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Alcohol Use Problems and Sexual Risk among Young Adult African American Mothers

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Abstract

Studies have documented high levels of alcohol use and sexual risk among young mothers. We examined parenting satisfaction and self-efficacy in relation to alcohol use problems and sexual risk among 346 young African American women enrolled in an HIV prevention trial, 41% (n=141) of whom were mothers. Among mothers, greater parenting satisfaction was associated with a reduced likelihood of problematic alcohol use, having multiple sex partners, and testing positive for *Trichomonas vaginalis*. Relative to non-parenting women, mothers reported lower condom use. Compared to non-parenting women, mothers with the highest parenting satisfaction reported fewer alcohol use problems; mothers with the lowest parenting satisfaction reported lower condom use and were more likely to have multiple partners and test positive for *T. vaginalis*. Parenting self-efficacy was not associated with the outcomes examined. Future research investigating relationships between parenting satisfaction, alcohol use and sexual risk may be useful for improving multiple maternal health outcomes.

Keywords

African American; Mothers; Alcohol; Sexual risk behavior; Sexually transmitted infections

INTRODUCTION

Young African American women have high rates of pregnancy and are at disproportionate risk for sexually transmitted infections (STIs), including HIV (1,2). Although teen pregnancies are declining in the United States (U.S.), African Americans continue to have the highest pregnancy rate of all young women 15-19 years of age (3). Nationally, rates of Chlamydia and gonorrhea are highest among African American female adolescents aged 15-24 years (1). In 2011, the rate of new HIV infections among African American women was 20 times that of white women and approximately 5 times that of Hispanic/Latino

women (4). HIV is a leading cause of death for African American women 15-24 years (5). Alcohol use is strongly related to sexual risk behavior and STI acquisition among young African American women (6,7). Young African American mothers may represent a particularly vulnerable sub-population.

Although there have been relatively few, multiple studies have documented increased alcohol use and sexual risk among young mothers (8,9). A recent systematic review identified 11 articles published since 1989 which examined alcohol use among postpartum adolescent mothers and concluded that alcohol use is more prevalent among adolescent mothers relative to the general population of adolescent females (8). Although most, but not all, young women abstain from alcohol during pregnancy, evidence shows that resumption of use steadily increases during the first 12 months postpartum (10,11). Postpartum alcohol use is significantly associated with greater perceived stress and often serves as a coping strategy among young mothers (10,12). As young mothers transition to adulthood, alcohol use remains prevalent and relatively stable as compared to women in the general population (8). National data show that women giving birth before age 23 years binge drink more frequently over the long-term, well into adulthood, than women giving birth at age 23 or after (13). Studies suggest that young African American mothers and older adolescent mothers may be more likely to be substance users (14), and mothers giving birth in late adolescence may be higher quantity alcohol users (15). Importantly, alcohol and substance abuse by parents of young children is associated with impaired parenting capacity, child abuse and neglect (16). High HIV/STI risk has also been reported among young mothers, including low levels of condom use (9). Studies have shown that 14-39% of teen mothers acquire an STI within 6-10 months of delivery (9).

Stress is related to both alcohol use and sexual risk among young African American women (17-20). The transition to parenthood can be stressful, regardless of age. The transition to parenting may be particularly stressful for young mothers during the developmental periods of adolescence and emerging adulthood (21,22). The stress proliferation framework posits that early parenting is a primary stressor that generates, or proliferates, secondary stressors that eventually decrease health (23). Previous research shows that the strains of parenting increase emotional distress (21). Such strains may be exacerbated among young mothers (21,22). In addition, parenting at a young age often engenders secondary stressors, such as reduced educational attainment, poverty and relationship dissolution (13,22). Early parenting may, thus, increase exposure to stress throughout the life course and yield lasting impacts on health (24).

Decades of research suggest that the impact of stressors on health and well-being are buffered by high self-esteem and mastery, which foster active problem solving attempts (25). Lazarus and Folkman's Transactional Model of Stress and Coping posits that overall adjustment and well-being are dependent on individuals' appraisals of their coping resources and employment of effective coping strategies (26). As depicted in our conceptual framework (Figure 1), young mothers' level of parenting self-esteem, also termed parenting sense of competence, which includes the distinct but complementary domains of parenting self-efficacy and satisfaction (27), may influence engagement in negative coping behaviors, including alcohol use and sexual risk behavior, leading to STIs.

Greater parenting self-efficacy, which reflects competence, problem-solving ability, and capability in the parenting role (27), and parenting satisfaction, which reflects parenting frustration, anxiety, and motivation (27), are associated with lower levels of perceived parenting stress (28,29) as well as a more easy-going, low-conflict parenting style (30). It is unknown, however, whether parenting satisfaction and self-efficacy are related to alcohol use or HIV/STI risk among young mothers. The primary objective of this study was to examine associations between parenting satisfaction and parenting self-efficacy and alcohol use problems, sexual risk behavior, and STIs exclusively among young African American mothers. We hypothesized that greater parenting satisfaction and self-efficacy would be associated with lower levels of alcohol use problems and HIV/STI risk.

Given the limited number of studies comparing alcohol use problems and sexual risk among young mothers as compared to similarly-aged non-parenting young women and none conducted exclusively among young African American women, a secondary objective was to compare alcohol use problems and HIV/STI risk among mothers and non-parenting women in our study. In addition, we compared alcohol use problems and HIV/STI risk outcomes among mothers with the highest and lowest levels of parenting satisfaction and self-efficacy relative to non-parenting women in order to further explore relationships between parenting cognitions and the outcomes of interest. All analyses comparing young mothers and non-parenting young women were exploratory.

METHODS

Participants

From January, 2012, to February, 2014, women were recruited from community venues in Atlanta, GA, to participate in a trial of a behavioral intervention designed to prevent HIV/STIs among young African American women who use alcohol. Potential participants were approached by a female African American recruiter who assessed study eligibility. Eligibility criteria included being aged 18-24 years, having at least one episode vaginal sex without a condom in the past 90 days, and alcohol use on 3 or more occasions within the last 90 days. Individuals who were married or pregnant were excluded from participating. Recruitment also included respondent-driven sampling. Eligible participants who agreed to participate were invited to complete baseline study activities at a local university. At the baseline visit, young women completed informed consent procedures and baseline assessments and were randomized to trial conditions. Written informed consent was obtained from all participants. Of eligible young women, 96% (N=560) enrolled and were randomized to study conditions. Participants were compensated \$50 for travel and childcare to complete the baseline assessment and attend the baseline intervention session. The Emory University Institutional Review Board approved all study protocols.

A total of 350 participants completed baseline measures about motherhood and parenting, added to the baseline survey after data collection began.¹ All participants who reported giving birth and reported living with their child(ren) at least “some of the time” were

¹Data collection for the main trial began in February, 2014. Data about motherhood and parenting were collected beginning in October, 2014.

categorized as mothers. Only 4 participants who reported giving birth reported living with their child less than “some of the time” (i.e., “never”). These 4 participants also reported not seeing their child in the past month, and were excluded from analysis since their parenting history could not be determined. All other participants were considered “non-parenting.” Therefore, the analytic sample for this study included 346 participants.

Procedures

The main study was a comparative treatment efficacy trial designed to test the efficacy of a behavioral intervention (N-LITEN) to reduce incident laboratory-confirmed STIs and enhance the proportion of condom-protected vaginal sex acts over 12-months among young African American women who use alcohol. Participants were randomly assigned to one of three trial conditions using a 1:1:1 allocation ratio: 1) the N-LITEN condition, a combination behavioral intervention that augments Horizons, a behavioral intervention shown to be efficacious in reducing sexual risk behavior and preventing STI acquisition among young African American women (31), with a group-based, alcohol-specific, HIV risk-reduction group motivational enhancement therapy (GMET), 2) a time-equivalent condition comprised of Horizons condition and a placebo attention general health promotion session, or 3) an enhanced standard-of-care (SOC) condition. Data collection occurred at baseline and 3-, 6-, 9- and 12-months post-intervention and consisted of an audio computer-assisted self-interview (ACASI) and a self-collected vaginal swab to assess for STIs. The current analysis is limited to data collected at the baseline assessment.

The baseline ACASI assessed sociodemographics, sexual history, alcohol use and psychosocial constructs associated with sexual risk behavior. After completing the ACASI, participants provided a self-collected vaginal swab specimen. The vaginal swab specimen was assayed for Chlamydia and gonorrhea using the BDProbeTec ET *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Amplified DNA Assays (Becton Dickinson and Company, Sparks, MD) (32) and *Trichomonas vaginalis* using a non-commercial real-time polymerase chain reaction assay with high sensitivity and specificity (33). Participants with a positive STI test result received directly-observed single-dose treatment and risk-reduction counseling per Centers for Disease Control and Prevention recommendations and were encouraged to refer their sex partners for treatment. The County Health Department was notified of reportable STIs.

Measures

Key variables of interest

Parenting satisfaction: Parenting satisfaction was measured with 9 items adapted from the parenting satisfaction subscale of the Parenting Sense of Competence Scale (27). The wording was modified to make enhance readability of the items and to focus the questions on motherhood. A sample item was, “It's frustrating to be a mother at your child's current age.” Response options ranged from 1 = *Strongly disagree* to 6 = *Strongly agree*. This particular item was reverse coded. Higher scores indicate greater parenting satisfaction. Possible scores ranged from 9 to 54. Reliability of the satisfaction subscale ranges from 0.68 to 0.75 (22,34). In this sample, scores ranged from 26 to 54, and reliability was 0.69. Mothers were categorized into tertiles based on their parenting satisfaction scores. Mothers

with scores less than 43 were considered to have the lowest level of parenting satisfaction. Mothers with scores greater than 48 were considered to have the highest level of parenting satisfaction.

Parenting self-efficacy: Parenting self-efficacy was measured with 7 items adapted from the parenting self-efficacy subscale of the Parenting Sense of Competence Scale (27). The wording was modified to enhance readability of the items and to focus the questions on motherhood. A sample item was, “The problems of having a child are easy to solve.” Response options ranged from 1 = *Strongly disagree* to 6 = *Strongly agree*. Higher scores indicate greater parenting self-efficacy. Possible scores ranged from 7 to 48. Reliability of the satisfaction subscale ranges from 0.60 to 0.82 (22,34). In this sample, scores ranged from 7 to 42, and reliability was 0.82. Mothers were categorized into tertiles based on their parenting self-efficacy scores. Mothers with scores less than 35 were considered to have the lowest level of parenting self-efficacy. Mothers with scores greater than 38 were considered to have the highest level of parenting self-efficacy.

Outcomes

Alcohol Use Disorders Identification Test (AUDIT): AUDIT is a brief screening tool developed by the World Health Organization to identify hazardous and harmful patterns of alcohol consumption (35). The 10-item scale assesses alcohol intake, alcohol dependence, and alcohol-related problems. Scores range from 0 to 40 with higher scores indicating a greater likelihood of hazardous and harmful drinking, severity of alcohol problems and possible dependence and need for more intensive treatment.

Problem drinking: Total AUDIT scores of 8 or more are recommended as indicators of problem drinking, including hazardous and harmful alcohol use and alcohol dependence symptoms (35). Problem drinking was defined as AUDIT score of 8 or more (yes/no).

Multiple vaginal sex partners: Participants were asked “In the past 3 months, how many guys have you had vaginal sex with?” Participants who reported more than 1 male sex partner were categorized as having multiple vaginal sex partners.

Proportion condom use: Proportion condom use was calculated by dividing the number of times condoms were used during vaginal sex in the past 3 months by the total number of vaginal sex acts in the past 3 months.

STIs: Participants who tested positive for Chlamydia and/or gonorrhea were defined as being infected with a “bacterial STI”. Participants who tested positive for *T. vaginalis* were defined as having trichomoniasis.

Participant characteristics

Overall stress: Participants rated their overall level of stress from 1 = *No stress* to 5 = *Extreme stress*.

Age: Participants were instructed, “Please type in your age (years).”

Graduated high school: High school graduation was defined as graduating high school, obtaining a GED or attending college (yes/no).

Paid job: Participants were asked, “Do you have a job for which you are paid?” (yes/no).

Family aid index: Family aid index was measured with 4 items. Participants reported whether anyone in their household received the following services during the past year: a) welfare, b) food stamps, c) Women, Infants and Children (WIC) and d) Section 8 housing subsidies (yes/no). The number of “yes” responses was summed to create a total family aid index score (0-4).

Data Analysis

First, we used summary statistics to describe pregnancy and parenting characteristics of the sample and sociodemographic characteristics. We used the Pearson correlation coefficient to assess bivariate associations between parenting satisfaction and parenting self-efficacy. Next, we used linear regression models to examine associations between stress and mothers’ parenting satisfaction and parenting self-efficacy scores. Next, we used logistic and linear regression models to examine associations between parenting satisfaction and parenting self-efficacy and the outcomes of interest among young mothers.

To address our secondary study objectives, we used ANOVA and chi-square statistics to describe and compare the outcomes of interest among mothers and non-parenting women. We then used ANOVA to compare levels of overall stress by parenting status. Finally, we used linear and logistic models to compare alcohol use problems and HIV/STI risk outcomes among non-parenting women relative to mothers categorized as having the highest and lowest levels of parenting satisfaction and parenting self-efficacy. This Extreme Groups Approach was selected given the lack of previous research and exploratory nature of these analyses (36). The goal of comparing outcomes among non-parenting women and mothers categorized as having the highest and lowest levels of each of the key independent variables was to determine: a) if associations exist and b) the direction of associations (36).

RESULTS

Of 346 participants included in the analytic sample, 141 (41%) were categorized as mothers. Of the 205 non-parenting women, 20.0% (n=41) reported a history of pregnancy. Among mothers, 57.5% (n=81) reported giving birth to only 1 child (range: 1-7). Nearly half of mothers (46.4%, n=64) reported their only or youngest child to be less than 18 months of age (range: <1-117 months). The vast majority (91%, n=128), reported living with their child(ren) “all or most of the time.”

Table 1 shows sociodemographic characteristics and the outcomes of interest among mothers. Almost half of mothers’ AUDIT scores indicated problem drinking. Approximately half of mothers reported multiple sex partners in the past 3 months, and mean proportion condom use was low (0.26). Approximately one-fifth of mothers tested positive for a bacterial STI, and one-quarter tested positive for *T. vaginalis*.

The Pearson correlation coefficient for the association between parenting satisfaction and parenting self-efficacy was 0.36. Linear regression models indicated each unit increase in parenting satisfaction score among mothers was associated with significantly reduced levels of overall stress (coefficient: -0.07 , $p < 0.001$). Parenting self-efficacy was not significantly associated with overall stress (coefficient: 0.004 , $p = 0.776$).

Table 2 presents associations between parenting satisfaction and parenting self-efficacy and the outcomes of interest among young mothers. Each unit increase in parenting satisfaction score was associated with a significantly lower AUDIT score and reduced likelihood of problem drinking. In addition, greater parenting satisfaction was associated with a significantly reduced likelihood of having multiple sex partners and reduced likelihood of being infected with *T. vaginalis*. Parenting satisfaction was not associated with proportion condom use or testing positive for a bacterial STI. Parenting self-efficacy was not significantly associated with any of the outcomes of interest.

Mean overall level of stress was significantly higher among mothers relative to non-parenting women (2.6 vs. 2.4, $p = 0.038$). Table 1 shows sociodemographic, alcohol use and sexual risk comparisons between mothers and non-parenting women. Mean age was higher among mothers relative to non-parenting women. Similar proportions of mothers and non-parenting women reported graduating from high school and having a paid job. Mothers reported receiving a greater number of forms of governmental assistance. There were no statistically significant differences in either of the measures of alcohol use problems. Similar proportions reported having multiple sex partners in the past 3 months, but proportion condom use during the past 3 months was significantly lower among young mothers. Similar proportions of women tested positive for a bacterial STI. However, 24.1% of young mothers as compared to 16.6% of non-parenting women tested positive for *T. vaginalis* ($p = 0.083$).

Table 3 compares alcohol use and HIV/STI risk outcomes among mothers, stratified by lowest and highest tertiles of parenting satisfaction and parenting self-efficacy, relative to young non-parenting women. Mothers defined as having the highest level of parenting satisfaction appeared to have lower total AUDIT scores, although the association only approached statistical significance ($p = 0.050$). Mothers defined as having the lowest level of parenting satisfaction were significantly more likely to report having multiple sex partners. Mothers defined as having the lowest parenting satisfaction and mothers categorized as having the lowest and highest parenting self-efficacy were significantly more likely to report lower proportion condom use. Mothers categorized as having the lowest parenting satisfaction were significantly more likely to be infected with *T. vaginalis*. None of the other outcomes of interest was observed to significantly differ by highest or lowest levels of parenting satisfaction or self-efficacy relative to non-parenting women.

DISCUSSION

The purpose of this study was to investigate alcohol use problems and HIV/STI risk among mothers in relation to two specific coping resources, parenting satisfaction and parenting self-efficacy. A broad literature has shown that mastery and self-esteem encourage attempts at active problem-solving and are related to more successful adjustment to stressful events,

emotional well-being and mental and physical health (25). We, therefore, hypothesized that the two domains of parenting sense of competence, parenting satisfaction and parenting self-efficacy, would be inversely associated with the negative coping behaviors of alcohol use problems and sexual risk among young adult African American mothers. We observed partial support for these hypotheses.

Among analyses conducted exclusively among young mothers, we found that greater parenting satisfaction was inversely associated with overall stress, alcohol use problems and HIV/STI risk. This study extends previous research examining parenting self-perceptions in relation to parenting behavior, maternal mental health outcomes and child outcomes (28). The findings suggest that cognitions about the parenting role are associated, although not necessarily causally, to problem alcohol use, sexual risk behavior and biologically-confirmed STIs. Previous research has shown that parenting self-perceptions have direct effects on maternal depression (37) and mediate relationships between factors such as social support and infant temperament and depressive symptomology (38,39). Given that alcohol use is associated with postpartum depression (40) and elevated depressive symptoms are associated with increased engagement in sexual risk behaviors among young African American women (41), higher levels of depressive symptoms may help explain the observed relationships between parenting satisfaction and the outcomes examined. Alternatively, relationships between parenting satisfaction, alcohol use and HIV/STI risk may be explained by partner and partnership factors (34,42).

Greater understanding about the nature of the relationship between parenting satisfaction and alcohol use problems and HIV/STI risk may be useful in preventing adverse outcomes among young mothers and their children. Parenting satisfaction has been found to be associated with parenting quality, parenting style, child behavior problems and risk for child maltreatment (30,43). Alcohol use problems are also associated with significant adverse outcomes among children. In addition, maternal STIs, including HIV, and alcohol use problems could affect future pregnancy and infant health outcomes. Thus, additional research on parenting satisfaction and alcohol use and HIV/STI risk is warranted. In particular, longitudinal studies may be useful for understanding temporal changes in relation to each of these factors. In addition, studies identifying factors associated with greater parenting satisfaction among young mothers and pathways through which parenting satisfaction may be related to negative coping behaviors may be useful for targeting interventions and improving parenting and health outcomes among young mothers and their families.

We did not find support for our hypothesis regarding parenting self-efficacy, which was not associated with overall stress or any of the outcomes examined among mothers. Several possible explanations may explain these findings. First, despite theoretical reasoning, there may truly be no association between parenting self-efficacy and the outcomes examined. Alternatively, the adapted scale items may not have adequately reflected the coping-related dimension we intended to measure. Parenting self-efficacy is mainly concerned with mothers' perceived ability to respond to and problem solve around the needs of children. Lack of association with overall stress and alcohol-related and HIV/STI risk outcomes among mothers could also be due to competing stressors which loom larger than the

demands of caretaking and attending to child needs. In addition, our ability to detect differences by parenting self-efficacy may have been reduced given that participants were selected to participate in the trial based, in part, on their alcohol use and sexual risk behavior. However, participant eligibility criteria did not prevent our ability to detect differences by parenting satisfaction.

Though limited, prior research has shown elevated levels of alcohol use and HIV/STI risk among adolescent mothers. In contrast to some other studies (8), we detected no significant differences between mothers and non-parenting women in terms of problematic alcohol use. This finding may be attributable to our high-risk sample whereas other studies compared young mothers to general population samples (8). Our finding that proportion condom use was significantly lower among young mothers stands in contrast to only other study, to our knowledge, which directly examined condom use among young postpartum mothers relative to non-parenting young women and observed no association (44). However, our study corroborates others reporting low condom use among adolescent mothers and lower condom use among young pregnant women relative to similarly-aged non-pregnant women (9).

We did not find that parenting self-efficacy differentiated alcohol use problems and HIV/STI risk outcomes among mothers relative to non-parenting women. Condom use was lower among mothers with the lowest and highest levels of parenting self-efficacy relative to non-parenting women; we assume this was due to the lack of observed association between parenting self-efficacy and the outcomes of interest. Comparing non-parenting women to mothers categorized as having the lowest and highest levels of parenting satisfaction, we found that mothers categorized as having the highest parenting satisfaction had fewer alcohol use problems. We also observed that mothers categorized as having the lowest parenting satisfaction reported greater levels of sexual risk behavior and were more likely to be infected with *T. vaginalis*. These findings suggest that young adult African American mothers do not have uniform risk for adverse alcohol-related and sexual health outcomes. Satisfaction with the maternal role appears to differentiate young mothers from their high-risk non-parenting peers in terms of alcohol use problems, sexual risk behavior and STI prevalence. Although consistent with cognitive models of stress and coping, which posit that coping resources reduce the impact of stressors on health, even if the observed associations between parenting satisfaction and negative coping behaviors are not causally related, interventions which aim to reduce alcohol-related and HIV/STI risk among high-risk young mothers may produce secondary benefits in parenting self-perceptions and downstream benefits in terms of parenting behavior and child outcomes.

The limitations of this study should be noted. First, participants in this study were young adult African American women participating in an HIV/STI prevention trial. Thus, the findings may not be generalizable to other young African American women, other populations of young adult women. However, particular strengths of the study include its community-based recruitment procedures, high participation rate, and focus on a particularly high-risk population. In addition, this study relied on cross-sectional data. Thus, the directionality of the effects cannot be determined. However, our analyses were informed by empirical evidence and a conceptual framework developed *a priori*. Another limitation is that all of the outcomes except STIs, which were laboratory-confirmed, were self-reported.

Socially desirable responding may have reduced our ability to detect differences in some of the outcomes. Finally, given limited evidence regarding factors related to parenting sense of competence among young mothers (34) and the exploratory nature of this study, our analyses did not adjust for factors which may confound the associations of interest. Therefore, the findings do not reflect independent associations between parenting perceptions and problem alcohol use and HIV/STI risk. Nevertheless, the study presents novel findings, which may generate new research directions. This study also has a number of important strengths. Namely, it adds to the limited evidence about alcohol use and HIV/STI risk among young mothers. It also extends the literature base on parenting self-perceptions and maternal outcomes to alcohol use and HIV/STI risk. Use of biologically-confirmed STIs is another particular study strength.

Young adult African American women are at marked risk for HIV/STIs (1,2). Risk is even greater among young African American women who use alcohol (6,7). Previous research has shown elevated levels of alcohol use and HIV/STI risk among young mothers (8,9). Alcohol use problems and STI prevalence were not uniformly higher among young adult African American mothers in this study. Notably, however, mothers reported lower condom use than their non-parenting peers. Greater alcohol-related and HIV/STI risk was observed among mothers with lower parenting satisfaction. Thus, this study identified young adult African American mothers with low parenting satisfaction as a particularly high-risk sub-population in need of alcohol and HIV/STI prevention and risk reduction services. Future research should confirm these findings. Studies to identify factors which foster greater parenting satisfaction among young mothers and help explain the nature of the relationship between parenting satisfaction and alcohol use problems and HIV/STI risk may help to improve young African American mothers' perceptions of parental competence and satisfaction and be useful for improving multiple maternal and child health outcomes.

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REFERENCES

1. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2012. U.S. Department of Health and Human Services; Atlanta: 2013.
2. Centers for Disease Control and Prevention. Estimated HIV incidence in the United States, 2007–2010. HIV Surveillance Supplemental Report. 2012; 17(4)
3. Kost, K.; Henshaw, S. [December 15, 2014] US teenage pregnancies, births and abortions, 2010: national and state trends by age, race and ethnicity. Available at: <http://www.guttmacher.org/pubs/USTPTrendsstate10.pdf>.
4. Centers for Disease Control and Prevention. HIV Surveillance Report. 2011; 23 Available at: <http://www.cdc.gov/hiv/topics/surveillance/resources/reports/>.
5. Centers for Disease Control and Prevention. [December 12, 2013] Available at: http://www.cdc.gov/women/lcod/2010/WomenBlack_2010.pdf.

6. Swartzendruber A, Sales JM, Brown JL, Diclemente RJ, Rose ES. Correlates of incident *Trichomonas vaginalis* infections among African American female adolescents. *Sex Transm Dis*. 2014; 41(4):240–245. [PubMed: 24622635]
7. Sales JM, Brown JL, Vissman AT, Diclemente RJ. The Association Between Alcohol Use and Sexual Risk Behaviors Among African American Women Across Three Developmental Periods: A Review. *Curr Drug Abuse Rev*. 2012
8. Chapman SL, Wu LT. Substance Use among Adolescent Mothers: A Review. *Child Youth Serv Rev*. 2013; 35(5):806–15. [PubMed: 23641120]
9. Meade CS, Ickovics JR. Systematic review of sexual risk among pregnant and mothering teens in the USA: pregnancy as an opportunity for integrated prevention of STD and repeat pregnancy. *Soc Sci Med*. 2005; 60(4):661–78. [PubMed: 15571886]
10. Barnett B, Duggan AK, Wilson MD, Joffe A. Association between postpartum substance use and depressive symptoms, stress, and social support in adolescent mothers. *Pediatrics*. 1995; 96(4 Pt 1):659–66. [PubMed: 7567327]
11. Gilchrist LD, Hussey JM, Gillmore MR, Lohr MJ, Morrison DM. Drug use among adolescent mothers: prepregnancy to 18 months postpartum. *J Adolesc Health*. 1996; 19(5):337–44. [PubMed: 8934294]
12. Koniak-Griffin D, Nyamathi A, Vasquez R, Russo AA. Risk-taking behaviors and AIDS knowledge: experiences and beliefs of minority adolescent mothers. *Health Educ Res*. 1994; 9(4): 449–63. [PubMed: 10150460]
13. Wolfe JD. Age at first birth and alcohol use. *J Health Soc Behav*. 2009; 50(4):395–409. [PubMed: 20099447]
14. Amaro H, Zuckerman B, Cabral H. Drug use among adolescent mothers: profile of risk. *Pediatrics*. 1989; 84(1):144–51. [PubMed: 2740164]
15. Oxford ML, Gilchrist LD, Morrison DM, Gillmore MR, Lohr MJ, Lewis SM. Alcohol use among adolescent mothers: heterogeneity in growth curves, predictors, and outcomes of alcohol use over time. *Prev Sci*. 2003; 4(1):15–26. [PubMed: 12611416]
16. Muhuri PK, Gfroerer JC. Substance use among women: associations with pregnancy, parenting, and race/ethnicity. *Matern Child Health J*. 2009; 13(3):376–85. [PubMed: 18566878]
17. Copeland-Linder N, Lambert SF, Chen YF, Ialongo NS. Contextual stress and health risk behaviors among African American adolescents. *J Youth Adolesc*. 2011; 40(2):158–73. [PubMed: 20213481]
18. Stevens-Watkins D, Brown-Wright L, Tyler K. Brief report: the number of sexual partners and race-related stress in African American adolescents: preliminary findings. *J Adolesc*. 2011; 34(1): 191–4. [PubMed: 20303161]
19. Seth P, Raiji PT, DiClemente RJ, Wingood GM, Rose E. Psychological distress as a correlate of a biologically confirmed STI, risky sexual practices, self-efficacy and communication with male sex partners in African-American female adolescents. *Psychol Health Med*. 2009; 14(3):291–300. [PubMed: 19444707]
20. Hulland EN, Brown JL, Swartzendruber AL, Sales JM, Rose ES, DiClemente RJ. The association between stress, coping, and sexual risk behaviors over 24 months among African-American female adolescents. *Psychol Health Med*. 2014:1–14.
21. Birkeland R, Thompson JK, Phares V. Adolescent motherhood and postpartum depression. *J Clin Child Adolesc Psychol*. 2005; 34(2):292–300. [PubMed: 15901229]
22. Sadler LS, Anderson SA, Sabatelli RM. Parental competence among African American adolescent mothers and grandmothers. *J Pediatr Nurs*. 2001; 16(4):217–33. [PubMed: 11498815]
23. Pearlin LI, Schieman S, Fazio EM, Meersman SC. Stress, health, and the life course: some conceptual perspectives. *J Health Soc Behav*. 2005; 46(2):205–19. [PubMed: 16028458]
24. Henretta JC. Early childbearing, marital status, and women's health and mortality after age 50. *J Health Soc Behav*. 2007; 48(3):254–66. [PubMed: 17982867]
25. Thoits PA. Stress and health: major findings and policy implications. *J Health Soc Behav*. 2010; 51(Suppl):S41–53. [PubMed: 20943582]
26. Lazarus, RS.; Folkman, S. Stress, appraisal, and coping. Springer; New York: 1984.

27. Johnston C, Mash EJ. A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology S2-Journal of Clinical Child and Adolescent Psychology*. 1989; 18(2):167–75.
28. Hassall R, Rose J, McDonald J. Parenting stress in mothers of children with an intellectual disability: the effects of parental cognitions in relation to child characteristics and family support. *J Intellect Disabil Res*. 2005; 49(Pt 6):405–18. [PubMed: 15882391]
29. Coleman PK, Karraker KH. Self-efficacy and parenting quality: Findings and future applications. *Developmental Review*. 1998; 18(1):47–85.
30. Ohan JL, Leung DW, Johnston C. The Parenting Sense of Competence scale: Evidence of a stable factor structure and validity. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement*. 2000; 32(4):251–61.
31. DiClemente RJ, Wingood GM, Rose ES, et al. Efficacy of sexually transmitted disease/human immunodeficiency virus sexual risk-reduction intervention for African American adolescent females seeking sexual health services: a randomized controlled trial. *Arch Pediatr Adolesc Med*. 2009; 163(12):1112–21. [PubMed: 19996048]
32. Van Der Pol B, Ferrero DV, Buck-Barrington L, et al. Multicenter evaluation of the BDProbeTec ET System for detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in urine specimens, female endocervical swabs, and male urethral swabs. *J Clin Microbiol*. 2001; 39(3):1008–16. [PubMed: 11230419]
33. Caliendo AM, Jordan JA, Green AM, Ingersoll J, Diclemente RJ, Wingood GM. Real-time PCR improves detection of *Trichomonas vaginalis* infection compared with culture using self-collected vaginal swabs. *Infect Dis Obstet Gynecol*. 2005; 13(3):145–50. [PubMed: 16126499]
34. Angley M, Divney A, Magriples U, Kershaw T. Social support, family functioning and parenting competence in adolescent parents. *Matern Child Health J*. 2015; 19(1):67–73. [PubMed: 24833286]
35. Babor, TF.; Higgins-Biddle, JC.; Saunders, JB.; Monteiro, MG. Guidelines for use in primary care. World Health Organization; Geneva: 2001. The alcohol use disorders identification test..
36. Preacher KJ, Rucker DD, MacCallum RC, Nicewander WA. Use of the extreme groups approach: a critical reexamination and new recommendations. *Psychol Methods*. 2005; 10(2):178–92. [PubMed: 15998176]
37. Farmer AY, Lee SK. The Effects of Parenting Stress, Perceived Mastery, and Maternal Depression on Parent–Child Interaction. *Journal of Social Service Research*. 2011; 37(5):516–25.
38. Cutrona CE, Troutman BR. Social support, infant temperament, and parenting self-efficacy: a mediational model of postpartum depression. *Child Dev*. 1986; 57(6):1507–18. [PubMed: 3802975]
39. Haslam DM, Pakenham KI, Smith A. Social support and postpartum depressive symptomatology: The mediating role of maternal self-efficacy. *Infant Mental Health Journal*. 2006; 27(3):276–91.
40. Chapman SL, Wu LT. Postpartum substance use and depressive symptoms: a review. *Women Health*. 2013; 53(5):479–503. [PubMed: 23879459]
41. Brown JL, Sales JM, Swartzendruber AL, Eriksen MD, Diclemente RJ, Rose ES. Added benefits: reduced depressive symptom levels among African-American female adolescents participating in an HIV prevention intervention. *J Behav Med*. 2013; 37(5):912–20. [PubMed: 24366521]
42. Kershaw TS, Ethier KA, Niccolai LM, et al. Let's stay together: relationship dissolution and sexually transmitted diseases among parenting and non-parenting adolescents. *J Behav Med*. 2010; 33(6):454–65. [PubMed: 20607596]
43. Begle AM, Dumas JE. Child and parental outcomes following involvement in a preventive intervention: efficacy of the PACE program. *J Prim Prev*. 2011; 32(2):67–81. [PubMed: 21170589]
44. Kershaw TS, Niccolai LM, Ickovics JR, Lewis JB, Meade CS, Ethier KA. Short and long-term impact of adolescent pregnancy on postpartum contraceptive use: implications for prevention of repeat pregnancy. *J Adolesc Health*. 2003; 33(5):359–68. [PubMed: 14596957]

Figure 1.

Conceptual framework: Parenting cognitions, alcohol use and sexual risk among young mothers, based on Lazarus and Folkman's Transactional Model and Stress and Coping

Table 1

Sociodemographic characteristics, alcohol use problems and sexual risk, among young adult African American mothers and similarly-aged non-parenting African American women

Characteristic	Mothers (n=141) % (n)	Non-parenting Women (n=205) % (n)	p-value
Sociodemographic characteristics			
Age (years), mean (SD)	21.4 (1.8)	20.1 (1.8)	<0.001 ^c
Graduated high school	60.3 (85)	64.9 (133)	0.384
Paid job	21.3 (30)	25.4 (52)	0.379
Family aid index, mean (SD)	1.8 (0.8)	1.0 (0.8)	<0.001 ^c
Alcohol use problems			
AUDIT score, mean (SD)	9.9 (8.5)	10.3 (8.9)	0.654
Problem drinking (AUDIT score ≥ 8)	44.7 (63)	48.8 (100)	0.453
Sexual risk behavior, past 3 months			
Multiple vaginal sex partners	48.2 (68)	45.4 (93)	0.600
Proportion condom use	0.26 (0.28) ^a	0.36 (0.31) ^b	0.002 ^c
STIs			
Bacterial STI	21.5 (44)	19.9 (28)	0.718
Trichomoniasis	24.1 (34)	16.6 (34)	0.083 ^d

RAPI: Rutgers Alcohol Problem Index, AUDIT: Alcohol Use Disorders Identification Test, STI: Sexually transmitted infection

^aMissing 2

^bMissing 7

^cp-value<0.05

^dp-value<0.1

Table 2

Associations between parenting satisfaction and parenting self-efficacy and alcohol use problems and sexual risk outcomes among 141 young adult African American mothers

Outcome	Parenting Satisfaction	Parenting Self-efficacy
	OR (95% CI), p-value	OR (95% CI), p-value
Alcohol use problems		
AUDIT score ^a	-0.33 (-0.53, -0.13), 0.001 ^b	-0.12 (-0.32, 0.09), 0.265
Problem drinking (AUDIT score ≥ 8)	0.94 (0.90, 0.99), 0.022 ^b	1.00 (0.96, 1.05), 0.889
Sexual risk behavior, past 3 months		
Multiple vaginal sex partners	0.92 (0.87, 0.97), 0.002 ^b	0.96 (-0.91, 1.10), 0.108
Proportion condom use ^a	0.00 (-0.00, 0.01), 0.547	0.00 (-0.01, 0.01), 0.907
STIs		
Bacterial STI	0.98 (0.92, 1.04), 0.451	1.04 (0.96, 1.10), 0.380
Trichomoniasis	0.94 (0.89, 0.99), 0.026 ^b	1.00 (0.95, 1.06), 0.895

OR: Odds Ratio, CI: Confidence Interval, RAPI: Rutgers Alcohol Problem Index, AUDIT: Alcohol Use Disorders Identification Test, STI: Sexually transmitted infection

^aBeta coefficient (linear regression model)

^bp-value<0.05

Table 3

Comparisons of alcohol use problems and sexual risk outcomes among young adult African American mothers, by lowest and highest tertiles of parenting satisfaction and parenting self-efficacy, relative to similarly-aged non-parenting African American women

Outcome	Reference: Non-parenting Women (n=205)			
	Parenting Satisfaction		Parenting Self-efficacy	
	Lowest Level Group (n=50)	Highest Level Group (n=44)	Lowest Level Group (n=48)	Highest Level Group (n=45)
	OR (95% CI), p-value		OR (95% CI), p-value	
Alcohol use				
AUDIT score ^a	2.06 (−0.65, 4.78), 0.136	−2.86 (−5.72, 0.00), 0.050 ^c	1.48 (−1.34, 4.29), 0.303	−1.94 (−4.83, −0.95), 0.188
Problem drinking (AUDIT score ≥ 8)	1.34 (0.72, 2.49), 0.361	0.54 (0.27, 1.08), 0.079 ^c	0.97 (0.51, 1.81), 0.914	0.53 (0.33, 1.24), 0.183
Sexual risk behavior, past 3 months				
Multiple vaginal sex partners	2.14 (1.13, 4.06), 0.020 ^b	0.69 (0.35, 1.35), 0.276	1.42 (0.76, 2.67), 0.273	0.66 (0.34, 1.30), 0.231
Proportion condom use ^a	−0.12 (−0.21, −0.02), 0.014 ^b	−0.09 (−0.20, 0.01), 0.064 ^c	−0.14 (−0.24, −0.05), 0.003 ^b	−0.11 (−0.21, −0.02), 0.021 ^b
STIs				
Bacterial STI	1.29 (0.63, 2.63), 0.491	0.47 (0.17, 1.26), 0.134	0.84 (0.38, 1.88), 0.678	0.67 (0.28, 1.61), 0.375
Trichomoniasis	2.59 (1.30, 5.17), 0.007 ^b	0.79 (0.31, 2.03), 0.629	1.87 (0.90, 3.90), 0.096 ^c	1.62 (0.756, 3.53), 0.217

OR: Odds Ratio, CI: Confidence Interval, RAPI: Rutgers Alcohol Problem Index, AUDIT: Alcohol Use Disorders Identification Test, STI: Sexually transmitted infection

^a Beta coefficient (linear regression model)

^b p-value<0.05

^c p-value<0.1