (Select one answer. ☒)**

☐	Married, living with spouse
☐	Married, not living with spouse
☐	Living with a partner/boyfriend
☐	In a relationship but not living together
☐	Not in a relationship
☐	Prefer not to answer

6. **Do you have a spouse, partner or boyfriend right now?** ☐ Yes ☐ No ☐ Unsure

If you have a spouse, partner, or boyfriend right now, please select one answer to the following questions. ☒

Question Item	Disagree strongly	Disagree somewhat	Disagree a little bit	Agree a little	Agree somewhat	Agree strongly	Prefer not to answer
6.a. My spouse/partner/boyfriend makes me feel unsafe even in my own home.	☐	☐	☐	☐	☐	☐	☐
6.b. I feel ashamed of the things he does to me.	☐	☐	☐	☐	☐	☐	☐
6.c. I try not to rock the boat (cause trouble) because I am afraid of what he might do.	☐	☐	☐	☐	☐	☐	☐
6.d. I feel like I am programmed to react a certain way to him.	☐	☐	☐	☐	☐	☐	☐
6.e. I feel like he keeps me prisoner.	☐	☐	☐	☐	☐	☐	☐
6.f. He makes me feel like I have no control over my life, no power, no protection.	☐	☐	☐	☐	☐	☐	☐

7. **Where do you plan to deliver this baby?** ☐ Hospital ☐ Birth Center ☐ Home ☐ Unsure

8. **Do you plan to have a support person with you during labor?** ☐ Yes ☐ No ☐ Unsure

   8.a. If yes, select all that apply ☒**:**

   ☐ Doula ☐ Spouse/Partner/Boyfriend ☐ Other family member ☐ Someone else (specify): _____

9. **Do you plan to take something for pain during labor?** ☐ Yes ☐ No ☐ Unsure

   9.a. If yes: do you plan to get an Epidural? ☐ Yes ☐ No ☐ Unsure

10. **How do you plan to deliver this baby?** ☐ Vaginally ☐ Cesarean Section (C-Section) ☐ Unsure

11. **Have any of your prenatal care providers suggested scheduling your delivery prior to your due date?**

    ☐ Yes ☐ No ☐ Unsure

12. **How do you plan to feed your baby in the first few weeks?**

    ☐ Breastfeed only ☐ Formula feed only ☐ Both breast and formula feed ☐ I haven't decided

13. **How would you rate your level of overall satisfaction with the prenatal care you are receiving? Would you say you are:** (select one ☒)

Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
☐	☐	☐	☐	☐

Appendix M

Strong Start for Mothers and Newborns Postpartum Survey

Postpartum Survey—English

Strong Start for Mothers and Newborns Initiative Postpartum Survey

Place study ID label in box

Instructions: Please mark your answer by placing an ☒ in the appropriate box with a **black pen.** When appropriate, use numbers (0, 1, 2, 3 etc.,) to answer questions

Correct ☺	Incorrect ☹
[X]	[☐no] or [☐X] or [ ] or [☐ X]

Your responses are voluntary and will be kept confidential.

Today's Date
__/__/____
MM/DD/YYYY

Delivery Date
__/__/____
MM/DD/YYYY

1. **Where did you deliver this baby?**
   ☐Hospital ☐ Birth Center ☐ Home ☐Other (please specify)

2. **Did you have a support person with you during labor?**
   ☐Yes ☐ No ☐ Unsure

   If yes, please specify who supported you during labor (select all that apply ☒):
   ☐ Doula ☐ Spouse/Partner/Boyfriend ☐ Other Family member ☐ Someone else (specify)

3. **Did you have any medicine during labor to help you with pain?** ☐ Yes ☐ No ☐ Unsure
   3.a. If yes: Did you receive an Epidural? ☐ Yes ☐ No ☐ Unsure

4. **How did you deliver this baby?** ☐ Vaginally ☐ Cesarean Section (C-section) ☐ Refused

5. **Did a doctor, nurse, or midwife try to induce your labor (start your contractions using medicine)?**
   ☐ Yes ☐ No ☐ Unsure

6. **Did a doctor, nurse, or midwife try speed up your labor using medicine?**
   ☐Yes ☐No ☐Unsure

7. **Did a doctor, nurse, or midwife break your bag of water to start or speed up your labor?**
   ☐ Yes ☐ No ☐ Unsure

8. **How satisfied were you with your delivery experience? (select one ☒)**

Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
☐	☐	☐	☐	☐

9. **How would you rate your overall level of satisfaction with the prenatal care you received? (select one ☒)**

Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
☐	☐	☐	☐	☐

10. **What is your relationship status now? (select one ☒)**

☐	Married, living with spouse
☐	Married, not living with spouse
☐	Living with a partner/boyfriend
☐	In a relationship but not living together
☐	Not in a relationship
☐	Prefer not to answer

11. **Did you ever breastfeed or pump breast milk to feed your baby after delivery, even for a short period of time?**
☐ Yes ☐ No ☐ Prefer not to answer

11.a. If yes: Are you *currently* breastfeeding or feeding pumped breast milk to your new baby?
☐ Yes ☐ No ☐ Refused

12. ***After your new baby was born*, did a doctor, nurse, or other health care worker talk with you about using birth control?**
☐ Yes ☐ No ☐ Unsure

13. **Are you or your spouse/partner/boyfriend doing anything *now* to keep from getting pregnant?**
☐ Yes ☐ No ☐ Unsure

14. **If yes, what kind(s) of birth control are you using to keep from getting pregnant? (select all that apply ☒)**
☐ Condom or rubber
☐ Withdrawal or pulling out
☐ Vasectomy or male sterilization
☐ Birth Control Pills
☐ IUD (for example, Mirena/Paragard)
☐ Tubal ligation or female sterilization (tubes tied)
☐ Spermicidal foam/jelly/cream/film/suppository
☐ Hormonal implant or injection (Implannon/Nexplanon)
☐ Injection (The Shot/Depo)
☐ Rhythm or safe period
☐ Breastfeeding
☐ Something else (please specify): _____

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Participant unable to be contacted to complete Postpartum Survey. ☐ Yes

CURRICULUM VITAE

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Latia M. Hickerson, PhD, MPH, APRN, WHNP-BC

EDUCATION:

University of Texas, Houston, Texas	2017	PhD	Nursing
University of Texas, Houston, Texas	2012	MSN	Nursing
University of Texas, Houston, Texas	2012	MPH	Community Health Practice/ Maternal and child health
Columbia University New York, New York	2008	BS	Nursing
The University of Florida Gainesville, Florida	2007	BS	Health Education & Behavior/ Community Health

PROFESSIONAL POSITIONS:

Baylor College of Medicine
Houston, Texas
Faculty Nurse Practitioner 2012- Present

Baylor College of Medicine
Houston, Texas
Nurse Manager 8/2012- 12/2012

Orlando Health
Medical-Surgical Floor
Orlando, Florida
Staff Nurse I 2008-2009

Shand's Hospital
Mother-Baby Unit
Gainesville, Florida
Lactation Intern 2007

PROFESSIONAL MEMBERSHIPS:

National Association of Nurse Practitioners in Women's Health	2012- Present
Sigma Theta Tau International Nursing Honor Society Zeta Phi Chapter	2012-Present
American Public Health Association	2012-Present
Association of Women's Health, Obstetric, and Neonatal Nurses	2012-Present
American Association of Nurse Practitioners	2014-Present
Houston Area Nurse Practitioners	2015-Present
American Holistic Nurses Association	2016-Present

PUBLICATIONS:

Hickerson, L., Wardell, D., Wood, G., & Buzi, R. (2017). Factors influencing attendance, postpartum follow-up, and contraceptive use among teenage CenteringPregnancy© participants. Unpublished manuscript.

Hickerson, L. (2016). Pregnancy ambivalence and teenage mothers: An integrative review. Unpublished manuscript.

Hickerson, L. & Santa Maria, D. (2016). Differences in birth outcomes and pregnancy intention status among women with closely spaced pregnancies. Unpublished manuscript.

PRESENTATIONS:
Poster session

Abuharb, F., Brown, S., & Hickerson, L. (2015, March). *Number of prenatal visits as a predictor to delivery by c-section.* Poster sessions presented at the University of Texas-Houston SON Research Day, Houston, Texas.

Wade, L. (2007, April). *Socialization and Anger Expression a correlation study, performed under faculty supervision, to evaluate a relationship between social relationship.* Poster session presented at the Ronald E. McNair Research Day, University of Florida, Gainesville, Florida.

AWARDS AND RECOGNITION:

2017	The PhD Faculty Award of Excellence, University of Texas- Houston
2017	The Community Health and Service Award, University of Texas- Houston
2014-2017	Robert Wood Johnson Future of Nursing Scholar
2012	Outstanding Nurse Practitioner Award, University of Texas- Houston
2012	University of Texas Ben Love Scholar
2007	Columbia University Jacqueline M. Webb Scholar