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Prevalence and risk of psychiatric disorders as a function of variant rape histories: results from a national survey of women

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Abstract

Purpose—Rape is an established risk factor for mental health disorders, such as posttraumatic stress disorder (PTSD), major depressive episodes (MDE), and substance use disorders. The majority of studies have not differentiated substance-involved rape or examined comorbid diagnoses among victims. Therefore, the aim of the present study was to estimate the prevalence of common trauma-related psychiatric disorders (and their comorbidity) in a national sample of women, with an emphasis on distinguishing between rape tactics. A secondary objective was to estimate the risk for psychiatric disorders among victims of variant rape tactics, in comparison to non-victims.

Methods—A nationally representative population-based sample of 3,001 non-institutionalized, civilian, English or Spanish speaking women (aged 18–86 years) participated in a structured

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telephone interview assessing rape history and DSM-IV criteria for PTSD, MDE, alcohol abuse (AA), and drug abuse (DA). Descriptive statistics and multivariate logistic regression analyses were employed.

Results—Women with rape histories involving both substance facilitation and forcible tactics reported the highest current prevalence of PTSD (36%), MDE (36%), and AA (20%). Multivariate models demonstrated that this victim group was also at highest risk for psychiatric disorders, after controlling for demographics and childhood and multiple victimization history. Women with substance-facilitated rapes reported higher prevalence of substance abuse in comparison to women with forcible rape histories. Comorbidity between PTSD and other psychiatric disorders was higher among rape victims in comparison to non-rape victims.

Conclusions—Researchers and clinicians should assess substance-facilitated rape tactics and attend to comorbidity among rape victims. Empirically supported treatments are needed to address the complex presentations observed among women with variant rape histories.

Keywords

Rape; Sexual assault; Posttraumatic stress disorder; Depression; Alcohol abuse; Drug abuse; Comorbidity

Introduction

Sexual assault affects a substantial portion of women, with the lifetime prevalence of rape estimated to be between 12 and 18% among national samples of women [1–3]. National data have associated the experience of rape with a number of adverse psychosocial outcomes, including posttraumatic stress disorder (PTSD), major depression, and substance use problems [3–6]. However, the majority of prior nationally representative research on this topic has failed to differentially assess for experiences of substance-facilitated and incapacitated rape. Whereas national estimates of the prevalence of these disorders and their comorbidity among victims of incapacitated and substance-facilitated rape would provide information critical for intervention, treatment, and policy planning, our current knowledge in this domain is limited to estimates produced by small regional or specific subsamples of the national population [7, 8]. The current study examined associations between rape type and mental health problems and provided nationally representative estimates of depression, PTSD, and comorbid substance abuse among four distinct groups of women: (1) victims of adult substance-facilitated/incapacitated rape, (2) victims of adult forcible rape, (3) victims of adult rapes involving both forcible and substance use characteristics, and (4) women without any adult rape history.

Nationally representative data speak to the prevalence of PTSD, depression, substance use, and comorbid psychiatric diagnoses among women reporting forcible rape experiences. The National Comorbidity Study (NCS), which consisted of a nationally representative sample of 5,877 men and women, reported a lifetime prevalence of 7.8% for PTSD [9]. Rape and sexual molestation were the most frequently identified traumas associated with lifetime PTSD for both men and women. Further, of women endorsing a history of rape, nearly half (46%) developed PTSD at some point in their lifetimes. These findings were echoed by the

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National Women's Study (NWS), a nationally representative sample of 4,008 women, which identified a lifetime prevalence of PTSD of 32% among victims of forcible rape [6]. Further, the NWS reported that 30% of female rape victims had experienced a depressive episode (in comparison to 10% of non-victims of crime) [1]. Nationally representative data have also associated rape history with increased risk for substance use problems. In the NWS, 5% of rape victims met criteria for past year alcohol abuse and 13% had engaged in past year non-experimental drug use [4]. Data from non-representative samples largely mirror these associations between adult rape trauma and mental health outcomes of PTSD, depression, and substance abuse [10–12]. Finally, psychiatric comorbidity is notably common among women presenting with PTSD. Nearly half (49%) of women diagnosed with lifetime PTSD in the NCS also reported a lifetime diagnosis of depression), and over one-quarter of women with PTSD were diagnosed with lifetime drug abuse/dependence (27%) and alcohol abuse/dependence (28%) [9]. However, little is known about comorbidity specific to rape victims. Furthermore, additional studies involving epidemiological assessment of trauma-related diagnoses are necessary to better understand the public health burden of trauma exposure [13].

Although rape is most frequently defined by national research as vaginal, oral, or anal intercourse occurring as a result of force or threat of force, many legal statutes and the National Incident Based Reporting System also include intercourse that takes place when a victim is unable to consent, including inability to consent due to intoxication in their definition of rape [14, 15]. Further, approximately half of rapes involve alcohol use [16, 17] and an estimated 2.2 million women meet lifetime criteria for drug-or-alcohol-facilitated/incapacitated rape (DAFR/IR) that would not otherwise be classified as forcible rape [2]. Given the substantial number of rapes involving substance facilitation or incapacitation, specific and differential assessment of these experiences and their association with psychiatric outcomes could have important implications for secondary intervention and treatment. However, little data are available regarding the prevalence of PTSD, depression, and comorbid PTSD/depression among both forcible and substance-involved rape victims, particularly from nationally representative samples.

A few studies have begun to assess the differences between FR and DAFR/IR with respect to their psychiatric implications. Prior studies utilizing the current nationally representative data have examined the unique contributions of experiences of FR, DAFR, and IR tactics to lifetime reports of PTSD, depression, and substance use [18, 19]. DAFR and FR tactics were uniquely associated with PTSD, whereas only FR tactics were uniquely associated with depression [19]. Further, all three tactics were uniquely associated with increased odds of past year marijuana and illicit drug use, whereas only IR was uniquely associated with increased odds of past year binge drinking [18]. Both studies used non-mutually exclusive categorization of rape tactics, meaning that women's single rape experience may have been classified as more than one "rape type" if the incident involved use of multiple rape tactics. Because there was significant overlap between forcible and substance-facilitated elements, these studies were limited in their ability to compare different event histories. Even though a large portion of DAFR/IR incidents involves forcible elements, the effects of this "combined type" rape remain unexplored. In addition, these studies examined lifetime assault histories that included childhood sexual abuse experiences in the DAFR/IR and FR groups, and it is

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likely that the effects of childhood assaults differ from those of adult rape experiences. Finally, neither of these studies presented national prevalence estimates of PTSD, depression, substance abuse, and psychiatric comorbidity among victims of the various types of rape [e.g., adult DAFR/IR, adult FR only, adult combined type (DAFR/IR/FR)].

Non-representative studies using regional or convenience samples have yielded interesting findings regarding psychiatric outcomes of substance facilitated and incapacitated rape and support the importance of differential assessment of DAFR/IR and FR. Abbey et al. [7] interviewed a sample of 139 single African American and Caucasian women (aged 18–49 years) in the Detroit metropolitan area regarding the characteristics, perceptions, and outcomes of their sexual assault. Women whose assault experience was best classified as forcible sustained significantly more injuries and reported more negative affect during the assault and significantly more life disruption than did women whose experience was classified as incapacitated or coercive. Similarly, Brown et al. [8] examined data from two samples of women, 265 college women and 244 women aged 18–30 recruited from the local community, comparing several psychological outcomes of forcible rape with those of incapacitated rape. Among the community sample, posttraumatic stress symptoms and interpersonal/social impact of women's most recent rape experience were compared by rape type. The impact of incapacitated rape was similar to that of forcible rape with respect to current perceived impact of the trauma, emotional and psychological reaction to the event, and non-diagnostic measures of posttraumatic stress symptoms; however, the two rape experiences produced differential outcomes with respect to perceived trauma at the time of the event (forcible perceived as more traumatic), negative impact on social functioning (forcible perceived as having greater impact), and self-blame for assault (incapacitated producing more self-blame). Findings among the college sample [8] were largely consistent in that incapacitated rape victims reported differential and intermediate outcomes when compared with victims of forcible rape. A third study examined predictors of forcible and incapacitated rape in a sample of 1,014 women, finding that adolescent substance use predicted incapacitated but not forcible rape [20].

Taken together, the limited prior research in this area suggests differences between substance-involved and forcible rape experiences with respect to adjustment and mental health associates and supports the importance of specific assessment for and differentiation of rapes involving incapacitation or drug-alcohol facilitation when examining mental health outcomes. At present, gaps still exist in our understanding of the role of rape tactics in conferring risk for psychiatric morbidity. These gaps include: (1) lack of nationally representative estimates of the prevalence of psychiatric morbidity among women with DAFR/IR histories, (2) unknown prevalence of comorbidity among rape victims, (3) an incomplete understanding of the relative association between rape type to mental health problems, and (4) a lack of knowledge regarding the impact of rapes involving both incapacitated and forcible elements. The primary purpose of this study was to estimate the prevalence of common trauma-related psychiatric disorders in a national sample of female adult rape victims and non-victims. We examined the prevalence of seven different mental health outcomes among women with four variant adult rape histories (FR, DAFR/IR, combined type, and non-victim): (1) PTSD, (2) major depression, (3) alcohol abuse, (4) drug abuse, (5) comorbid PTSD/depression, (6) comorbid PTSD/alcohol abuse, and (7) comorbid

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PTSD/drug abuse. In addition, we examined the risk of meeting criteria for mental health disorders among victims of different rape tactics, in comparison to non-victims. Given the findings regarding the greater perceived impact of FR and more consistent relation to PTSD and depression, we expected a higher risk for PTSD and depression among the FR group, in comparison to the DAFR/IR and non-victim groups. Based on prior literature highlighting the association between DAFR/IR and substance use, we expected a higher prevalence of substance use among this group, in comparison to FR and non-victims. Due to lack of prior research on combined DAFR/IR and FR, we did not generate hypotheses regarding the relation between this group and psychiatric disorders.

Method

Participants and procedure

Data were collected as part of the "National Women's Study-Replication." The sample consisted of 3,001 women who were selected from two U.S. population samples: (a) a national cross-section of 1,998 women aged 18–34 and (b) a cross-section of 998 women aged 35 and older, and 5 women who refused to provide their age. The age range of participants was 18 to 76 years, with a mean age of 46.58 (SD = 17.87). The majority of participants identified as White (76%), followed by 15% African American, 5% Hispanic, and 4% Asian or Native American. We used random-digit-dial (RDD) methodology to survey a geographically stratified sample, with sample allocation proportionate to population distribution. A sample of assigned telephone banks was randomly selected from an enumeration of the Working Residential Hundreds Block (defined as each block of 100 potential telephone numbers with an exchange that includes one or more residential listings). Verbal informed consent was obtained. The cooperation rate was 65.3%. All interviews were conducted between January 23 and June 26, 2006. This study was approved by the Institutional Review Board at the Medical University of South Carolina.

Measures[1]

Demographic information—Women were asked to report their current age (at time of interview), race/ethnicity, marital status, and estimated personal yearly income.

Mental health—Lifetime and past 6-month PTSD and Major Depressive Episode (MDE) diagnoses were assessed with the National Women's Study (NWS) PTSD and MDE modules. These are structured interviews based on *Diagnostic and Statistical Manual of Mental Disorders* (4th edn, *DSM-IV*) criteria [21, 22, 23]. Both modules also assessed functional impairment. The NWS-PTSD has demonstrated good concurrent validity and several forms of reliability (e.g., temporal stability, internal consistency, diagnostic reliability) [6, 24]. Support for internal consistency and convergent validity of both PTSD and MDE measures also exist [24]. Comborbid PTSD/MDE was defined as the presence of both a PTSD and an MDE diagnosis within the *past 6 months*.

[1] Interview measures are available upon request.

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Alcohol and drug abuse—Past year alcohol abuse (AA) and drug abuse (DA) were also assessed using the NWS interview module, which was based on *DSM-IV* criteria. Items assessed frequency of use for the following substances over the past 12 months: alcohol, marijuana, illicit drugs (cocaine, PCP, heroin, inhalants), club drugs (MDMA, GHB, Ketamine, Rohypnol, Methamphetamine, hallucinogens), and non-medical use of prescription drugs [25]. Items also assessed several negative consequences associated with substance use. Prior research has demonstrated the construct validity of this measure [4]. Comorbid PTSD/AA and PTSD/DA were defined as meeting criteria for both a past 6-month PTSD and past year AA or DA diagnosis, respectively.

Rape experiences—We assessed women's most recent and, for women with multiple rapes, first incident of rape. Age at time of rape was also assessed. Rape was defined as penetration of the victim's vagina, mouth or rectum without consent. Questions were closed-ended and behaviorally specific. Women were asked:

1. Has a man or boy ever made you have sex by using force or threatening to harm you or someone close to you? Just so there is no mistake, by having sex, we mean putting a penis in your vagina.
2. Has anyone, male or female, ever made you have oral sex by force or threatening to harm you? So there is no mistake, by oral sex, we mean that a man or boy put his penis in your mouth or someone penetrated your vagina or anus with their mouth or tongue?
3. Has anyone ever made you have anal sex by force or threatening to harm you? By anal sex we mean putting their penis in your anus or rectum.
4. Has anyone ever put fingers or objects in your vagina or anus against your will by using force or threatening to harm you?
5. Has anyone ever had sex with you when you did not want to after you drank so much alcohol that you were very high, drunk, or passed out? By having sex, we mean that a man or boy put his penis in your vagina, anus, or your mouth?
6. Has anyone ever had sex with you when you did not want to after they gave you, or you had taken enough drugs to make you very high, intoxicated, or passed out? By having sex we mean that a man or boy put his penis in your vagina, anus, or your mouth?

Cases were defined as FR if the victim reported an incident during adulthood (age 14 or older) wherein the perpetrator used force or threat of force. Cases were defined as DAFR/IR if the victim was intoxicated and incapacitated via voluntary or involuntary consumption of drugs and/or alcohol during an adulthood incident. Cases were defined as combined type if both force and incapacitation were used in the same incident. If participants reported multiple adult rapes, they were classified as FR if both rapes involved FR alone, DAFR/IR if both rapes involved DAFR/IR alone, and "combined type" if both force and incapacitation were used during the same incident for one or both of the incidents. Cases that involved adult FR during one incident and adult DAFR/IR during a second incident were excluded, given the small number of cases that fell in this category ($n = 7$). Cases were defined as child

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sexual abuse (CSA) if the victim reported any childhood incidents (occurring before age 14). Women were classified as having multiple rape experiences if they endorsed both a first and a most recent adult experience.

Procedure

Women were interviewed using a computer-assisted telephone interviewing (CATI) system. Only experienced female interviewers were involved in survey procedures. English and Spanish versions of the interview were developed; the version administered was based on respondent language preference. After determining that the residence contained one or more women eligible for the study, the interviewer introduced the study and provided a toll-free telephone number to confirm authenticity of the study. When a residence had more than one woman who met study criteria, the woman with the most recent birthday was selected. After a complete description of the study was provided, oral consent was obtained. Completed interviews averaged 20 min.

Results

Chi-square analyses and ANOVAs were used to compare rape victims and non-victims on demographic characteristics (marital status, income, race/ethnicity, age) and rape history variables (multiple rape history, CSA). Descriptive statistics were used to obtain prevalence of lifetime and current mental health diagnoses among rape victims and non-victims. Logistic regression analyses were conducted to examine the relative risk of mental health disorders for each rape tactic group in comparison to non-victims. Demographic characteristics and rape history variables were included as control variables in the logistic regression analyses.

Comparison of rape tactic groups and non-victims on demographic characteristics and rape history variables

Ten percent of the full sample were categorized as FR only (n = 299), 2% were categorized as DAFR/IR (n = 55), 3% were categorized as combined type (n = 78), and 85% were categorized as not having experienced an adult rape (“non-victims”; n = 2,561). Chi-square analyses revealed significant differences on marital status, income, race/ethnicity, multiple rape history, and child sexual abuse history. ANOVAs identified significant differences on age and time since rape (Table 1). Specifically, the combined group was the least likely to report being married (42%; $\chi^2 = 12.74$, $p < .01$). A slightly higher percentage of rape victims reported low income (<$20K; 22–28%) in comparison to non-victims (21%; $\chi^2 = 18.38$, $p < .01$). A higher percentage of FR victims identified as African American (18%) in comparison to other rape victims (9–12%) and non-victims (11%; $\chi^2 = 17.48$, $p < .05$). A higher percentage of combined victims reported multiple rape history (45%) in comparison to FR victims (24%) and DAFR/IR victims (15%; $\chi^2 = 19.14$, $p < .001$). Women with a DAFR/IR or combined rape history were younger on average than women with an FR history or non-victims [F (3, 2,984) = 22.02, $p < .001$]. Time since the rape was longer in the FR group (M = 21.8, SD = 14.0) in comparison to the DAFR/IR (M = 13.0, SD = 9.4) and combined groups [M = 13.4, SD = 9.8; F (2, 413) = 20.12, $p < .001$].

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Lifetime diagnoses

The combined type victim group demonstrated the highest prevalence of lifetime diagnoses in comparison to the other victim groups (Table 2). Approximately one-half (52%) of combined type victims met criteria for lifetime PTSD, which was higher than DAFR/IR victims (30%) and FR victims (34%). Combined type victims also demonstrated a high prevalence of lifetime MDE (43%), in comparison to DAFR/IR victims (20%) and FR victims (34%). However, there was little difference between groups in terms of *noncomorbid* prevalence of PTSD and MDE (i.e., PTSD only or MDE only). Results of logistic regression analyses followed a similar pattern, with combined type victims exhibiting the highest risk for PTSD (OR = 4.85; DAFR/IR: OR = 2.24; FR: OR = 2.75) and MDE (OR = 5.46; DAFR/IR: OR = 2.03; FR: OR = 4.68), in comparison to non-victims. DAFR/IR victims appeared to be at a lower risk for MDE in comparison to other rape victims. All three tactics were significantly related to both mental health outcomes, after controlling for demographic variables and prior sexual assault history (Table 3).

Current diagnoses

Of the rape victim groups, combined type victims also demonstrated the highest prevalence of current PTSD and MDE diagnoses; over one-third of combined type victims met criteria for either of these disorders (Table 2). Approximately 16% of DAFR/IR victims and 21% of FR victims met criteria for current PTSD. Similarly, 18% of DAFR/IR victims and 22% of FR victims met criteria for current MDE. Logistic regression analyses with current diagnoses demonstrated a similar pattern of results to the analyses predicting lifetime diagnoses (therefore, only results from analyses with lifetime diagnoses are depicted in Table 3).

The highest prevalence of alcohol abuse was observed among combined type victims (20%), which was slightly higher than the prevalence among DAFR/IR victims (15%). The prevalence of alcohol abuse among FR victims was much lower (5%), and was similar to the prevalence found among non-victims (6%). DAFR/IR victims demonstrated the highest prevalence of drug abuse (9%), with FR victims representing the lowest prevalence for this diagnosis among rape victims (2%; Table 2). In the logistic regression models, only the combined group was significantly associated with alcohol abuse (OR = 2.54, $p = .01$) and only DAFR/IR was significantly associated with drug abuse (OR = 4.53, $p < .01$; Table 3).

Finally, combined type victims were more likely to meet criteria for any current diagnosis (62%) in comparison to DAFR/IR victims (44%) and FR victims (46%; Table 2). In logistic regression models, combined type victims demonstrated much higher odds for current mental health disorders (OR = 5.07) in comparison to DAFR/IR (OR = 2.39) and FR (OR = 3.23; vs. non-victims; Table 3). All rape tactic variables were significant in the multivariate model.

Comorbidity

Combined type victims demonstrated the highest rates of comorbidity for lifetime PTSD and MDE (36 vs. 14% DAFR/IR and 24% FR) and current PTSD and MDE (28 vs. 13% DAFR/IR and 18% FR). Of women who met criteria for lifetime PTSD, the majority of

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combined type and FR victims met criteria for lifetime MDE (70% and 69%, respectively). Of women who met criteria for current PTSD, a higher percentage of all rape victims met criteria for current MDE, in comparison to non-victims (78–83 vs. 56%; Table 2). Only the combined tactics (OR = 4.93, $p < .001$) and FR (OR = 3.48, $p < .001$) were significantly associated with lifetime PTSD/MDE after controlling for other variables in the logistic regression analyses. All three rape tactics were associated with current PTSD/MDE in the multivariate model, with the highest odds ratio observed in the combined group (OR = 6.19; DAFR/IR: OR = 2.99; FR: OR = 4.08; Table 4).

The prevalence of comorbid PTSD and alcohol abuse was highest among the combined group (12 vs. 5% DAFR/IR and 3% FR). Of women with current PTSD, both the combined group and the DAFR/IR group reported high rates of comorbid alcohol abuse (30–32 vs. 13% of FR victims and 15% of non-victims). Only the combined group was significantly associated with PTSD/alcohol abuse in the logistic regression model (OR = 4.69 $p < .01$). Combined type victims and DAFR/IR victims reported similar rates of comorbid PTSD and drug abuse (5%), which was higher than the prevalence among FR victims (1%; Table 2). DAFR/IR victims with PTSD reported the highest prevalence of comorbid drug abuse (30%). Only DAFR/IR was associated with PTSD/drug abuse in the logistic regression model (OR = 5.80, $p < .05$; Table 4).

Discussion

Prior research has established notable associations between rape and mental health problems like PTSD, MDE, and substance abuse. The current study extends this literature by differentiating between substance-related and forcible rape tactics with respect to the prevalence of mental health problems, reporting the prevalence of comorbid mental health disorders among victims of these rape tactics, and examining the association between combined rape tactics and mental health outcomes. Results from this study generally indicate: (1) that combined type rape experiences were associated with the highest prevalence of nearly every mental health and comorbid outcome examined, (2) that women with DAFR/IR only experiences exhibited a somewhat different pattern of substance use and mental health outcomes in comparison to other tactics, and (3) that the risk of comorbid PTSD and depression is significantly higher among rape victims in comparison to non-victims.

Findings from this study highlight the importance of considering the impact of DAFR/IR as a rape tactic. First, approximately one-third of rape victims reported a history of DAFR/IR. Although DAFR/IR is often not differentially assessed in research or clinical settings, this study demonstrates that these rape experiences affect a large portion of victims and have differential associations with mental health problems. Over half of women with a DAFR/IR history also experienced FR tactics during the same incident. The high overlap between DAFR/IR and FR tactics is noteworthy, especially given its association with the highest risk for mental health disorders among all rape tactic groups. Of note, the combined group exhibited approximately five times the risk of PTSD, MDE, PTSD/MDE, and PTSD/AA diagnoses, in comparison to non-victims. Furthermore, estimates of lifetime PTSD, lifetime MDE, and current alcohol abuse diagnoses among the combined group (52, 43, and 20%,

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respectively), were much higher than prior estimates of these psychological disorders in epidemiologic studies of rape victims (e.g., 31% PTSD, 30% MDE, and 5% alcohol abuse prevalence in the NWS) [6]. These findings underscore the need to target rape victims who have experienced both DAFR/IR and FR tactics in research and clinical settings.

One possible hypothesis for the novel finding that combined type victims reported the highest rates of PTSD and MDE relates to the severity of assault. It may be that combined type incidents include characteristics (e.g., injury, fear of injury or death) from forcible rapes known to be associated with poorer outcomes in combination with characteristics of substance related rape that may be associated with a higher likelihood of self-blame (e.g., inability to remember what happened, victim substance use at time of rape). It is also possible that the observed risk of mental health disorders among combined type victims was higher in comparison to FR victims because combined type victims experienced a rape episode more recently. Furthermore, although multiple victimization was entered as a control variable, the combined group reported a significantly higher rate of revictimization in comparison to other rape tactic groups, which is likely to place these women at risk for poor outcomes. These hypotheses should be examined in future research that carefully assesses specific rape characteristics associated with each tactic in relation to mental health outcomes.

Consistent with previous research and our hypotheses [20, 26], DAFR/IR alone or in combination with FR was linked with higher alcohol and drug abuse than FR only. These findings, in combination with previous research, suggest that women with substance-related rapes may have a notable likelihood of continuing or increasing substance use subsequent to their assault. Longitudinal research conducted among community samples of high-risk women has consistently demonstrated that women who report high levels of alcohol use/abuse prior to (and during) their rape are at the highest risk for continued alcohol problems following their rape [27]. In contrast, and consistent with expectations, FR was associated with a higher risk for PTSD and depression in comparison to DAFR/IR. Given the differing prevalence and risk for mental health disorders across tactics, it appears that diverse mental health trajectories could be associated with the various rape tactics. Future research should combine longitudinal methodology with the differentiation of rape tactic when examining women's risk for substance use outcomes, psychiatric disorders, and revictimization risk. Although not the focus of this study, child sexual abuse exhibited a unique association with mental health outcomes in each model, suggesting that the interaction between child sexual abuse and different adult rape tactics should also be considered in future investigations.

Several interesting findings emerged from these data with respect to comorbidity and rape experiences. Although no prior studies have reported on comorbidity of PTSD and other disorders among rape victims, the current study suggests that rape victims are at particular risk for comorbid diagnoses. The prevalence of comorbid PTSD/MDE among women *without* a rape history were comparable to those reported by Kessler et al. [9] in the NCS; the current study found that 46% of non-rape victims with a lifetime history of PTSD also endorsed a lifetime history of MDE, compared with 49% of women in the NCS. However, rates of comorbid lifetime MDE among women with lifetime history of PTSD were remarkably higher for women with a FR or combined type rape history, with a sizeable

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majority of these women (64–70%) endorsing PTSD/MDE comorbidity. Rates of comorbid substance use disorders among women with current PTSD were also strikingly high among women with a DAFR/IR or combined history. These findings suggest that women presenting with PTSD and a history significant for rape may be more likely to have complex clinical presentations than women presenting with PTSD and other forms of trauma history. Further, the high rates of comorbidity among rape victims highlights the need for clinical providers (and empirically supported treatments) that are able to provide integrated treatment options to women with these complex presentations.

Although the current findings begin to elucidate the complex and differential relations between variant rape experiences and mental health problems, the study is not without limitations. First, all data were collected via retrospective self-report, introducing potential recall biases, making the accurate determination of timing of onset and statements regarding causality impossible, and therefore limiting the strength of conclusions. Second, with respect to comorbidity of lifetime diagnoses, it is impossible to determine if women experienced these symptoms concurrently, if symptoms preceded or proceeded rape experience, and if mental health symptoms were associated with women's rape experience. Third, although assessment methods for mental health and substance use problems have demonstrated acceptable psychometric properties, these diagnoses were not rendered by professionals. Fourth, due to low base rates of the variables examined, we were unable to statistically differentiate between women whose substance-related rape was the result of voluntary consumption or involuntary/unknowing consumption of alcohol or drugs. Fifth, due to the necessarily brief nature of the assessment, the data only capture women's first and most recent rape incident, and cannot speak to the full range of traumatic life experiences. Finally, the low base rates for drug abuse in our sample may have limited our ability to detect relationships between rape tactics and drug abuse.

In sum, the current study extends the current knowledge on the prevalence of mental health/substance use problems among victims of different types of rape. Findings showed that DAFR/IR tactics were often experienced in combination with FR, which resulted in poor outcomes for victims in comparison to other types of rape. Given the potentially additive effects of experiencing multiple rape tactics and the high prevalence of substance use among DAFR/IR victims, researchers and clinicians should consider adding an assessment of DAFR/IR tactics to the standard assessment of FR experiences. In addition to addressing the aforementioned limitations, future research should employ longitudinal methodology and use more fine-grained assessments of peritraumatic and post-rape characteristics (e.g., injury, fear of death, voluntary intoxication, acknowledgement, reporting, etc.) in order to ascertain concrete risk factors for mental health, substance abuse, and comorbid outcomes. Risk factors for the experience of different rape tactics should also be more thoroughly investigated. Finally, these results highlight that complex clinical presentations are common among women with rape experiences, reinforcing the critical need for empirically supported treatments and clinicians prepared to address complex comorbid presentations among rape victims.

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Heidi Zinzow had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Table 1

Comparisons between rape victims and non-victims on demographic and rape history variables

	FR (%)	DAFR/IR (%)	Combined (%)	Non-victim (%)	χ^2
Married	51	52	42	57	12.74**
Income					18.38**
> $60K	27	43	29	38	
$20–60K	46	35	45	41	
< $20K	28	22	26	21	
Race/ethnicity					17.48*
White	74	78	78	79	
African American	18	9	12	11	
Hispanic	5	7	7	5	
Other	3	6	4	5	
Multiple rape history	24	15	45	–	19.14***
Child sexual abuse history	23	0	15	5	165.00***
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	*F*
Age	46.0 (16.0)	33.7 (10.5)	35.2 (10.6)	47.3 (18.2)	22.02***
Time since rape	21.8 (14.0)	13.0 (9.4)	13.4 (9.8)	–	20.12***

FR forcible rape, *DAFR/IR* drug-or-alcohol-facilitated/incapacitated rape, *combined* FR and DAFR/IR during the same incident

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Table 2

Prevalence of psychiatric disorders among rape victims and non-victims

Psychiatric diagnosis	FR (%)	DAFR/IR (%)	Combined (%)	Non-victim (%)
Overall lifetime prevalence				
PTSD	34	30	52	13
MDE	34	20	43	9
Overall current prevalence				
PTSD	21	16	36	6
MDE	22	18	36	7
AA	5	15	20	6
DA	2	9	6	1
Noncomorbid lifetime prevalence				
PTSD only	10	15	14	6
MDE only	9	5	5	2
Noncomorbid current prevalence				
PTSD only	2	4	5	2
MDE only	2	4	5	2
AA only	1	5	4	3
DA only	.3	2	0	.2
Comorbid lifetime prevalence				
PTSD + MDE	24	14	36	6
Comorbid current prevalence				
PTSD + MDE	18	13	28	4
PTSD + AA	3	5	12	1
PTSD + DA	1	5	5	1
Any diagnosis	46	44	62	20
Comorbidity with lifetime PTSD				
Lifetime MDE	69	47	70	46
Comorbidity with current PTSD				
Current MDE	83	78	79	56
AA	13	30	32	15
DA	6	30	14	9

FR forcible rape, *DAFR/IR* drug-or-alcohol-facilitated/incapacitated rape, *combined* FR and DAFR/IR during the same incident, *PTSD* post-traumatic stress disorder, *MDE* major depressive episode, *AA* alcohol abuse, *DA* drug abuse

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Table 3

Results of logistic regressions relating rape tactics to psychiatric disorders

Predictors	Lifetime PTSD		Lifetime MDE		Alcohol abuse		Drug abuse	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Married	.84	.66–1.07	.61***	.46–.80	.49***	.35–.70	.35**	.16–.77
Income ($20–60K)	1.10	.85–1.43	.95	.71–1.29	1.15	.79–1.66	.84	.38–1.85
Income (< $20K)	1.94***	1.43–2.64	1.53*	1.08–2.16	.64	.39–1.04	.97	.43–2.23
Age	.98***	.97–.99	.98***	.97–.98	.95***	.94–.96	.92***	.90–.95
African American	.72	.51–1.01	.74	.51–1.08	.52*	.30–.91	1.33	.60–2.93
Hispanic	1.25	.82–1.90	.93	.57–1.53	.74	.40–1.37	.90	.29–2.76
Other race	.73	.43–1.24	.76	.42–1.40	.47	.19–1.14	1.57	.50–4.95
Multiple rape	1.18	.72–1.94	.98	.59–1.65	1.02	.44–2.37	1.09	.27–4.47
Child sexual abuse	3.76***	2.68–5.27	3.28***	2.28–4.72	1.55	.89–2.73	4.01**	1.75–9.16
DAFR/IR	2.24*	1.21–4.16	2.03*	1.00–4.10	1.73	.76–3.90	4.53**	1.50–13.70
FR	2.75***	1.98–3.82	4.68***	3.33–6.57	.84	.45–1.57	1.30	.48–3.50
Combined	4.85***	2.80–8.39	5.46***	3.11–9.60	2.54*	1.25–5.16	2.32	.71–7.64

* $p < .05$,

** $p < .01$,

*** $p < .001$

FR forcible rape, *DAFR/IR* drug-or-alcohol-facilitated/incapacitated rape, *combined* FR and DAFR/IR during the same incident, *PTSD* post-traumatic stress disorder, *MDE* major depressive episode

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Table 4

Results of logistic regressions relating rape tactics to comorbid psychiatric disorders and any diagnosis

Predictors	Current PTSD/MDE		Lifetime PTSD/MDE		PTSD/AA		PTSD/DA		Any diagnosis	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Married	.67*	.45–.99	.66*	.48–.91	.32**	.15–.70	.35	.12–1.00	.68***	.55–.84
Income ($20–60K)	1.16	.74–1.84	1.08	.76–1.55	.87	.40–1.60	1.13	.37–3.45	1.08	.87–1.35
Income (< $20K)	2.31**	1.41–3.77	1.87**	1.26–2.80	.83	.35–1.95	1.33	.42–4.21	1.47**	1.11–1.93
Age	.96***	.95–.98	.97***	.97–.98	.93***	.90–.96	.94**	.90–.97	.97***	.97–.98
African American	1.30	.82–2.04	.83	.55–1.27	.51	.18–1.41	1.05	.35–3.12	.64**	.47–.87
Hispanic	.90	.46–1.77	.93	.53–1.63	.65	.19–2.19	1.29	.34–4.84	1.12	.76–1.64
Other race	1.10	.51–2.37	.71	.35–1.45	.42	.07–2.52	.69	.08–5.70	.70	.44–1.11
Multiple rape	1.08	.56–2.08	1.39	.79–2.44	1.76	.54–5.76	1.53	.29–8.02	.88	.54–1.44
Child sexual abuse	3.99***	2.54–6.26	3.77***	2.54–5.58	3.60**	1.51–8.61	6.82***	2.48–18.73	3.58***	2.56–5.00
DAFR/IR	2.30*	1.27–7.05	1.82	.80–4.13	2.75	.71–10.71	5.80*	1.40–24.08	2.39**	1.35–4.21
FR	4.08***	2.60–6.39	3.46***	2.36–5.12	1.72	.64–4.59	1.08	.30–3.94	3.24***	2.37–4.43
Combined	6.19***	3.17–12.09	4.93***	2.70–8.99	4.69**	1.66–13.25	3.38	.88–13.01	5.07***	2.90–8.86

* $p < .05$

** $p < .01$

*** $p < .001$

FR forcible rape, *DAFR/IR* drug-or-alcohol-facilitated/incapacitated rape, *combined* combined FR/DAFR/IR, *PTSD* posttraumatic stress disorder, *MDE* major depressive episode, *AA* alcohol abuse, *DA* drug abuse

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