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The Impact of Depressive Symptomatology on Risky Sexual Behavior and Sexual Communication among African American Female Adolescents

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Abstract

Adolescents are at high risk for sexually transmitted infections (STIs), particularly African American adolescents. The association between psychosocial factors and risky sexual behavior has been well established. However, only a small number of studies have examined the relationship between depressive symptomatology among African American female adolescents, specifically over time. The present study examined depressive symptoms as a predictor of risky sexual behavior, sexual communication, and STIs longitudinally among African American female adolescents between the ages of 15-21. Binary generalized estimating equation (GEE) models were conducted assessing the impact of depressive symptoms at baseline on risky sexual behavior and STIs over 6- and 12-months follow-up. Age, intervention group, and baseline outcome measures were entered as covariates. The results indicated that high levels of depressive symptoms predicted no condom use during last sexual encounter and multiple sexual partners over 6-months follow-up. Depressive symptoms also predicted having a main partner with concurrent partners, high fear of communication about condoms, and sex while high on alcohol or drugs over 6- and 12-months follow-up. These findings could be used to inform HIV/STI prevention intervention programs and clinicians providing regular health care maintenance to African American female adolescents engaging in risky sexual behavior.

Keywords

depression; African American; female; adolescents; HIV/STI; risky sexual behavior

Introduction

Approximately one-quarter of new sexually transmitted infections occur among adolescents in the United States (Centers for Disease Control and Prevention (CDC), 2004, 2005). Approximately 25% of new STI cases, almost 4 million, are diagnosed in teenagers (CDC, 2000). It is estimated 24.1% of adolescent girls, aged 14 to 19, have one of five commonly reported STIs (HSV, trichomoniasis, chlamydia, gonorrhea, or HPV) (Forhan et al., 2009). African American adolescents are particularly at risk for STIs and account for 55% of HIV/AIDS cases in the US among individuals 13-24 years (CDC, 2005). Among African American adolescent girls, 14 to 19 years, a national study found that 44% had at least one STI (Forhan, et al., 2009). Moreover, in a study by the CDC, African American females

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were seven times more likely to be diagnosed with HIV, compared to their white counterparts (CDC, 2004, 2005). Studies which examine factors that influence sexual risk-taking among African American female adolescents are needed to ultimately curb STIs among youth in the US.

A variety of factors influence risk-taking behavior and specifically sexual risk-taking among adolescents. One factor that has drawn attention as an important correlate of sexual risk is depression (DiClemente et al., 2001; Lehrer, Shrier, Gortmaker, & Buka, 2006; Mazzaferro et al., 2006; Seth, Raiji, DiClemente, Wingood, & Rose, 2009; Shrier, Harris, & Beardslee, 2002). Studies have shown approximately 8.3% of adolescents are affected by depression (Birmaher et al., 1996), and a higher proportion of females report depressive symptoms (Rushton, Forcier, & Schectman, 2002; Saluja et al., 2004). Depression is a common condition that affects adolescents and can impact all aspects of life (Sales, Spitalnick, Crittenden, & DiClemente, 2009). One explanation for depression comes from Beck's cognitive theory of depression, which describes that negative feelings and thoughts play a central role in how people feel about themselves, which ultimately influences the behavior in which they engage (A. T. Beck, 1967, 1995; Sales, et al., 2009). Such negative thoughts and cognitive distortions can deter rational decision-making and allow emotions to influence behavior (A. T. Beck, 1967, 1995). Thus, depressive symptoms may not support healthy decision making and subsequent healthy behavior, including safe sexual decision making and safe sex behavior (Sales, et al., 2009). However, little is known about the extent to which depressive symptomatology predicts sexual communication and high-risk sexual behavior longitudinally among African American adolescent females.

Studies have shown associations between depressive symptomatology and high-risk sexual behavior (Lehrer, et al., 2006; Mazzaferro, et al., 2006; Seth, et al., 2009; Shrier, et al., 2002); however few studies have examined whether depressive symptoms predict risky sexual behavior over time, such as having a nonmonogamous male partner and being fearful of partner's response to condom negotiation among African American female youth across time (DiClemente, et al., 2001). A national study found that female adolescents who reported depressive symptoms were more likely to report an STI; however, in the adjusted analyses, only the adolescent males demonstrated a linkage between high depressive symptoms and STIs (Shrier, Harris, Sternberg, & Beardslee, 2001). In one cross-sectional study, African American female adolescents who reported higher levels of depressive symptoms were more likely to report having an STI, multiple sexual partners, sex while high on alcohol and drugs, non-monogamous male partner, low frequency of sexual communication with their partner, and fear of communicating about condom use (Seth, et al., 2009). While this study focused on African American female adolescents, it was unable to determine a causal or temporal link between depression and sexual communication and unsafe sexual practices due to the cross-sectional study design. Therefore, prospective and longitudinal studies that evaluate depression as a predictor of risky sexual behavior among adolescent African American females are needed.

The present study expands upon prior research of depressive symptomatology and risky sexual behavior. As indicated previously, the vast majority of studies have focused on cross-sectional examinations of depressive symptoms and sexual risk behavior among adolescents, and very few have focused on African American female adolescents. In this longitudinal study, depressive symptomatology was prospectively examined as a predictor of sexual communication practices and risky sexual behavior, such as multiple sexual partners, sex while drunk or high, having a non-monogamous male partner, inconsistent condom use, as well as STIs, among African American female adolescents.

Methods

Participants

Participants were part of a larger study evaluating a sexual risk reduction intervention tailored for African American adolescents. From March 2002 to August 2004 African American adolescent females, 15-21 years old, were recruited from three clinics in Atlanta, Georgia, providing sexual health services to predominantly inner-city adolescents. Eligibility criteria included: African American female, 15-21 years old and vaginal intercourse in the past 60 days. Adolescents who were married, currently pregnant, or attempting to become pregnant were excluded. Informed consent was obtained from all adolescents with parental consent waived for those younger than 18 due to the confidential nature of clinic services. Of the eligible adolescents, 84.4% (N=715) completed baseline assessments and were randomized to study conditions. Regarding retention, 610 (85.3%) completed 6-months and 605 (84.6%) completed 12-months assessments. Participants were compensated \$50, and the Emory University Institutional Review Board approved all study protocols prior to implementation.

Intervention Methods

The intervention included two 4-hour group HIV/STI prevention sessions, which were facilitated by trained African American women health educators. The intervention was based on Social Cognitive Theory (Bandura, 1994) and the Theory of Gender and Power (Wingood & DiClemente, 2000, 2002). The comparison condition was a 1-hour group session, consisting of a culturally- and gender-appropriate HIV/STI prevention video, question-and-answer session, and group discussion.

Data collection

Data collection occurred at baseline, 6- and 12-months follow-up and consisted of an audio computer assisted self-interview (ACASI) and self-collected vaginal swabs to assess for STIs. The ACASI assessed sociodemographics, depressive symptomatology, risky sexual behavior and sexual communication.

Measures

Sociodemographics: Participants completed questions regarding age, education, and whether they were currently attending school.

Depressive Symptomatology: Depressive symptomatology was assessed with the eight-item version of the Center for Epidemiological Studies-Depression Scale (CES-D) (Melchoir, Huba, Brown, & Reback, 1993). The CES-D assessed presence of depressive symptoms over the past seven days and has been validated for minority women and adolescent samples (Garrison, Addy, Jackson, McKeown, & Waller, 1991; Radloff, 1991). Participants rated each item from 0 (less than one day) to 3 (five to seven days), with higher scores indicating higher levels of depressive symptomatology. Sample statements include, "I felt sad" and "I had crying spells." Cronbach's alpha was .89.

Fear of communication about condoms (Wingood & DiClemente, 1998): Participants' fears about consequences of negotiating condom use were assessed by an eight-item scale. Participants rated each item from 1 (never) to 5 (always), with higher scores indicating more fear of communication. Sample questions include, "I have been worried that if I talked about using condoms with my boyfriend or sex partner he would threaten to hit me," and "I have been worried that if I talked about using condoms with my boyfriend or sex partner he would leave me." Cronbach's alpha was .87 at 6-months and .91 at 12-months follow-up.

Risky sexual behavior: Participants completed questions regarding a range of risky sexual behavior: sex while high on alcohol or drugs over the past 60 days (yes/no), male main partner with concurrent female sexual partners (yes/no), condom use during last sexual encounter (yes/no), and multiple sexual partners during the past 60 days (yes/no).

Sexually transmitted infections: Participants provided two self-collected vaginal swab specimens (K. Smith et al., 2001). One specimen was assayed for *C. trachomatis* (CT) and *N. gonorrhoeae* (GC). Initially, CT and GC were assayed using the Abbott LCx Probe System (Abbott Laboratories, Abbot Park, IL, USA) (Carroll et al., 1998; Lee et al., 1995; K. R. Smith et al., 1995). In September 2002 this assay was discontinued and subsequent testing used the BDProbeTec ET *C. trachomatis* and *N. gonorrhoeae* Amplified DNA assay (Becton Dickinson and Company, Sparks, MD) (Van Der Pol et al., 2001). The second specimen was tested for *Trichomonas vaginalis* using a non-commercial real-time polymerase chain reaction assay (Caliendo et al., 2005). Participants with a positive test received directly observable single-dose antimicrobial treatment, risk-reduction counseling per CDC recommendations, and were encouraged to refer sex partners for treatment.

Data Analyses

Descriptive statistics determined the prevalence of sociodemographic characteristics, depressive symptoms, high-risk sexual behavior, and STIs. Fear of communication was dichotomized utilizing the median-split technique (Median= 8 at both 6- and 12-months follow-up). Scores from the 8-item CES-D were dichotomized using established cutoff scores. High levels of depressive symptomatology were defined as having a score of ≥ 7 (DiClemente, et al., 2001; Melchoir, et al., 1993; Seth, et al., 2009). Bivariate and multivariate analyses were conducted using binary generalized estimating equations (GEE) models. GEE models specifically were designed to control for repeated within-subject measurements and allow for a number of observations on study participants longitudinally. GEE models examined the independent contribution of quantity of depressive symptomatology at baseline, with age, intervention group, and outcomes measures at baseline as covariates, for each outcome variable over a 6- and 12-months follow-up period.

Results

Participant characteristics are displayed in Table 1. The average age at baseline was 17.9 ($SD= 1.7$) years. The majority were full-time students (65.3%), and 31.1% reported graduating from high school or receiving their GED. Most participants reported they were currently in a relationship (83.6%).

After controlling for age, intervention group, and outcomes measures at baseline, GEE models revealed that female adolescents reporting high levels of depressive symptomatology, relative to those reporting low levels, were more likely to not use condoms during their last sexual encounter, have multiple sexual partners during the past 60 days, have a main partner with concurrent sexual partners, have a higher fear of communication about condoms, and have sex while high on alcohol or drugs over the 6-months follow-up period. High levels of depressive symptomatology also predicted having a main partner with concurrent sexual partners, higher fear of communication about condoms, and sex while high on alcohol or drugs over the 12-months follow-up period (see Table 2). Depressive symptoms did not predict STIs at 6- or 12-months follow-up.

Discussion

The present study extends previous research by examining depressive symptoms as a predictor of new constructs. This is one of the first prospective studies, to our knowledge,

that has examined depressive symptomatology as a predictor of having sex while high on alcohol or drugs, not using a condom during last sexual encounter, and multiple sexual partners among African American female adolescents at 6- and 12-months follow-up. This study corroborates previous concurrent findings on the associations among depressive symptomatology, adverse health consequences, and risky sexual behavior (Brown, Tolou-Shams, Lescano, & Lourie, 2006; DiClemente, et al., 2001; Mazzaferro, et al., 2006; Shrier, et al., 2002), and extends prior cross-sectional findings that indicated depressive symptomatology was associated with inconsistent condom use, no condom use during last casual sexual encounter, sex while high on alcohol or drugs, having male partners with concurrent female partners, low self-efficacy, and being more fearful of communicating with their partners (Seth, et al., 2009).

It is noteworthy that in this sample of African American female adolescents, 51.5% scored above the cutoff on the CES-D, indicating relatively high rates of depressive symptomatology. This prevalence rate exceeds the national average of 34.5% for African American female youth reporting high depressive symptomatology in the 2007 Youth Risk Behavior Surveillance Survey (Eaton et al., 2008). However, a previous study with African American female adolescents found that 48% were psychologically distressed (DiClemente, et al., 2001). Previous research has indicated that African American adolescents experience high rates of depressive symptoms (Wright, Sepulveda, & Aneshensel, 2004). Since there may be a variety of socioeconomic, racial, and cultural factors unique to this study's sample, these rates suggest that African American female adolescents may be particularly vulnerable to higher levels of depressive symptomatology.

There are many mechanisms by which depressive symptoms may be linked to poor sexual decision-making and risky sexual practices. Jessor (1991) developed a conceptual framework noting that biology/genetics, social environment, perceived environment, personality, and behavior play a role in influencing risk behavior. According to cognitive theory (A.T. Beck, 1967; J. Beck, 1995), negative thoughts, often associated with depression, influence not only how one feels about him/herself but also influences one's behavior. This can often lead to unhealthy decision making in several situations, including sexual situations (Beck, 1976; Rehm, 1977; Sales, et al., 2009). Adolescents who are depressed may be more likely to succumb to pressure to have sex and are more prone to peer pressure to potentially avoid rejection (Cooper, Shapiro, & Powers, 1998; Lehrer, et al., 2006; Prinstein, Boergers, & Spirito, 2001). Beliefs about their ability to practice safer sexual behavior and communicate effectively with their partners regarding condom negotiation and refusal of alcohol/drugs may be compromised and lead to risky sexual practices. It is possible that fear of communication about condoms could also play a moderating/mediating role explicating the relationship between depressive symptomatology and risky sexual behavior.

Although the present study employed a number of methodological strengths, including its prospective design and ACASI, it was not without limitations. First, the CES-D is a self-report screening tool that serves as an indicator of depressive symptomatology; it is not a substitute for a clinical diagnostic assessment of depressive disorder. Although this measure has adequate reliability when compared to clinical assessments (Breslau, 1985; Roberts & Vernon, 1983), it is possible that the overall prevalence of depressive symptomatology may be significantly lower or higher than described. Finally, the sample was homogeneous, African American female adolescents from the southeastern United States who were sexually experienced at the study's onset and recruited from clinics. Therefore, the results have limited generalizability and replication with diverse populations would be needed.

Implications and Conclusions

Adolescent depression is a particularly concerning issue given its association to suicide, comorbidity with other psychiatric disorders, and relationship to sexual risk-taking and outcomes of such risky behavior. For clinicians providing services to adolescent females, depression screening may be warranted for those who are sexually active, being treated for an STI, or for those facing the reality of being pregnant. Beyond identifying the presence of depressive symptomatology, clinicians who identify a young woman engaging in sexual risk-taking behavior and endorsing depressive symptoms might consider interventions that include simply alleviating the depression through pharmacological and psychotherapeutic treatments. Provider interventions might also include preventive education, risk reduction counseling, or specially designed treatments that address co-existing conditions associated with mental and sexual health. In addition to these traditional and adolescent-focused provider-delivered interventions, clinicians working with adolescents might consider developing a referral resource whereby resources are targeted for the adolescent's peer networks, families, and other social support systems, given the identified influence these social environments have on one's risk-taking behavior.

For researchers and behavioral scientists, given the relation between depression and risky sexual behavior, especially in African American adolescent females where rates of depression and STIs are highest, designing tailored STI/HIV prevention programs for this vulnerable population is critical. If the occurrence of depression and other emotional difficulties impede an adolescent's healthy decision-making and subsequent behavior, group-based interventions focusing on sexual risk-taking must also begin to consider intervening on adolescents' psychological well-being. Based on the findings, it is recommended that researchers and clinicians consider multidisciplinary, multifaceted, and multidimensional interventions that address medical, psychological, and social issues related to depression and sexual behavior and also attend to other areas that likely impact sexual decision-making (e.g., substance use, peer influences). An example of such an approach is having young women participant in a group-based intervention focused on sexual risk-taking and the intersection of mental health and risk-taking, followed up with occasional individual sessions with health educators or mental health professionals to "check-in" on each participant's mental and behavioral status. By coordinating medical care with mental health services early detection of potential mental and physical health problems will be facilitated. Ultimately, employing such an approach would likely improve the current medical and psychological services provided to young African American females who utilize clinics for their medical and mental health needs.

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Table 1

Prevalence of depressive symptomatology, risky sexual behavior, psychosocial factors associated with sexual risk behavior and sexually transmitted infections.

	N(%)
Depressive Symptomatology	
High	368 (51.5%)
Low	347 (48.5%)
<u>Six-Months Follow-up</u>	
Condom use during last sexual encounter	
Yes	316 (51.6%)
No	296 (48.4%)
Partner with concurrent sexual partners	
Yes	103 (23.3%)
No	340 (76.7%)
Multiple sexual partners during the past 60 days	
Yes	159 (26%)
No	453 (74%)
Fear of communication about condoms	
High	219 (35.8%)
Low	393 (64.2%)
Sex while high on alcohol or drugs	
Yes	152 (24.8%)
No	460 (75.2%)
Any sexually transmitted infection	
Yes	165 (27%)
No	447 (73%)
Gonorrhea	
Yes	35 (5.7%)
No	578 (94.3%)
Chlamydia	
Yes	94 (15.4%)
No	518 (84.6%)
Trichomonas vaginalis	
Yes	69 (11.2%)
No	547 (88.8%)
<u>Twelve-months Follow-up</u>	
Partner with concurrent sexual partners	
Yes	99 (23.9%)
No	315 (76.1%)
Fear of communication about condoms	
High	226 (37.4%)
Low	379 (62.6%)

	N(%)
Sex while high on alcohol or drugs	
Yes	144 (23.8%)
No	461 (76.2%)
Any sexually transmitted infection	
Yes	120 (19.9%)
No	483 (80.1%)
Gonorrhea	
Yes	16 (2.6%)
No	588 (97.4%)
Chlamydia	
Yes	64 (10.6%)
No	540 (89.4%)
Trichomonas vaginalis	
Yes	58 (9.6%)
No	547 (90.4%)

Depressive symptoms as a predictor of risky sexual behavior and psychosocial factors associated with sexual risk behavior over the 6- and 12-months follow-up period.

Table 2

	High levels of depressive symptoms N(%)		Low levels of depressive symptoms N(%)		PR ^a	AOR ^b	95% CI ^c	p
<u>Six-months Follow-up</u>								
No condom use during last sexual encounter	164 (53.4%)		132 (43.3%)		1.50	1.38	1.00-1.92	.05
Partner with concurrent sexual partners	65 (31.1%)		38 (16.2%)		2.33	2.12	1.31-3.43	.002
Multiple sexual partners, past 60 days	90 (29.3%)		69 (22.6%)		1.42	1.40	.97-2.01	.05
High fear of communication about condoms	138 (45%)		81 (26.6%)		2.26	1.87	1.30-2.68	.001
Sex while high on alcohol or drugs	93 (30.3%)		59 (19.3%)		1.81	1.59	1.04-2.42	.03
<u>Twelve-months Follow-up</u>								
Partner with concurrent sexual partners	125 (30.3%)		77 (17.3%)		2.03	2.03	1.36-3.03	.001
High fear of communication about condoms	272 (44.8%)		173 (28.4%)		2.05	1.74	1.31-2.31	.0001
Sex while high on alcohol or drugs	185 (30.5%)		111 (18.2%)		2.15	1.94	1.22-2.41	.002

^a Prevalence ratio

^b Adjusted odds ratio using low levels of depressive symptomatology as the referent category; models are controlling for age, intervention group, and outcome measures at baseline.

^c 95% Confidence interval