Article

Arrest and Trait Aggression **Correlates of Emergency Department Use**

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Abstract

This study examined the associations between arrest and incarceration, trait aggression, and emergency department (ED) use. Data were collected from 525 clients who visited the Center for Behavioral Research and Services in Long Beach, CA, using the following instruments: Risk Behavior Assessment, Risk Behavior Follow-Up Assessment, the Aggression Questionnaire (AQ), the Displaced AQ, and the parole and Legal Status section of the Addiction Severity Index. The bivariate analysis suggested that ED use was significantly associated with trait aggression and trait-displaced aggression among those with a history of incarceration. In the logistic regression, weapons offenses, manslaughter/homicide, being male, and being Black were significantly associated with ED use. Identification and management of aggressive trait personality are important in improving the management of postrelease care in transition to clinical networks and community-based health care settings.

Keywords

aggression, emergency department, injection drug use, personality measures

Introduction

Previously Incarcerated Individuals Have Higher Needs for Health Care

History of incarceration has been strongly associated with health care utilization (Palepu et al., 1999; Reynolds, Fisher, Wood, Klahn, & Johnson, 2003; Small, 2011; van Olphen, Eliason, Freudenberg,

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& Barnes, 2009). Incarceration has also been associated with acquisition of sexually transmitted infections and HIV infection (Jenness et al., 2011; Khan et al., 2009; Weiser et al., 2006). The long-term effect of incarceration increases the likelihood of severe limitations on health (Schnittker & John, 2007). History of incarceration has also been associated with a higher prevalence of infectious disease and mental illness (Davis & Pacchiana, 2004; Fazel, Bains, & Doll, 2006; Wilper et al., 2009), a higher prevalence of chronic diseases (e.g., HIV infection; Binswanger, Krueger, & Steiner, 2009; Davis & Pacchiana, 2004; Hawkins, O'Keefe, & James, 2010; Wang & Green, 2010), and a higher risk of death from drug overdose and cardiovascular disease (Binswanger et al., 2007). Men who have sex with men who have been arrested were more likely to have had syphilis and gonorrhea than those who had not been arrested (Fisher, Milroy, Reynolds, Klahn, & Wood, 2004). Furthermore, a longitudinal study spanning 6.5 years of former inmates in Rhode Island showed a higher risk of death due to drug overdose, HIV infection, and hepatitis (Spaulding, Allen, & Stone, 2007). Also, the former inmates were more likely to have poor health outcomes, high-cost health service use, and low use of regular medical services (Spaulding et al., 2007).

Previously Incarcerated People Are More Likely to Use the Emergency Department (ED) for Health Care

When people who have been incarcerated obtain health care, they are more likely to use an ED due to ease of access and lack of knowledge regarding outpatient resources. A longer and more severe criminal history was associated with poorer physical health and use of the ED (Mateyoke-Scrivner, Webster, Hiller, Staton, & Leukefeld, 2003). The ED was the primary source of care among released prisoners with HIV (Meyer, Qiu, Chen, Larkin, & Altice, 2012) and drug-involved prisoners (van Olphen, Freudenberg, Fortin, & Galea, 2006). Challenges in accessing health care and medications as well as risk factors for HIV and hepatitis C infection were more prevalent among former inmates, especially immediately after release from incarceration (Adams et al., 2011; Hawkins et al., 2010; Kulkarni, Baldwin, Lightstone, Gelberg, & Diamant, 2010). A study by Thomas and colleagues (2016) reported that people with psychological distress and poor access to primary care were more likely to use the ED than outpatient care clinics. Love, Kinner, and Young (2017) reported that people who live in remote or socioeconomically disadvantaged areas were significantly more likely to be hospitalized after release from prison. Women on probation or parole were less likely to have insurance or receive health services, and their social vulnerabilities led to poor health (Lorvick, Comfort, Krebs, & Kral, 2015). Reduced health status subsequently leads to higher cost health services such as the ED (Leukefeld et al., 2006).

ED Use Is More Expensive and Has Worse Outcomes Than Outpatient Care

The problem with using the ED for primary health care is that for nonemergency issues, it is possible to obtain the same health care services for lower cost from providers in an outpatient setting. In a recent study of nonurgent cases, ED care was considerably more expensive than primary care would have been for the same medical condition (Baker & Baker, 1994). In general, ED use is associated with higher costs and poorer outcomes (Grumbach & Grundy, 2010; Meyer et al., 2012; Taubman, Allen, Wright, Baicker, & Finkelstein, 2014). To assist with the health problems of those being released from incarceration, some communities provide postincarceration health care clinics specifically tailored to released individuals (Fox et al., 2014). These resources are intended to improve health promotion and manage chronic health problems by reducing the use of the ED while ensuring continuity of care.

Personality Traits Also Affect Health and Health Care Use

In addition to the attention on risk behaviors in behavioral models for vulnerable populations (Gelberg, Andersen, & Leake, 2000), literature has been growing regarding the importance of personality traits, such as trait aggression, on health care utilization and outcomes. For example, a longitudinal study by the Concordia Longitudinal Risk Project has shown that childhood aggression is predictive of overall use of health services, medical visits due to injuries or lifestyle-related illnesses (Temcheff, Serbin, Martin-Storey, Stack, Hastings, et al., 2011), and adult physical health outcomes such as ED visits (Temcheff, Serbin, Martin-Storey, Stack, Ledingham, et al., 2011). Higher levels of hostility and aggression have been found to increase the risk of myocardial infarction, high blood pressure, and coronary heart disease (Izawa et al., 2011; Smith, Glazer, Ruiz, & Gallo, 2004; Smith, Uchino, Bosch, & Kent, 2014). People with higher levels of aggressive traits, both in early and later onset, had poorer outcomes (e.g., depression, health) across domains of life success at age 48 (Huesmann, Dubow, & Boxer, 2009). Trait aggression has been reported to be a predictor of several health risks, including teen pregnancy and parenting difficulties, that led to higher ED visits (Serbin, Peters, McAffer, & Schwartzman, 1991; Serbin, Peters, & Schwartzman, 1996).

Both trait aggression and aggressive behavior have been reported to be associated with substance use (Cuomo, Sarchiapone, Giannantonio, Mancini, & Roy, 2008; Martin-Storey, Serbin, Stack, Ledingham, & Schwartzman, 2011). When compared to nondrug abusers, those who abuse drugs were more likely to have used the ED (Cherpitel & Ye, 2008; Gilbert, El-Bassel, Chang, Wu, & Roy, 2012), have had higher medical expenses (French, McGeary, Chitwood, & McCoy, 2000; Rockett, Putnam, Jia, Chang, & Smith, 2005), and have had a higher risk of death (Merrall et al., 2010) due to illnesses and poorer health status (Garrity, Hiller, Staton, Webster, & Leukefeld, 2002; Kanato, 2008; Webster et al., 2005).

Purpose of the Study

This study examined whether there is a more complex relationship among incarceration history, specific criminal offenses, and the personality constructs of trait aggression and trait-displaced aggression leading to use of the ED for health care. As noted in the peer-reviewed literature section, significant associations exist between (a) incarceration history and higher need for health care; (b) incarceration history and greater likelihood to use EDs for health care, with their associated problems of increased cost of health care; and (c) personality constructs such as trait aggression and higher health care needs. Specific aggressive personality factors may lead to higher use of EDs and, therefore, higher overall spending for health care. Additional research is necessary to investigate the factors that significantly predict ED use.

Method

Participants

Data were collected from 525 clients who sought HIV and STD screening from March 2006 to August 2009 from the Center for Behavioral Research and Services, which is an outpatient care center in Long Beach, CA. It is in a low-income neighborhood between two gang-injunction areas. Participants were excluded from the study if they were not able to give informed consent, usually because they were intoxicated. The protocol and the informed consent form were approved by the California State University Long Beach Institutional Research Board.

Measures

Risk Behavior Assessment (*RBA*). The RBA was developed by the Community Research Branch of the National Institute on Drug Abuse in collaboration with AIDS Cooperative Agreement program grantees (Dowling-Guyer et al., 1994; Fisher, Reynolds, Wood, & Johnson, 2004; Needle et al., 1995). The RBA shows good test–retest reliabilities for the drug use variables, which range from .80 to .84. The injection variables show greater variability in their reliabilities of .68 to .87 (Dowling-Guyer et al., 1994). The lifetime arrest and incarceration items show good to excellent reliabilities of .50 to .92 (Fisher et al., 2004). The RBA was administered face-to-face in a structured interview and collected information on drug use (i.e., use of any types of drugs in the last month, use of injected drugs, and frequency of use) and history of incarceration. Other information collected included whether the client had traded sex for money or drugs, as well as demographic information (e.g., age, gender, sexual orientation, race, marital status, education, living arrangement, homelessness, and income).

Risk Behavior Follow-Up Assessment (*RBFA*). The RBFA is the follow-up version of the RBA and includes information on use of the ED in the last 6 months and number of hospitalization days during that period (Johnson et al., 2000; Reynolds et al., 2003). The 48-hour test–retest reliability of the outcome variable is .668 (95% CI [.593, .729]; Fisher, Reynolds, Van Otterloo, & Johnson, 2018).

Aggression Questionnaire (AQ). The AQ is an update of the Hostility Inventory (Buss & Durkee, 1957) that aimed to ensure adequate psychometric properties (Buss & Perry, 1992). The AQ consists of 29 items that use a self-report format in which subjects rate each item on a 5-point scale rating from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). The four subscales are physical aggression, verbal aggression, anger, and hostility. Cronbach's α coefficients range from .72 to .85. Nine-week test-retest reliability coefficients were .80 for physical aggression, .76 for verbal aggression, .72 for anger, and .72 for hostility. The reliability for the total score was .80.

Displaced Aggression Questionnaire (DAQ). The DAQ is a 31-item self-report measure that uses a 7-point scale ranging from 1 (*extremely characteristic of me*) to 7 (*extremely uncharacteristic of me*; Denson, Pedersen, & Miller, 2006). DAQ subscales are angry rumination, revenge planning, and behavioral displaced aggression. The angry rumination and the behavioral displaced aggression subscales each consist of 10 items, and the revenge planning subscale has 11 items. There is also a composite score, with higher values meaning a greater likelihood that an individual will engage in displaced aggression.

The Legal Status section of the Addiction Severity Index (ASI). The Legal Status subscale of the ASI (McLellan et al., 1992) consists of 26 items assessing various aspects of the participant's legal and criminal history, including the number of times the respondent has been arrested for a variety of crimes (e.g., forgery, weapons offenses, homicide/manslaughter, assault, burglary) and how many of those arrests have resulted in conviction.

Variables

Answers to the question "How many times in the last 6 months (or since we last interviewed you) have you spent time/been treated in an emergency room" produce a J-shaped distribution, and so were dichotomized into ever/never to be used as a dependent/criterion variable for this analysis. This variable came from the RBFA collected at follow-up. The independent/predictor variables, collected from the RBA, included use of drugs in the last 30 days (prior to baseline), drug injection, history of arrest and incarceration, and whether the respondents have ever traded sex for money or drugs (lifetime asked at baseline). Other independent variables, collected from the AQ and DAQ, included

	ED Users	Nonusers	
Candidate Predictor Variables	% Mean (SD)	% Mean (SD)	t or χ^2
Aggression Questionnaire (AQ) total	2.64 (0.82)	2.47 (0.79)	2.14*
AQ hostility subscale	2.8 (0.95)	2.59 (0.95)	2.34*
AQ physical aggression subscale	2.48 (0.93)	2.32 (0.89)	2.36*
AQ verbal aggression subscale	2.89 (0.99)	2.70 (0.96)	2.30*
AQ aggression subscale	2.45 (0.90)	2.27 (0.94)	2.35*
Displaced AQ (DAQ) total	97.66 (52.0)	85.5 (44.13)	2.85**
DAQ DAS subscale	30.22 (18.11)	26.69 (15.38)	2.39*
DAQ revenge planning subscale	31.45 (18.58)	26.89 (15.51)	3.05**
Lifetime total incarceration (days)	1,358.6 (2,325.8)	1,066.0 (2,052.9)	2.60**
Male	65.8%	74.9%	4. 9**
Latino/Hispanic	25.8%	32.4%	4.79*
Income from welfare	40.6%	33.7%	7.17**
Single, never married	55.2%	62.6%	7.86**
Live alone	19.8%	26.2%	7.59**
Education			
< High school degree	28.5%	27.3%	6.43*
High school or GED	38.8%	33.6%	
> High school	32.6%	38.9%	
Ever traded sex for money or drugs	39.5%	29.4%	15.92**
Ever injected drugs	46.7%	29.6%	43.79**
Ever arrested/charged with			
Weapons offense	21.7%	11.1%	9.63*
Homicide/manslaughter	9.9%	2.6%	l2.39**
Prostitution	15.8%	7.1%	9.06**

Table 1. Bivariate Comparisons Between Emergency Department Users and Nonusers..

Note. DAS = displaced aggression subscale. *p < .05. **p < .01.

the total aggression score and the hostility subscale. These scales collect aggression and hostility aspects of personality that are assumed to have existed prior to baseline. We also used the types of lifetime charges from the ASI–Legal Status section as independent variables such as "How many times in your life have you been arrested and charged with a weapons offense." Responses were dichotomized to ever/never versions of these variables. Several interaction variables were created and explored in bivariate analysis.

Statistical Analysis

This study used bivariate and logistic regression analysis to investigate the importance of trait aggression and trait-displaced aggression in predicting ED use. The statistical analysis was conducted using SAS Version 9.3.

Results

Of the 525 participants who completed the three instruments, 160 (30.5%) indicated that they had used the ED for any reason at least once in the last 6 months. The total aggression score was significantly higher among those who used the ED (M = 2.64, SD = .82) compared to those who did not (M = 2.47, SD = .79), t(523) = 2.14, p = .0326. This was also true for the aggression score hostility subscale and the total and subscale scores for the DAQ. ED use was

Personality Variables	Men Mean (SD)	Women Mean (SD)	t
Aggression Questionnaire (AQ) total	2.50 (0.71)	2.84 (0.93)	3.02**
AQ hostility subscale	2.65 (0.84)	2.97 (1.04)	2.47**
AQ physical aggression subscale	2.35 (0.86)	2.70 (I.0I)	2.66**
AQ verbal aggression subscale	2.74 (0.87)	3.15 (1.14)	2.92**
AQ aggression subscale	2.34 (0.84)	2.65 (0.97)	2.47**
Displaced AQ (DAQ) total	84.99 (43.4)	118.0 (58.22)	4.20***
DAQ DAS subscale	26.39 (14.74)	36.43 (21.20)	3.64**
DAQ revenge planning subscale	27.53 (16.55)	37.80 (20.02)	3.62**

Table 2. Bivariate Gender Comparisons of Individuals Who Used the Emergency Department.

Note. DAS = displaced aggression subscale.

*p < .05. **p < .01.

Table 3. Logistic Regression	on Model Predicting	Use of Emergency	y Department
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Variables	Odds Ratio	95% CI
Male	0.304	[0.195, 0.474]
Ever arrested/charged with		
Weapons offense	1.861	[1.075, 3.197]
Homicide/manslaughter	3.971	[1.634, 9.655]
Hispanic	1.778	[0.861, 3.58]
Black	1.703	[1.084, 2.71]

also significantly associated with most demographic variables (Table 1). With respect to the ASI–Legal Status arrest and charge variables, men and women did not differ as to whether they reported ever having been arrested and charged with the following crimes: shoplifting/vandalism, parole/probation violations, drug charges, weapons offenses, robbery, arson, homicide/ manslaughter, contempt of court, disorderly conduct/vagrancy/public intoxication, driving while intoxicated, and reckless driving/speeding/moving violations (data not shown). However, there were some gender differences of note. Men were significantly more likely than women to have reported they were ever arrested and charged with burglary/larceny, $\chi^2(1) = 4.68$, p = .03. Women were significantly more likely to report that they were ever arrested and charged with assault, $\chi^2(1) = 13.21$, p = .0003; prostitution, $\chi^2(1) = 139.94$, p < .0001; and forgery, $\chi^2(1) = 4.66$, p = .03.

Among ED users only, women had higher scores on all aggression and displaced aggression scales and subscales compared to men (Table 2). One interaction variable "female_weapon" was created with the gender and the weapons' offenses variable; this variable was significantly associated with use of the ED, $\chi^2(1) = 7.13$, p = .007, such that women who also reported having been arrested and charged with a weapons offense were significantly more likely to report use of the ED.

In the logistic regression model (Table 3), being male, being Black, and having ever been arrested and charged with weapons offenses and homicide/manslaughter were significant predictors of ED use. Those who were ever arrested/charged with homicide/manslaughter were 3.97 times more likely to use ED (95% CI [1.634, 9.655]) and those who ever arrested/charged with weapons offenses were 1.86 times more likely to use ED (95% CI [1.075, 3.197]). Men were less likely to use the ED than women (OR = .30, 95% CI [0.195, 0.474]) and those reporting Black race were 1.70 times more likely to use the ED (95% CI [1.084, 2.711]).

Discussion

Medical care delivered in EDs plays an important and significant role in the U.S. health care system. The ED serves as an entry point for inpatient admissions and is a common setting for acute care delivery, as well. Data indicate that an average of 20% of the U.S. population visits an ED each year (Tang, Stein, Hsia, Maselli, & Gonzales, 2010). High rates of ED utilization may indicate poor access to regular health care providers or a failure of the health care system to address appropriate management of chronic conditions or illness prevention, especially among vulnerable populations (Doran, Raven, & Rosenheck, 2013; Tsai, Doran, & Rosenheck, 2013). This study looked at the relationship between ED use in a community-recruited sample with high trait aggression and displaced aggression and substantial criminal justice system involvement.

We found that approximately 30% of the participants reported use of ED in the last 6 months. The percentage was significantly higher than in the general population (Tang et al., 2010). Such a high percentage causes great concern for both costs and quality of care. Numerous studies have assessed both risk and protective factors that are significantly associated with ED use. Some "vulnerable" conditions such as injection drug use, previous incarceration, being a victim or perpetrator of intimate partner violence (IPV), and sex trading were reported to be significantly associated with higher health care use, including ED use, and expenditures. One study reported that individuals released from incarceration had three or more ED visits in the first year after release, and the majority of these visits were for mental health issues, substance abuse, or other problems that could be handled more appropriately through outpatient care (Frank et al., 2013). A recent national survey found that individuals with recent criminal justice involvement make up 4.2% of the U.S. adult population, yet account for an estimated 7.2% of hospital expenditures and 8.5% of ED expenditures (Frank, Linder, Becker, Fiellin, & Wang, 2014).

The current study found similar relationships among a specific community-recruited high-risk population. ED users were more likely to have ever traded sex for money or drugs; injected drugs; and been arrested/charged with weapons offenses, homicide/manslaughter, and/or prostitution. In this study, women were significantly more likely to report that they were ever arrested and charged with assault. It is interesting that whether the women were victims or perpetrators of IPV, they were more likely to have higher injury-related hospitalization and ED visits due to greater injuries (Kothari, Easter, Lewis, Howard, & Micali, 2015). IPV was reported to be the leading cause of serious injury among women between the ages of 15 and 44 years, and more than 30% homicides of females were committed by intimate partners (Weinsheimer, Schermer, Malcoe, Balduf, & Bloomfield, 2005). Fatality of the IPV was associated with substance use (Peters, Khondkaryan, & Sullivan, 2012), and impulsive aggression increased the severity of the substance use (Coccaro et al., 2016).

This study's contribution to the literature on ED use comes from our use of the aggression and displaced aggression scales. We found that on all measures of both trait aggression and traitdisplaced aggression, ED users scored significantly higher than nonusers. We also found that women scored significantly higher than men on all measures of aggression and that women in our sample, like other research findings, are more likely to use the ED than men. This is important because it suggests that there are similarities between victims and offenders in ED utilization, with both groups using EDs for injuries (Daday, Broidy, & Crandall, 2008). This may be supported by being female and having been arrested/charged with assault and the interaction term of being female and having been arrested/charged with a weapons offense and its association with ED use (data not shown). Researchers have known for decades that victimization has significant costs associated with it, especially for women (Koss, Koss, & Woodruff, 1991). This finding suggests that the women with weapons offenses may have had the weapon for personal security but that it does not prevent the need for ED use. The multivariate regression model further substantiates this finding as men are less likely to use the ED than women, and those individuals with weapons offenses (whether male or female) are more likely to use the ED.

There are several limitations that need to be noted in this study. First, there is a need to capture information on reasons for use of the ED. This information would be particularly useful to separate cases that are chronic medical conditions from those that are trauma-related health events from violent activities or assault-related incidents. Lack of data on spending and reasons for ED use prohibit the researchers from conducting cost analysis of ED service use. A further limitation is the length of time that elapsed between the administration of the RBA and RBFA, which varied from 3 months to several years.

Conclusions

Our findings suggest that aggression scores are linked to higher ED utilization and highlight the need to further evaluate trait aggression and displaced aggression as predictors of ED use, especially within the context of postincarceration. It is also important to focus on shaping and controlling aggression by enhancing coping, problem-solving, and social skills, and by increasing social support at any age and in any setting to prevent adverse behaviors.

As health care costs increase nationally as well as worldwide, measures to reduce unnecessary or inappropriate utilization of emergency services need to be addressed. Vulnerable populations including homeless, drug users, sex traders, and those with a history of incarceration are even more at risk for utilizing emergency room services. This may be due to a lack of perceived access or a lack of skills to access outpatient services, insurance coverage, or both. Clinics that focus specifically on postincarceration patients have had some success in reducing ED use (Fox et al., 2014). With the increase in ED utilization among previously incarcerated individuals and those with higher aggression, EDs may be an important location for specialized outreach, in which high-risk populations can be referred to comprehensive social services and mental health and substance abuse assistance.

Authors' Note

The protocol was approved by the California State University Long Beach Institutional Review Board.

Declaration of Conflicting Interests

The authors disclosed no conflicts of interest with respect to the research, authorship, or publication of this article. For information about *JCHC*'s disclosure policy, please see the Self-Study Program.

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