

# Determinants of Delayed Pregnancy Testing Among Adolescents

Daniel Bluestein, MD, MS, and Carolyn M. Rutledge, RN, MS, CFNP

Norfolk, Virginia

**Background.** Pregnant teenagers often prolong the interval between suspecting and confirming that they are pregnant. Prior studies suggest a number of potential determinants for this delay but do not specify which ones are most salient.

**Methods.** In a cross-sectional survey, 123 pregnant teenagers, 64 of whom maintained their pregnancies and 59 of whom had abortions, completed a short version of the Center for Epidemiologic Studies Depression Scale, the Family APGAR test, and a study-specific questionnaire.

**Results.** Significant bivariate determinants of delayed pregnancy testing included young maternal age, black race, lower educational attainment, lack of pregnancy symptoms, continuing the pregnancy, and denial. Only denial, however, retained a significant net effect on delayed testing ( $P < .05$ ) when the effects of these six

variables were modeled using multiple linear regression.

**Conclusions.** These results suggest that psychological barriers are the most salient determinants of delayed pregnancy testing among the teenagers surveyed in this study. Some teenagers may not volunteer information about a suspected pregnancy. Providers, therefore, should directly question teenagers about sexual activity and discuss the importance of early testing when pregnancy is suspected. Findings also suggest further research that would increase understanding of adolescent health behavior in pregnancy and identify effective clinical and educational interventions.

**Key words.** Pregnancy in adolescence; pregnancy, unwanted; pregnancy tests; adolescent behavior.

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Pregnant teenagers often prolong the interval between suspecting and confirming that they are pregnant.<sup>1</sup> This tendency to delay pregnancy testing can result in delayed prenatal care, which contributes to the excess infant morbidity and mortality associated with adolescent pregnancies.<sup>2</sup> Delayed testing may also result in a more complicated and costly second-trimester abortion,<sup>3,4</sup> or subject a teenager to bearing an unwanted child. Emotional distress and high-risk health behaviors resulting from this latter circumstance further increase obstetrical risk.<sup>5</sup> Prevention of these adverse outcomes can be facilitated by understanding the factors that predispose teenagers to delay having pregnancy tests.

Previous research suggests a number of potential determinants. These include sociodemographic attributes such as age, race, education, and ability to pay for a

test,<sup>6-8</sup> as well as pertinent clinical attributes including parity, contraceptive practices, menstrual regularity, and pregnancy symptoms.<sup>6</sup> Several investigations have reported an association between delayed testing and a lack of social support, particularly fear of parental response<sup>9</sup> and communication difficulties with partners.<sup>10</sup> Other psychosocial determinants have received less empirical study, but probably include inadequate reproductive health knowledge,<sup>6</sup> difficulty in acknowledging the pregnancy,<sup>1</sup> depressed mood,<sup>11,12</sup> and the desirability of the pregnancy.<sup>3,13</sup>

Prior studies do not explain why teenagers delay pregnancy testing. Many studies exclude potential determinants. The majority examine late prenatal care enrollment<sup>14</sup> and second-trimester abortion,<sup>15</sup> although factors that delay these later actions are likely to differ from factors that delay pregnancy testing.<sup>16</sup> Few consider teenagers as a separate group despite the likelihood that determinants of delay will vary by age.<sup>7</sup>

The current study addresses these limitations by assessing only pregnant teenagers on a broad range of potential determinants and by focusing on the interval

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From the Department of Family and Community Medicine, Eastern Virginia Medical School, Norfolk. Requests for reprints should be addressed to Daniel Bluestein, MD, MS, Department of Family and Community Medicine, Eastern Virginia Medical School, PO Box 1980, Norfolk, VA 23501.

between pregnancy recognition and pregnancy testing. Specific study objectives were (1) to establish associations between delay over this interval and the potential sociodemographic, clinical, and psychosocial determinants, and (2) to identify which determinants best predict the duration of this delay.

## Methods

### Sample

The sample consisted of 151 pregnant teenagers (range, 14 to 19 years; mean age, 17.3 years). Of these, 123 returned the completed surveys used in these analyses; 64 of the teenagers maintained their pregnancies and 59 chose abortion. Subjects ranged in level of education completed from the 7th grade to the 2nd year of college (both mean and median educational attainment was 11th grade). Sixty-one percent of subjects were black, nearly all (98%) were unmarried, and the majority (67%) were pregnant for the first time. Eighty-seven percent reported no difficulty in paying for health care services.

### Data Collection

Data were obtained in Norfolk, Virginia, during the spring of 1990 as part of a larger study of emotional adjustment in unwanted pregnancy. There were two data collection sites: a high school for pregnant teenagers and a pregnancy termination clinic. The high school offers a standard curriculum for grades 9 through 12, which includes prenatal care, health education programs, and social support programs to teenagers in all trimesters of pregnancy. The termination clinic conducts only first-trimester abortions and serves women of all ages. Women at both sites had undergone pregnancy testing before their participation in the study.

Participants voluntarily and anonymously completed self-report surveys consisting of a short version of the Center for Epidemiologic Studies–Depression scale,<sup>17</sup> the Family APGAR,<sup>18</sup> and a study-specific questionnaire addressing other sociodemographic, clinical, and attitudinal variables. These surveys were distributed to a health education class at the high school and to women waiting to have their abortions.

### Variables

In this study, the dependent variable was delay in obtaining a pregnancy test, defined as the interval (in weeks) between the time pregnancy is suspected and the time of a pregnancy test. Independent variables included the

potential sociodemographic, clinical, and psychosocial predictors suggested in prior studies. Sociodemographic variables consisted of age (in years), race (coded: 0 = black, 1 = white), education (coded: 1 = 7th grade to 6 = 12th grade), and ability to pay for a test (coded: 0 = unable to pay, 1 = able to pay). Clinical variables included parity (coded: 0 = nulliparous, 1 = 1 or more prior pregnancies), contraceptive use (coded: 0 = contraceptive not used, 1 = contraceptive used), menstrual pattern (coded: 0 = irregular menses, 1 = regular menses), and number of pregnancy symptoms, from 0 to 2 symptoms present (breast tenderness and nausea).

Psychosocial factors included reproductive health knowledge, social support, depressive symptoms, desirability of pregnancy, and pregnancy acknowledgment. The reproductive health knowledge measure was a summary score of self-assessed knowledge concerning pregnancy symptoms, pregnancy tests, and other information (coded: 0 = inadequate knowledge, 1 = adequate knowledge). Indicators of social support included an index of perceived overall support, measured using the Family APGAR,\* and support regarding the pregnancy, as manifested by difficulties in discussing the pregnancy with parents and partner. The Family APGAR is an interval scale from 0 to 10, with lower values indicating greater dissatisfaction with support.<sup>18</sup> Communication difficulties were assessed based on responses to the question, "Did you have difficulties discussing the pregnancy with your [mother, partner, father]?" (coded: 0 = no difficulties, 1 = difficulties). A recently confirmed, 12-item version of the Center for Epidemiologic Studies–Depression (CES-D)<sup>17</sup> scale was used to measure depressive symptoms (scored 1 to 35, with higher scores indicating a more depressed state). Both the initial response to the positive result on the pregnancy test (coded: 0 = unhappy with pregnancy, 1 = happy with pregnancy) and the means of pregnancy resolution chosen (coded: 0 = abortion, 1 = continue the pregnancy) were used to address pregnancy wantedness. Difficulty acknowledging the pregnancy was assessed by the question, "Did you have difficulty admitting to yourself you were pregnant?" (coded: 0 = no, 1 = yes).

### Data Analysis

Data analyses were conducted to determine the best sociodemographic, clinical, or psychosocial predictors of delay in obtaining a pregnancy test. Descriptive statistics were used to profile study subjects. Pearson correlations

\*A screening instrument developed in 1978, the Family APGAR assesses a family member's perception of family function in terms of adaptation, partnership, growth, affection, and resolve; hence the acronym APGAR.<sup>18</sup>

Table 1. Descriptive Statistics and Bivariate Correlations of Study Variables with Delay in Obtaining a Pregnancy Test (N = 123)

| Patient Characteristics              | Mean  | Correlation with Delayed Testing (r) |
|--------------------------------------|-------|--------------------------------------|
| Delay in obtaining test, wk (mean)   | 4.35  |                                      |
| Age, y (mean)                        | 17.28 | -0.20*                               |
| White (%)                            | 39    | -0.25†                               |
| Education, y (mean)                  | 10.6  | -0.31‡                               |
| Not first pregnancy (%)              | 33    | -0.15                                |
| Did not talk to mother (%)           | 40    | 0.04                                 |
| Did not talk to father (%)           | 37    | -0.03                                |
| Did not talk to partner (%)          | 22    | -0.01                                |
| Used contraception (%)               | 25    | -0.02                                |
| Regular menses (%)                   | 84    | -0.14                                |
| Reacted positively (%)               | 39    | -0.05                                |
| Planned to keep pregnancy (%)        | 54    | 0.28†                                |
| Experienced denial (%)               | 45    | 0.20*                                |
| Able to pay for care (%)             | 87    | -0.15                                |
| Adequate knowledge (%)§              | 100   | 0.11                                 |
| Family support (mean)                | 6.37  | -0.01                                |
| Pregnancy symptoms, scale 0-2 (mean) | 1.16  | -0.25†                               |
| Depression (mean)¶                   | 15.54 | -0.07                                |

\*P &lt; .05.

†P &lt; .01.

‡P &lt; .001.

§Reproductive health knowledge was rated adequate or inadequate based on the participant's score on a self-administered questionnaire.

||Family support was assessed by the Family APGAR test (on a scale of 0 to 10).

¶Depression was assessed using the 12-item Center for Epidemiologic Studies-Depression (CES-D)<sup>17</sup> test, which has a scale of 1 to 35 (higher scores indicated a more severe state of depression).

were then calculated across all study variables to identify gross (ie, bivariate) associations among the variables, especially those significantly related to delay. Multiple linear regression was used to regress delay in obtaining a pregnancy test onto those potential predictors that exhibited significant bivariate associations with delay. All analyses were conducted using the CORR and GLM procedures in PC version 6.03 of SAS.<sup>19</sup>

## Results

The mean duration of delay in seeking a pregnancy test was 4.35 weeks. Subjects were moderately satisfied with the support received from their families (mean Family APGAR score, 6.37), and most had no trouble talking with their partners (78.2%). Subjects indicated a moderate degree of emotional distress (mean CES-D score, 15.5). Only 39% were happy about their pregnancy, and 45% had trouble admitting they were pregnant.

Pearson intercorrelations were significant between delayed pregnancy testing and young maternal age, black race, lower educational attainment, lack of pregnancy symptoms, continuing the pregnancy, and difficulty acknowledging the pregnancy. Table 1 presents descriptive

Table 2. Multiple Regression Results of Determinants of Delay in Obtaining a Pregnancy Test (N = 123)

|                   | Multiple Regression Results |       |
|-------------------|-----------------------------|-------|
|                   | b (SE)                      | β     |
| Age               | 0.33 (0.47)                 | 0.11  |
| White             | -1.50 (0.93)                | -0.16 |
| Education         | -0.69 (0.45)                | -0.27 |
| Symptoms          | -0.95 (0.58)                | -0.15 |
| Keeping pregnancy | 0.23 (1.12)                 | 0.02  |
| Denial*           | 1.65 (0.77)                 | 0.18  |

R<sup>2</sup> = .183 (explaining 18.3% of variance in delay).

F = 4.33 (P &lt; .001).

\*P &lt; .05.

statistics of the hypothesized predictors of delay in seeking a pregnancy test.

Although not shown in Table 1, several other bivariate associations also were noteworthy. Difficulty acknowledging the pregnancy was associated with depressive symptoms (P < .01), problems talking with partners (P < .05), and negative initial reaction to the pregnancy (P < .01). In addition, depressive symptoms were associated with dissatisfaction with family support (P < .01) and difficulties in communicating with partners (P < .001).

Results of multiple linear regression in which the dependent variable of delayed pregnancy testing was analyzed with the significant bivariate correlates of age, race, education, symptoms, disposition, and difficulty acknowledging the pregnancy are presented in Table 2. These six variables explained 18.3% of the variance in the duration of delay. Only difficulty in acknowledging the pregnancy exerted a significant net effect on delayed testing (P < .05).

## Discussion

This study of pregnant adolescents indicates that only a psychosocial variable, difficulty in acknowledging the pregnancy, retained a significant association with delayed pregnancy testing. Because this is a cross-sectional survey, a causal relationship cannot be established. Results are, however, consistent with evidence that, among teenagers, psychosocial factors are the most important determinants of delayed care, especially in early pregnancy, when decisions to undergo tests most often occur.<sup>6</sup>

Difficulty in acknowledging pregnancy may be a manifestation of denial, a selective disavowal of the realities posed by unpleasant situations.<sup>20</sup> Although excessive or persistent denial is dysfunctional, lesser degrees may be adaptive, and denial is commonly used by healthy individuals as an initial response to a threat.<sup>21</sup> This use may forestall overwhelming anxiety that would otherwise



preclude effective planning.<sup>22</sup> Denial among teenagers may reflect cognitive immaturity in some instances or ambivalence about sexuality.<sup>23</sup> Undergoing a pregnancy test confirms sexual behavior and may generate guilt and embarrassment.<sup>1</sup> For the pregnant teenager, the test also represents a threat to physical and emotional well-being, for which denial is a common initial response.<sup>21</sup>

Research in other contexts suggests that the use of avoidant coping strategies to deal with negative life events, depressive symptoms, and lack of social support are related.<sup>24</sup> Results of this investigation are consistent with this interpretation, as reflected by the significant correlations between negative initial reaction to the pregnancy, difficulty with pregnancy acknowledgment, depressive symptoms, and communication problems with partners. Acknowledgment difficulties were not associated with Family APGAR scores, but may be related indirectly by the association of both of these factors with depressive symptoms.

These findings raise several clinically relevant issues. Many participants in this study delayed pregnancy testing for more than 1 month. During this period, teenagers may be alone in facing difficult choices concerning their pregnancy. Proactive efforts by health care providers can result in needed support and anticipatory guidance. Teenagers' difficulty in acknowledging pregnancy underscores the need for proactive questioning and testing because a teenager may lack the emotional readiness to volunteer information about a possible pregnancy. When evaluating teenagers who delay pregnancy testing, providers should assess coping strategies being used by these patients and help them develop more effective strategies. Pregnancy testing issues can also be raised in health maintenance encounters, during visits for illness when appropriate, or in the course of health education programs. Addressing the importance of early pregnancy testing during these preventive interventions will potentially result in pregnant teenagers seeking health care sooner.

These conclusions are tempered by several potential study limitations. Although financial barriers did not produce delay, noneconomic barriers to access, especially discomfort with health care providers,<sup>25</sup> were not assessed. Second, psychosocial factors such as self-esteem and locus of control may influence test-seeking decisions.<sup>26</sup> These attributes were not measured directly, but are strongly intercorrelated with the means of pregnancy resolution,<sup>3</sup> which offers a proxy measure and was not a net predictor of the duration of delay. Estimates of the interval between pregnancy recognition and pregnancy testing and other self-reports are subject to bias, but this limitation is inherent to most studies of delayed maternal health care. Reliance on self-report may have overlooked

severe denial. The absence of other net correlates of delay may reflect a small and nonrandom study sample, which also limits the generalizability of present findings.

Several associations merit further consideration, even though significance was lost in the multivariate analysis. Delay was correlated with lower educational attainment and the lack of symptoms, both of which may lower the perceived need for a test.<sup>7</sup> Greater delay among black teenagers might reflect culturally mediated differences in responses to symptoms or beliefs about health care that could also affect the perceived need for pregnancy confirmation.<sup>8</sup> Delay among younger adolescents might reflect the primacy of barriers to testing in this group.<sup>1,7</sup> Additionally, the relationship between the timing of testing and means of pregnancy resolution suggests that achievement orientation, perceived competence, and other psychosocial determinants of pregnancy disposition may also affect beliefs concerning tests.<sup>3</sup>

These caveats indicate the need for additional research with particular attention to teenagers' beliefs about pregnancy testing. Further research might also confirm and extend study findings by utilizing data collected at the time of pregnancy testing, incorporating other potential determinants of delay, comparing these determinants among sociodemographic subgroups, and examining determinants of denial. Such inquiry would serve to explain adolescent illness behavior in pregnancy and be instrumental to clinical and educational interventions, promoting more timely use of maternal health services by teenagers, more effective provider-patient communication, and improved quality of and outcomes in adolescent health care.

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