The Role of Neighborhood Environment and Risk of Intimate Partner Femicide in a Large Urban Area

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Homicide was the second leading cause of death among women aged 20 to 24 years of age in the United States in 2002.[1] When women are killed, their intimate partners are often responsible; approximately one third of all female victims are killed by intimate partners.[2,3] Intimate partner homicide of women (hereafter referred to as intimate partner femicide, or [IPF]) often occurs in the prime of life and at a time when a woman's familial and social responsibilities are at her peak. IPF is most likely to occur in the home[2] and is often witnessed by children.[4] Key victim-level risk factors include race, socioeconomic status, and foreign country of birth.[2,5,6] Although research in this area is growing, the role of the neighborhood environment in shaping IPF risk is not well understood.

Framed within social disorganization theory, recent empirical studies of both lethal and nonlethal violence have shown that key neighborhood characteristics, such as poverty, ethnic heterogeneity, and collective efficacy, are highly predictive of homicide and violence risk.[7–9] Social disorganization theory proposes that reciprocal social interactions cocreate local moral orders by determining the behaviors that are considered deviant and facilitating the social interactions that restrict such behaviors.

The effects of macrolevel processes such as industrialization, urbanization, and immigration alter a neighborhood's social structure and weaken its cohesiveness.[10] Operationalized as concentrated poverty, ethnic heterogeneity, and residential mobility, these changes to the social structure adversely influence a neighborhood's interconnectedness or social cohesion. Social cohesion is a key component of collective efficacy or the ability of a community to informally control violence and other social and health problems.[11] Public health researchers are increasingly applying social disorganization and collective efficacy theories to the study of violence[7] and other health[12] outcomes.

Objectives. We evaluated the contribution of neighborhood-level factors indicative of social disorganization, including educational and occupational attainment, immigrant concentration, physical disorder, and social cohesion, to the likelihood of intimate partner femicide (IPF) while taking into account known neighborhood- and individual-level IPF risk factors.

Methods. We used medical examiner data on 1861 femicide victims between 1990 and 1999 and archival information on 59 neighborhoods in New York City to conduct a multilevel case–control analysis.

Results. After controlling for neighborhood-level income, we found that no neighborhood factors were significantly associated with IPF risk, as compared with risk of non–IPF and risk of femicide from unknown perpetrators, above and beyond the contributions of individual-level factors. The strongest predictors of IPF were foreign country of birth and young age.

Conclusions. IPF victims were nearly twice as likely as non-IPF victims to be foreign born; by contrast, there was little neighborhood-level heterogeneity with respect to IPF risk. Further research is needed to identify neighborhood characteristics that uniquely influence risk of IPF to guide community-level interventions. (*Am J Public Health.* 2008;98:1473–1479. doi:10.2105/AJPH.2007.112813)

Studies applying a social disorganization theoretical framework to intimate partner violence against women have produced mixed results; most ecological analyses suggest that neighborhood factors are less important to models focusing on rates of intimate partner violence than to models focusing on rates of non–intimate partner violence.[13,14] In multilevel models comparing women who have and have not experienced intimate partner violence, findings have generally revealed a negative influence of neighborhood poverty but not of other neighborhood-level factors indicative of social disorganization, such as residential stability and ethnic heterogeneity.[15–19]

The results of a pair of studies showed that neighborhood collective efficacy reduced risk of intimate partner violence at the individual level,[15,20] whereas another study's findings revealed no effect of collective efficacy or other related neighborhood-level factors on a range of partner violence outcomes (e.g., leaving a relationship, being subsequently victimized).[21] We examined whether neighborhood characteristics indicative of social disorganization were related to IPF risk, as compared with non-IPF risk and risk of femicide on the part of an unknown perpetrator, after controlling for individual-level factors found in previous research to be associated with IPF.[2]

METHODS

Data

The New York City Department of Health and Mental Hygiene conducts systematic surveillance of femicides occurring in the city. In 1995, the department retrospectively reviewed all homicide death records from the Office of the Chief Medical Examiner of New York City (hereafter "medical examiner") for females 15 years or older who had died between 1990 and 1994; beginning with 1995, all records for females 12 years or older were examined (record reviews occurred approximately 6 months after the end of each year to ensure that all cases had been received and processed by the medical examiner).

Records included autopsy reports, crime scene and police reports, and other documents that contained information on victims' and perpetrators' demographic characteristics. Epidemiologists and graduate student interns were trained on the data collection method,

confidentiality issues, and standardized coding techniques. Special attention was paid to the potential effect of vicarious trauma on data collectors. All data collection forms were reviewed, and inconsistencies were resolved during a second record review. Femicide victims younger than 16 years and those who had not been residents of 1 of the 5 boroughs of New York City (Manhattan, Brooklyn, the Bronx, Queens, Staten Island) were excluded from our analyses.

Femicide Classification Scheme

Using both information on the official motive recorded on the police report and information on the victim–perpetrator relationship from other sources within the medical examiner's records, the research team categorized cases as IPF or non-IPF. In all cases, we used only the medical examiner's records to categorize femicides; we were not able to link cases to criminal justice system outcomes, such as whether the case was prosecuted and who was officially charged in the crime.

IPF cases (n=446) were grouped into 4 categories. First, cases were classified as definite IPF (n=365) when the alleged perpetrator, according to the police report, was either a current or former husband or an opposite- or same-gender partner (e.g., including boyfriends, girlfriends, common-law marriages). Second, cases were classified as probable IPF (n=58) if family or other informant data indicated that an intimate partner was the perpetrator.

Third, cases were categorized as secondary IPF (n=12) when the victim was killed during a dispute between 2 intimate partners not including herself. Secondary IPF reflects the possibility that the police misclassify a number of IPF cases each year (see Langford et al.[22] for a detailed discussion of the limits of police data in classifying homicides perpetrated by intimate partners). It is also possible that the police correctly classify a certain number of IPF cases after the end of the official data collection period; thus, the medical examiner's records did not reflect this classification at the time of data collection. Finally, cases were classified as intimate partner accidents (n=12) if the intimate partner, and alleged perpetrator, alleged that the homicide was an accident.

Non-IPF cases (n=571) included family (not intimate partner) homicides, family violence accidents (in which a family member, but not an intimate partner, alleged that the homicide was an accident), other crime-related homicides (e.g., robberies, sex crimes), random homicides (in which the victim was an innocent bystander), justifiable homicides, and homicides classified as "other." These classifications were taken from police reports. All remaining female homicides (n=811) were classified as involving an "unknown" motive or perpetrator.

Our previous research revealed that victims of femicide we were able to classify according to intimate partner perpetrator status (i.e., into the IPF or non-IPF category) were slightly older and more often Black than White, Asian, or from another ethnic group.[2] It is probable that some portion of the unknown cases were in fact perpetrated by intimate partners. However, because we found in our earlier empirical research that femicides attributed to unknown perpetrators were more sociodemographically similar to non-IPF cases than to IPF cases,[2] we grouped unknown femicides with non-IPF cases in the present analyses.

Neighborhood Definitions

The 59 residential community districts delineated by the New York City Office of City Planning, which are socially and politically meaningful neighborhoods in the city, formed the neighborhood units of analysis.[23–25] Information on neighborhood of residence was collected from the death certificate or family interview form within the medical examiner's files; in some cases, the police report yielded this information. All homicides were classified according to victim's neighborhood of residence. Women who lived in New York City but died outside of the city were not considered part of the population and were not included in the analysis; women who did not live in New York City but died within its borders were considered part of the population but were excluded from the analyses described here.

Individual-Level Independent Measures

Individual-level data on femicides were drawn from the medical examiner record

review and included the victim's age, race/ethnicity, and place of birth, along with motive and perpetrator if known. Information was often missing from the medical examiner's death records; complete data were available for 1042 of the 1828 homicides in the database involving females 16 years or older. These cases, 294 of which were classified as IPF and 748 of which were classified as non-IPF (perpetrator status was actually unknown in 411 of the non-IPF cases), were included in the analyses reported here.

Neighborhood-Level Independent Measures

Data on neighborhood-level variables were obtained primarily from the US census,[26,27] the New York City Housing and Vacancy Survey,[28] and the New York City Mayor's Management Report.[29] Information on neighborhood social cohesion was obtained from a 2002 random-digit-dialing telephone survey of 2752 New York City residents. Two items drawn from Sampson's measure of social cohesion and trust[7] were used: "People around here are willing to help their neighbors" and "People in this neighborhood can be trusted." Respondents indicated whether they strongly agreed, agreed somewhat, disagreed somewhat, or disagreed strongly with these statements. Item responses were averaged and aggregated to the neighborhood level.

Following the example of Land et al.,[30] we used both principal-components factor analysis and knowledge of the literature to reduce the number of neighborhood-level variables used in our multivariate analyses and to identify statistically related neighborhood-level characteristics indicative of social disorganization. The first factor identified, educational and occupational attainment, included percentage of the population with less than a high school degree and percentage of the population not employed in a managerial or administrative occupation ($\alpha=0.96$). The second factor, immigrant concentration, included percentage of the population that was foreign born and percentage of households that were linguistically isolated (i.e., no members of the household 14 years or older reported speaking English only or reported speaking both another language and English "very well"; $\alpha=0.70$).

The third factor, external physical disorder, included the percentage of housing units that were vacant, were in dilapidated or deteriorated condition, and had external wall problems, window problems, or stairway problems ($\alpha = 0.88$). The fourth factor, internal physical disorder, included the percentage of housing units that had internal water leakage, toilet breakdowns, or peeling paint and plaster and that were not owner occupied ($\alpha = 0.95$). We created these 4 factors by summing the z scores of each factor component. A fifth factor reflecting social cohesion represented the mean response scores of neighborhood residents on the 2 social cohesion items ($\alpha = 0.83$). In the case of all factors, higher scores indicated higher levels of social disorganization.

Analytic Strategy

We used the 2-tailed t test and χ^2 test to investigate associations between individual- and neighborhood-level factors and IPF status. Generalized estimating equations accounting for intraneighborhood clustering were used to measure bivariate relationships between individual- and neighborhood-level covariates and the likelihood of IPF (as compared with non-IPF).

We assessed potential neighborhood-level confounders of the relationships between IPF and the neighborhood-level factors indicative of social disorganization (neighborhood racial/ethnic and age distribution, per capita income, median household income, percentage of population unemployed, and percentage of female-headed households) by regressing IPF on each of these factors in separate models. We fit separate multivariable models for each of the neighborhood factors while controlling for neighborhood-level confounders and individual-level factors shown to be important in our previous research on female homicide.[2]

We calculated odds ratios (ORs) and confidence intervals (CIs) to estimate the magnitude of the effect of each neighborhood factor on IPF risk. SAS version 8.02 (SAS Institute Inc, Cary, North Carolina) was used in all statistical analyses, and ArcView 3.2 software (Environmental Systems Research Institute, Redlands, California) was used to assign each female homicide to a neighborhood of residence.

We conducted sensitivity analyses to determine how classification of all femicide cases with a known perpetrator status as non-IPF cases may have influenced our results. First, we reran our analyses excluding all cases with unknown perpetrator status, resulting in 294 IPF and 337 non-IPF cases. Second, we reran the analyses classifying all unknown cases as IPF cases, resulting in 705 IPF and 337 non-IPF cases among females 16 years or older.

Finally, we used the method outlined by Pampel and Williams[31] to classify femicide cases in which perpetrator status was unknown as either IPF or non-IPF according to individual-level characteristics shown to be associated with IPF case status in our previous analyses[2]: victim's age, race/ethnicity, country of birth, and living situation (living alone, living with children younger than 18 years, or living with other adults only); crime location (private residence or public place); type of homicide (e.g., shooting, stabbing, strangulation); whether or not others were injured or killed during the femicide; and suicide of the perpetrator after the femicide.

Logistic regression models fit among the sample of femicides with known IPF case status were used to calculate the predicted probability of IPF or non-IPF case status for each of the femicides with unknown perpetrator status. Unknown cases were assigned to the higher probability classification (i.e., IPF or non-IPF) according to their individual characteristics, resulting in 121 of the 411 unknown cases classified as IPF and the remaining 290 unknown cases classified as non-IPF (a total of 415 IPF and 627 non-IPF cases).

RESULTS

Table 1 presents the characteristics of the study population and the bivariate associations between the individual- and neighborhood-level characteristics and IPF case mortality. In comparison with non-IPF victims, IPF victims were younger; more likely to be Hispanic, Asian, or from another ethnic group; less likely to be White or Black; and more likely to be foreign born. Neighborhood age and race distributions were similar in the 2 groups. Both per capita income and median household income were lower on average in the IPF case

TABLE 1—Characteristics Associated With IPF and Non-IPF Deaths: New York City, 1990–1999

Characteristic	IPF (n = 294)	Non-IPF[a] (n = 748)	P
Individual level			
Race/ethnicity, No. (%)			.004
White	38 (12.9)	135 (18.1)	
Black	131 (44.6)	381 (50.9)	
Hispanic	105 (35.7)	200 (26.7)	
Asian or other	20 (6.8)	32 (4.3)	
Foreign born, no. (%)	163 (55.4)	300 (40.1)	<.001
Age, y, mean (SD)	34.07 (11.60)	39.75 (18.46)	<.001
Neighborhood level			
Racial distribution, mean % (SD)			
White	26.22 (25.00)	25.58 (25.10)	.711
Black	33.97 (25.11)	36.75 (27.42)	.132
Hispanic	31.80 (21.33)	29.92 (20.12)	.184
Asian or other	8.01 (7.59)	7.74 (7.18)	.594
Aged 15–34 y, mean % (SD)	31.93 (2.72)	32.13 (2.88)	.292
Socioeconomic status			
Per capita income, $, mean (SD)	14 254 (7 656)	15 582 (10 140)	.022
Median household income, $ (SD)	28 763 (10 684)	29 708 (11 212)	.215
Unemployed, mean % (SD)	12.39 (4.90)	12.22 (4.76)	.607
Female-headed households with children <18 y, mean % (SD)	15.26 (8.43)	14.64 (7.98)	.269

Note. IPF = intimate partner femicide. Data are restricted to femicide decedents 16 years or older who were residents of New York City.
[a]Includes cases in which perpetrator status was unknown.

TABLE 2—Bivariate Associations Between Neighborhood Social Disorganization Characteristics and Intimate Partner Femicide (IPF) Mortality: New York City, 1990–1999

Social Disorganization Factor	IPF (n = 294), Mean (SD)	Non-IPF[a] (n = 748), Mean (SD)	P
Educational/occupational attainment	0.81 (1.65)	0.61 (1.64)	.076
Immigrant concentration/isolation	0.18 (1.56)	–0.01 (1.62)	.079
External physical disorder	0.98 (4.85)	1.26 (4.64)	.383
Internal physical disorder	1.12 (3.88)	1.05 (3.55)	.780
Social cohesion	2.21 (0.41)	2.24 (0.39)	.313

Note. Data are restricted to femicide decedents 16 years or older who were residents of New York City. See "Methods" section for descriptions of social disorganization factors. For all factors, higher scores indicate higher levels of social disorganization.
[a]Includes cases in which perpetrator status was unknown.

group than in the non-IPF case group; however, the difference was significant only in the case of per capita income, which was thus included in our multivariable models. There were no between-group differences in neighborhood levels of unemployment or numbers of female-headed households with children.

In terms of the social disorganization indices, the neighborhoods in which IPF victims resided were characterized by lower average educational attainment, higher levels of immigrant concentration and isolation, less external physical disorder, more internal physical disorder, and more social cohesion than the neighborhoods in which non-IPF victims

resided. However, these differences were not statistically significant (Table 2).

Table 3 illustrates adjusted relationships between the neighborhood factors indicative of social disorganization and IPF after control for neighborhood-level per capita income and individual-level age, race, and foreign country of birth. Each of the neighborhood-level factors indicative of social disorganization was negatively associated with IPF risk; however, none of these associations were statistically significant in multivariate models, though several were of borderline statistical significance.

Neighborhood-level per capita income was inversely associated with IPF risk as

compared with non-IPF risk; this relationship reached statistical significance in 2 of the 5 models (model 3 and model 5), exhibiting borderline statistical significance in the remaining models. Younger age and foreign country of birth were significant predictors of IPF victimization in these multilevel models after control for neighborhood factors, with IPF victims being between 1.83 and 1.91 times more likely than non-IPF victims to be foreign born.

The results of the sensitivity analyses in which we reclassified femicide cases with unknown perpetrator status in 3 different ways were very similar to the results just described for the analyses in which all unknown cases were classified as non-IPF cases. In all 3 sensitivity analyses, foreign country of birth and young age emerged as the strongest predictors of IPF mortality. In multivariable models with all unknown cases excluded, each neighborhood social disorganization measure was inversely associated with IPF mortality, although none of the relationships reached statistical significance.

In multivariable models with all unknown cases classified as IPF cases, femicide decedents living in neighborhoods with higher levels of immigrant concentration and isolation were at increased risk of IPF (OR=1.09;

TABLE 3—Multilevel Generalized Estimating Equation Models of Associations Between Neighborhood Social Disorganization Characteristics and Intimate Partner Femicide (IPF) Mortality: New York City, 1990–1999

	Model 1, OR (95% CI)	Model 2, OR (95% CI)	Model 3, OR (95% CI)	Model 4, OR (95% CI)	Model 5, OR (95% CI)
Social disorganization factors					
Educational/occupational attainment	0.97 (0.84, 1.12)	…	…	…	…
Immigrant concentration/isolation	…	0.98 (0.90, 1.07)	…	…	…
External physical disorder	…	…	0.98 (0.95, 1.01)	…	…
Internal physical disorder	…	…	…	0.98 (0.94, 1.03)	…
Social cohesion	…	…	…	…	0.72 (0.49, 1.04)
Per capita income of neighborhood	0.98 (0.95, 1.01)	0.98 (0.97, 1.00)	0.98 (0.96, 0.997)	0.98 (0.96, 1.00)	0.98 (0.97, 0.997)
Individual-level characteristics					
Race/ethnicity (referent: White)					
Black	0.88 (0.51, 1.52)	0.86 (0.51, 1.46)	0.93 (0.54, 1.63)	0.90 (0.51, 1.58)	0.93 (0.53, 1.64)
Hispanic	1.06 (0.61, 1.82)	1.04 (0.60, 1.77)	1.10 (0.64, 1.88)	1.07 (0.61, 1.86)	1.04 (0.60, 1.83)
Asian or other	1.19 (0.49, 2.85)	1.19 (0.50, 2.88)	1.17 (0.49, 2.79)	1.17 (0.49, 2.81)	1.17 (0.49, 2.81)
Foreign born	1.86 (1.46, 2.39)	1.89 (1.48, 2.42)	1.83 (1.43, 2.34)	1.87 (1.46, 2.39)	1.91 (1.49, 2.46)
Age	0.98 (0.97, 0.99)	0.98 (0.97, 0.99)	0.98 (0.97, 0.99)	0.98 (0.97, 0.99)	0.98 (0.97, 0.99)

Note. Data are restricted to femicide decedents 16 years or older who were residents of New York City. Non–IPF cases included cases in which perpetrator status was unknown. See "Methods" section for descriptions of social disorganization factors. For all factors, higher scores indicate higher levels of social disorganization.

95% CI=1.01, 1.17). The other neighborhood social disorganization factors were positively associated with IPF mortality but did not reach statistical significance.

Finally, in multivariable models with unknown cases classified as either IPF or non-IPF cases according to their individual characteristics, femicide decedents residing in neighborhoods with higher levels of internal physical disorder were more likely to have been the victim of IPF (OR=1.04; 95% CI=1.00, 1.07). (Complete results of the sensitivity analyses are available from the authors.)

DISCUSSION

In this multilevel study, we found that none of the factors indicative of neighborhood social disorganization were significantly associated with IPF case status, although all were related with outcomes in the anticipated inverse direction. These results were consistent across the measures of social disorganization assessed here, including neighborhood social cohesion. These data suggest that the adverse influence of neighborhood-level factors indicative of social disorganization was relatively uniform across both types of femicide. Of the neighborhood-level factors examined, only per capita income was significantly and negatively associated with IPF risk; however, this association narrowly achieved statistical significance and was observed in only 2 of the 5 models tested. Sensitivity analyses confirmed these main findings in large part.

The strongest predictors of IPF mortality risk were the individual-level factors foreign country of birth and young age. Epidemiological research has documented that most homicides involving adult women as well as female adolescents are perpetrated by family members or intimate partners.[32,33] Young women may be at higher risk because they are more likely than older women to have a partner and thus be exposed to potentially violent men or women. Furthermore, because they are more likely to be partnered with other young people, who are more likely to perpetrate intimate partner violence,[34] the risk posed by their partners is increased. Other research has shown that recent separation is a risk factor for adult IPF,[32] and relationship separation is a common context for adolescent

femicide.[33] Thus, young women attempting to leave abusive relationships may be at particularly high risk of IPF.

The association between foreign-born status and increased risk of IPF after control for neighborhood factors merits further discussion. This increased risk may be due to the unique barriers immigrant women face in seeking help, such as fear of involving the police and potentially jeopardizing their immigration status.[35,36] The measure used in the present analysis, "foreign-born status," does not reflect the various dimensions of immigration that may be important with respect to IPF risk, such as legal status, duration of stay,[37,38] level of acculturation,[39] and access to services such as victim advocacy and legal counsel.[40,41] Furthermore, these individual-level factors may interact with characteristics of the neighborhood or community, including sociocultural norms around intimate partner violence.[42,43]

To evaluate whether neighborhood-level immigrant concentration exerted an independent effect on risk of IPF among foreign-born women, we conducted ancillary analyses including only the subset of femicide victims who had been born outside the United States. We found that living in an ethnic enclave did not further increase foreign-born women's risk of IPF. However, lower neighborhood-specific levels of educational attainment and higher levels of internal physical disorder were significantly and negatively associated with IPF status among foreign-born women (data available on request). Further research is needed to clarify the relationship between place of birth, immigration status, neighborhood characteristics, and risk of lethal intimate partner violence.

Several potentially important neighborhood-level factors in addition to those considered here merit further study. For example, we were able to evaluate only one component of the collective efficacy construct, social cohesion; we were not able to assess informal social control. Informal social controls represent the actions that regulate problem behaviors within a community. Level of neighborhood informal social control of intimate partner violence may be particularly important in the geographic distribution of such violence.

Because informal social control theoretically depends on the shared values of the neighborhood, another important characteristic of a neighborhood may be its collective attitude toward intimate partner violence. Browning's[15] work, in which "norms of nonintervention" (i.e., neighborhood-level attitudes inhibiting intervention in intimate relationships) predicted nonlethal intimate partner violence against women, offers preliminary evidence that shared attitudes are important indicators of risk of intimate partner violence. Other research has revealed that personal attitudes toward intimate partner violence, but not perceptions of the social cohesion of a neighborhood, are positively associated with predicted intervention in intimate partner disputes but not in disputes between strangers.[44]

Finally, recent qualitative research has shown that neighborhood residents believe that neighborhood stability, communication, and monitoring are important factors in cessation of intimate partner violence.[45] Together, the findings just described suggest that neighborhood norms and informal responses (i.e., communicating or monitoring events and relationships in a neighborhood), elements not available from archival data, may be important with respect to risk of intimate partner violence.

Limitations

Our findings should be considered in the context of several limitations, some of which are intrinsic to cross-sectional, place-based research. For example, as in all place-based research, generalizability, in this case to other urban areas, is limited. In addition, we used mid-decade census data estimates for several of our neighborhood measures, whereas the femicide cases under study occurred each year between 1990 and 1999. However, as a result of the moderate pace of neighborhood change, our neighborhood-level factors were probably reasonable approximations of neighborhood conditions at the time of each death.

Because we did not have information on how long women lived or how much time they spent in their neighborhoods of residence, their levels of exposure to the neighborhood conditions under investigation are unclear. Thus, in some cases any influential neighborhood characteristics revealed may

have been those of a neighborhood different from that under study. In terms of the neighborhood as unit of analysis, community districts, although meaningful for New York City residents, are large, leading to increased difficulty in identifying neighborhood effects. It may be more appropriate to use smaller units of analysis in research on interpersonal violence; in our case, however, this strategy would have resulted in loss of data on neighborhood social cohesion, which is a factor central to the role of collective efficacy in a social disorganization theoretical framework.

It is important as well to note that the absence of statistically significant, negative associations between neighborhood factors and risk of IPF observed in this study does not preclude social disorganization as an important factor shaping risk of non-IPF. As some have noted,[46,47] group-level factors may have a central role in shaping individual-level circumstances that, when taken into account in multilevel models, obviate the statistical relationship between group-level variables and an individual outcome.

Missing data represent a common limitation of much homicide research. In addition, a large number of cases could not be categorized according to intimate partner perpetrator status. Categorizing unknown-perpetrator femicides as non-IPF cases may have resulted in misclassification of some IPF cases as non-IPF cases, which would have attenuated any association between individual- and neighborhood-level characteristics and IPF risk. Sensitivity analyses indicated possible associations between neighborhood social disorganization measures and IPF mortality under different classifications of femicide cases with unknown perpetrator status, highlighting the need for further exploration of the relationship between neighborhood characteristics and IPF mortality.

We were unable to examine several potentially important neighborhood- and individual-level factors as a result of the limitations of our femicide data and our tight theoretical focus on factors indicative of social disorganization. For example, because information on individual-level socioeconomic status was not available in the femicide data set, the association between neighborhood per capita income and IPF case status might be explained by individual-level socioeconomic status. In addition, we did not have information on previous experiences of domestic violence or previous access to social, victim advocacy, and legal services. Finally, other potentially important neighborhood factors, such as type of housing and household composition, were not examined.

Conclusions

To our knowledge, the investigation described here is the only published study in which multilevel modeling has been used to examine the role of neighborhood-level characteristics in risk of IPF as opposed to non-IPF. In most multilevel studies revealing limited effects of neighborhood factors indicative of social disorganization on intimate partner violence, absence of or cessation of nonlethal intimate partner violence has been the comparison condition. Ecological analyses have shown that neighborhood-level social disorganization is a less powerful predictor of rates of intimate partner violence than rates of non–intimate partner violence.

We modeled risk of IPF, as compared with non-IPF, and examined both neighborhood- and individual-level factors. We found that the strongest predictors of IPF risk were at the individual level; the influence of neighborhood environment on IPF risk was not statistically significant, although there was a suggestion that neighborhood social disorganization might be more strongly associated with non-IPF risk than with IPF risk. Further research is needed to identify neighborhood factors that may uniquely increase risk of IPF so that targeted prevention interventions can be designed. Finally, our results confirm the vulnerability of foreign-born women to IPF and highlight the need for interventions to reduce the occurrence of IPF in this group. ∎

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