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Factors Associated with Follow-Up Attendance among Rape Victims Seen in Acute Medical Care

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Abstract

Objective—Rape is associated with Posttraumatic Stress Disorder and related comorbidities. Most victims do not obtain treatment for these conditions. Acute care medical settings are well-positioned to link patients to services; however, difficulty engaging victims and low attendance at provided follow-up appointments is well documented. Identifying factors associated with follow-up can inform engagement and linkage strategies.

Method—Administrative, patient self-report, and provider observational data from Harborview Medical Center were combined for the analysis. Using logistic regression, we examined factors associated with follow-up health service utilization after seeking services for rape in the emergency department.

Results—Of the 521 diverse female (n=476) and male (n=45) rape victims, 28% attended the recommended medical/counseling follow-up appointment. In the final (adjusted) logistic regression model, having a developmental or other disability (OR=0.40, 95% CI=0.21-0.77), having a current mental illness (OR=0.25, 95% CI=0.13-0.49), and being assaulted in public (OR=0.50, 95% CI=0.28-0.87) were uniquely associated with reduced odds of attending the follow-up. Having a prior mental health condition (OR= 3.02 95% CI=1.86-4.91), a completed SANE examination (OR=2.97, 95% CI=1.84-4.81), and social support available to help cope with the assault (OR=3.54, 95% CI=1.76-7.11) were associated with an increased odds of attending the follow-up.

Conclusions—Findings point to relevant characteristics ascertained at the acute care medical visit for rape that may be used to identify victims less likely to obtain posttraumatic medical and mental health services. Efforts to improve service linkage among these patients is warranted and may require alternative models to engage these patients to support posttraumatic recovery.

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Introduction

According to a 2010 Centers for Disease Control survey report, 1,270,000 United States (US) women were raped in the previous year (1.1% of the female population), with rape defined as any completed or attempted unwanted vaginal, oral, or anal penetration through the use of physical force or threats of physical harm (Black et al., 2011). Nearly 1.6 million men are raped over their lifetime (1.4% of the male population). Rape is associated with significant posttraumatic psychological sequelae. Posttraumatic stress disorder (PTSD) is more likely to occur following rape than other types of traumatic events (30-47% of victims; Kilpatrick & Acierno, 2003; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). Depression (Zinzow et al., 2010), suicidality, (Ullman & Brecklin, 2002; Waldrop et al, 2007) and risk behaviors (e.g., substance misuse, sexual health practices; Campbell, Sefl, & Ahrens, 2004; Kilpatrick et al., 2003) are also common after rape. These conditions are frequently comorbid (Kessler, Chiu, Demler, Merikangas, & Walters, 2005; Kilpatrick et al., 1997). Many rape victims have suffered prior sexual victimization (Black et al., 2011; Walsh, Danielson, McCauley, Saunders, Kilpatrick, & Resnick, 2012) and have pre-existing mental health conditions (26-48%), including prior suicide attempts (22%; Brown, Du Mont, Macdonald, & Bainbridge, 2013; Creighton & Jones, 2012), which increase susceptibility to post-rape PTSD (Brewin, Andrews, & Valentine, 2000).

An estimated 317,000 rape victims (26%) will seek acute care services post assault in hospital emergency departments (EDs) or specialty clinics each year (Resnick et al., 2000), where they may receive medical and forensic services provided by specially-trained forensic nurses known as Sexual Assault Nurse Examiners (SANEs). There are estimated to be over 600 SANE programs in operation in the US and Canada (Pearsall, 2013). SANE programs are well received by victims (Ericksen et al., 2002) and improve service delivery, such as rates of sexually transmitted disease prophylaxis prescription, evidence collection, and rates of criminal prosecution of rapes (Campbell, Patterson, & Lichty, 2005). Consistent with best-practice guidelines (Hampton, 1995; U.S. Department of Justice Office on Violence Against Women, 2013), many SANE programs schedule a follow-up with victims within two weeks after the initial exam to provide a medical check-up and assess any potential need for ongoing psychosocial and mental health services.

Unfortunately, difficulty engaging and linking rape victims to the recommended follow-up appointment to assess medical and psychosocial needs after the acute care visit (10-50% attend recommended follow-up appointments) is well-documented (Ackerman, Sugar, Fine, & Eckert, 2006; Boykins & Mynatt, 2007; Brown et al., 2013; Herbert, Grams, & Berkowitz, 1992; Holmes, Resnick, & Frampton, 1998; Rambow, Adkinson, Frost, & Peterson, 1992), potentially resulting in many victims not receiving needed services. Additionally, most victims do not pursue counseling or mental health services in the year after being raped (Kimerling & Calhoun, 1994; Price, Davidson, Ruggiero, Acierno, & Resnick, 2014) and less than half of victims will ever seek mental health services for problems related to the assault (Ullman & Brecklin, 2002). Low service seeking related to the rape appears to be common, even when cost is not an issue (New & Berliner, 2000). In the long-term, rape victims are known to have higher rates of medical service utilization than the general population (Kimerling & Calhoun, 1994; Elkit & Shevlin, 2010). Obtaining

timely services related to the assault may help stem the development of physical health and somatic problems that may contribute to higher medical healthcare utilization (Kimerling & Calhoun, 1994). Identifying barriers and facilitators of follow-up can inform interventions to improve service-linkage, and ultimately, post-rape recovery.

According to two prior studies, attendance at the recommended post-acute care follow-up medical/counseling appointment is predicted by various patient demographics and clinical rape characteristics (Ackerman et al., 2006; Holmes et al., 1998). Rape characteristics that might lead victims to seek clarity about what happened to them and the impact of the assault on their physical well-being (e.g., having been assaulted when intoxicated, having been injured) were associated with greater likelihood of attending a follow-up appointment (Ackerman et al., 2006; Holmes et al., 1998). Additionally, Ackerman and colleagues' findings suggest that victims with more chaotic lifestyles and greater exposure to trauma (i.e., patients assaulted in public places, homeless persons, and persons using illicit drugs) are least likely to follow-up. The present study adds to and builds upon this literature by exploring the role of additional potentially relevant variables not included in prior studies, including gender and the patient's report of available social support. Although not specific to research with rape victims, both gender and social support are known to play a role in post-trauma service utilization (Elhai, North, & Frueh, 2005). Further, we had the opportunity to observe whether changes to clinic procedures affected follow-up service utilization rates. Specifically, although follow-up services were always recommended to patients, for a period of time, follow-up appointments were not routinely pre-scheduled for patients at the time of the ED visit, rather appointments were pre-scheduled based on ED provider discretion or patient request.

Using combined administrative and electronic medical record data from Harborview Medical Center (Harborview) in Seattle, WA for the analyses, our goal was to describe the associations between an exploratory set of clinical variables and health service utilization in this novel service delivery sector for which few studies have been conducted. This study fills an important gap in the literature and may inform future interventions associated with SANE services to improve health service utilization among rape victims.

Method

Setting

All patients included in this analysis were seen in the ED of Harborview, an urban, public, academic hospital with a Level 1 trauma center. The Harborview ED is the major referral center for police and other emergency services in King County of Washington State (2010 Census population estimate of 1,931,249) and provides SANE services to residents of King County. In Washington State, victims may receive SANE services without making a police report. Evidence collected is sent to police when the victim has made a police report and the police request the evidence as part of their investigation. Evidence is disposed of after several months if the victim does not request the evidence be further retained at the Harborview Center for Sexual Assault and Traumatic Stress (HCSATS), a medical/mental health clinic specializing in the care of rape victims that oversees the services provided to rape victims in the Harborview ED. ED social workers coordinate services in the ED for

rape victims and meet with the victim to gather basic information about the patient, the assault, and the patient's interest in obtaining a medical/forensic exam. If indicated, the ED social worker then contacts the on-call SANE. Rape victims are provided a private room for the entirety of their stay in the ED. The medical/forensic examination itself usually last between 2 to 4 hours, depending on the extent of evidence collected and victims' medical needs. SANEs must review the case with the attending Emergency Medicine physician, who also sees the patient and prescribes any needed medications. ED social workers schedule victims for a follow-up medical/counseling appointment at HCSATS to be held within two weeks of the ED visit. At the follow-up appointment, victims see the SANE coordinator, who herself occasionally provides services to rape victims in the ED, and a HCSATS (non-ED) social worker. At the hour-long appointment, victims may undergo a physical evaluation if requested or indicated (e.g., victim sustained physical injuries requiring follow-up care) and are assessed and referred for psychosocial services (e.g., counseling, legal aid, domestic violence resources). HCSATS provides evidence-based cognitive-behavioral therapy to Harborview patients and community members affected by rape and other traumatic events. All victims receive SANE and follow-up appointment services for free. Those who report the rape to police and pursue state-funded Crime Victim's Compensation may also obtain mental health services related to the assault at no cost.

Procedure

The University of Washington Institutional Review Board (IRB) approved all study procedures. We gathered retrospective data from HCSATS' administrative and Harborview electronic medical records (EMRs) for all patient visits to the Harborview ED for a rape or suspected rape during January 2011 – December 2012. All data were de-identified upon retrieval; a waiver of patient consent was approved by the IRB. Nine percent of patients obtained services more than once during the study period. In these cases, only data associated with the first rape was retained for analyses. Data reflect patient self-report and provider observational data.

Study Population

The target population included English-speaking, non-prisoner, female and male rape victims ages 15 and older. A total of 565 patients sought acute care services for rape in the Harborview ED during the data collection period. Thirty three prisoners and 11 non-English speaking patients were excluded from the study. Patients included in the analysis were 521 female (n=476) and male (n=45) victims of rape or suspected rape (e.g., victim is assaulted when intoxicated and unable to provide consent) with a mean age of 31 (SD=13, range 15-89). Race/ethnicity for these patients was reported as White (68%), African American (14%), Native American (5%), Asian (4%), Multiracial (4%), Other (3%), and not reported (1%).

Data Elements

Dependent Variable—The dependent variable, extracted from HCSATS administrative records, included whether patients attended the recommended medical/counseling follow-up at HCSATS, generally scheduled to take place 1 to 2 weeks after the ED visit. There was no

missing data for this variable. Using HCSATS administrative records, we also examined descriptively how many counseling appointments, in addition to the standard medical/counseling follow-up at HCSATS, patients attended within the several months following the index ED visit.

Independent Variables—Patient sociodemographic characteristics extracted from the EMR were recorded by ED providers (e.g., social workers, SANEs) based on patient self-report and included patients' gender, age, race (White, non-White), ethnicity (Hispanic/Latino, not Hispanic/Latino), the patient's disability status (whether the patient had a physical, mental, or developmental disability), parental status (whether the patient had any children), and housing status (whether the patient was homeless at the time of the ED visit). There was no missing data for sociodemographic variables.

Other relevant clinical characteristics documented by ED social workers and SANEs, based on patient self-report and extracted from the EMR, included whether there was evidence that patients had a current mental illness, prior mental health condition, and prior trauma history. There were missing data for these clinical characteristics, primarily due to uncompleted SANE exams, given that the data is gathered most often by SANEs. Any unknown data was considered to be a lack of evidence for the presence of the clinical characteristic and the amount noted in Table 1.

Characteristics of the rape were extracted from the EMR. SANEs and ED social workers documented in the EMR patient self-report of what occurred during the assault. Categorical variables of aspects of the rape included whether the patient reported a rape versus a suspected rape (e.g., patient unsure what occurred due to substance intoxication; labeled as “type of assault” in Table 1), whether the rape was a domestic violence assault, the location of the assault (public versus other/unknown; other included victim's own home, someone else's home, a vehicle, and workplace), relationship to the primary offender (stranger, non-stranger, unknown), whether a weapon was used or threatened by the offender, whether the patient was under the influence of alcohol or drugs at the time of the assault, whether the patient experienced amnesia for the assault, whether the offender used verbal threats, whether the offender used physical force, and whether the victim perceived her/his life to be threatened during the assault. There were missing data for some of the rape characteristics, again, primarily due to uncompleted SANE exams. Any unknown data was considered to be a lack of evidence for the presence of the rape characteristic and the amount noted in Table 1.

Characteristics and outcomes of the rape exam were extracted from the EMR. Whether the SANE exam was completed was documented by ED social workers. The presence of physical injury was observed and recorded by the SANE. We dichotomized injury variables as having evidence bodily injury/no evidence bodily injury and having evidence of genital injury/no evidence of genital injury. Whether HIV post-exposure prophylaxis (PEP) was given was documented by the SANE. Missing data was considered to be a lack of evidence for the presence of the exam characteristic and the amount noted in Table 1.

Also extracted from the EMR based on patient self-report to ED social workers or SANEs at the time of the ED visit were whether patients had contacted law enforcement by the time of the ED visit, whether the patient provided a phone contact, whether they had available social support to assist in coping with having been raped, and whether they reported an interest in receiving counseling related to having been raped. There were missing data only for the social support variable, which was considered to be a lack of evidence of social support and the amount noted in Table 1. During February 2012 – June 2012, Harborview ceased making routine follow-up appointments for all rape victims seen in the ED and instead gave out appointments based on provider judgment or patient request. We did not have data available on whether an appointment was pre-scheduled in the ED during this time period. A dichotomous indicator variable reflected whether or not patients were seen in the ED during the time that routine follow-up appointments were made versus the time when follow-ups were made at the discretion of providers (labeled as "follow-up appointment scheduling" in Table 1).

Data Analysis

The present analysis focused on factors associated with attendance at the medical/counseling follow-up appointment (did attend versus did not attend) provided at HCSATS for rape victims presenting to the ED for medical/forensic care post assault. We first describe the demographic, clinical, and injury characteristics of the cohort using descriptive statistics. Independent variables were checked for multicollinearity, which was not present. There was no missing data in our analysis on account of how we coded data (i.e. "unknown" information is either tested in the analysis as its own category or combined with the categories as noted in Table 1). We used logistic regression to observe associations between the independent and dependent variables. Specifically, we explored bivariate relations between each of the original 29 variables of interest and follow-up attendance and retained only those meeting a liberal significance level of $p \leq 0.25$ (Hosmer & Lemeshow, 2004) to be examined as candidates for a final model to obtain adjusted odds ratios. We then used backwards elimination to individually remove the most non-significant characteristic at $p < 0.05$. After the elimination of non-significant candidate variables, we refit the model adjusting for potentially relevant demographic characteristics (gender, age, race, ethnicity) and retaining only those remaining significantly associated with the dependent variable in backwards logistic regression analyses. The statistical significance level for variables included in the final model was set at $p < 0.05$. All analyses were conducted using IBM SPSS Statistics version 19 (IBM Corp, 2010).

Results

Of the 521 patients included in the analyses, 28% ($n = 147$) attended a follow-up appointment and 7% attended any counseling sessions after the follow-up appointment. Patients were largely White, female, young adults. Twenty three percent reported a current mental illness, nearly half of patients reported a prior history of mental health conditions (42%), and 54% had a history of one or more prior traumas. It was most common for victims to report being raped by someone known to them (36% by an acquaintance; 23% by a stranger; for 32% there was no data regarding who the perpetrator was). For most patients,

there was no evidence noted by the nurse of bodily (72%) or genital (88%) injury. Table 1 includes descriptive statistics and bivariate (i.e. unadjusted) odds ratios for all original 29 study variables, as well as adjusted odds ratios for the final model.

In the final (adjusted) logistic regression model, having a developmental or other disability (OR=0.40, 95% CI=0.21-0.77), having a current mental illness (OR=0.25, 95% CI=0.13-0.49), and being assaulted in public (OR=0.50, 95% CI=0.28-0.87) were uniquely associated with reduced odds of attending the medical/counseling follow-up appointment. Having a prior mental health condition (OR= 3.02 95% CI=1.86-4.91), a completed SANE examination (OR=2.97, 95% CI=1.84-4.81), and social support available to help cope with the assault (OR=3.54, 95% CI=1.76-7.11) were associated with an increased odds of attending the follow-up.

Discussion

Our findings underscore a major problem in the continuity of care for patients who are seen for a medical/forensic visit post rape. Only 28% of patients sought the recommended post-rape follow-up care, a rate commonly observed in other studies (Ackerman et al., 2006; Holmes et al., 1998; Rambow et al., 1992). Additionally, despite the high rate of risk factors for posttraumatic sequelae (e.g., prior trauma history, prior mental health conditions, having suffered an interpersonal assault; Brewin et al., 2000) and reported interest in pursuing counseling by the majority of patients (79%), only 7% of patients attended any counseling sessions at HCSATS beyond the follow-up appointment. These deficits in continuity of care are similar to other acute care medical populations (Gentilello, Donovan, Dunn, & Rivara, 1995; Zatzick et al., 2004).

A number of readily identifiable rape characteristics and other clinical and demographic factors seemed to be associated with patients who do not make it to their follow-up appointments compared to those who do. Our findings corroborate the earlier work by Ackerman et al. (2006) in that particularly vulnerable subpopulations of victims may be the least likely to follow-up. These included victims living potentially chaotic lifestyles with greater psychosocial stress (e.g., current mental illness, no report of available social support for the event, having been assaulted in a public place, having a developmental or physical disability). These vulnerable populations of victims may benefit from additional efforts to enhance service linkage or identify alternative means of obtaining assault-related follow-up care.

Identified barriers and facilitators of follow-up can inform early interventions that serve to engage, treat symptoms, and improve service delivery linkages to post-rape medical and mental health care among acute care rape victims. Having available social support to assist in coping with the event appears to be one important facilitator of follow-up attendance. Those who identified social support post rape were three times as likely to attend the medical/counseling follow-up appointment. Therefore, patients without available social support could be identified as in need of additional engagement strategies at the acute care visit. We did not have detailed data on who the available social support was for patients; however, it is possible that victims are seen in the ED for services related to rape committed

by someone who is also otherwise seen as a source of social support. It is unknown this type of perpetrator may affect a patient's pursuit of post-rape services. Future research could examine the unique needs of victims under these circumstances. Previous research indicates prior experience with mental health treatment predicts mental health service utilization after sexual assault (Price et al., 2014). Although we did not have data on whether patients had received prior mental health treatment, we did have data on patient report of a prior mental health condition, which was associated with greater follow-up and may be a proxy for having received some amount of prior mental health care. It seems prudent to identify patients who have no history of a documented mental health condition or contact with mental health care as at-risk for not pursuing potentially indicated services after rape.

A completed SANE exam predicted attendance at the recommended follow-up in this study. This may reflect that patients who elect to undergo and complete the medical/forensic exam see the follow-up as a necessary component of care. It is unknown what patients' expectations are of the follow-up; however, it may be particularly important to explain to patients who do not have a SANE exam that the follow-up can be useful to address an array of concerns that may arise over time, including mental health and psychosocial needs in addition to medical and legal concerns.

In our analysis, routine pre-scheduling of follow-ups in the ED did not appear to result in better follow-up rates than pre-scheduling follow-ups based on provider judgment or patient request. It may actually be more important who schedules the follow-up. At Harborview, ED social workers schedule the follow-up appointments; however, it is possible that appointments scheduled by SANEs who spend 2-4 hours with the patient at this vulnerable time would result in greater follow-up. Brown and colleagues (2013) were able to achieve a 50% follow-up rate after sexual assault using SANEs to schedule follow-ups and contact patients to remind them of the appointment. Although not tested in this study, it is likely that having the same providers who saw the patient in the ED see the patient at follow-up could improve follow-up attendance by capitalizing on the rapport developed in the ED.

Also of interest are observations that some of our factors were unrelated to post-rape medical/counseling appointment follow-up. We did not observe a relationship between gender and follow-up, which is in contrast to other research indicating men are less likely to seek services after traumatic events more generally (Elhai, et al., 2005). Although this finding may be an artifact of the small sample size of males in our study (8.6%), it is also possible that men who choose to seek acute medical services for rape, are as likely to pursue additional services as women who pursue these acute medical services. We also did not observe a relationship between the relationship to the primary offender and follow-up. Prior research indicates that being raped by a stranger results in women being more likely to seek acute care medical/forensic services (Resnick et al., 2000; Starzynski, Ullman, Filipas, Townsend, 2005); however, our findings suggest that among those who do seek acute services, being assault by a stranger is not related to obtaining the recommended follow-up care.

In addition to enhancing linkage to post-rape medical and mental health services, embedded interventions for rape victims at the point of initial contact in the ED could include

preventive interventions to reduce the occurrence of new primary mental health conditions (e.g., PTSD, depression, suicidality) and mitigate the consequences of pre-existing conditions (e.g., address pre-existing depression and risky alcohol use). Pioneering work supports the feasibility and potential benefit of incorporating cognitive-behavioral strategies into acute care services to help prevent posttraumatic sequelae among some rape victims (Resnick, Acierno, Amstadter, Self-Brown, & Kilpatrick, 2007; Rothbaum et al., 2012), however, population-based service delivery models that simultaneously optimize reach and intervention effects (Zatzick, Koepsell, & Rivara, 2009) are needed. Some patients may benefit from ongoing psychotherapeutic interventions to target ongoing posttraumatic distress and dysfunction; however, as indicated by the low rate of counseling service utilization in our study, barriers to accessing such treatment are common (Trusz, Wagner, Russo, Love, & Zatzick, 2011). Embedding psychotherapeutic interventions within ED settings and subsequently offering treatment in a stepped care fashion at specialty mental health settings might help overcome barriers. Given that positive social support is identified as important in post-rape recovery in prior research (Ullman & Peter-Hagene, 2014) and service utilization in our study, these interventions may consider ways of incorporating naturally-occurring social support.

Limitations

This is a retrospective, exploratory study using clinic registry data that combines provider observation and patient self-report. Related limitations include lack of causal inference regarding factors associated with follow-up care, the potential subjective nature of self-report data, potential inaccuracies and inconsistencies of the data captured regarding patient history by ED providers (e.g., social workers, SANEs), and reliance on only available variables to explore factors associated with follow-up attendance. Clinical self-report data could be improved upon with the use of psychometrically validated measures. Findings from this single cohort and single trauma center may not generalize to other populations and settings. To explore the large number of factors of interest, we chose the method of retaining only a subset of variables evidencing bivariate relations with the outcome and, of those, variables retained through backwards regression procedures. Our analytic method further contributes to limitations in the generalizability of our findings. An additional consideration is that this data does not speak to service utilization aside from the HCSATS follow-up appointment. We do not know what other resources victims are utilizing after the ED visit. It may be that victims are obtaining or seeking relevant services elsewhere. We also do not know whether victims are not seeking services because they are asymptomatic or on a trajectory of natural recovery.

Conclusion

Beyond these considerations, our findings point to the extremely important area of the response to the problem of rape and sexual victimization, which is receiving high priority press nationally on college campuses and within the military. Given that many victims will present to acute care medical settings after rape and only a subset of these victims will present for recommended follow-up services, acute care medical settings are a prime target for combined research, clinical, and policy efforts to provide a place for safe identification, screening, and strategies for service linkage.

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Table 1

Descriptive Statistics, Unadjusted Odds Ratios, and Adjusted Odds Ratios[a] and 95% Confidence Intervals for Associations with Follow-Up Appointment Attendance (N = 521).

			Unadjusted Odds Ratios				Adjusted Odds Ratios[a]		
	n	**%**	**OR**	**95% CI**		***p***	**OR**	**95% CI**	
Gender									
Female	476	91.4		Reference				Reference	
Male	45	8.6	0.71	0.34	1.47	0.35	0.86	0.38	1.96
Age									
18-29	269	51.6		Reference				Reference	
15-17	41	7.9	1.27	0.65	2.50		1.13	0.53	2.39
30-39	108	20.7	0.48	0.28	0.82		0.60	0.33	1.08
40+	103	19.8	0.48	0.28	0.83	<.01	0.89	0.47	1.67
Race									
White	353	67.8		Reference				Reference	
Non-White	168	32.2	1.07	0.71	1.61	0.74	1.37	0.85	2.24
Ethnicity									
Not hispanic	472	90.6		Reference				Reference	
Hispanic	49	9.4	1.14	0.60	2.16	0.70	1.04	0.50	2.20
Disability status*									
No disability	395	75.8		Reference				Reference	
Disability	126	24.2	0.29	0.17	0.52	<.01	0.40	0.21	0.77
Parental status									
No children	418	80.2		Reference					
Has children	103	19.8	1.26	0.79	2.00	0.34			
Housing Status									
Not homeless	432	82.9		Reference					
Homeless	89	17.1	0.42	0.23	0.77	<.01			
Current mental illness*									
No evidence of current mental illness[b]	399	76.6		Reference				Reference	
Evidence of current mental illness	122	23.4	0.42	0.25	0.71	<.01	0.25	0.13	0.49

			Unadjusted Odds Ratios				Adjusted Odds Ratios[a]		
	n	%	OR	95% CI		p	OR	95% CI	
Prior Mental Health Condition*									
No evidence of a prior mental health condition[b]	300	57.6		Reference					
Evidence of a prior mental health condition	221	42.4	1.83	1.24	2.68	<.01	3.02	1.86	4.91
Prior trauma history									
No evidence of a prior trauma history[b]	278	53.4		Reference					
Evidence of a prior trauma history	243	46.6	1.06	0.72	1.55	0.78			
Assault type									
Patient report of assault	361	69.3		Reference					
Patient report of suspected assault	160	30.7	0.51	0.32	0.80	<.01			
Domestic violence assault									
No evidence that the assault was DV related[b]	475	91.2							
Evidence that the assault was DV related	46	8.8	1.13	0.58	2.18	0.73			
Location of assault*									
Other/unknown[b]	393	75.4		Reference				Reference	
Public	128	24.6	0.57	0.35	0.93	0.02	0.50	0.28	0.87
Relationship to primary offender*									
Non stranger	235	45.1		Reference				Reference	
stranger	117	22.5	0.77	0.48	1.24		1.08	0.61	1.89
Unknown	169	32.4	0.36	0.22	0.58	<.01	0.53	0.31	0.91
Weapon used by offender									
No evidence that a weapon was used[b]	472	90.6		Reference					
Evidence that a weapon was used	49	9.4	1.02	0.53	1.96	0.95			
Under the influence at time of the assault									
No evidence of alcohol or drugs use[b]	327	62.8		Reference					
Evidence of alcohol or drugs use	194	37.2	1.63	1.10	2.40	0.01			
Amesia for the assault									
No evidence of amnesia[b]	400	76.8		Reference					
Evidence of amnesia	121	23.2	1.65	1.07	2.54	0.02			

			Unadjusted Odds Ratios				Adjusted Odds Ratios[a]		
	n	%	OR	95% CI		p	OR	95% CI	
Offender use of verbal threat									
No evidence of verbal threat[b]	387	74.3		Reference					
Evidence of verbal threat	134	25.7	0.91	0.58	1.42	0.69			
Offender use of physical force									
No evidence of physical force[b]	235	45.1		Reference					
Evidence of physical force	286	54.9	1.05	0.72	1.54	0.80			
Victim perception of life threat									
No evidence of perceived threat to life[b]	369	70.8		Reference					
Evidence of perceived threat to life	152	29.2	0.80	0.52	1.22	0.30			
SANE Exam*									
Exam not completed	267	51.2		Reference				Reference	
Exam completed	254	48.8	2.02	1.37	2.99	<.01	2.97	1.84	4.81
Bodily injury									
No evidence of bodily injury[b]	374	71.8		Reference					
Evidence of bodily injury	147	28.2	1.29	0.85	1.95	0.23			
Genital Injury									
No evidence of genital injury[b]	458	87.9		Reference					
Evidence of genital injury	63	12.1	1.55	0.89	2.69	0.12			
HIV PEP									
No evidence of HIV PEP given[b]	481	92.3		Reference					
HIV PEP given	40	7.7	1.59	0.81	3.10	0.17			
Law enforcement contacted									
Law enforcement not contacted	173	33.2		Reference					
Law enforcement contacted	348	66.8	1.29	0.85	1.95	0.23			
Phone contact									
Did not provide phone contact	291	55.9		Reference					
Provided phone contact	230	44.1	0.80	0.54	1.17	0.25			
Social support for the assault*									
No evidence of social support[b]	123	23.6		Reference				Reference	

			Unadjusted Odds Ratios				Adjusted Odds Ratios[a]		
	n	%	OR	95% CI		p	OR	95% CI	
Evidence of social support	398	76.4	5.29	2.75	10.16	<.01	3.54	1.76	7.11
Interest in counseling for the assault									
No evidence of interest in counseling[b]	112	21.5		Reference					
Evidence of interest in counseling	409	78.5	3.71	2.01	6.86	<.01			
Follow-up appointment scheduling									
Routine follow-ups not made	109	20.9		Reference					
Routine follow-ups made	412	79.1	1.41	0.86	2.32	0.17			

Note. OR = Odds ratio; CI = Confidence interval. Of the original 29 variables examined, only those with p≤0.25 were retained as candidates for the final model. Using a p<0.05 for statistical significance, we fitted the model by using both backwards elimination procedures and retained significant variables in a final model that included potentially relevant demographic covariates (gender, age, race, ethnicity).

[a] Adjusted odds ratios for factors included in the final model, $\chi^2(14)= 113.26$, $p<0.01$.

[b] Includes cases for which data were unknown. The amount of unknown data for Current mental illness = 229, Prior mental health condition = 161, Prior trauma history = 103, Domestic violence assault = 14, Location of the assault = 61, Weapon used by offender = 2, Under the influence at the time of the assault = 236, Amnesia for the assault = 236, Offender use of verbal threat = 193, Offender use of physical force = 165, Victim perception of life threat = 187, Bodily injury = 257, Genital injury = 269, HIV PEP = 218, Social support for the assault = 54, and Interest in counseling for the assault = 47.

* p<0.05 in the final model.