



Examining the Role of the Pediatric Emergency Department in Reducing Unintended Adolescent Pregnancy

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Objectives To determine pregnancy risk and receptiveness to emergency department (ED)-based pregnancy prevention interventions among adolescents accessing care in the ED.

Study design Cross-sectional electronic survey of adolescent females in a pediatric ED used to calculate the Pregnancy Risk Index, a validated measure estimating the annual risk of becoming pregnant based on recent sexual activity, contraceptive method(s), method-specific contraceptive failure rates, and interest in receipt of ED-based contraceptive services.

Results Of 229 participants, 219 were not pregnant, and 129 reported sexual experience. Overall, 72.4% (n = 166) endorsed negative pregnancy intentions. The overall Pregnancy Risk Index for the 219 nonpregnant participants was 9.6 (95% CI 6.8-12.4), and was 17.5 (95% CI 12.8-22.2) for the 129 sexually experienced participants. A Pregnancy Risk Index greater than the national average of 5 was associated with older age (aOR 3.0; 95% CI 1.5-5.85), nonprivate insurance (aOR 7.1; 95% CI 1.6-32.1), prior pregnancy (aOR 2.7; 95% CI 1.2-6.0), and chief complaint potentially related to a reproductive health concern (aOR 2.6; 95% CI 1.4-5.1). In this cohort, 85.1% (n = 194) believed that the ED should provide information about pregnancy prevention, the majority of whom (64.9%; n = 148) believed that pregnancy prevention services should be offered at all ED visits.

Conclusion This study demonstrates a high unintended pregnancy risk among adolescents accessing care in the ED. Adolescents report interest in receiving pregnancy prevention information and services in the ED, regardless of reason for visit. Strategies to incorporate successfully the provision of reproductive health services into ED care should be explored. (*J Pediatr* 2017;189:196-200).

Approximately 615 000 adolescents become pregnant in the US annually, translating to a national pregnancy rate of 5.9 per 100 adolescent women.¹ More than 75% of adolescent pregnancies are unintended,² and 84% of sexually active adolescent women report that they would be upset if they became pregnant.³ However, only one-third of adolescent women report the use of condoms at last sex and only 20% report use of dual method (eg, condom and hormonal contraceptive or an intrauterine device) at last sex.⁴ Low uptake of contraceptive use may, in part, be explained by limited use of preventive care services by adolescents. More than one-third of adolescents report no source of primary care⁵⁻⁸ and less than one-third have received contraceptive counseling.⁹

The emergency department (ED) may serve as a strategic venue for pregnancy prevention. EDs are a key point of access to care for many adolescents, who account for 16% of the 130 million ED visits made annually.¹⁰⁻¹³ Furthermore, adolescents seeking care in the ED are more likely to engage in high-risk sexual behaviors compared with those who access primary care services.^{7,14} A prior study conducted in New York City noted adolescents seeking care in the ED to be at high risk for pregnancy.¹⁵ Furthermore, previous studies suggest that adolescents may be receptive to ED-based pregnancy prevention interventions.¹⁵⁻¹⁹ The goal of this study was to validate the previous finding of high pregnancy risk in an adolescent ED population and to characterize associated risk factors. A secondary objective was to assess receptiveness to ED-based contraceptive care services. We hypothesized that adolescents seeking care in the ED would be at higher risk for pregnancy than a nationally representative sample of adolescent females.

Methods

We conducted a cross-sectional survey using a computerized web-based questionnaire with a convenience sample of female adolescents aged 14-21 who presented to an urban tertiary care pediatric ED (annual volume 90 000 visits, with

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ED Emergency department
PRI Pregnancy Risk Index
RAs Research assistants

approximately 10% by adolescent females) from May 2015 to November 2015. This study was approved by our institution's Institutional Review Board with a waiver of parental consent for participation. All study subjects provided verbal informed consent before participation.

We developed our questionnaire by adapting survey items from previously validated surveys, including the Youth Risk Behavior Surveillance System,²⁰ Child and Adolescent Health Measurement Initiative's Young Adult Health Care Survey,²¹ and National Survey of Family Growth.²² Once developed, we then performed cognitive interviews²³ with 5 adolescent patients in the ED to pilot test the questionnaire for understanding and acceptability. All items were assessed as acceptable and understandable in pilot testing, requiring no further modifications to the questionnaire. Survey items were designed to assess risk of pregnancy, and pregnancy intentions, receptivity to pregnancy prevention resources and interventions in the ED, and to collect sociodemographic information. The questionnaire, created through LimeSurvey software (LimeSurvey: An Open Source Survey Tool, version 2; Hamburg, Germany), used branching logic for customized items based on respondents' prior responses.

Eligible patients were identified by research assistants (RAs) using the ED electronic tracking system between 8 a.m. and 11 p.m. daily. Patients were eligible for study participation if they were female and between the ages of 14 and 21, inclusive. Patients were excluded if they had not been cleared medically by the attending physician, had a history of developmental or neurocognitive delay, presented with altered mental status, or were non-English speaking (>95% of the adolescent population served by our ED is fluent in English). We excluded patients who presented for care related to sexual trauma to minimize bias and distress. This group of patients routinely receives pregnancy prevention resources as a part of standard ED care and we were concerned about distress associated with study participation.

The RA approached potentially eligible patients, inquiring about their interest in participating in a brief "anonymous health survey for teen girls." If the patient was interested in learning more about the study, anyone who had accompanied the patient to the ED was asked to step out of the room. The RA then discussed the study details in private and obtained verbal informed consent for study participation. Participants were then provided with a computer tablet to complete the web-based questionnaire. RAs remained in the participants' treatment rooms to be available to provide clarifications to questions if needed. No incentives for study participation were provided. Basic demographic information, including age and race or ethnicity of patients who declined study participation, was abstracted from the electronic health record by the RAs.

Our primary outcome was pregnancy risk. Based on a previously developed and validated measure,²⁴⁻²⁶ we calculated the Pregnancy Risk Index (PRI) for each study participant to estimate the annual risk of becoming pregnant based on (1) recent sexual activity (vaginal–penile sexual intercourse within the last 3 months), (2) contraceptive method(s) used at last sexual

intercourse, and (3) method-specific contraceptive failure rates. Nonuse of contraception was assigned a contraceptive failure rate of 85, the 1-year risk of pregnancy with no contraception. The PRI score for a woman who was not sexually active in the past 3 months or who was sexually inexperienced was set to zero.^{25,27-29} The overall PRI serves as the mean of individual PRI scores and summarizes the risk of pregnancy at the population level. A PRI of 5, for example, equates to 5 expected pregnancies per 100 adolescent females per year.

Statistical Analyses

We calculated the overall PRI of our entire nonpregnant population. Participants were categorized as pregnant if they responded affirmatively to the question, "Are you pregnant now?" We used self-report of pregnancy rather than pregnancy test results because not all enrolled patients underwent pregnancy testing as part of their routine care. Furthermore, we performed a subgroup analysis to assess overall PRI among participants disclosing sexual experience (eg, ever engaging in sexual intercourse). For the purposes of these analyses, which were focused on behavior increasing pregnancy risk, we defined sexual intercourse as penis in vagina.

We performed bivariate and multivariate logistic regression analyses to identify sociodemographic factors associated with having an individual PRI above the national PRI of 5.²⁹ For the sexually experienced subgroup, we conducted similar analyses to identify sociodemographic factors associated with having an individual PRI above the PRI of 18 found in a nationally representative sample of sexually active adolescents.²⁹ Covariables of interest included race or ethnicity, age category (14-17 years of age vs 18-21 years of age), insurance type, prior pregnancy, and presentation for a potential reproductive health concern. Chief complaints categorized as presentation for a potential reproductive health concern included pregnancy test request, concern for sexually transmitted infection, dysuria, vaginal bleeding, vaginal discharge, and lower abdominal or pelvic pain. Covariables with a *P* value of <.2 in bivariable analyses were included in multivariable analyses. We used STATA 12.1 (StataCorp, College Station, Texas) to perform all analyses.

Results

Three hundred twenty-two eligible participants were approached for study participation, of which 229 (71.1%) agreed. There was no difference with regard to race or ethnicity or age between patients who participated and those who declined study participation. The mean age of study participants was 17.0 years of age (SD 1.9); the majority were of non-Hispanic Black race or ethnicity (69%, *n* = 158) and publicly insured (67.3%; *n* = 154). One-third of participants (*n* = 81) presented with a chief complaint potentially related to a reproductive health concern (**Table I**).

More than one-half of the participants (*n* = 129; 56.3%) were sexually experienced (eg, had engaged in sexual intercourse), of whom the majority (*n* = 94; 76.0%) reported sexual activity within the 3 months before completing the survey (**Table I**).

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