A Prospective Study of Psychological Distress and Sexual Risk Behavior Among Black Adolescent Females

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ABSTRACT. *Objective.* The purpose of the study was to examine the association between adolescents' psychological distress and their sexually transmitted disease/human immunodeficiency virus (STD/HIV)-associated sexual behaviors and attitudes.

Method. Sexually active black adolescent females ($N = 522$) completed, at baseline and again 6 months later, a self-administered questionnaire that assessed sexual health attitudes and emotional distress symptoms (using standardized measures, $\alpha = .84$), a structured interview that assessed STD/HIV-associated sexual risk behaviors, and a urine screen for pregnancy.

Results. In multivariate analyses, controlling for observed covariates, adolescents with significant distress at baseline were more likely than their peers, after 6 months, to be pregnant (adjusted odds ratio [AOR]: = 2.0), have had unprotected vaginal sex (AOR = 2.1), have nonmonogamous sex partners (AOR = 1.7), and not use any form of contraception (AOR = 1.5). Additionally, they were also more likely to: perceive barriers to condom use (AOR = 2.2), be fearful of the adverse consequences of negotiating condom use (AOR = 2.0), perceive less control in their relationship (AOR = 2.0), have experienced dating violence (AOR = 2.4), feel less efficacious in negotiating condom use with a new sex partner (AOR = 1.6), and have norms nonsupportive of a healthy sexual relationship (AOR = 1.7).

Discussion. The findings suggest that psychological distress is predictive over a 6-month period of a spectrum of STD/HIV-associated sexual behaviors and high-risk attitudes. Brief screening to detect distress or depressive symptoms among adolescent females can alert the clinician to the need to conduct a sexual health history, initiate STD/HIV-preventive counseling, and refer for comprehensive psychological assessment and appropriate treatment. Among adolescents receiving STD treatment, those with even moderate emotional distress may be at heightened risk for further unhealthy outcomes. STD/HIV interventions should also consider psychological distress as one potential risk factor that may impact program efficacy. *Pediatrics* 2001;108(5). URL: http://www.pediatrics.org/cgi/content/full/108/5/e85; *black adolescents, females, psychological distress, depressive symptoms, sexual behaviors, pregnancy.*

In the United States, adolescents are a population at increasing risk of human immunodeficiency virus (HIV) and sexually transmitted disease (STD) infection.[1] Recent estimates suggest that 25% of new HIV infections occur among adolescents younger than 22 years of age.[2] Additionally, more than 15 million new cases of STDs occur in the United Sates each year,[3] with 25% of these occurring among adolescents.[4] However, the threat of HIV or STD infection is not uniform among adolescents. One subgroup of adolescents that has been disproportionately affected by the intersecting epidemics of STDs and HIV are black females.[5–7] Consequently, identifying factors associated with adolescents' STD/HIV-associated sexual risk behaviors is critical for developing more effective prevention strategies.

A number of studies have examined the behavioral and psychosocial factors associated with high-risk sexual behavior.[8,9] Few studies, however, have examined the influence of psychological distress. Of the limited studies examining mental health variables, most have focused on adolescents with severe emotional disorders requiring psychiatric hospitalization.[10,11] In general, findings from these studies indicate that adolescents with severe emotional disorders have a high prevalence of STD/HIV-associated sexual risk behaviors and, relative to a normative adolescent sample, have higher rates of these behaviors.[12] Less well-studied, however, is the association between psychological distress and STD/HIV-associated sexual risk behaviors.

Of the limited empirical studies, 1 has observed an association between adolescent females' depressed mood and pregnancy risk.[13] Another study among women has identified an association between depressive symptoms and HIV risk.[14] This study, how-

ever, did not focus on sexual risk behaviors. Ramrakha et al[15] recently reported that young adults (21 years of age) living in New Zealand were more likely to practice risky sex, contract STDs, and sexually debut before age 16 if they met the criteria for depression as established by *Diagnostic and Statistical Manual of Mental Disorders, Third Edition*. Finally, Stiffman et al,[16] using the Diagnostic Interview for Children and Adolescents and the National Institute of Mental Health Diagnostic Interview Schedule, found that depression during adolescents was associated with risk behavior 5 years later as a young adult. For example, young adults who had 3 or more depressive symptoms as an adolescent were more than 5 times as likely than their peers to engage in prostitution.

Although these studies are informative, the use of a cross-sectional research design or, in the latter example, a lengthy follow-up period limits causal interpretations. Additional research investigating the association between adolescents' psychological distress and their STD/HIV-associated sexual behavior is warranted. Studies of adolescent females at-risk of STD/HIV may be particularly important. Evidence suggests that there is a higher prevalence of depressive mood among adolescent females relative to males. This phenomenon has been related to a constellation of factors, including hormonal changes and changing affiliative needs (ie, needs for belonging to peer groups, family, school, and community organizations), which may interact with negative life events.[17,18]

The primary purpose of this study was to prospectively examine the association between black adolescent females' psychological distress and their STD/HIV-associated sexual risk behaviors. The secondary purpose was to prospectively examine the association between psychological distress and adolescents' attitudes about various aspects of their relationships with male sex partners (relational attitudes).

METHODS

Study Sample

From December 1996 through April 1999 project recruiters screened 1130 female teens in adolescent medicine clinics, health department clinics, and school health classes to assess eligibility for participating in an HIV/STD prevention trial. Recruitment sites were in neighborhoods characterized by high rates of unemployment, substance abuse, violence, and STDs. Of those screened,

609 adolescents were eligible to participate in the study. Of those adolescents not eligible to participate ($N = 521$), the majority, 98%, was not sexually active. The current study consists of 522 (85.7%) eligible adolescents who were enrolled and completed baseline assessments. The majority of eligible teens who did not participate in the study were unavailable because of conflicts with their employment schedules. Adolescents were eligible to participate in the trial if they were black females, between the ages of 14 and 18 at the time of enrollment, sexually active in the previous 6 months, and provided written informed consent. The study protocol was approved by the Institutional Review Board Committee on Human Research before implementation.

Data Collection

Baseline data collection was conducted at the Family Medicine Clinic and consisted of 3 components: a self-administered survey that assessed sociodemographic characteristics, relational attitudes, perceptions of STD/HIV-associated sexual risk behaviors, and psychological distress; a structured personal interview that assessed sexual risk behaviors; and a urine specimen that was collected for pregnancy testing.

The self-administered survey was conducted in a group setting with monitors providing assistance to adolescents with limited literacy and helping to ensure confidentiality of responses. Subsequently, adolescents completed a face-to-face interview that assessed sexual risk behaviors. Trained black female interviewers in private examination rooms administered the interview. After completing their interview, adolescents were asked to provide a urine specimen for pregnancy testing. Adolescents were reimbursed $20 for their participation.

Subsequently, adolescents were randomly assigned to an HIV sexual risk-reduction intervention or a comparison condition. Adolescents completed four 4-hour group sessions offered on consecutive Saturdays. At 6-month follow-up, adolescents were contacted and asked to return to the clinic to complete identical assessments. Of the 522 adolescents completing baseline assessments, 90% ($N = 468$) completed follow-up assessments.

Measures

Sociodemographics

Sociodemographic variables assessed adolescents' age, education, work history, family structure, parental monitoring, and whether their family received temporary assistance for needy families (TANF).

Psychological Distress

The predictor variable, psychological distress, was assessed using an 8-item version of the Center for Epidemiologic Studies-Depression Scale (CES-D). A CES-D score of 7 or higher is the recommended indicator of psychological distress.[19] Thus, psychological distress was defined as having a score of ≥ 7 on the 8-item CES-D; adolescents' with scores below the cutoff were categorized as being nondistressed. The internal consistency of the scale with the present sample of black female adolescents was 0.84. Table 1 displays the 8-item CES-D in the format administered to the adolescents. Scores for the CES-D were obtained by adding the numeric values indicated by each adolescent.

TABLE 1. Brief Version of the CES-D Directions: The next set of statements are about how you may or may not have felt during the last week. Circle the number of the answer that best describes how often you felt like this in the past week.

	Less Than 1 Day	1–2 Days	3–4 Days	5–7 Days
During the past week				
1. I felt sad.	0	1	2	3
2. I felt depressed.	0	1	2	3
3. I thought my life had been a failure.	0	1	2	3
4. I felt fearful.	0	1	2	3
5. My sleep was restless.	0	1	2	3
6. I felt lonely.	0	1	2	3
7. I had crying spells.	0	1	2	3
8. I felt that I could not shake off the blues even with help from my family and friends.	0	1	2	3

Note: Scores were obtained by adding the numeric values indicated.

The CES-D was developed for use in studies of depressive symptoms in general population samples. The original scale consists of 20 items that assess the presence of depressive symptoms during the past 7 days. The CES-D has been widely used with diverse populations of varying socioeconomic characteristics[20–22] and has been shown to be valid for blacks. Scores from the brief CES-D have demonstrated high correlations with the 20-item CES-D ($r = .93$).

Several studies report only a modest relationship between the CES-D and a diagnosis of depression from a structured clinical interview and modest relationships with other diagnoses such as anxiety disorder.[23,24] Therefore, the CES-D is considered useful as a general screening instrument. Higher scores on the CES-D reflect general psychological distress and may not be specifically indicative of depression.[25,26]

Outcome Variables

Pregnancy

Pregnancy was defined by a positive urine test result.

Sexual Behaviors

The interview assessed a number of sexual behaviors within the previous 6 months. These variables included the frequency of condom and contraceptive use and having a male partner who concurrently had other female sex partners (ie, a nonmonogamous partner).

Dating Violence

To assess dating violence adolescents were asked, "In the past 6 months has a boyfriend physically abused you (ie, punched, hit, or pushed you)?"

Psychosocial Scales

Several psychosocial scales were included as part of the survey. The survey assessed adolescents' perceived control over their sexuality ($\alpha = .52$), their fears about the potential consequences of negotiating condom use ($\alpha = .81$), their perceived norms about healthy relationships ($\alpha = .72$), their perceived barriers to using condoms ($\alpha = .87$) and their ability to negotiate condom use with a new partner ($\alpha = .79$). Because of the highly skewed distributions, all of the scales were dichotomized based on a median split of the distribution.

Data Analysis

The data analysis was comprised of several sequential steps. First, descriptive statistics were used to characterize the prevalence of psychological distress at baseline. Next, using the baseline scores, we compared psychologically distressed adolescents (scores above the cutoff) with nondistressed adolescents (scores below the cutoff) with respect to the study outcomes collected at the 6-month follow-up assessment: pregnancy, risky sexual behaviors, and attitudes. Subsequently, to identify potential covariates, we examined associations among baseline measures of psychological distress, sociodemographic characteristics, and parental monitoring. Additionally, group assignment to either the HIV risk-reduction intervention or the comparison condition was considered as a covariate and entered into the logistic analyses to control for potential intervention effects. Therefore, adolescents' baseline risk behaviors and attitudes, their group assignment, covariates associated with psychological distress, and the study outcomes at 6-month follow-up ($P < .10$) were included in the logistic regression analyses. Logistic regression analyses examined the effects of being psychologically distressed on the study outcome variables, assessed at the 6-month follow-up, by controlling for adolescents' baseline risk behaviors, attitudes, and covariates and subsequently calculating adjusted odds ratios (AORs), their 95% confidence intervals, and corresponding P values.[27]

RESULTS

All participants ($N = 522$) were unmarried black females 14 to 18 years of age. The mean age of the sample was 16.0 years (standard deviation = 1.2 years). The majority (81.2%) were full-time students;

9.4% were part-time students, and the remainder was not enrolled in school. Less than one fifth (17.8%) of the sample reported having a paying job and 18.4% reported living in a household that received public assistance. Most adolescents reported living with their mother only (57.5%), with both parents (21.6%), or with another relative (14.2%), with the remainder living with nonfamily members.

Ninety percent completed follow-up assessments. No significant differences were observed between adolescents who completed follow-up and those who only participated in the baseline assessment with respect to sociodemographic characteristics or baseline risk profile (ie, age, family structure, employment status of the adolescent and her parents, student status, receipt of TANF. Thus, all analyses are based on the sample of adolescents completing both the baseline and 6-month follow-up assessments ($N = 468$).

Scores for the 468 adolescents on the CES-D at baseline ranged from 0 to 24 (24 was the highest possible score). The mean score was 6.9 (standard deviation = 5.3), indicating that scores were widely distributed between 0 and 24. Using the recommended cutoff score of ≥ 7, approximately 48% ($N = 224$) of adolescents were defined as psychologically distressed. Of the adolescents scoring above the recommended threshold for psychological distress at baseline, 60.3% also scored above the threshold at 6-month follow-up assessment (relative risk = 2.3; 1.8–3.0; $P = .0001$). The Pearson-product moment correlation between adolescents' depression scale scores at baseline and follow-up was highly significant ($r = .47$, $P < .0001$), suggesting stability between the baseline assessment and 6-month follow-up assessment.

Of the 468 adolescents, about 12% were pregnant at baseline. Adolescents who were psychologically distressed were equally likely to test positive for pregnancy (12.7%) as those who were not distressed (12.5%; $P = .95$). The subsequent analysis of prospective associations between psychological distress and pregnancy was conducted using only those adolescents who reported not being pregnant at baseline ($N = 419$).

Bivariate analyses identified a spectrum of high-risk behaviors, relational attitudes, and perceptions that were associated with psychological distress (Table 2). The adjusted, multivariate logistic regression analyses identified the same spectrum of findings. Compared with adolescents who were not psychologically distressed, those distressed at baseline were more likely to test positive for pregnancy (AOR = 2.0; $P = .04$), engage in unprotected vaginal sex (AOR = 2.1; $P = .008$), have nonmonogamous sex partners (AOR = 1.7; $P = .03$), and to report not using any contraception in the month preceding follow-up assessment (AOR = 1.5; $P = .04$; Table 2).

With respect to relationship characteristics, relative to adolescents who were not psychologically distressed, adolescents who were distressed at baseline were more fearful about the adverse consequences of negotiating condom use with their sex partner (AOR = 2.0; $P < .0001$), perceived more

TABLE 2. Bivariate and Multivariate Analyses of the Association Between Adolescents' Baseline Psychological Distress and High-Risk Sexual Behaviors and Attitudes at 6-Month Follow-Up (N = 468)

	Distressed		Bivariate Analyses			Multivariate Analyses		
	Yes %	No %	Relative risk ratio*	95% Confidence Interval	P	AOR†	95% Confidence Interval	P
Pregnancy								
Became pregnant	11.3	6.4	1.85	1.0–3.4	.05	2.0	1.0–4.0	.04
High-risk sexual behaviors								
Unprotected vaginal sex‡	26.6	17.3	1.5	1.0–2.3	.03	2.1	1.2–3.5	.008
Had a nonmonogamous sex partner‡	31.3	21.3	1.5	1.0–2.1	.03	1.7	1.1–2.7	.03
No contraception use‡	41.9	33.3	1.3	1.0–1.6	.06	1.5	1.0–2.2	.04
High-risk relationship characteristics								
Fearful of partners' response to negotiating condom use	41.6	26.3	1.6	1.2–2.0	.0001	2.0	1.3–2.9	.0001
More perceived barriers to condom use	61.0	41.7	1.5	1.2–1.8	.0001	2.2	1.5–3.2	.0001
Less perceived control in relationship	60.7	43.9	1.4	1.2–1.7	.0001	2.0	1.4–3.0	.0001
Perceives norms nonsupportive of having a healthy relationship	58.0	45.9	1.3	1.1–1.5	.006	1.7	1.2–2.4	.006
Experienced dating violence‡	8.5	3.7	2.3	1.1–5.1	.03	2.4	1.1–5.5	.04
Lower self-efficacy to negotiate condom use with a new partner	41.5	31.5	1.3	1.0–1.7	.03	1.6	1.1–2.3	.02

* Adolesents with CES-D scores below the cutoff are the referent category for calculating the relative risk ratio.
† AOR = Odds ratio adjusted by parental monitoring, group assignment, and baseline scores.
‡ In the 6-month follow-up period.

barriers to condom use (AOR = 2.2; P < .0001), perceived less control in their relationship (AOR = 2.0; P < .0001), had lower self-efficacy to negotiate condom use (AOR = 1.6; P = .02), had perceived norms nonsupportive of healthy relationships (AOR = 1.7; P = .006), and were more likely to experience dating violence (AOR = 2.4; P = .04).

DISCUSSION

The present study found that among sexually active black female adolescents, those with significant psychological distress were more likely during a 6-month follow-up period, to test positive for pregnancy, report high-risk sexual behaviors, and have attitudes and perceptions that may enhance the likelihood of engaging in risky sexual behaviors. Further, the current findings, in contrast to those of Orr and her colleagues,[14] identified a broader spectrum of STD/HIV-associated sexual risk behaviors, as well as a profile of relational attitudes and perceptions that may enhance the risk for STD/HIV acquisition.

The findings suggest that psychological distress markedly influenced female adolescents' perceptions about sexual relationships, such as, perceiving greater barriers to condom use, less perceived control in the relationship, and being more fearful of the adverse consequences of negotiating condom use. Indeed, the findings suggest that not only are adolescents less likely to engage their partner in STD/HIV-preventive discussions because they feel he may not be receptive or supportive, but they are fearful of the adverse consequences (ie, relationship conflict, abuse, abandonment) that may result. Thus, adolescents' ability to adopt STD/HIV-preventive behaviors, or encourage the adoption of STD/HIV-preventive behavior by her partner, may be limited by a power imbalance in their relationship.[28]

The observed pattern of sexual risk behaviors and relationship attitudes and perceptions associated with even moderate psychological distress may be-come ingrained over time and more problematic as adolescents progress to adulthood. As they age, there is increased likelihood that the potential pool of sex partners will be older, more likely to abuse drugs, or have STDs and HIV,[29–31] thereby magnifying the risk for exposure to STDs and HIV. Thus, feelings of powerlessness in sexual relationships may become normative, and place adolescents on a risk trajectory that is likely to result in adverse sexual outcomes as a result of the cumulative risk of such behavior.

Current research in the area of adolescent psychopathology indicates a need to identify and intervene early rather than dismiss these symptoms as a transitory experience. In the absence of intervention, adolescents with significant psychological distress may develop any of several disorders including affective disorder, anxiety disorders, or impulse control disorder.[32,33] The development of comorbidity, such as alcohol and substance abuse, may further amplify adolescents' risk for STDs and HIV.[34–36]

In addition to the analytic findings of this study, the descriptive findings presented in Table 2 provide important information. For example, even among adolescents classified as not psychologically distressed, one third reported no use of contraception in the 6 months between the baseline and follow-up assessments. Similarly, more than one fifth of the adolescents who were not distressed reported the risk behavior of having sex with a nonmonogamous partner. Thus, although psychological distress distinguished between adolescents engaging in significantly different levels of these risk-behaviors, those who were not psychologically distressed at baseline were still engaging in high-risk behavior at follow-up. A second point based on the descriptive findings also warrants mention. The relatively high level of unfavorable relational attitudes among those who were psychologically distressed suggests that these attitudes may be a source of continued psychological distress. Our findings suggest that future investiga-

tions should attempt to identify relational variables that contribute to adolescents' psychological distress.

Limitations

Although the use of a prospective research design represents a methodologic improvement over previous research, the present study is not without limitations. There is little specificity as to the origin of adolescents' psychological distress (based on a score beyond the cutoff on the CES-D). The instrument is designed as a standardized, epidemiologic instrument for screening in general populations. Elevated scores are associated with an increased probability of several psychiatric disorders including depression and anxiety. Research documents that lower scores reliably indicate the lack of distress and psychopathology (negative predictive value = 99.4%).[25] Thus, although most adolescents with scores above the cutoff are not likely a clinical case, there are likely important psychological differences between the 2 groups. The proportion above the cutoff for the CES-D in this study was similar to that found in other samples of adolescents.[25] Further, the CES-D assessed frequency of depressive symptoms in the 7 days before completing the baseline assessment and, thus, may not be a valid measure of symptomatology over the entire follow-up period (6 months) when sexual-risk behaviors occurred. Recent evidence, however, suggests that depressive symptoms are relatively stable through adolescence.[37] This finding is also consistent with a report identifying subclinical depressive symptoms in adolescence as a strong predictor of an episode of major depression in young adulthood.[38]

Findings may also be limited by the use of self-reported outcome measures. Although most of the scales used to assess adolescents' relational attitudes and perceptions had satisfactory measures of internal consistency, adolescents may not have been accurate or truthful in their responses to these measures.

Finally, the findings are based on data collected from a convenience sample, thus it is difficult to generalize these findings to other populations of black adolescent females. Our findings may stimulate more extensive research investigations of adolescent females' psychological distress and STD/HIV-associated sexual risk behaviors. Also, the sample was limited to economically disadvantaged black adolescents. Therefore, the findings may not be generalized to other racial/ethnic groups, or adolescents from different socioeconomic strata. Additional research is needed to corroborate these findings with diverse adolescent populations.

Implications for the Prevention of HIV-Associated Risk Behaviors

The findings pose multiple and complex challenges for STD/HIV prevention but also suggest opportunities. First, from a disease prevention perspective, psychological distress may increase the difficulty of modifying STD/HIV-associated relationship attitudes, perceptions and, as a direct consequence, sexual behaviors. Although there is ample evidence that STD/HIV risk-reduction programs can be effective in reducing sexual risk-taking and enhance theoretically important mediators of safer sex behavior,[9] it is unclear how effective such programs would be for adolescents with significant distress or psychiatric disorders.[11] Prevention programs that aim to influence adolescents' with even moderate distress may need to be broader in scope, addressing not only knowledge and skills, but also reducing adolescents' distress.[39] As found in this study, a large proportion of adolescents report at least moderate distress. These emotional symptoms can stem from many sources including psychiatric disorders, the context of poverty, cultural alienation or as sequelae from traumatic events. For example, emerging evidence suggests that a history of sexual abuse is a powerful predictor of adolescent sexual risk behavior, even when controlling for psychopathology and demographic factors.[11,40] Unfortunately, there are few programs that are designed to target emotional symptoms as well as promote adoption of STD/HIV risk-reduction strategies. In the absence of such programs, distress may be an important moderator of intervention efficacy, reducing the likelihood of achieving maximal reductions in risky attitudes, perceptions and sexual behaviors.

The study findings may also have implications for clinical practice. The findings suggest that clinicians, predominantly family practitioners and pediatricians, need to be alert to the potential significance of even modest levels of distress disorder. Beyond referring adolescent females with severe depressive symptoms for psychiatric evaluation, clinicians should be aware that such distress could be an indicator for other risk behaviors.[11] Thus, screening for symptoms of psychological distress in primary care clinical settings may serve as a strategy of identifying adolescent females with elevated risk for engaging in STD/HIV behaviors. Clinicians should conduct a detailed risk behavior history for adolescent females, especially for those with moderate distress, even if the origin of that distress is obvious and reasonable (eg, academic failure). If a profile of STD/HIV-associated sexual risk behaviors is identified, clinicians could provide risk-reduction education and counseling or make a referral to the local health department or an appropriate community-based organization to provide more in depth STD/HIV risk-reduction training.[41]

CONCLUSION

Given the prevalence of significant emotional distress identified among black adolescent females, more research is needed to develop a better understanding of the association between psychological symptoms and risk behaviors, and relational attitudes and perceptions that increase the likelihood of exposure to STDs or HIV. Additional research is also urgently needed to evaluate strategies designed to improve the effectiveness of STD/HIV prevention programs targeted toward female adolescents experiencing psychological distress.

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