Original Study

The Effect of Centering Pregnancy versus Traditional Prenatal Care Models on Improved Adolescent Health Behaviors in the Perinatal Period

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A B S T R A C T

Study Objective: To determine if the CenteringPregnancy model of prenatal care improves maternal health behaviors in adolescent pregnancy.
Design: We conducted a retrospective chart review comparing 150 pregnant adolescents who received prenatal care between 2008 to 2012 with CenteringPregnancy to those receiving care in traditional prenatal care models with either multiprovider or single-provider visits. Outcome measures included weight gain during pregnancy, compliance to prenatal care appointments, infant feeding method, postpartum follow up and contraceptive use postpartum. A χ^2 analysis was used to compare outcomes between the 3 groups at a 2-tailed α of .05.
Results: Fifty individuals were evaluated in each group. Adolescents in the CenteringPregnancy group were more likely to comply with prenatal and postpartum visits and to meet the 2009 Institute of Medicine gestational weight guidelines for weight gain in pregnancy than were adolescents in either multiprovider (62.0% vs 38.0%, $P = .02$) or single-provider (62.0% vs 38.0%, $P = .02$) groups. The CenteringPregnancy group was also more likely to solely breastfeed compared with adolescents in the multiprovider group (40.0% vs 20.0%, $P = .03$) and include breastfeeding in addition to bottle-feeding compared with both multiprovider (32.0% vs 14.0%, $P = .03$) and single-provider (32.0% vs 12.0%, $P = .03$) patient groups. Additionally, the CenteringPregnancy group had increased uptake of long-acting reversible contraception and were less likely to suffer from postpartum depression.
Conclusions: CenteringPregnancy Prenatal Care program aids in compliance to prenatal visits, appropriate weight gain, increased uptake of highly effective contraception, and breastfeeding among adolescent mothers.
Key Words: Centering pregnancy, Group prenatal care, Teen pregnancy, Postpartum contraception

Introduction

The number of adolescent pregnancies has been declining since the 1990s, with a reported rate of 31.3 per 1000 in 2011 compared with 61.8 per 1000 in 1991 among girls aged 15-19.[1] However, the United States continues to have the highest rate of adolescent pregnancies compared with any other industrialized nation.[2] Furthermore, ~82% of adolescent pregnancies are reported as unintended.[3] Increased risk taking behaviors compounded with a lack of ability to anticipate consequences often contributes to adolescent pregnancies.[4,5] Additionally, the lower use of highly effective contraception is a major factor in the disparity between pregnancy rates in the United States and other developed nations.[2]

Adolescent pregnancies are of critical importance because of the wide-reaching implications and long-term consequences for both the mother and the baby. It is known that pregnant adolescents and their infants have an increased risk of medical complications and poor psychosocial outcomes.[2] Pregnant adolescents are at increased risk of poor compliance to prenatal visits, depression, poor or excessive maternal weight gain, and obstetric morbidity such as preeclampsia, labor dystocia and operative delivery.[2,5,6] Infants of adolescent parents are at higher risk for preterm birth, low birth weight, stillbirth, and neonatal death.[2] Adolescent mothers are less likely to graduate high school, have lower income potential, and have higher rates of substance abuse and mood disorders.[2] Infant and child psychosocial outcomes include increased risk of abuse, neglect, and decreased academic achievement.[2] Poor health behaviors and limited prenatal care are believed to have a major contribution to these adverse outcomes.[5] Pregnant adolescents are often faced with lack of support and difficult financial issues, further complicating their pregnancies.[7] This group also remains at risk for a repeat pregnancy, which may be more deleterious to the teen mother and her offspring by compounding negative medical, economic, and psychosocial effects.[2]

A number of programs have been developed to aid adolescent mothers and their infants, and some have focused specifically on the prenatal care provided.[6] The American Academy of Pediatrics and the American Congress

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of Obstetricians and Gynecologists define *prenatal care* as a "plan of care that includes medical, nutritional, psychological and educational needs of patient and her family."[8,9] Traditionally, prenatal care is given in the clinic or office setting. There a provider sees a patient in a private examination room at 1- to 4-week intervals depending on the gestational age and associated pregnancy factors. A separate visit is generally needed for nutrition and social work visits. These visits may provide a challenge for teens as they must work around several obstacles, including school, transportation, or child care for their other children.

CenteringPregnancy prenatal care (CPPC) is a model of care developed by a certified nurse midwife in the early 1990s that unifies all components of prenatal care and exchanges the individual examination room for a group setting that provides risk assessment, health promotion, and support.[10,11] Currently, there are more than 100 sites nationally that offer this innovative model of prenatal care.[8] CPPC, while following the traditional prenatal care visit schedule, consists of group visits typically of 8-12 women at similar gestational ages offering guided education, group discussion, and social support for women both during pregnancy and immediately postpartum.[10,12] In addition, participants perform self-care activities such as measuring their own vital signs, which may aid in encouraging women to take ownership of their health.[10,13,14] The education sessions are composed of structured topics on a variety of topics including early pregnancy issues, nutrition, exercise, breastfeeding, and parenting techniques. Handouts, videos, and worksheet are often used to guide the discussions during these sessions. During the group session, each woman has an opportunity to have individual time with the provider at which time a physical examination is performed, including evaluation of fundal height and fetal heart tones, as well as reviewing her progress and any concerns.[10] Although group sessions are led by a provider, the group drives the discussion and help each other with problem solving.[5,10,14]

A number of studies have shown that CPPC may have favorable outcomes in maternal knowledge of pregnancy, social support, compliance, patient satisfaction, and incidence of preterm birth and low birth weight.[11,12,15,16] However, few studies have evaluated the CPPC model and effect on improvement in health behaviors.[8,14] Moreover, there is only 1 study to date evaluating CPPC in the adolescent population exclusively.[5] CPPC may be ideally suited for adolescent mothers because they often lack social support. Studies have shown that experiencing less social isolation has been associated with improved outcomes for adolescent mothers.[6,14] Moreover, increasing adolescent participation in prenatal care and providing information about pregnancy, labor, birth, and parenting have been viewed as essential for any adolescent pregnancy program.[7]

As a great deal of the morbidity associated with adolescent pregnancies is related to their poor health habits, we focused on whether adolescents participating in CPPC had any improvement in some of the modifiable maternal behaviors. The purpose of this study was to compare maternal health behaviors and select pregnancy outcomes among teens participating in CPPC versus single- and multiple-practitioner models. We specifically wanted to compare rates of compliance to prenatal care, breastfeeding, uptake of contraception, depression, and weight gain.

Materials and Methods

This study was approved by the MedStar Health Research Institute (MHRI)/MedStar Washington Hospital Center (MWHC) institutional review board. We conducted a retrospective cohort study of pregnant adolescents, aged 11-21, from January 2008 through June 2012, who received prenatal care and delivered at a teaching hospital in an urban community. Individuals were excluded if they had either a medical history or pregnancy complication that required monitoring in the high-risk obstetric clinic.

Prenatal Care Models

The CPPC model was implemented at MWHC Obstetrics and Gynecology clinic in 2008. Since that time, adolescents seeking prenatal care at our institution received prenatal care in 1 of 3 models: either CPPC, single-provider prenatal care (SPPC), or multiprovider prenatal care (MPPC). The latter 2 models are traditional models of prenatal care. The initial prenatal visit for all teens presenting for prenatal care is an individual session in which a provider takes a history and performs a physical examination and risk assessment. After the initial assessment, they are then offered entry into a CPPC group. Those who wish to participate are then entered into a group of adolescents of similar gestational age for the duration of their pregnancy, culminating with a postpartum visit. If a patient declines entry into a group, care is provided through 1 of the 2 traditional models based on provider availability. All groups met on the same prenatal care schedule with monthly visits until 28 weeks, then twice a month to 36 weeks, followed by weekly visits. No group received any additional reminders or incentives to attend prenatal visits. No-shows were recalled according to standard clinic policy.

In the SPPC model, an individual is seen in the clinic setting by 1 provider for the duration of their pregnancy and immediately postpartum. In the MPPC model, patients are seen by a resident physician in obstetrics and gynecology under the supervision of a staff attending. In this model, the patients typically see a variety of resident physicians during their prenatal care and immediately postpartum. Both SPPC and MPPC models are traditional models of prenatal care in which provider services are given on a one-to-one basis in a private examination room, typically in 10- to 30-minute intervals with separate appointments required for other services such as nutrition and social work. The education and social support aspects for the patients are provided on a one-to-one basis from a variety of individuals and differs based on the level of commitment to education and time constraints.

Individuals participating in CPPC met in groups of 6-12 individuals for 120 minutes on the same schedule as traditional models. These groups were led by either of 2 certified nurse midwives or an attending obstetrician. The sessions started with an opportunity for socializing, during which refreshments were also served. At that time, each