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Alcohol Outlet Density, Drinking Contexts and Intimate Partner Violence: A Review of Environmental Risk Factors

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Abstract

Alcohol use is a robust predictor of intimate partner violence (IPV). A critical barrier to progress in preventing alcohol-related IPV is that little is known about how an individual's specific drinking contexts (where, how often, and with whom one drinks) are related to IPV, or how these contexts are affected by environmental characteristics, such as alcohol outlet density and neighborhood disadvantage. The putative mechanism is the social environment in which drinking occurs that may promote or strengthen aggressive norms. Once these contexts are known, specific prevention measures can be put in place, including policy-oriented (e.g., regulating outlet density) and individually-oriented (e.g., brief interventions to reduce risk for spousal aggression) measures targeting at-risk populations. This paper reviews applicable theories and empirical research evidence that links IPV to drinking contexts and alcohol outlet density, highlights research gaps, and make recommendations for future research.

Keywords

intimate partner violence; drinking context; alcohol outlet density; environment

Introduction

Intimate partner violence (IPV) is a widespread public health problem. Among married or dating respondents age 18 and older in Wave II of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), 6.9% of females and 4.0% of males reported past-year IPV perpetration; 5.0% of females and 5.6% of males reported IPV victimization (Smith, Homish, Leonard, & Cornelius, 2012). Among young adults (age 18–28) in the third

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wave of the National Longitudinal Study of Adolescent Health (Add Health), nearly 24% reported past-year IPV; half of those episodes were reciprocally violent (Whitaker, Haileyesus, Swahn, & Saltzman, 2007). Women are as likely or more likely than men to engage in IPV (Archer, 2000; Cunradi, Ames, & Duke, 2011; Jain, Buka, Subramanian, & Molnar, 2010; Schafer, Caetano, & Clark, 1998; Whitaker et al., 2007), but are more likely than men to be injured (Archer, 2000). Whether due to greater exposure to background risk factors (e.g., childhood maltreatment), environmental stressors (e.g., neighborhood poverty), or increased alcohol availability (e.g., alcohol outlet density), some studies indicate that racial/ethnic minorities and those residing in socially disadvantaged neighborhoods are at elevated risk for IPV (Caetano, Ramisetty-Mikler, & Field, 2005; Cunradi, 2007; Cunradi, Mair, Ponicki, & Remer, 2012).

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IPV-involved men and women are more likely to experience numerous physical and mental health consequences compared to non-IPV involved adults (Plichta, 2004; Reid et al., 2008; Rhodes et al., 2009). Associated health care utilization costs are estimated to be \$4.1 billion (National Center for Injury Prevention and Control, 2003). Children exposed to their parents' marital aggression also are at risk for a range of adverse mental health, behavioral and somatic problems (Kaufman et al., 2006; Klostermann & Kelley, 2009; O'Campo, Caughy, & Nettles, 2010). Moreover, adults who were exposed to IPV and other forms of family dysfunction during childhood are more likely to report psychological distress (e.g., depression, anxiety), substance use problems (e.g., alcohol dependence), and are themselves at greater risk for IPV (Anda et al., 2006). Recent studies of dating violence among urban adolescents and young adults indicate that girls report higher rates of perpetration than boys (Epstein-Ngo et al., 2013; Rothman et al., 2011). Increasingly, clinicians and researchers are recognizing the dyadic nature of IPV (Capaldi & Langhinrichsen-Rohling, 2012; Stith, McCollum, Amanor-Boadu, & Smith, 2012) and its attendant implications for treatment, research and prevention. It is therefore important to consider the correlates of alcohol-related aggression for both partners in the couple.

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Alcohol use is a robust predictor of IPV. In an international study encompassing participants from 13 countries, drinking during an IPV event on the part of one or both partners in the couple was associated with severity of aggression (Graham, Bernards, Wilsnack, & Gmel, 2011); similar findings were reported for married/cohabiting U.S. couples (McKinney, Caetano, Rodriguez, & Okoro, 2010). Graham et al. (2011) suggest that beyond being a risk factor, alcohol consumption may serve to potentiate violence between partners when it occurs. Barriers to aggression may be lowered not only by acute alcohol use, but also by drinking in a setting that poorly regulates or encourages aggression. For example, drinking in certain contexts, especially bars and pubs, is linked with fighting and other forms of alcohol-related harm. These findings are consistent across studies from U.S. (Greenfield et al., 2011; Nyaronga, Greenfield, & McDaniel, 2009), Canadian (Graham, Bernards, Osgood, & Wells, 2006; Wells, Graham, Speechley, & Koval, 2005), and European (Hughes et al., 2011) settings.

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Surprisingly, few studies have sought to determine how an individual's specific drinking context (i.e., where, how often, and with whom people drink) may be related to IPV. Recent findings, however, suggest that those who drink in certain venues, such as bars or street

corners, are at increased risk for IPV even after adjustment for numerous covariates (Cunradi, Mair, Todd, & Remer, 2012; Zhan et al., 2011). Similarly, while research has shown that self-reported hostility and norms for alcohol-related aggression are directly related to drinking at bars and pubs, parties and friends' homes (Treno, Gruenewald, Remer, Johnson, & LaScala, 2008), little is known about the extent that background characteristics (e.g., impulsivity) are related to drinking venue utilization among those at risk for IPV. Lastly, greater density of off-premise alcohol outlets and bars increases risk for more severe forms of IPV (Cunradi, Mair, Ponicki, & Remer, 2011; Cunradi, Mair, Ponicki, et al., 2012; Livingston, 2011), but no studies have examined if associations between known IPV risk factors (e.g., depression; impulsivity) and where, how often, and with whom one drinks are exacerbated in areas with greater density of bars, off-premise alcohol outlets, and neighborhood social disadvantage.

The purpose of this paper is to review applicable theories and empirical research evidence that links IPV to drinking contexts and alcohol outlet density, highlight research gaps, and make recommendations for future research. The paper concludes with implications for prevention of alcohol-related IPV.

Methods

A literature search of the PubMed database was conducted for peer-reviewed epidemiological studies, published between 2000 and 2013, that related to drinking contexts, alcohol outlets, intimate partner violence, and neighborhood social disadvantage. The bibliographies of certain articles provided additional papers. Articles were screened for their relevance to the specific topic of drinking contexts, alcohol outlets, and intimate partner violence on the basis of the title and abstract.

Conceptual Framework

The conceptual framework for this paper builds upon the developmental, social-ecological model of IPV proposed by Whitaker, Hall and Coker (2009). The *developmental* aspect of their model proposes that the early precursors of IPV (e.g., exposure to violence and family dysfunction during childhood) need to be considered to understand the trajectory of partner violence. The *social-ecological* aspect of their model suggests that numerous spheres of influence (e.g., individual, family, peer, social, cultural) contribute to the occurrence of IPV, and therefore must be considered for effective IPV interventions. Social ecology and social disorganization theories (and empirical research, discussed below) suggest that the *drinking environment* represents a key component of this conceptual framework. For example, in an application of social ecology theory, Gruenewald (2007) proposes that alcohol sellers 'niche market' to select social strata; that drinkers return to outlets frequented by people like themselves; and that consequent social stratification of drinkers across contexts will result in greater levels of problems in some outlets. Social disorganization theory (Sampson & Groves, 1989) suggests that higher rates of 'deviant' behavior, such as public intoxication and IPV, will be found in disorganized neighborhoods that lack a structure to help maintain social controls over these problem outcomes. Through these mutually reinforcing mechanisms, the presence of alcohol outlets in social disorganized neighborhoods may

compound both the effects of social disorganization and patterns of venue use and drinking (Cunradi, 2010). This paper focuses on three interrelated aspects of the conceptual framework: (1) alcohol consumption, drinking contexts and IPV; (2) known IPV risk factors and drinking contexts; and (3) the potentially moderating role of alcohol outlet densities and neighborhood social disadvantage. A heuristic representation of these constructs is depicted in Figure 1.

Alcohol, Drinking Contexts, and IPV

Drinking in specific contexts may increase risk for IPV. First, drinking in a social environment that promotes or supports aggressive norms makes the occurrence of aggressive behaviors more likely. For example, based on a nationally representative U.S. sample of drinkers, Nyaronga et al. (2009) found that those who did most of their drinking in bars (and also drank in other venues) were significantly more likely to report arguments and fighting in the past 12 months compared to those who were light drinkers. These ‘bar-plus’ drinkers were also more likely to report problems with their spouses, although this association varied by respondent gender and race/ethnicity. Second, amount consumed in specific contexts may increase risk for aggression due to the pharmacological effects on cognitive processing or alcohol-related expectancies (Klostermann & Fals-Stewart, 2006). Wells, Mihic, Tremblay, Graham, and Demers (2008), for example, found that after accounting for drinking location and other contextual factors, each additional drink increased the likelihood of arguing or fighting by 12% among a national sample of Canadian college students. Drinking with one’s romantic partner increased the likelihood of these outcomes (Wells et al., 2008). In one of the few IPV-specific studies that analyzed amount consumed in 6 different contexts, Cunradi, Mair, Todd, et al. (2012) found that past-year volume of alcohol consumed by men in bars, in public settings such as parks, street corners or parking lots, and at home was associated with increased IPV in a large (n=1585) sample of California couples; volume consumed at home by the female partner was associated with frequency of IPV. Additional analyses of these data using context-specific dose-response models showed that risks for IPV related to frequency of alcohol consumption differed between drinking contexts and were sometimes related to heavier volumes consumed (Mair, Cunradi, Gruenewald, Todd, & Remer, 2013). Specifically, male partners’ frequency of drinking at parties at another’s home was associated with risk for male-to-female partner violence, and frequency of drinking during ‘quiet evenings at home’ was associated with risk for female-to-male partner violence. Female partner’s frequency of drinking with friends at home was associated with decreased risk for male-to-female partner violence, but volume consumed was associated with increased risk (Mair et al., 2013). Results from these dyadic analyses using dose-response models suggest that the context in which drinking occurs may play a role in violence among partners.

Limitations of the Cunradi, Mair, Todd, et al. (2012) and Mair et al. (2013) studies include lack of information as to whether the respondent drank with their spouse or partner in each context. Alcohol may act as an accelerant among conflicting couples to increase aggressive behavior. Drinking in a setting that may condone aggressive norms (e.g., bars) can add to this risk, whereas drinking in a setting that does not promote aggression (e.g., restaurants) would not have an impact on likelihood of IPV. Another limitation is that drinking behaviors

and IPV were measured on a past-12 month basis. This limits the ability to make event-level statements about the temporal ordering of these behaviors. Lastly, certain sample characteristics (e.g., higher educational attainment; older age) are correlated with lower rates of IPV and problem drinking. The findings may therefore represent an underestimate of the association between drinking volume in each context and IPV.

Known IPV Risk Factors and Drinking Contexts

The conceptual framework herein proposes that known IPV risk factors, such as adverse childhood experiences (Cunradi, Todd, Mair, & Remer, 2013), impulsivity (Cunradi, Ames, & Duke, 2011), and depression and anxiety (Mair, Cunradi, & Todd, 2012), are related to venue use and other contextual aspects of the drinking environment. Understanding how these characteristics are associated with where, how often, and with whom people drink is important for several reasons. First, cumulative exposure to stress in childhood due to adverse experiences (e.g., physical, emotional or sexual abuse) can result in neurobiological changes to developing brain mechanisms with long-term consequences, such as impaired cognitive functioning and impulsive behavior (Lovallo et al., 2013). Anda et al. (2006) propose that the graded relationship between the number of adverse exposures in childhood and risk in adulthood for comorbid outcomes across affective, somatic, substance abuse, and other domains is theoretically consistent with this neurobiological perspective. Second, there is substantial empirical evidence that links adverse childhood experiences, impulsivity, and depression and anxiety with alcohol consumption and IPV. For example, studies based on data from NESARC have shown positive associations between childhood maltreatment and alcohol use disorders (Afifi, Henriksen, Asmundson, & Sareen, 2012); impulsivity and alcohol use disorders, major depressive disorder, generalized anxiety disorder, and perpetrating physical IPV (Chamorro et al., 2012); substance use disorders and IPV (Smith et al., 2012); and IPV and new onset Axis I disorders (Okuda et al., 2011). Third, past-12 month stressors are also linked with drinking and IPV. For example, number of past-year stressors (e.g., legal and job-related stress) was associated with measures of heavy drinking among Wave I NESARC respondents, with a stronger association seen for men than women (Dawson, Grant, & Ruan, 2005). Among a sample of couples, the male partner's report of recent unemployment (a type of job stress), and the male's heavy drinking were associated with IPV (Cunradi, Todd, Duke, & Ames, 2009). In accord with the Hammen, Henry, and Daley (2000) stress sensitization hypothesis, Roberts and colleagues (Roberts, McLaughlin, Conron, & Koenen, 2011) found that there is an interaction between recent stressors and childhood adversity, such that individuals exposed both to recent stressors and childhood adversity are at greater risk of IPV perpetration than would be predicted by an additive effect of stressors and childhood adversity alone.

A major limitation of the research is that despite clear findings that link these characteristics to alcohol consumption and IPV, little is known about how these characteristics are related to venue use and other contextual factors, particularly among those at risk for IPV. For example, Nyaronga et al. (2009) compared racial/ethnic and gender differences for venue preference and related problems among a national sample of white, African American, and Hispanic drinkers, but psychosocial background characteristics were not included in the models. Treno et al. (2008) found that demographic characteristics (younger age; male;

African American; separated, divorced or widowed marital status) and endorsing norms for alcohol-related aggression were significantly associated with bar venue utilization among a stratified sample obtained from 36 California ZIP Code areas. In a multilevel analysis of archival and survey data from 50 California cities, Gruenewald, Remer, and Lascala (2014) found that greater impulsivity was related to greater drinking frequencies and logged quantities and proportionately more drinking at bars and parties. These findings suggest that additional research is needed to determine how known IPV risk factors are related to where, how often, and how much people drink.

Role of Alcohol Outlet Densities & Neighborhood Social Disadvantage

Greater densities of alcohol outlets, especially in socially disadvantaged neighborhoods, may be linked to IPV (1) indirectly, as a sign of loosened normative constraints against violence; (2) by promoting problem drinking among at-risk couples; and (3) by providing environments where high-risk groups form (Cunradi, 2010). In an Australian study, alcohol outlet density (hotels/pubs, packaged liquor stores, and on-premise outlets considered separately) was significantly associated over time with rates of police-reported IPV in Melbourne; the largest effects were for packaged liquor (i.e., off-premise) outlets (Livingston, 2011). Cunradi, Mair, et al. (2011) found that increased density of off-premise outlets was associated with increased risk for IPV-related police calls and crime reports in Sacramento, California; bar and restaurant density were not associated with the outcomes. In the Washington D.C. metro area, off-premise outlets were associated with IPV-related police calls during weekends, but not weeknights (Roman & Reid, 2012). In an analysis of California hospital data, increased density of bars was associated with increased IPV-related ED visits throughout the state (Cunradi, Mair, Ponicki, et al., 2012). A limitation of these aggregate population analyses is the absence of individual-level data to test linking mechanisms (e.g., binge drinking) that may underlie these findings. For example, in multilevel analysis among a national sample of couples, McKinney, Caetano, Harris, and Ebama (2009) found that increases in alcohol outlet density were associated with increased risk for male-to-female IPV; the relationship was stronger among couples with alcohol-related problems, but binge drinking was not an effect modifier. Waller et al. (2013) reported that alcohol outlet density was associated with IPV perpetration among a national sample of young adult males (age 18–27). These findings, however, were based on a combined measure of on- and off-premise outlets; no association was found when each measure was examined separately. Moreover, drinking behavior did not mediate the association between outlet density and IPV (Waller et al., 2013).

Results from a number of studies suggest that binge drinking and other risky drinking behaviors are influenced by living in an area characterized by greater density of bars and off-premise outlets. For example, Ahern, Margerison-Zilko, Hubbard, and Galea (2013) found a nonlinear relation between off-premise alcohol outlet density and binge drinking in a community sample of New York City residents; the association was far stronger at densities of more than 80 outlets per square mile. Longitudinal analyses of a large cohort of Finnish employees (mean follow-up 6.8 years) found that reduction in distance from home to a bar (i.e., either the participants moved or the bar moved) was associated with increased risky drinking behavior (Halonen et al., 2013a). In addition, change in distance from home

to the nearest off-premise alcohol outlet increased the risk of heavy alcohol consumption in women, but not men (Halonen et al., 2013b). While these studies provide support for availability theory (Popova, Giesbrecht, Bekmuradov, & Patra, 2009), the impact of environmental factors (e.g., neighborhood disadvantage) on risky drinking behaviors are complex and have been shown to differ by race/ethnicity and gender (Karriker-Jaffe et al., 2012). Keyes et al. (2012) found that exposure to neighborhood physical disorder (a type of chronic stress) interacted with childhood adversity to predict incident binge drinking among a predominately African-American representative sample from Detroit. Neighborhood disorder predicted problem drinking only among those with high exposure to childhood maltreatment, lending support to the stress sensitization hypothesis. Further investigation is needed to determine if the associations between known IPV risk factors and where, how often, and with whom people drink are moderated by density of off-premise outlets and bars and by neighborhood social disadvantage. For example, researchers could examine whether or not impulsive individuals drink in bars more frequently in neighborhoods with higher bar densities.

Recommendations for Future Research

Future research on IPV environmental risk factors should address several important issues. First, Leonard (2011) suggests that alcohol's acute effects and the social ecology of neighborhoods may both contribute to the relationship between alcohol outlets and IPV. In order to make causal interpretations, studies using micro-temporal scales (e.g., diary methods; ecological momentary assessment) are needed to assess the temporal relations between drinking venues and IPV. Second, relationships between IPV frequency and the frequencies and quantities of alcohol consumed in specific venues may exist, such that that amount of alcohol consumed in a particular context may be more (or less) important than other (e.g., social) characteristics of that context (Mair et al., 2013). Distinguishing between effects of the drinker's social environment (e.g., exposure to bars in local and adjacent neighborhoods) and amount of alcohol consumed in that environment is complex; use of context-specific dose-response models will help disentangle the extent that IPV is related to any drinking in bars, independent of amount consumed in that context. Third, as previously noted, some studies indicate that racial/ethnic minorities and those residing in socially disadvantaged neighborhoods are at elevated risk for IPV (Caetano et al., 2005; Cunradi, 2007; Cunradi, Mair, Ponicki, et al., 2012). Reducing or eliminating these IPV-related health disparities among at-risk populations should therefore be a priority. Research is needed to understand the mechanisms through which differences in social-environmental exposures may contribute to these disparities. Fourth, in accord with the recommendations of Capaldi, Knoble, Shortt, and Kim (2012) in their systematic review of risk factors for IPV, future research should strive to collect data from both partners in the couple to allow for more complete and rigorous modeling of dyadic behaviors, including alcohol-related aggression. Couple data could be used to explore potential gender differences in relation to IPV, drinking contexts, and alcohol outlet density.

Conclusion

IPV typically occurs in the home, yet contextual and environmental factors such as the use of drinking venues and exposure to neighborhood conditions may influence the likelihood of its occurrence. Additional research that provides new insights into how individual psychosocial characteristics, contextual aspects of drinking, and environmental factors influence alcohol-related IPV is needed. Findings from these studies could inform development of alcohol-related IPV prevention strategies and policies, including policy-oriented (e.g., regulating outlet density) and individually-oriented (e.g., brief interventions to reduce risk for spousal aggression) measures targeting at-risk populations. Given the limited success of single-gender treatment approaches for IPV perpetrators (Stith et al., 2012) and renewed calls for developing effective IPV prevention programs and interventions with couples experiencing IPV (Dutton, 2012; Langhinrichsen-Rohling & Capaldi, 2012), further investigation as to how partners' environmental exposures influence risk for IPV is warranted.

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Figure 1.
Conceptual Framework for Alcohol Outlet Density, Drinking Contexts and Intimate Partner Violence