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Willingness of Facial Injury Patients to Change Causal Substance Using Behaviors

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Abstract

Many injuries due to interpersonal violence among patients presenting to urban trauma centers for treatment are preventable, with alcohol and illicit drug use presenting as common antecedent risk factors. However, many patients with such problems do not seek treatment. Substance use patients were surveyed to determine how many recognized they had a problem and whether they had previously received treatment for substance use problems. Almost 60% of the patients treated for a facial injury screened for problem alcohol use, and slightly more than 25% screened for problem drug use. Only approximately one-third of patients indicated any movement towards dealing with these problems and of these, only 20% had actually sought treatment. Employment had an effect on treatment seeking, with fewer employed patients seeking help. Utilizing the critical window of opportunity for ED personnel to make referrals may have an impact on treatment seeking for problem level substance use.

Keywords

Facial Injury; Alcohol/Drug Use; Treatment

Introduction

A significant portion of patients presenting to urban trauma centers for treatment of intentional injuries due to interpersonal violence are preventable, with alcohol and illicit drug use presenting as common antecedent risk factors. Some studies have found that up to 40% of patients treated at trauma centers have a positive blood alcohol concentration at admission (1). When polydrug use was included, over 60% of the patients tested positive for intoxicants (2).

Patients with facial injury are a significant subset of those presenting with violence-related injuries to regional trauma centers. The face is a common target for assault and injury to the face, jaw, and mouth is regarded as a prominent marker of interpersonal violence (3;4). Rates of facial injury have been described as comprising up to 39% (5) of all trauma

admissions. Given that alcohol and illicit substance use lowers inhibitions and increases risky behaviors, it is reasonable to assume that intentional facial injuries may also be a marker for underlying substance use disorders. The individual and public health implications of these, largely preventable, injuries are rather significant. Among 336 patients treated for facial injuries at an inner-city trauma center, Shetty et al. (6) determined that 83% of the injuries resulted from interpersonal assault, and the direct costs of providing care (excluding the more severe gunshot wounds) were nearly \$3 million. Vinson et al. (7) calculated the increased risk of intentional injury related to alcohol use and reported that drinking in the six hours prior to injury was positively associated with injury, with an odds ratio of 9.5 after 5 drinks.

Most individuals who have an alcohol or drug use problem do not seek help or receive treatment. National surveys suggest that fewer than half of those individuals who have a psychiatric disorder (including substance use disorder) in the past year receive any treatment (8). Estimated ratios of untreated to treated individuals have ranged from 3:1 to 13:1 (9). Thus, only a small portion of individuals who have substance abuse related difficulties seek professional help. Typically, those individuals who have a substance use problem report a number of reasons for not seeking treatment, including not thinking the problem is serious enough, thinking they can handle it on their own, believing the problem may get better by itself, and not wanting to admit they need assistance (10–12). Moreover, some patients think that treatment may not be effective. Some of these reasons can be considered differential expressions of denial, which is described as endemic to substance use disorders (10;13). In addition, individual patient characteristics may influence motivation for treatment. For example, men and minorities have been found to be less likely to use mental health services (14;15). In addition, some studies have indicated that individuals who have a co-occurring mood disorder may be more likely to seek treatment, and that those who have a drug problem may be much more likely to seek help compared with those with an alcohol problem (Grella, Karno, Warda, Niv, & Moore, in submission).

Even among those who do seek treatment, considerable damage may be done before they decide to do so. While two thirds of respondents recognized they had a drinking problem before age 30, considerable time (1 – 2 years) elapsed between recognizing the problem and deciding to seek help (11). Patients hospitalized after a substance-related injury have been found to be motivated to change their drinking (16); aversiveness of the injury and perception of degree of substance involvement may assist in predicting level of motivation. As an initial step towards developing motivational interventions targeting antecedent substance use behaviors, we investigated significant substance use problems concomitant in patients presenting with intentional facial injury to a Level 1 trauma center. We surveyed the substance using patients to determine how many recognized they had a problem, and whether they had previously received treatment for their substance use problems.

Methods

Subjects

Participants were recruited from the pool of patients ($N = 830$) presenting with intentional facial injury to the Los Angeles County/University of Southern California Medical Center (LAC/USC) between January 2005 and April 2008. Patients were considered eligible for recruitment if they were 18 years or older, had used alcohol or drugs within the past 30 days, and had at least one fracture involving the mandible, maxilla, orbit, nose or cheekbone as determined by clinical history, examination and radiographic findings also within the past 30 days, and that injury was due to interpersonal violence rather than accidental. Patients with severe gunshot injuries, altered mental status attributable to head injuries, or who were incarcerated or in treatment for mental illnesses were excluded, as were patients who were

unable or unwilling to return for follow-up interviews and assessments. The subset of eligible and consenting patients ($n = 221$) were recruited into a prospective, randomized controlled trial of a culturally competent motivational intervention targeting antecedent substance use behaviors.

Procedures

Following a full explanation of the study, written consent from eligible patients was obtained by research staff utilizing procedures approved by the Institutional Review Boards at the University of Southern California and University of California, Los Angeles. Consenting patients were interviewed by trained bilingual interviewers who used structured questionnaires and face-to-face interviews to collect extensive baseline information on sociodemographic characteristics and various psychosocial measures. Interviews were conducted using English or Spanish versions of standard data collection forms used by UCLA's Integrated Substance Abuse Program (ISAP). Data from completed interviews as well as data abstracted from medical charts was entered into computers and compiled in a database.

Measures

Participant sociodemographics—The research interviewers elicited patient information using the UCLA Integrated Substance Abuse Program demographic questionnaire. Baseline information included details on patient gender, country and date of birth, ethnic background, first language, marital status, and family history of substance use problems, occupation, employment status, and education. Table I summarizes the participants' baseline demographic characteristics.

Alcohol Use Disorder Identification Test (AUDIT)—The AUDIT is a ten-item questionnaire designed to distinguish light drinkers from those with harmful drinking. Originally intended for the early identification of harmful drinking, the screening instrument can also detect problem drinking with a high degree of accuracy (17). The items included in the AUDIT reflect three dimensions of drinking: alcohol intake (items 1–3); alcohol dependence, such as difficulty in controlling drinking, neglect of alternative interests, and physiological withdrawal (items 4–6); and adverse consequences (items 7–10). Possible scores range from 0 to 40, with higher scores indicating greater risk of problem drinking. Cronbach's alpha for the AUDIT in our data was .848, indicating good internal consistency.

Texas Christian University Drug Screen (TCUDS)—The TCUDS is a 12-item index of severity of drug abuse (18). For our cohort of 221 patients with facial injury, the internal consistency had a Cronbach's alpha equal to .85.

Substance Use Time-line—Interviewers recorded patient's primary drug as part of the background questionnaire, as well as from retrospective reports of the participant's substance use behaviors. At the baseline assessment, the research interviewer asked the participant to report on his or her quantity of alcohol and illicit drug consumption for the 30 days preceding the injury. Additionally, participants reported the age at which they began regular alcohol and drug use. Subjects reporting use of illicit drugs provided a complete history of use patterns for each drug reported.

Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES)—The 19-item SOCRATES (Version 8) developed by Miller and Tonigan (19) evaluates a patient's readiness to change substance use patterns in the context of the transtheoretical model of health behavior change. Using both drug and alcohol versions of the SOCRATES, patients are scored on the basis of their recognition of having a substance use problem

(recognition), their level of concern about whether the substance use is having a negative effect on their lives (ambivalence), and the degree to which they had initiated behavior change (taking steps). Examples of items of response include “I am a problem drinker” or “I really want to make changes in my drug use.” High scorers on the recognition and ambivalence subscales directly acknowledge that they are having problems related to their drinking, tend to express a desire for change, and perceive that harm will continue if they do not change. High scorers on ambivalence wonder if they are in control of their drinking (i.e., are drinking too much, are hurting other people, and/or are alcoholic). A high score here reflects some openness to reflection, as might be particularly expected in the contemplation stage of change. High scores on the taking steps scale manifest that the subjects are already doing things to make a positive change in their drinking or drug use (action). A high score on this scale has been found to be predictive of successful change.

Prior research (20) has also investigated latent structures of the SOCRATES alternative to that of the three-factor model proposed by Miller and Tonigan (19). Using confirmatory factor analysis, we compare the three-factor model to one indicated by Maisto et al. (20) that includes two factors comprised of 15 of the original items. The data more strongly supported the reduced two-factor model, so we conduct our analysis based on the model that included one factor combining recognition and ambivalence items 2, 3, 6, 7, 10, 11, 12, 15, and 17, called AMREC, and another factor consisting of taking steps items 4, 5, 8, 9, 13, and 18. The SOCRATES was administered at the baseline and the 1, 6, and 12-month follow-up assessments. The baseline data are the subject of this article. The data indicated strong internal consistency for both SOCRATES subscales, with Cronbach's alphas for AMREC and taking steps scales of .96, and .95, respectively, for the alcohol questionnaire, and .97 and .96 for the drug questionnaire.

Data Analysis

Non-orthogonal confirmatory factor analysis was used to compare competing factor structures for the SOCRATES, assessing model fit on the basis of chi-square over degrees of freedom ratio (χ^2/df) goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and root mean square error of approximation (RMSEA).

For concurrent evidence supporting the validity of the SOCRATES measures, Pearson correlations were used to describe the relationship between patients' motivation to change behavior and other continuous measures of substance abuse such as AUDIT score, TCUDS score, and how often patients used drugs or alcohol in the 30 days preceding interview. Independent t-tests were used to compare SOCRATES measures between groups defined by categorical definitions of substance and service use such as having an AUDIT or TCUDS in excess of a clinical threshold, or having ever sought professional treatment or other support for substance abuse. Crosstabulations comparing distributions of categorical factors across groups were analyzed with chi-square tests of independence. Confirmatory factor analysis was carried out using Amos (Version 7) and all other analyses were undertaken using SPSS for Windows, version 15.

Results

Goodness of fit measures from the confirmatory factor analysis models fit to the three-factor and two-factor models are summarized Table II. The data provides stronger support for the two-factor model, leading us to conduct our analysis with the AMREC and taking steps factors indicated by Maisto et al. for both the alcohol and drug use SOCRATES. For alcohol use, the mean (SD) AMREC score was 21.9 (10.8), and the mean (SD) taking steps score was 17.3 (7.6). The corresponding values for the drug use SOCRATES were 18.0 (11.1) for AMREC and 14.3 (8.7) for taking steps.

Other evidence of substance abuse use was prevalent in the cohort with over half (58%) of the patients indicating alcohol abuse with AUDIT scores of 8 or higher, and one quarter (26%) with TCU scores of 3 or higher, suggesting drug abuse.

The concurrent validity of SOCRATES factors with other measures of drug and alcohol abuse was investigated. AMREC for both alcohol and drug use is significantly associated with every concurrent measure of substance use, with correlations ranging from .29 to .80. Taking steps scores are associated with every substance-use measure except the number of days of primary drug use in the 30 days preceding interview (significant correlations from .20 to .65). Additionally, SOCRATES scores were significantly higher for patients who reported use of hard drugs and for patients with various indications of seeking help for substance abuse.

Thirty-five patients (15.8%) indicated readiness to change through report of seeking professional help or other support services for substance use treatment in the six months preceding interview. Twenty-one of these patients reported seeking professional help for the primary purpose of alcohol or drug treatment, and 25 reported participating in another support group for emotional, substance abuse, or health issues such as a twelve-step program or clergy-led group. Nine patients visited a residential drug or alcohol treatment or detox facility seeking help for alcohol abuse and/or drug abuse, and 10 patients received outpatient treatment.

In the entire sample, 153 patients screened positive for substance abuse via the AUDIT or TCUDS, but only 30 of these patients actually indicated having sought any type of drug or alcohol treatment. The sample contained 5 patients without a positive clinical screen for substance abuse who sought treatment or support. Among the 151 patients identified as substance abusers who had complete service utilization information available, we compared patients who sought treatment or support ($n = 30$) to those who did not ($n = 121$) in order to investigate characteristics that may prevent individuals in need from receiving treatment services. Language barriers did not seem to play a role in an individual's likelihood of seeking treatment, as neither country of birth (United States vs. other), first language (English vs. other), nor comfort level speaking English significantly associated with whether or not a person with clinical definitions of substance abuse sought treatment in the six months preceding interview. There was no indication that having at least a high school education affected patients' propensity to seek treatment, nor was there evidence that patients who tended to have more contact with the health care system via visits to hospital clinics, outpatient departments, or private doctor's offices were more likely to seek treatment for substance abuse. Employment, however, did appear important in whether or not a person with clinical signs of substance abuse actually sought treatment. Of the 30 patients who met clinical criteria for substance abuse and sought treatment, 16.7% were employed, compared to 40.5% of those who met clinical criteria but did not seek treatment (chi-square p -value = .015).

Discussion

Patients treated at urban trauma centers for facial injuries often have other significant problems above and beyond their presenting injury. As noted earlier, substance use often plays a critical role in patients obtaining such injuries. In the current study, almost 60% of the patients treated for a facial injury screened for problem alcohol use, and slightly more than one-quarter screened for problem drug use. Despite these findings, only approximately one-third of patients indicated any movement towards dealing with problem behaviors through report of seeking professional help or other support services within the past 6 months. Of these, only 20% had actually sought treatment. Patients who did seek

professional treatment for alcohol or drug use had a higher average score for both subscales of the SOCRATES, indicating that recognition of the problem and motivation for change were key components in actually seeking treatment.

In an attempt to further discriminate the smaller group of patients who sought treatment from those who continued to live with this level of substance use problems without seeking help, we compared the characteristics between the two groups. Language barriers did not seem to affect seeking treatment in our patient cohort. However, to contextualize this finding, it should be noted that Los Angeles has fairly extensive substance abuse treatment services available for both English and Spanish-speaking patients. Similarly, the level of education and previous health services use did not seem to affect seeking treatment. Of the data available, only employment was associated with treatment seeking. Fewer employed patients sought treatment. It may be that employed patients needing substance use treatment have less time—and may fear taking time from work to address these problem issues. It may also be that they fear that if their substance problems become known, they could lose employment. However, these patients may be most in need of such treatment, as increasing substance problems could result in job-performance problems, up to loss of employment.

It is clear that it would be useful for emergency trauma centers to screen patients for problem levels of alcohol and substance use. For patients indicating problem usage, readiness to change can also be assessed. A brief and focused interview during trauma center admission would make it possible to identify target groups most apt to engage in hazardous drinking or drug use and most likely to benefit from referral and intervention. Reliable, user- and patient-friendly brief screens need to be utilized; it may be possible for many trauma centers to utilize new computer based techniques for screening and even for intervention, to use when the patient is in the “therapeutic window” of a trauma center stay. In this study, the SOCRATES did assist in identifying those individuals who were ready for treatment and had actually taken steps to seek treatment. In a trauma setting, as the negative consequences of their behavior manifest – the injury being an example--patients are more likely to become concerned and to try to change their behavior. While premature focus on action with patients who are not yet ready to change will only provoke resistance, clinicians could use the SOCRATES, or other similar measures, to identify level of desire to change and reinforce to patients why change might be desirable. Then, brief interventions could be conducted during the immediate post-injury window of opportunity, focusing on patients whose high risk drinking or substance use behaviors have been identified by screening. For high-risk patients, the amount of treatment required to reduce alcohol/substance use would vary based on the severity of the problem and their willingness to change. Patients who have severe problems, such as true alcohol dependence, probably need long-term care.

Our study makes several issues manifest. A significant subset of patients presenting with facial injury to our urban trauma centers may have alcohol and substance use problems. This is a critical window of opportunity for ED personnel to make referrals, and have an impact on treatment seeking for substance use. All of these findings indicate that there needs to be a focus on increasing patient awareness of the association between substance use and injury, and utilize these “teachable moments” with patients to move them towards treatment. Most importantly, utilizing the opportunity to tie a patient’s injury to their substance use may provide the patient with recognition of a problem level of behavior that may not have been apparent to them previously, and may also change their motivation for treatment. Finally, previous research indicates that the best time to do this may be within a trauma care setting, where the individual is presenting for treatment of their physical injury and not the underlying reasons leading to the injury.

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Table I**Patient Background / Demographics (N = 221)**

	% ^a
Sex	
Male	91.4
Ethnicity	
Black	26.2
Mexican	39.4
Other Latino	9.5
White Non-Latino	10.4
Native American/Alaskan	1.4
Asian/Pacific Islander	1.8
Multi-Ethnic	8.1
Other	3.2
Country of Birth	
USA	71.9
Marital Status	
Married	9.0
Living With	10.9
Widowed	0.5
Separated	10.0
Divorced	8.1
Never Married	61.5
Legal Problems (probation, parole, warrant, etc.)	
Yes	25.3
Employment Status	
Employed	35.7
Education	
Less than High School	39.8
High School Graduate/GED	25.8
Some College/Trade/Tech/AA	30.8
4 year College or more	3.2
Has/had family member with alcohol problem	
Yes	37.6
Has/had family member with drug problem	
Yes	29.9
Are you currently a gang member?	
Yes	5.0
Socializes with people who are	
Only from own ethnic group	13.6
Mostly from own ethnic group	11.8
About half and half	63.8

	% ^a	
Mostly from a different ethnic group	8.1	
Only from a different ethnic group	1.8	
	<i>M</i>	Range
Age	31.9	18–62
Number of days worked in last 30	6.2	0–30

^a Some percentage values within category do not add up to 100% due to missing response.

Table II

Confirmatory Factor Analysis Summary

Model	Factors	Items	Chisquare	df	chisq/df	GFI	AGFI	RMSEA
Alcohol Use:								
Miller and Tomigan (1996)	3	19	671.91	149	4.51	0.731	0.657	0.127
Maisto et al (1999)	2	15	252.23	89	2.83	0.867	0.821	0.092
Drug Use:								
Miller and Tomigan (1996)	3	19	710.78	149	4.77	0.713	0.634	0.132
Maisto et al (1999)	2	15	346.51	89	3.89	0.817	0.753	0.116