

***The Epidemiology of
Female Rape Victims Who Seek
Immediate Medical Care
Temporal Trends in the Incidence of
Sexual Assault and Acquaintance Rape***

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Women who seek medical care following sexual assault are usually evaluated and treated in an emergency department (ED). Therefore, EDs can be an important source of sexual assault surveillance data. The authors compared the incidence of sexual assault presenting for emergency care in a single county during July to November of 1974 and 1991. Participants included all female sexual assault victims aged 14 and older who presented for ED evaluation. Treating physicians prospectively collected data using standardized forms. The z statistic was used to compare sexual assault incidence. There was a 60% increase in the incidence of sexual assault victims presenting for emergency care in 1991 compared to 1974, primarily due to an increase in the incidence of women presenting to the ED after rapes by known assailants. In contrast, the annual incidence of reported stranger assaults was similar in the two study years.

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Rape is a serious problem for U.S. women (Bureau of Justice Statistics, 1994; "Prevalence, Incidence, and Consequences of Violence," 1998). It is estimated that one in five women will be sexually assaulted during their lifetime ("Prevalence, Incidence, and Consequences of Violence," 1998). An understanding of the epidemiology of sexual assault may be helpful to the medical professionals who treat rape victims and public health officials who develop prevention programs.

Women who seek medical care following sexual assault are usually evaluated and treated in the emergency department (ED) (Rosen & Golden, 1992). As a result, EDs can be an important source of sexual assault surveillance data. ED data can then be used to identify temporal and demographic trends in sexual assault.

The purpose of this study was to use ED surveillance data to evaluate temporal trends in rape incidence in our county and to compare victims and assault characteristics for all adult female sexual assault victims who sought emergency medical care from July to November of 1974 and 1991. We hypothesized that the incidence of sexual assault presenting for emergency care would be higher in 1991 than 1974.

METHOD

Study Design

This was a prospective data gathering study conducted at a Level I trauma center. Physicians used standardized data collection forms to collect information on sexual assault characteristics and victims during the 5-month study period. The Colorado multiple institutional review board approved this study.

Study Setting and Population

This study was conducted at the county ED, a Level I trauma center that provides acute care for all adult sexual assault victims in our county. The Police Department's policy of having all adult sexual assault victims seen at this ED was instituted because these ED providers receive special training in sexual assault victim evaluation and evidence collection. This policy was in

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place in both 1974 and 1991, and during each of these years more than 95% of rape kits completed for adult rape victims and submitted to the County Crime Lab were from this facility (K. Brown, Forensic Laboratory, County Police Department, personal communication).

The study participants included all females 14 years old or older who identified themselves as sexual assault victims and presented to this ED for evaluation. Adult male sexual assault victims were also evaluated at this ED, but because male sexual assault victims were not included in the 1974 study period, they were not included in this analysis. Pediatric sexual assault victims (both males and females younger than 14 years old) were excluded because they were not evaluated exclusively at our facility.

Study Protocol

Treating physicians used a standardized form to collect data on victim and assailant demographics, assault characteristics, and physical exam findings for all adult female sexual assault victims seen between July and November of 1974 and 1991. We chose July to November of 1974 as the baseline time period for this study because data were available from a previous prospective study (Soules, Stewart, Braun, & Pollard, 1978). Data on prophylaxis for sexually transmitted diseases and postcoital contraception were obtained by review of the ED medical record.

For this analysis, we defined acquaintance rape as a sexual assault by an assailant previously known to the victim. Perpetrators of acquaintance rapes included assailants who were intimates, relatives, or casual acquaintances of the victim. Stranger rapes were perpetrated by assailants unknown to the victim.

Data Analysis

Comparisons of rape victim and assailant characteristics were conducted using Student's *t* test for continuous variables and the chi-square test for categorical variables. Incidence rates for sexual assault are presented as cases per 10,000 females 14 years old or older per year. Data on the size of the population of our county during the study years were obtained from the State Demographer's Office. We used the *z* statistic to compare sexual assault incidence in 1974 and 1991. Stratification was used to control for changes over time in population age and ethnic distribution.

RESULTS

A total of 102 women presented to the ED after sexual assault in 1974 compared to 155 women who presented after being sexually assaulted in 1991. The annual incidence of rape victims reporting for ED evaluation in the county increased 60% from 1974 to 1991 (11.6 per 10,000 adult females in 1974 compared to 18.5 per 10,000 adult females in 1991, $p < .01$). This increased incidence remained significant after adjusting for temporal changes in population age and racial/ethnic distribution.

The annual incidence of reported stranger assaults was similar in the two study years (7.5 per 10,000 adult females in 1991 compared to 7.2 per 10,000 adult females in 1974, $p = .77$). In contrast, the annual incidence of reported assaults by known assailants was significantly higher in 1991 (10.6 per 10,000 adult females) compared to 1974 (4.1 per 10,000 adult females) ($p < .01$). The overall 60% increase in the incidence of women presenting for medical care after sexual assault can be explained almost entirely by an increase in the incidence of assaults by known assailants (see Figure 1).

Table 1 shows data on victim, assailant, and assault characteristics for the two study years. There were no significant differences in victim age, ethnicity, or the number of assailants per assault. The proportion of sexual assaults involving vaginal intercourse was higher in 1974, whereas the proportion involving either oral or anal intercourse was higher in 1991. In addition, the reported use of physical force by the assailant and the frequency of non-genital trauma were higher in 1991. Of note, use of force in 1991 was significantly different between known and unknown assailants (92% vs. 73%; $p = .005$) compared to 1974 (49% vs. 61%; $p = .3$). There was no difference in use of force by ethnicity or age.

The majority of rape victims who were vaginally assaulted during both study years were at risk for pregnancy. The proportion of women who were using birth control and the proportion of assailants who had used a condom at the time of the assault were similar in both years (Table 1). In contrast, pregnancy prophylaxis in vaginally assaulted victims using no birth control was significantly more common in 1991 (87.2%) compared to 1974 (38.8%) ($p < .01$). Also, in 1991, 60.5% of patients were given empiric antibiotics for sexually transmitted infections compared to 32.4% in 1974 ($p < .01$).

DISCUSSION

We compared the characteristics of adult female sexual assault victims who sought emergency medical care in 1974 and 1991. We found a 60%



Figure 1: Relationship Between Assailant and Victim

NOTE: Relationship between assailant and victim could not be determined in two patients during both study years.

increase in the incidence of sexual assault victims presenting for emergency medical care in 1991 compared to 1974, an increase that is primarily due to an increase in the incidence of women presenting to the ED after rapes by known assailants. We also noted a higher proportion of rapes involving oral and anal intercourse and a higher rate of physical trauma in sexual assaults in 1991. Finally, physicians prescribed pregnancy prophylaxis and empiric antibiotics for sexually transmitted infections more commonly in 1991 than in 1974.

The increased incidence of ED sexual assault cases was largely due to an increase in presentation by women who were assaulted by a known assailant. Confidential phone surveys conducted by the U.S. Department of Justice from 1973 through 1992 suggest that the incidence of acquaintance rape nationally did not vary significantly during this time period (Bureau of Justice Statistics, 1994). This suggests that our findings more likely reflect an increase in victims' willingness to present for emergency care after acquaintance rape rather than an actual increase in the incidence of acquaintance rape. Other studies have also reported an increased incidence of acquaintance rape victims treated in the emergency department (Makower, Pennycook, & Crawford, 1995; Riggs et al., 2000). Rape prevention programs have been

TABLE 1: Victim and Assault Characteristics

	1974 (N = 102)	1991 (N = 155)	p Value
Mean victim age	25.9	24.0	.22
Victim ethnicity (%)			.25
Caucasian	64.7	52.9	
African American	14.7	17.4	
Hispanic	20.6	29.0	
Asian	0	.7	
Victim currently using birth control (%)	25.5	30.1	.42
Number of assailants			.54
1	76.2	81.5	
2	10.9	8.6	
3 or more	12.9	9.9	
Assailant used condom (%)	1.1	3.2	.34
Assailant known (%)	35.6	57.1	< .01
Assault type (%)			
Vaginal	100.0	91.6	< .01
Oral	14.1	36.0	< .01
Anal	4.0	18.4	< .01
Assault location (%)			< .01
Victim's home	20.8	21.9	
Assailant's home	7.9	21.1	
Inside, other	38.6	19.2	
Outside	14.9	22.5	
Automobile	17.8	15.2	
Force & trauma (%)			
Use of force	52.9	81.4	< .01
Weapon use	30.4	26.6	.51
Body trauma on exam	47.5	64.2	< .01
Genital trauma on exam	15.0	12.1	.52

effective in changing attitudes about acquaintance rape (Rickert, Psy, & Wiemann, 1998). Other reasons for increased reporting of acquaintance rape may include increased media attention, successful prosecution of acquaintance rapes, and better education of the community about acquaintance rape. However, despite our findings, a recent study conducted at our institution found that only 18% of acquaintance rape victims reported the assault to the police (Feldhaus, Houry, & Kaminsky, 2000). Thus, our results may still represent an underestimate of the problem.

We believe that the increase in the incidence of sexual assault victims presenting for emergency medical care in 1991 is unlikely to be due to random fluctuations in the rate of sexual assault in this county. These rapes represented all cases presenting for emergency care in a defined population and

therefore should not be biased by self-referral to a particular hospital or clinic. In addition, the increased incidence in sexual assault presentations persisted after adjusting for changes in population demographics. Finally, a review of our ED logs after this study was conducted shows that the number of sexual assault presentations to the emergency department has been as high or higher than in 1991 (Riggs, Houry, Long, Markovchick, & Feldhaus, 2000).

Physical injury following the sexual assault was more commonly noted in 1991 than in 1974. Riggs recently reported very similar rates of force (80%) and physical trauma (67%) at our institution (Riggs et al., 2000). Although these findings could be due to increased awareness and improved documentation, data on physical trauma were collected prospectively on standardized sexual assault evaluation forms by the treating physician and were based on objective physical examination findings. The increased use of force in 1991 (81% vs. 53%) also warrants concern and further investigation. Known assailants (92%) were more likely to use force during sexual assault than an unknown assailant (73%). Unknown assailants may not need to use force because the threat of force or use of a weapon would likely be enough to intimidate the victim who does not know the assailant or what they are capable of. This increase in physical trauma and force is also a concern given that assailant aggression and victim injury are associated with greater likelihood of subsequent posttraumatic stress disorder in rape survivors (Bownes, O'Gorman, & Sayers, 1991; Ullman & Filipas, 2001).

Many rape victims worry about the possibility of an unintended pregnancy following the assault. The fact that assailants rarely used condoms and that fewer than 25% of women in both study years were using contraception at the time of the assault underscores the importance of counseling women with regard to possible pregnancy and offering pregnancy prophylaxis. Studies published since 1974 have documented the effectiveness of postcoital contraception in sexual assault victims; this may partly explain the wider use of pregnancy prophylaxis following sexual assault noted in 1991 (Rambow, Adkinson, Frost, & Peterson, 1992).

Many rape victims are concerned that they may develop a sexually transmitted infection following the assault and may seek medical care because of this concern (Resnick et al., 2000). Multiple studies have also demonstrated that rape victims are at risk for a sexually transmitted infection following sexual assault (Glaser et al., 1991; Reynolds, Peipert, & Collins, 2000). A policy of empiric antibiotic therapy for sexually transmitted infections is also supported by studies documenting poor rates of patient follow-up following sexual assault (Glaser et al., 1991; Homes, Resnick, & Frampton, 1998). The trend toward increased use of empiric antibiotic therapy for sexually trans-

mitted infections in 1991 compared to 1974 is encouraging and is consistent with current CDC guideline recommendations. Early CDC recommendations suggested prophylaxis only for patients with signs of infection or at risk for poor follow-up, but by 1993, the CDC stated that most sexual assault patients probably benefit from prophylaxis ("Sexually Transmitted Diseases Treatment Guidelines," 1993). Although these recommendations came out after this study, it is presumed that because of many studies documenting poor rates of follow-up (Glaser et al., 1991; Homes et al., 1998) and risk of sexually transmitted infections (Glaser et al., 1991; Reynolds et al., 2000), emergency physicians were more aggressive in giving antibiotic prophylaxis.

Many women do not seek any medical attention following sexual assault; thus, our study population was likely more inclined to seek medical care and to report sexual assault. The results of this study only pertain to those women who sought emergency medical care in this county and may not be applicable to other settings or to those rape victims who do not obtain medical care. In addition, the results may not be generalizable to children or adult male sexual assault victims, as this population was not included in our study. Characteristics of the sexual assault were based on patients' self-reporting; there was no attempt to verify the events of the sexual assault. In addition, data were collected on a standardized form and thus information abstracted was limited to the specific elements on the form. Finally, demographics and sexual assault characteristics may have changed since our study was conducted.

CONCLUSIONS

We found a 60% increase in the incidence of sexual assault victims presenting for ED care in 1991 compared to 1974, an increase that is almost entirely explained by an increase in the number of women presenting to the ED after acquaintance rape. We also noted a higher rate of reported use of physical force by the assailant and higher rates of bodily trauma for rape victims in 1991. Finally, significant changes in treatment practices were also noted with a higher proportion of rape victims receiving pregnancy prophylaxis and empiric antibiotics for sexually transmitted infections in 1991 compared to 1974.

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