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Original article

The Effect of an Educational Approach to Pregnancy Prevention Among High-Risk Early and Late Adolescents

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A B S T R A C T

Purpose: To evaluate a novel approach to adolescent pregnancy prevention through scheduled educational clinic visits, focusing to retain patients within the clinic system.
Methods: This is a retrospective chart review conducted at the Center for Adolescent Pregnancy Prevention, a privately funded clinic located in an urban setting serving only adolescents and young adults. Subjects included adolescent patients aged 11–18 years who were seen between January 2007 and December 2010. The primary outcomes studied were 12- and 24-month continuation rates of birth control options, total length of follow-up, time until gaps in follow-up, and any incident pregnancies. Results were stratified based on age at initial visit: early adolescents (aged 11–15 years) or late adolescents (aged 16–18 years).
Results: There were 121 patients who met inclusion and had more than one visit. There were seven incident pregnancies over the study period, all in the late adolescent group. The relative risk of pregnancy among those with a gap in follow-up of >12 months compared with those without a gap was 4.63 (95% confidence interval [CI] 1.1–19.4). The early adolescents had a greater rate of continuation of birth control at 12 months compared with late adolescents (66.6% vs. 42.2%, relative risk [RR] 1.57, 95% CI 1.12–2.20) and had higher rates of continuation at 24 months (41.6% vs. 18.3%, RR 2.27, 95% CI 1.25–4.11).
Conclusions: The educational approach at Center for Adolescent Pregnancy Prevention may decrease adolescent pregnancy among high-risk adolescents that stay within the clinic system. This educational model may be more effective for early adolescents than late adolescent patients.
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IMPLICATIONS AND CONTRIBUTION

This article describes a successful clinic design that focuses on decreasing unintended adolescent pregnancy in a high-risk urban area. Subjects without gaps in follow-up had a significantly lower risk of unintended pregnancy. This model was especially influential on early adolescents (aged 11–15 years) who had higher rates of birth control continuation and no incident pregnancies during the study period.

Nearly half of the 6.7 million pregnancies reported in the United States each year are unintended, and this rate is even higher among 15- to 24-year-old women (69%) [1]. Within the United States, the adolescent birth rate varies among states and race. The average reported birth rate per state across years 2000–2006 was 41 per 1,000 females, with a lower rate of 28 per 1,000 among whites and higher rates among blacks and Hispanics of 61 and 90 per 1,000, respectively [2]. In 2010, the adolescent birth rate in the state of Kentucky was 46 per 1,000 in 2010, ranking 44th of 50 states [3].

Risk factors for adolescent pregnancy include lower socioeconomic status and being of racial minority [4]. Previous studies have highlighted how growing up in an environment where there is little chance of social and economic advancement can cause adolescents to be ambivalent about pregnancy and have babies at a young age [5]. Another study showed that younger, less educated, racial minority, and unemployed women had

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lower contraceptive knowledge scores than their counterparts at baseline [6]. This lack of contraceptive knowledge can be compounded by adolescent's perceptions of risk regarding sexual activity [4].

However, education regarding sexuality and provision of contraception does not guarantee compliance. Almost half of adolescent women discontinue oral contraceptive pill (OCP) use within 6 months of obtaining a prescription [7]. Furthermore, it has been shown that 33% of 13- to 19-year old and 18% of 20- to 22-year-old women reported that they did not use any contraception for at least 1 month after stopping their birth control pills although they did not want to become pregnant [8]. Others simply fail to take the method correctly. Methods that rely primarily on compliance with daily administration are associated with higher failure rates [9].

The purpose of this study was to evaluate a novel approach to adolescent pregnancy prevention through consistent scheduled educational clinic visits. The Center for Adolescent Pregnancy Prevention (CAPP) is an inner-city, privately funded clinic that provides female family planning and sexual education to females aged 11–24 years. CAPP is located in downtown Louisville, Kentucky. All methods of birth control are provided by this clinic including OCPs, contraceptive patch, ring, depot medroxyprogesterone acetate (DMPA) injection, and long-acting reversible contraceptives (LARCs) such as the subdermal implant, copper intrauterine device (IUD), and levonorgestrel IUD. Birth control is provided for free or at reduced cost, dependent on the patient's insurance coverage. Previous demographic evaluation has shown that 90% of the females served through this clinic live below the poverty level, and the majority are racial minorities. CAPP focuses on primary prevention through an educational class provided at the patient's initial visit and then aims to retain patients within the clinic system by scheduling routine 3-month follow-up appointments regardless of method chosen. At each visit, further education is provided along with identifying risks for noncompliance and high-risk activity. The goal of maintenance within the clinic system allows a trusting patient–provider relationship to be established and for these high-risk adolescent patients to have a resource where they can receive confidential care. Our study goal was to determine how well this educational approach worked by evaluating incident pregnancies over a given period, as well as analyzing patient follow-up, gaps in follow-up, and breaks in compliance with contraceptives once the patients have been established in the system.

Methods

This is a retrospective chart review conducted at the CAPP. Data were collected by chart review on any new patient seen at CAPP between the dates of January 2007 and December 2010. Patients included in the study were new, nulligravid patients between the ages of 11 and 18 years. The patient chart was reviewed from the initial visit to December 2012. The initial visit period of January 2007 through December 2010 was chosen in order to have at least 2 years of follow-up for each new patient. Patients were excluded from review if they had a prior pregnancy or if they were over the age of 18 at the initial visit. The data collected included date of initial and final visit, along with any gap in follow-up of over 6 and 12 months. The medication record and patient's report of compliance with contraception at each visit were also recorded. Incident pregnancies or sexually transmitted diseases (STDs) were recorded. Other demographics included patient race and type of insurance. Other data included the type of contraceptive method chosen, along with start and stop dates, and patient report of consistent condom use at entry. The latter was defined as subjects reporting condom use as "always" on a scale of "always, sometimes, rarely or never".

All data were stratified by age group. Early adolescents were defined as those aged 11–15 years, and late adolescent patients were those aged 16–18 years. A break in contraceptive use was defined as a lack of method documented, patient report of noncompliance, or break in the medication record of >1 month. A gap in follow-up was defined as no clinic visit in at least 6 or 12 months but with eventual return to the clinic system. Lost to follow-up was defined as no clinic visit in at least 6 months with no return to the clinic system.

The primary outcomes studied were 12- and 24-month continuation rates of different birth control options, total length of follow-up within the clinic system, time until gaps in follow-up, and any incident pregnancies. Secondary outcomes included incident STDs. We plotted contraceptive continuation using Kaplan–Meier estimates of the probability of discontinuation. Similarly we plotted overall incidence of pregnancy, as well as Kaplan–Meier plots of continuation within the clinic system. Subjects were censored when lost to follow-up or when the event (pregnancy or birth control discontinuation) occurred. Subjects who completed at least one follow-up visit were included in the analysis. For those lost to follow-up during the study period, data are included up until the point when they are lost to follow-up (i.e., censored). We examined the characteristics of the study population by age group: early adolescents (age at entry 11–15 years) or late adolescents (age at entry 16–18 years). Groups were compared using the chi-square statistic. The Kaplan–Meier distributions of early and late adolescent groups were compared using the log-rank test. Approval of our study protocol was obtained by the institutional review board.

Results

There were 151 new patients who met inclusion criteria for the study period, with an age range of 11–18 years. Eighty percent reported sexual activity at the initial visit, with a range of partners of 1–13, with a mean number of partners of 2.86. Fifty-three percent of patients reported some hormonal birth control at entry, and 67% reported consistent condom use with every intercourse. There were 20% of patients without insurance, 63% with Medicaid, and 17% with private insurance at the initial visit. The majority of patients presented for contraception (92%), while 8% presented for other reasons, most commonly STD testing. The majority of patients were African-American (65%), while Caucasians made up 27% of the population, and Hispanics only 3%. Table 1 lists entry demographics and sexual risk stratified by age group.

The overall incidence of STD was 39.7%. Forty-three patients had *Chlamydia trachomatis* (28.5%), three patients had *Neisseria gonorrhoeae* (2%), and 12 patients had both (7.9%). Of early adolescents, 40.6% were diagnosed with an STD during follow-up, and among late adolescents, this incidence was 39.1%.

There were 27 patients that had only one visit to the clinic and then became lost to follow-up. There were also three patients who were diagnosed with a pregnancy at their initial visit, meaning the patients were already pregnant prior to inclusion in the clinic system. When these patients were excluded, that left