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Alcohol use as a potential mediator of forced sexual intercourse and suicidality among African American, Caucasian, and Hispanic high school girls

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Introduction

Sexual violence among adolescent females is a significant public health problem. Among high school girls, 11% report a lifetime history of being forced to have sex [1] and over 50% report sexually coercive experiences [2]. The devastating consequences of sexual assault are far-reaching and long-lasting, and result in problems with physical and psychosocial health [3–5]. For example, using a national sample of high school girls, we recently found that girls who experienced forced sexual intercourse were more likely than non-abused girls to report suicidality [6]. Further, we found that binge drinking significantly mediated the relationship between forced sexual intercourse and suicidality for Hispanic and Caucasian adolescent females but not for African American females. The purpose of the present study was to extend this research by including a more recent national sample and to consider general alcohol use as opposed to binge drinking.

Methods

We analyzed data from the 2009 Youth Risk Behavior Survey (YRBS) [7], a nationally representative survey of United States high school students, conducted by the Centers for Disease Control and Prevention (CDC). For a detailed description of methods used, please see CDC, 2009 [1] and Behnken et al., 2010 [6]. Responses from African American ($n = 1113$), Caucasian ($n = 3059$), and Hispanic ($n = 2122$) females in grades 9 – 12 were examined. History of forced sexual intercourse was assessed by asking the yes/no question: “Have you ever been physically forced to have sexual intercourse when you did not want to?”. The outcome variable, suicidality, was measured by a yes/no item: “During the past 12 months, did you ever seriously consider attempting suicide?” The mediating variable, alcohol use, was assessed by asking, “During the past 30 days, on how many days did you

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have 1 or more drinks of alcohol?”. Responses were categorized on a 7 point scale with 0 representing “no days” to 7 representing “all 30 days”.

All analyses (descriptive, chi square, logistic regression, and mediational) were conducted using SPSS 16.0 (SPSS 16.0, SPSS Inc., Chicago, IL.). Univariate logistic regression analysis was used to assess whether a lifetime history of forced sexual intercourse would predict suicidal behavior. To examine whether this relationship was mediated by alcohol use (continuous) for the entire sample, we used the technique and script written by Preacher and Hayes [8] for mediation using the Sobel test for indirect effect. Mediation models were used to examine if the relationship was the same for each subgroup (i.e., African American, Caucasian, and Hispanic). Effect sizes for the indirect effect were calculated using the measure and technique introduced by Fairchild, MacKinnon, Taborga, and Taylor [9].

Results

The mean age of girls in the overall sample ($N=6294$) was 16 years ($SD=1.22$), with an equal proportion (25%) of participants distributed across grades. Overall, 10.9% of girls reported a lifetime history of forced sexual intercourse. Unlike our previous study with the 2007 YRBS data, there were no differences by ethnicity in rate of forced sexual intercourse ($\chi^2(2)=3.35, p=.19$). Eighteen percent of the participants had considered suicide in the past year, with Hispanic girls (19.7%) being more likely than their African American (18.3%) and Caucasian (17.2%) counterparts to report suicidality ($\chi^2(2)=6.04, p<.05$). Additionally, 56.6% of girls reported past-month alcohol use, with 23.9% reporting drinking 1–2 days, 10.1% reporting drinking 3–5 days, 5.4% reporting drinking 6–9 days, 3.1% reporting drinking 10–19 days, and 0.8% reporting drinking 20 or more days.

Forced sexual intercourse (predictor variable) was associated with suicidality (outcome variable) ($\beta=1.41, SE=.08, p<.0001$) and alcohol use (mediator) for the total sample of participants ($\beta=.67, SE=.05, p<.0001$) (Figure 1). Alcohol use was associated with suicidality, even after controlling for forced sexual intercourse ($\beta=.20, SE=.09, p<.0001$). The path from forced sexual intercourse to suicidality was significantly reduced when accounting for alcohol use ($p<.0001$), suggesting that alcohol use partially mediated the relationship between sexual assault and suicidality (Sobel test= 6.55, $p<.0001$). Approximately 13% of the variance in suicidality could be accounted for by the indirect effect of forced sexual intercourse on suicidal thinking through alcohol use (Table 1).

Results held for each ethnicity: African American (Sobel test= 3.43, $p<.001$), Caucasian (Sobel test= 3.08, $p<.01$), and Hispanic (Sobel test= 4.80, $p<.0001$). The proportion of variance in suicidality accounted for by the indirect effect of forced sexual intercourse through alcohol use is shown in Table 1.

Discussion

The current findings, using a 2009 national sample of high school girls, are mostly consistent with our previous study on sexual assault, binge drinking, and suicidality [6]. As expected, high school girls with a history of being sexually assaulted were more likely to consider suicide than their non-abused counterparts. The present study extended our previous research by showing that current alcohol use (not necessarily binge drinking) could help explain why some adolescent girls who experienced sexual assault became suicidal while others did not. We previously argued that the impulsivity, aggressiveness, and poor decision-making that often coincide with excessive alcohol use may be partially responsible for the relationship between sexual assault and suicidality. The fact that mediation held for current alcohol use suggests that, in addition to its acute affects, alcohol use may serve as a

general risk factor for suicidality. It is possible that some adolescent girls “self-medicate” with alcohol use, and that this maladaptive coping strategy results in poorer mental health than sexual assaulted girls who adopt more adaptive coping strategies.

These results must be considered in light of numerous limitations including use of self-report, single-item measures and minimal information about family context and demographic data. Given the cross-sectional design, causality cannot be determined or assumed. It is possible that alcohol use leads to suicidality via forced sex or that the alcohol-suicidality association is bi-directional. Future research should replicate this model using longitudinal data. Regardless, these findings suggest that prevention and intervention programs targeting female adolescent victims of sexual assault include a component on alcohol use.

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Figure 1.

Mediation illustration: Forced sexual intercourse predicts suicidality indirectly through current alcohol use for the total sample of high school girls (N=6294).

Note: Sobel test = 6.55, $p < .0001$

*** denotes coefficient significance at $p < .0001$ level

Table 1

Effect size of indirect effect of alcohol use as a mediator of forced sexual intercourse and suicidality among high school girls by total sample and ethnicity

Sample	R ²	SE	95% CI	Z	p
Total (N=6294)	.13	.02	.09, .17	6.55	<.0001
Caucasian (n=3059)	.08	.03	.03, .13	3.08	<.01
African American (n= 1113)	.17	.05	.07, .26	3.43	<.001
Hispanic (n=2122)	.21	.04	.12, .29	4.80	<.0001