A Case–Control Study of Female-to-Female Nonintimate Violence in an Urban Area

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Objectives. The aims of this study were to describe the characteristics surrounding female-to-female nonpartner violence and to identify independent factors associated with risk of female-to-female intentional injuries.

Methods. A case–control investigation was conducted among women who resided in an urban, low-income community and presented for emergency department care for injuries inflicted by female nonpartners.

Results. Women were typically victimized by women they knew (88%), in outdoor locations (60%), and in the presence of others (91%). Those found to be at risk for injury typically were young and socially active, used marijuana, and had experienced other kinds of violence.

Conclusions. The present results showed that women injured by female nonpartners had limited resources, experienced disorder in their lives, and were the victims of violence within multiple relationships. (*Am J Public Health.* 2003;93:1098–1103)

Over the past decade, assault perpetrated by women increasingly has become a topic of concern. Recent victimization data define the scope of the issue. According to the National Crime Victimization Survey,[1] women represented 14% of violent offenders during the years 1993 through 1997, an annual average of more than 2 million violent female offenders. The results of this survey also indicated that 75% of persons victimized by female offenders were women. These data suggest that violence between women is an important public health issue.

A literature review uncovered correlates of and reasons for female-to-female assault. One investigation based on arrest data reported that intragender assault is correlated with young age and poverty.[2] Ethnographic research has demonstrated that young women fight with other women over personal respect[3–5] in response to gossip[6] and over male partners.[3,5,6] Incidents of female-to-female violence have often been described as mutual, with the victim contributing to the outcome through verbal or physical provocation.[4]

One investigation of drug-addicted sex workers residing in a disadvantaged urban area showed that market forces contributed to an increased demand for clients and drugs that intensified female intragender competition and eventual violence.[7] A study of women arrested for nondomestic violent crime in a low-income urban area found that intragender violence occurs within the routine activities of drug use and selling.[4] A study conducted in a Midwestern community demonstrated that females participate in intragender violence to protect the respect of a third party.[8] Moreover, the presence of bystanders has been shown to contribute to the likelihood of intragender violence in situations in which a public challenge requires a violent response to save face.[4]

The present study is one of the first emergency department–based investigations to examine female-to-female nonpartner violence. Our population-based study focused on violent injuries suffered by women who resided in an urban, low-income community. The goals were to describe the characteristics surrounding female-to-female nonpartner violence and to identify independent factors associated with risk of intentional injuries.

METHODS

Study Design

The data for this report were derived from a larger case–control investigation of intentional injuries suffered by women aged 16 to 45 years who resided in a low-income, urban community and sought emergency department care at one of 3 participating hospitals in Philadelphia, Pa, between October 1996 and August 1998. The larger study included women injured by women or men, irrespective of the victim–offender relationship. Trained personnel used standardized methods of recruitment and questionnaire administration. Study methods have been reported in detail elsewhere.[9]

Women were considered to have been intentionally injured (i.e., to be case patients) if they reported to emergency department staff or study personnel that their reason for seeking care was a violence-related injury. A violence-related injury was defined as any physical pain or damage intentionally inflicted by another person.

Control participants were randomly selected from among women aged 16 to 45 years seen at the same emergency departments for health problems not involving a violence-related injury. Interviewers administered a standardized screening instrument to all potentially eligible control participants to identify women whose reason for visiting the emergency department was a violence-related problem. Control participants were reclassified as case patients if the health concern precipitating the emergency department visit was identified through the screening process as resulting from an intentional injury. Of all controls recruited, less than 1% were identified as intentionally injured women who had not reported their injuries to hospital staff. The most common presenting problems among controls were unintentional injuries, abdominal pain, respiratory symptoms, and general illness (e.g., influenza, viral symptoms).

A total of 911 women were identified who reported violent injuries to emergency depart-

ment or study staff. Sixty-eight women (7%) were ineligible as a result of acute psychosis or cognitive impairment, departure from the emergency department before being seen, a language barrier, or police custody in the emergency department that precluded a confidential interview. Of the 843 eligible case patients, 742 (88%) participated, 48 (6%) declined to participate, and 53 (6%) were not recruited because the interview staff was interviewing other participants. Interviews were incomplete for 5% of the 742 case patients; these individuals were excluded from the analysis.

Overall, 1108 women were identified as control participants. Sixty-eight (6%) were ineligible owing to acute psychosis or cognitive impairment, departure from the emergency department before being examined by medical personnel, or a language barrier. Of the 1040 eligible controls, 906 (87%) participated, 68 (7%) declined to participate, and 66 (6%) were not recruited because the interviewers were interviewing other subjects. Interviews were incomplete for 1% of the 906 controls, and these women were excluded from the analysis. Sixty-nine control participants (8%) reported a physical injury inflicted by another female nonpartner in the past year and were excluded from analysis. Questions regarding history of violence inflicted by female nonpartners were included in the questionnaire and were asked of all case patients and controls.

Of the 700 women who presented to the emergency department for an intentional interpersonal injury, 167 (24%) reported having been injured by 1 or more females, including family members, acquaintances, friends, and strangers. This report is based on the 167 women who reported being injured by 1 or more females and the 826 control participants. Data on women injured by female intimate partners, males, or mixed-sex groups are not included here.

Data Collection

Variables were chosen for inclusion in the larger study on the basis of a modification of Tolan and Guerra's framework for categorizing adolescent violence.[10] Our approach includes a major emphasis on structural/contextual factors measured at the neighborhood and individual levels and derived from the urban social disorganization tradition.[11] The framework also includes personal factors (e.g., depression, pregnancy status)[12–17] drawn from the domestic violence literature and characteristics of the violent event (e.g., victim–offender relationship, substance use)[1,4] identified by previous research on female assault and victimization.

Variables were grouped into 3 comprehensive categories: characteristics of the respondent, characteristics of her most recent male partner and intimate relationship, and characteristics of the violent event. Information on the respondents' male partners was included because partner and relationship characteristics (e.g., unemployment, relationships of short duration) have been hypothesized as correlates of female intragender assault.[18]

Characteristics of the respondents. Respondents' characteristics were grouped into prespecified domains, including sociodemographic factors, medical and reproductive history, psychiatric problems, personal and social contacts, financial and social support, psychosocial history, participation in illegal activity and substance use, contact with the criminal justice system, exposure to violence, household composition, and characteristics of the neighborhoods in which they resided at the time of the interview.

Demographic information collected included age, self-reported race/ethnicity, marital status, education, employment, and residence in public housing. Women were queried about their medical and reproductive history, psychiatric history, and current medication use. Information on previous contacts with medical, psychological, and social services and with criminal justice agencies was obtained. Women's financial status was assessed via questions about employment; dependents; financial support from family, friends, and intimate partners; and government assistance.

Women also were asked about frequencies of social visits and telephone conversations and about their level of satisfaction in terms of frequency of social interactions with friends and family. Participation in organized groups, including community activities and church attendance, was assessed. Self-esteem was measured with the Rosenberg 10-item scale,[19] and depressive symptoms were evaluated with the Center for Epidemiologic Studies Depression Scale.[20]

Substance use was assessed by asking women about the frequency with which they used alcohol or drugs, including marijuana, cocaine, and heroin, and about any previous substance abuse treatment. The TWEAK questionnaire was used to assess problem drinking.[21] Items regarding illegal activities included questions about experiences with prostitution and selling drugs and about previous arrests. Women were also asked about previous experiences as victims of violence, rape, and childhood physical or sexual abuse and whether, as children, they had witnessed physical abuse of their mother or of a mother figure. Violence was defined as a physical action (such as hitting, kicking, or stabbing) intentionally inflicted by another person. Verbal abuse was not assessed.

Information about residential neighborhoods, obtained from 1990 US census data, was recorded at the census-block level for each of the study participants. Neighborhood characteristics measured were low income, low education, and high residential mobility.

Partner and relationship characteristics. Data obtained about each participant's most recent male intimate partner included substance use patterns, previous arrests or imprisonment, employment status, and history of assaultive behavior with others. Women were also asked about the duration of the relationship, cohabitation, recent domestic violence, and, if applicable, the recency of the breakup of the relationship. All but 6 of the women (5 controls and 1 case patient) reported a past or current male partner.

Characteristics of the event. Intentionally injured women were asked what they considered to be the precipitating cause of the incident and whether others were present. Information on events leading up to the violence was obtained through the use of open-ended questions. Women were asked about the location of the injury on the body, involvement of the criminal justice system in response to the violent event, whether she or the assailant(s) had used alcohol or drugs (including marijuana, cocaine, and heroin) before the event, and the

TABLE 1—Comparisons Between Women Intentionally Injured by Women and Control Participants

	Injured Women (n = 167), No. (%)	Control Women (n = 826), No. (%)	Odds Ratio (95% Confidence Interval)
Characteristics of women			
Age, y			
16–24	94 (56)	284 (34)	2.2 (1.4, 3.7)
25–34	47 (28)	280 (34)	1.6 (1.0, 2.7)
35–45	26 (16)	262 (32)	Reference
Education			
Less than high school	89 (53)	259 (31)	3.9 (2.2, 6.8)
High school	58 (35)	358 (43)	2.1 (1.2, 3.6)
More than high school	20 (12)	209 (25)	Reference
Lives in public housing	52 (32)	152 (19)	1.6 (1.0, 2.4)
Currently is a student	57 (34)	158 (19)	1.8 (1.2, 2.8)
No. of social visits with friends per week			
None	35 (21)	236 (29)	Reference
1 or 2	38 (23)	261 (32)	1.0 (0.6, 1.7)
3 or more	93 (56)	324 (40)	2.0 (1.3, 3.1)
Did not participate in organized social activities in past 6 mo	144 (86)	638 (77)	1.9 (1.2, 3.0)
Financial support			
Receives cash assistance	77 (46)	280 (34)	2.3 (1.6, 3.3)
Has financial dependents	98 (59)	563 (68)	0.5 (0.3, 0.7)
Lives with >3 persons who are not partners	102 (61)	375 (46)	1.6 (1.1, 2.4)
Self-esteem[a]			
High	55 (34)	225 (28)	Reference
Low	89 (54)	406 (50)	2.4 (1.4, 4.1)
Midrange	20 (12)	183 (23)	2.0 (1.2, 3.4)
Uses alcohol more than 2 times per week	24 (15)	75 (9)	1.8 (1.1, 3.0)
Drug use			
Used marijuana in past 6 mo	79 (47)	231 (28)	2.0 (1.4, 2.9)
Has friends who use marijuana	130 (78)	504 (62)	1.8 (1.2, 2.8)
Arrested in past 6 mo	12 (7)	29 (4)	2.2 (1.1, 4.4)
Nonformal employment (provided child care)	52 (31)	174 (21)	1.6 (1.1, 2.4)
Recent history of nonpartner violence[b]	14 (9)	21 (3)	3.6 (1.8, 7.4)
Characteristics of intimate partner and relationship			
Partner ever arrested	59 (37)	191 (24)	1.8 (1.3, 2.6)
Violence by male partner in past 6 mo	30 (20)	85 (12)	2.0 (1.3, 3.3)
Relationship ended in past 6 mo	39 (24)	90 (11)	2.3 (1.5, 3.6)

Note. Results are based on domain-specific analyses. The variables listed were selected from those that were statistically significant after adjustment for site of emergency department care and other variables in the domain. Owing to missing data, sample sizes for some variables do not sum to the total number of participants; percentages shown are based on the numbers of women with available data. An interaction with site of emergency department care was detected for 1 variable not shown: "lives with extended family or acquaintances/friends" exclusive of nuclear family member or intimate partner. Also not shown are 2 medical history variables, asthma and abdominal pain, that were inversely associated with intentional injury, after adjustment for site of emergency department care.

[a]A score of less than 30 was considered to indicate low self-esteem. A score between 30 and 37 was considered midrange self-esteem, and a score greater then 37 was considered high self-esteem.

[b]Response does not include child abuse.

sociodemographic characteristics of the assailant(s).

Data Analysis

Characteristics of the event. Open-ended questions assessing the violent event were analyzed through the use of the constant comparative method, allowing categorization of responses according to common themes.[22] Frequency distributions for open-ended and closed-ended questions are reported in the Results section.

Case–control analysis. One hundred sixty-seven women who reported having been intentionally injured by 1 or more female nonpartners were compared with the 826 control participants. In this case–control analysis, odds ratios were used as estimates of the relative risks of female-to-female violence between nonpartners, because the incidence rate of female-to-female assault meets the rare-disease assumption (i.e., the overall prevalence of violence in the target population is low).[23] A 1990 community study of injuries suffered by women who sought emergency department care for intentional violence showed that the incidence rate of female-to-female assault was less than 3%.[24]

Interval-level variables were modeled as dichotomous; when more than 2 categories were involved, models incorporated multiple indicator variables. In accordance with past research on female assault and victimization, age,[2,9] number of social visits,[9] self-esteem,[9] and education[9] were expressed as 3-level variables (Tables 1 and 2).

Candidate variables were grouped into prespecified domains (as described earlier) for consideration in multivariate models.[25] The first step of the data reduction process was accomplished through the use of separate logistic regression models for each prespecified domain, after adjustment for emergency department site of enrollment and assessment of the presence of interaction terms with site of enrollment. The final multivariate model included hospital site, medical problems, age, and education. Additional variables from the domain-specific regressions were considered, and the final model was derived through backward elimination. The final set of variables was selected on the basis of statistical significance ($P<.05$).[26,27]

TABLE 2—Multivariate Analysis of Factors Associated With Women's Risk of Violent Injury Inflicted by Another Woman

	Adjusted Odds Ratio (95% Confidence Interval)
Age, y	
16–24	2.4 (1.4, 4.0)
25–34	1.7 (1.0, 2.9)
35–45	Reference
Education	
More than high school	Reference
High school	1.7 (1.0, 3.1)
Less than high school	3.0 (1.7, 5.4)
No. of social visits with friends per week	
None	Reference
1 or 2	0.8 (0.5, 1.5)
3 or more	1.8 (1.1, 2.8)
Used marijuana in past 6 mo	2.0 (1.4, 3.0)
Lives with acquaintances/friends or extended family	1.8 (1.2, 2.7)
Injured by nonpartner[a] male in past year	2.7 (1.2, 6.0)
Intimate relationship ended in past 6 mo	2.6 (1.6, 4.2)

Note. Odds ratios were based on unconditional logistic regression models adjusting for site of emergency department care and all other variables shown. The analysis excluded women (5 controls and 1 case patient) who had never been involved in an intimate relationship. Not shown are 2 medical history variables, asthma and abdominal pain, that remained in the model and were inversely associated with intentional injury.
[a]Response does not include child abuse.

RESULTS

Characteristics of the Violent Event

Of the 167 women injured by female nonpartners, most (56%) reported the assailant as an acquaintance or neighbor. Of the remaining injuries, 19% involved family members, 13% involved friends, and 12% involved strangers. Approximately a third of the women were hit with an object (32%), and 30% were stabbed. One woman was shot at with a gun. The most frequently cited area of injury was the face and head (64%).

In 77% of the incidents the woman reported having fought back, and in 63% of the incidents the police arrived at the scene. The assailant was arrested in 24% of the incidents that involved the police; the study participant was arrested in 4% of such incidents.

The majority (60%) of violent acts occurred outdoors, in public places. Sixty-one percent of the incidents occurred between 3 PM and 9 PM. In almost all incidents (91%), witnesses were present. In 31% of the witnessed incidents, no one said or did anything to try to stop the violence from occurring. In most cases (82%), an argument preceded the violence. In many cases (40%), the violent event appeared to be of a mutual nature, thus making it difficult to distinguish between assailant and victim.

Most incidents (65%) involved only 1 assailant. According to respondents' reports, almost all incidents were intraracial (93%). The majority occurred among age peers; at least 1 of the antagonists was within 5 years of the respondent's age in 63% of the incidents. In 12% and 7% of violent events, respectively, the respondent reported having used alcohol and marijuana within 4 hours of the event; cocaine or heroin use was reported in only 1% of incidents. In 35% of the incidents, the respondent reported that the assailant(s) had used alcohol within the previous 4 hours; the corresponding rates of marijuana and cocaine/heroin use were 18% and 5%.

Women were asked to report 1 or more reasons for the violent event. The most common reasons reported were issues related to personal respect (e.g., slights or insults; 33%), followed by issues concerning a male partner (e.g., jealousy; 23%), gossip/rumors or not being liked (22%), defending the reputation or physical well-being of friends or family (17%), jealousy about material goods or physical appearance (17%), and drug activity (e.g., using and selling; 16%).

Case–Control Analysis

The characteristics of the 167 intentionally injured women and those of the 826 controls with whom they were compared differed markedly according to the analysis of candidate variables (Table 1). Characteristics associated with an increased risk of assault by another woman were younger age (less than 25 years), a low level of education (less than high school), lack of participation in organized community activities, and receipt of government monetary assistance. In addition, recent marijuana or alcohol use, receipt of frequent social visits, student status, recent arrest, and having friends who use drugs were associated with an increased risk of violence. Notably, the majority of both intentionally injured women (78%) and control women (62%) reported having friends who use drugs. Relatively few of the injured women (11%) and controls (11%) reported recent cocaine or heroin use.

Several characteristics of male intimate partners were correlated with risk of female involvement in assault. Recent partner violence and a recent breakup were associated with increased risks of female-to-female nonpartner violence. Women whose partners had a history of past arrests were significantly more likely to experience violent injuries inflicted by women.

The results of the final multivariate model are shown in Table 2, including characteristics of the participant and her intimate relationship. Younger women and women with low levels of education were found to be at increased risk of violence inflicted by another female. Women who reported a high frequency of social encounters with friends, recent marijuana use, violence perpetrated by a male nonpartner, and living with extended family or friends/acquaintances exclusive of nuclear family members or partners were at an increased risk. A recent breakup with a male partner also was associated with an increased risk of violence inflicted by another woman. No associations were detected for the community characteristics measured via 1990 census data. There also were no differences with respect to race/ethnicity: Black women accounted for 97% of the intentionally injured participants and 94% of the controls.

DISCUSSION

In this article, we have described characteristics surrounding violent events and identified independent correlates of female–female nonpartner violence. These correlates included young age, a low level of education, recent marijuana use, living with extended

family or friends, past exposure to violence, and a recent breakup with a male intimate partner. These characteristics portray at-risk women as having only limited resources and substantial disorder in their lives.

Historically, violence perpetrated by women has been explained by factors that focus on psychological, biological, or family characteristics.[28,29] Yet, in this study, no independent associations were detected in the case of depression, psychotropic medication use, or childhood abuse. Instead, we identified factors similar to those that have been established as correlates of intragender male violence, including low socioeconomic status, illicit peer behavior, and involvement with violence in a variety of relationships.[30–33] In addition, social encounters with friends point to the importance of frequent interaction as a risk factor for violence.

Our results also indicate that, as with men, young women in low-income urban communities have begun to adopt what Anderson has termed the "code of the street,"[34] which emphasizes command of respect through a display of aggressive posturing in public settings that communicates a readiness to use violence to resolve disputes. We found that the majority of incidents among our participants resulted from arguments and occurred in public with witnesses present, during hours when the frequency of social interaction is highest. A frequently cited reason for violence involved issues related to respect, a finding consistent with previous research on female–female assault.[3–5] Moreover, similar to research on intragender male assault[35] and consistent with studies of intragender female assault,[3,5–6] conflict involving intimate partners was a frequently cited reason for the violent event. Conflict between women may be precipitated by their male intimates or through jealousy regarding other relationships. Risk of violence between women was strongly associated with characteristics of relationships with male intimates, including a recent breakup. This study highlights the extent to which intimate relationships affect women's lives.

Although our results identified social and situational factors similar to those generally used to explain male violence, they also point to the relevance of factors unique to women. For example, frequently cited reasons for intragender female violence included conflicts over gossip, rumors, or not being liked. These are female patterns that have been shown to contribute to intragender violence; in contrast to males, who rely on overt physical aggression, females tend to engage in indirect aggression such as gossip or rumor.[6] As with past research,[6,36] some of our respondents also reported that they (or their assailants) reacted to victimization in the form of gossip with violence against the perpetrator. Our results also indicate that incidents of female-to-female assault arise from disputes over what has been labeled "relational respect"; this pattern refers to violence that results from protecting a third party's reputation, in contrast with the male pattern of fighting to protect one's personal respect.[8]

To the extent that low levels of educational attainment and receipt of public assistance reflect low socioeconomic status, and to the extent that living with extended family or friends/acquaintances is an indication of personal instability, our findings substantiate research indicating that violence between women is correlated with economic hardship.[2] Research also suggests that low-income Black women are particularly at risk for involvement in assault.[37] Our findings point to the importance of the intersection of race/ethnicity and class as a topic worthy of further study.

Some limitations of the present study should be mentioned. It was not possible to validate information provided by participants or to obtain information from the assailants. In addition, the results of this study cannot be generalized to all women who experience violence inflicted by women or to women who do not seek care at an emergency department. However, because our study included all of the local emergency departments in the target community, we believe that the intentionally injured women are representative of women in this community who seek care for violent injuries. Moreover, a previous study documented that a high proportion of women in the community seek emergency care for violent injuries.[24] Misclassification is a potential problem in all case–control studies. However, women who were randomly selected as control participants were carefully interviewed to ascertain whether they had presenting complaints or health problems related to violence. Furthermore, controls with a recent history of female nonpartner intentional injury were excluded from this analysis.

Clearly, women face violence in the context of multiple relationships, and violent injuries caused by women represent a public health problem. It is particularly important, given the recent attention devoted to developing screening programs for domestic violence in emergency departments, that clinicians also take into consideration the need to screen for and counsel women who face violence in nonpartner contexts.

Our results highlight that women at risk for injury by other women are vulnerable in numerous areas, including resource scarcity, violence within multiple contexts, marijuana use, and disruption in partner relationships. The respondents lived in neighborhoods characterized by high rates of violence and structural disadvantage.[38] Research on intragender female[3,4] and male[39–42] violence has demonstrated that communities characterized by poverty and social isolation from mainstream institutions give rise to alternative norms that legitimize violence used in the service of maintaining respect and ensuring self-protection. Our findings point to the importance of orienting future research toward the topic of female–female violence within the context of structural disadvantage and the larger epidemic of violence that continues to victimize low-income individuals.[43] ■

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Contributors

N.B. Hirschinger managed the study and wrote the article. J.A. Grisso planned the study and supervised all aspects of the project. D.B. Wallace assisted with data analysis and contributed to writing the article. K.F. McCollum assisted with data management and project management, including examining data collected from all participants. D.F. Schwarz assisted with planning and designing the study, including questionnaire development. M.D. Sammel supervised data analysis and data management. C. Brensinger conducted data management, and E. Anderson contributed to the theoretical design of the study.

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Human Participant Protection

This study was approved by the University of Pennsylvania and Misericordia Hospital institutional review boards. All of the study participants signed informed consent documents.

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