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Factors Associated with Orofacial Injury and Willingness to Participate in Interventions Among Adolescents Treated in Trauma Centers

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Abstract

Purpose—Assault is the most common cause of facial injuries in adolescents treated at inner-city trauma centers, yet little is known about the behavioral and environmental antecedents of these injuries or the willingness of such at-risk adolescents to participate in behavioral interventions to minimize re-injury. The purpose of this study was to identify possible risk and protective factors among adolescents with assault-related facial injury, and assess their willingness to participate in prospective observational research and behavioral interventions.

Patients and Methods—Interviews were conducted with 67 adolescents (range 14 - 20 years) who were treated in trauma centers for facial injuries. Most of these injuries were assault-related (59%), followed by motor vehicle or other accidents (29%), gunshot wounds (9%) and sports injuries (3%). The subjects were predominantly male (86%) and ethnic minorities (91%).

Results—The adolescents showed high rates of intentional injuries in the past six months (56%), unhealthy alcohol use, and more than half (55%) had problem levels of substance use. As compared to those with unintentional injuries, adolescents who experienced assault-related injuries were more likely to report using alcohol, tobacco and other substances. Although a significant segment of the sample (55%) had been arrested previously, no differences in arrest rates or types of crimes for which

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adolescents were arrested were observed by injury type. Most subjects were unwilling to participate in interventions that involved multiple sessions; however, greater family cohesion predicted the likelihood of being willing to participate.

Conclusions—Most facial injuries in inner-city adolescents result from assault. Unhealthy alcohol use, problem levels of substance use behaviors, and family history of alcohol problems are associated markers of assault-related injuries that can be useful for risk assessment and targeted intervention. Interventions need to be brief if they are to engage these at risk youth.

Keywords

facial injury; adolescents; risk factors; substance use behaviors

Over the past two decades, injury in children and adolescents is increasingly recognized as an important public health problem.^{1,2} Between 2002 and 2004, adolescents 10 – 19 years of age had an average of 13 million emergency department visits in the U.S.; initial visits for injury constituted 42% of these visits.³ Spirito et al.⁴ found high rates of injury resulting from falls (38%), sports and other physical activity (47%), and cuts (58%) as well as fighting and assault (14.5%) in a community sample of adolescents. Although much of the research is focused on unintentional injury, there is growing interest in injuries attributable to violence, due to their disproportionate impact on vulnerable youth and the attendant morbidity and mortality. In a predominantly African-American (75%) sample of 100 adolescents and young adults (age range 15 – 30) treated in an urban trauma center, Redeker et al.⁵ found that 89% of the injured derived from interpersonal violence and included firearm injuries, stab wounds, and blunt trauma. At another urban level 1 trauma center, 86% of youth reported physical violence with the violence resulting in an injury requiring medical attention in 22% of the cases.⁶ Risk factors associated with the violent behaviors and victimization included depression, nonviolent delinquency, and community exposure to violence. Recognizing that some of these markers can be used to identify at-risk adolescents and serve as the basis for secondary prevention efforts, organizations including the American Academy of Pediatrics⁷ are advocating that health professionals be involved proactively in the identification of these youth.

The use of alcohol and drugs, in particular, has been closely linked with adolescent injury. Of all 13 to 19 year olds admitted to a Level I Pediatric Trauma Center, 34% screened positive for alcohol or drugs on admission.⁸ Another study of adolescents admitted for trauma found that 48% had positive blood alcohol levels.⁹ Rivara et al.¹⁰ found that 41% of 18 – 20 year olds admitted for trauma had positive blood alcohol screens. The youth admitted for assault-related injuries were most likely to be positive for substance use, with 49% of the youth having behavioral evidence of chronic alcohol abuse. Similarly, Loiselle et al.⁸ found that recent use of alcohol was more common among adolescents treated for intentional injury than those treated for unintentional injury. In a comprehensive study of injury prevalence among adolescents in 35 countries, Pickett et al.² determined that poverty was positively associated with intentional injuries, and alcohol use was positively and consistently associated with interpersonal violence, but not school and sports related injuries.

Although orofacial injuries comprise a distinct subset of all injuries in adolescents, particularly urban minorities, even less is known about the antecedent risk factors for orofacial injury than for general injury. Gordy et al.¹¹ found that in children and adolescents presenting with traumatic orofacial injuries to an urban emergency department, the primary mechanisms of injury were falls and sports-related activities. In a community sample of Brazilian adolescents aged 13, orofacial injury was associated with male sex, nonnuclear family, high paternal punishment, and poor school performance.¹² In a hospital-based English sample matched to controls on age and sex, Odoi et al.¹³ found dental injury more likely among children with peer relationship problems. Examining a broad range of adolescent injury, Laloo (2003) reported

that male gender, lower socioeconomic status, single parent home, hyperactivity, and conduct disorder were associated with occurrence of injury in a nationwide community sample of English children between 4 and 15 years old ($n = 5,913$).^{14,15} The identification of youth at risk for injury and re-injury is particularly relevant to orofacial injury, which forms a distinct subset of injuries treated at urban trauma centers. The face is a common target for interpersonal violence and thus orofacial injury, in vulnerable youth presenting to urban trauma centers is frequently considered as an empirical marker of an individuals' propensity to risk taking behaviors.

Identifying the factors that place these subgroups of youth at risk for violence and re-injury could set the stage for proactive intervention approaches that target the underlying problem behaviors. To help guide such secondary intervention strategies, we sought to clarify the association of possible risk (e.g., substance use, criminal activity) and protective factors (e.g., family cohesion) specific to intentional and unintentional injury among minority adolescents seen at urban trauma centers. Concomitantly, we chose to assess the adolescents' willingness to participate in prospective observational research and behavioral interventions focused on antecedent risk factors.

Methods

Participants

We conducted interviews with a sample of 67 adolescent aged 14 - 20 years who presented to two Level 1 trauma centers in Los Angeles County from July 2006 to March 2008. To be considered eligible, the adolescents had to meet the following inclusion criteria: received emergency treatment for orofacial injury at either Los Angeles County/University of Southern California Medical Center (LAC/USC) or Children's Hospital Los Angeles (CHLA) as verified by hospital records; was under 21 years old at the time of treatment; was at least 14 years old at the time of interview; the injury occurred within the past 12 months; the injury affected the orofacial area; the interview could be conducted in English or Spanish; the adolescent/young adult consented (18 years or older) or assented (14 to 17 years) to participation in the study. For patients under 18 years of age, a parent or legal guardian provided written permission for their child's participation. The presence of injury in the orofacial region was verified by clinician report. According to clinician report, 59% of the adolescents were treated for injuries that were assault-related, 29% for motor vehicle or other accidents, 9% for gunshot wounds and 3% for sports injuries. Exclusion criteria were: refused consent; injury was self-inflicted; adolescent was currently in detention by the California Youth Authority; adolescent/young adult was not physically or mentally capable of participating in a one-hour interview as determined by self-report, parental report or clinician report.

Procedures

Clinic staff and project staff at the recruitment sites reviewed patient files, identified potentially eligible families, and obtained verbal consent for the project interviewers to contact potential participants. In addition, flyers and brochures for the project were distributed so that interested patients could contact study staff directly. IRB-approved recruitment procedures differed slightly between the two sites. Potentially eligible patients at LAC/USC with orofacial injuries were identified from the trauma log at the hospital. At CHLA, potentially eligible patients were identified by the Current Procedural Terminology (CPT) recorded for them at the time of the emergency room visit. At both sites, potentially eligible patients were then screened for eligibility in person or by telephone and a time scheduled for consent and interview if the patient screened eligible. Written informed consent was obtained if the adolescent was of legal age (≥ 18 years), parental consent (in person or by phone) and adolescent assent were obtained if the adolescent was a minor. Trained bilingual interviewers with prior experience

interviewing adolescents conducted face-to-face interviews in the clinic or at a convenient location closer to the participant's home, depending on the preference of the participant or family. The majority of interviews were conducted at LAC/USC and CHLA and the interviews averaged one hour in length. Interviews were conducted separately in a private location using SCANTRON forms designed to be marked by pen on paper and then scanned into an electronic database, which was then uploaded into the Statistical Package for the Social Sciences (SPSS) for analysis. All enrolled subjects received \$35 for their participation.

The screening procedures at the two hospitals varied in efficiency for recruitment purposes. At CHLA, 356 adolescents who were treated in the emergency room within the past 12 months were identified as potentially eligible using CPT codes. When the criteria of injury only (excluding congenital orofacial abnormality and disease) and specificity to the orofacial region (excluding injuries to the head and neck) were applied to the 356 potential cases, 179 remained eligible. Of those 179 patients, 8 refused to participate, 17 completed interviews and the remainder had moved or had their phones disconnected since their treatment at CHLA. LAC/USC differed from CHLA in that adolescents were identified through trauma logs and most were informed about the study at the time of treatment, although the time between injury date and interview did not differ by study site. Of 108 potentially eligible LAC/USC patients: 31 declined to participate; 27 screened ineligible and 50 completed interviews for the study. Overall, more than half (54%) of the interviews occurred within the first month after the injury date reported on the admission form; 80% of interviews occurred within two months after the injury; 90% of interviews occurred within six months after the injury; and 100% occurred no more than 9 months after the injury. Consequently, most of the orofacial injuries for which adolescents were treated were captured on the Adolescent Injury Checklist (AIC) described below.

Measures

Injury Type—The Adolescent Injury Checklist (AIC) was used to assess the type of injuries (e.g., falls, motor vehicle accidents, intentional injuries) adolescents experienced in the past 6 months. The AIC is an established self report measure that assesses 16 types of injuries and the circumstances associated with these injuries.¹⁴ Two types of injuries, “being in a physical fight with someone” and “being physically attacked” were combined to estimate the extent that adolescents experience intentional injuries.

Family Functioning—Eight of the 15 sub-scales comprising the Family Functioning Scale¹⁶ were utilized: family cohesion, expressiveness, conflict, sociability, disengagement, democratic style, laissez-faire style and authoritarian style. The scales consist of five items each with adolescents/young adults rating the degree to which each item was ‘like’ his or her family on a four-point response scale (‘Not at all like my family’ to ‘Very much or just like my family’). For the current study, alphas were: cohesion (.78); sociability (.63); expressiveness (.60); conflict (.38); disengagement (.41); laissez faire style (.61); democratic style (.46) and authoritarian style (.07). Conflict, disengagement, and democratic and authoritarian style subscales were dropped from the study and not included in the analyses, due to the low alphas.

Substance-related Problems—The CRAFFT¹⁷ is a 6-item screen for lifetime substance-related problems specifically validated for use with adolescents. The name is a mnemonic of the first letters of key words in the test's six questions (e.g. ‘C’ is from the first question: ‘Have you ever ridden in a Car driven by someone who was high’). A validation study with 538 participants aged 14 to 18 years produced a sensitivity of .76 and a specificity of .94 for identification of any problem; a sensitivity of .80 and specificity of .86 for any disorder and a

sensitivity of .92 and specificity of .80 for dependence.¹⁷ For this study, the CRAFFT was internally consistent, with a Cronbach's alpha of .87.

Alcohol Use—The Alcohol Use Disorders Identification Test (AUDIT)¹⁸ was utilized to assess problem drinking in the past year. The AUDIT is a 10-item instrument developed by the World Health Organization and designed to assess three related constructs: alcohol consumption, drinking-related problems and alcohol dependence. The AUDIT is widely used and has excellent reliability and validity as a screening instrument for use in medical settings to assess potentially hazardous drinking.¹⁹ Two studies^{20,21} assessed adolescents under treatment in emergency departments and found a two-factor structure, with alcohol dependence not a separate factor for adolescents/young adults, based on work with individual aged 12 to 20 and a Cronbach's alpha of .86.²¹ Alpha for the 67 adolescents in the current sample was .86.

Drug History—Each participant was asked a series of questions regarding their use of specific illegal drugs, alcohol and tobacco to determine the following: age at first use, age began regular use, how many months ago was the most recent use, how many days of the past 30 was the substance used, how many days ago was the most recent use and how many days ago was the most recent medical use. The instrument assessed for use of inhalants, marijuana, hallucinogens, amphetamines, downers, heroin, other opiates, crack, cocaine, tranquilizers, PCP, synthetic drugs, any alcohol, and alcohol to intoxication (five or more drinks per sitting). For the present analyses, any lifetime use, and use in the past 30 days of tobacco, alcohol, alcohol use to intoxication, and marijuana/hashish use were examined.

Crime—A series of 8 items assessed number of arrests, charge at time of arrest, age at first arrest, number of convictions, number of incarcerations and whether these occurred prior to age 18 or prior to the first use of cocaine or narcotics.

Willingness to Participate in Research & Interventions—To assess their willingness to participate in observational research studies, participants were asked to rate, on a four point scale ranging from “definitely would” to “definitely wouldn't”, how willing they would be to participate in studies with interview content similar to the interview they had just completed that contained: (1) zero follow-ups; (2) one follow-up; and (3) two follow-ups. Subjects were asked the reasons for their choices. To assess their willingness to participate in intervention studies of causes, outcomes and prevention of facial injuries in adolescents, the same four point scale was used to evaluate four possible types of intervention: (1) single 10-20 minute session with a clinician face-to-face; (2) two sessions, one face-to-face and a phone follow-up; (3) an hour-long counseling session face-to-face; (4) two hour-long sessions, one week apart. They were also asked to provide the reasons for their choices. Three open-ended questions concluded the evaluation of willingness to participate in future research: what the participant liked and didn't like about the alternatives for interviews and clinician sessions offered; what would be improvements in the alternatives offered; what interventions might better address the problems or circumstances that led to the participant's injury.

Data Analyses

Chi-square tests and *t*-tests were conducted to examine the association of injury type (i.e., assault-related, as compared to unintentional injury as reported on the AIC) with adolescent demographic characteristics, family variables, substance use, arrests, and criminal behavior. Chi-square tests and *t*-tests were conducted to examine factors associated with adolescents' willingness (definitely or probably) to participate in a two-session counseling intervention each lasting 45-60 minutes as compared to those who were definitely or probably not willing to attend this type of intervention. Logistic regression analyses were performed to assess which

factors were most strongly associated with willingness to participate in the intervention while controlling for other relevant factors. Unless otherwise indicated, the significance level (two-tailed) was set at $p < .05$.

Results

Participants

The background and sociodemographic characteristics of the patient population by injury type are summarized in Table 1. Overall, patients were predominately male (86%), with an average age of 17.8 years (range 14 - 20 years). The ethnic makeup of the participants was primarily Latino (72%) and the remainder primarily African-Americans (19%). Sixteen percent were born outside the United States, but none reported that they were more comfortable speaking Spanish than English. Half (52%) of the adolescents reported that they were not currently in school; 9% were currently enrolled in 10th grade; 20% in 11th grade and 20% in 12th grade. Thirty percent were currently employed and an additional 44% were seeking employment. Of those who were employed, 11% reported working full-time (35 or more hours per week) and most were employed in unskilled or low-skilled occupations such as shipping, stocking, movie theater work, babysitting or furniture delivery. Adolescents who experienced assault-related injuries were more likely to be male, older, and not in school. African American and South/Central American youth had marginally higher rates of intentional injuries than those from other racial/ethnic groups. Family members of youth who were assaulted also had a higher rate of alcohol problems.

Injury-related Risk Behaviors

As reported on the Adolescent Injury Checklist, the most frequent cause of injury was “being in a physical fight with someone” (46%). “Being physically attacked” (40%) was the second most common reported cause of injury. Fifty-six percent of adolescents reported having been intentionally injured in a fight or physical attack in the past six months. Although not reported as intentional, 13% of adolescents reported injuries resulting from gunshots (e.g., bystander in gang shooting), cuts, or having been hit by objects such as rocks or glass. Other causes of injury were falls (25%), riding a bike, skateboard or rollerblades (25%), and sports injuries (19%). (Categories were not mutually exclusive.)

Extensive data on drug and alcohol use by injury type is summarized in Table 2. All but 8% of the participants had used alcohol and 41% had used it within the 30 days prior to the interview. Two-thirds (66%) had used alcohol to intoxication. More participants had smoked marijuana (66%) than tobacco (59%); among marijuana users, 36% had used marijuana in the 30 days prior to the interview. The mean CRAFFT score (SD) for participants was 2.54 (2.27), above the cut-point of 2.0 for identification of problem substance abuse in this population. More than half (55%) of the enrolled subjects scored 2.0 or higher on the CRAFFT screener. The mean AUDIT score (SD) of 5.95 (7.02) was well below the cut-point of 8 for problem identification and also well below the mean score (SD) of 7.74 (7.14) for a sample of 103 adolescents (mean age = 17.5; 80% white) who had also received treatment in emergency departments. Rates of recent tobacco, alcohol, and drug use were higher for adolescents with assault-related injuries. The mean AUDIT score was also significantly higher for youth who were assaulted.

A majority of the participants had been arrested at least once (55%). A larger majority (64%) had relatives who had been arrested and 80% reported that one or more of their close friends had been arrested. Reasons for arrest ranged from ditching school and curfew violations to assault with a weapon, grand theft and robbery. No statistically significant differences in

adolescent arrests were observed for youth who reported intentional or unintentional injuries (Table 3).

Willingness to Participate in Observation/Intervention Research

The majority of adolescents/young adults in the study expressed willingness to participate in research studies on topics similar to the current study. Scenarios for observational studies were most acceptable to the participants, with 80% reporting they definitely or probably would join a study “with interview content similar to the one just completed,” 77% expressing willingness if that study also included a single follow-up three to six months later, and 79% willing to join if there were two or more follow-up interviews occurring over the next 12 months.

Intervention research scenarios were less acceptable: 72% definitely or probably would participate in a single session of clinician advice (10 - 20 minutes, face-to-face); 68% were willing to participate in two sessions of clinician advice, one month apart (10-20 minutes face-to-face for the first session and 5 - 10 minutes by phone for the second session); 61% would participate in a single face-to-face counseling session lasting 45-60 minutes; 55% were willing to participate in two face-to-face counseling sessions lasting 45 - 60 minutes and scheduled one week apart. When asked to provide reasons for their choices in an open-ended question, the most frequent reason for disliking the counseling scenarios was that it was more comfortable to deal with the psychology of trauma and to express personal feelings in a relatively short multiple-choice format rather than a longer, open-ended counseling format where the individual is expected to express his or her feelings and deal with them at length. When asked if they would be willing to join a study where adolescents were randomized to the type of care they received, 13% said they definitely would and 61% said they probably would.

The cohesion subscale of the Family Functioning Scale significantly related to whether or not the adolescent/young adult reported that they would be willing to participate in a two-session counseling intervention (two face-to-face sessions one week apart, each 45 - 60 minutes), the most intensive and least accepted of the intervention possibilities presented to participants. In addition, injury type, adolescent race/ethnicity, lifetime tobacco use, family alcohol problems, drug problems among close friends, the CRAFFT score and the AUDIT score were also predictive of willingness to participate in the most intensive intervention scenario (Table 4). In multivariate logistic regression analyses, independent variables significantly ($p < .05$) related to whether or not the patient expressed a willingness to participate in future intervention research were the cohesion subscale of the FFS and injury type. The multivariate logistic regression equation that was the best fit to the data indicated that the combination of greater family cohesion (odds ratio = 1.30, 95% CI = 1.01-1.68, $p = .048$) and unintentional, rather than assault-related injuries (odds ratio = .32, 95% CI = .11-.93, $p = .036$) predicted adolescents' willingness to participate in the counseling intervention.

Discussion

This study assessed adolescents presenting with orofacial injury to two urban trauma centers who were a primarily male (86%), minority sample (72% Latino, 19% African-American; 16% born outside of the U.S.) whose mean age was 17.8 years. The study was conducted to identify risk factors and problem behaviors associated with assault-related (as compared to unintentional) injuries. Additionally, we surveyed them for motivation and willingness to participate in proactive, secondary prevention approaches that would target any escalating causal behaviors for interruption and intervention. Most of the orofacial injuries in this sample were intentional in nature, either through violent actions (i.e., being in a physical fight with someone) or victimization (i.e., being physically attacked). This finding is in sharp contrast to other surveys of adolescent injuries in majority populations,^{22,23} which tend to report mostly accidental or sports injuries. Factors that distinguished these at-risk, predominantly ethnic-

minority youth who experienced assault-related injuries from those with unintentional injuries included unhealthy alcohol use (i.e., higher AUDIT scores), high rates of recent substance use, and having a family history of alcohol problems.

Similar to previous findings in adult populations,²⁴ substance use was fairly high among this sample of adolescents. The mean screening score for substance use indicated problem-level behaviors for this sample, with more than half of the adolescents scoring above the cut-point. Although the mean score on the screen specific to alcohol use was below problem level behavior indications, it should be noted that 46% of adolescents with assault related injuries reported drinking within the past month, and 22% reported using alcohol to the point of intoxication within the past 30 days. These data indicate problem substance use patterns may be developing in adolescents who have experienced assault-related injury. As Li et al.²⁵ noted, alcohol dependence (alcoholism) is best understood as a chronic disease with a peak onset by the age of 18.

Notably, among this sample of urban youth, the majority of orofacial injuries were from assault or victimization, indicating a critical need for violence prevention intervention efforts with this population. An alarming finding from this study was the high rate of previous delinquency for both injury types. A majority of the injured adolescents had been arrested at least once, and some of these arrests were for serious crimes (assault and battery, 14%; weapons violations, 14%). All of these findings indicate there is a tremendous need for intervention among this inner-city population of adolescents treated at trauma centers, which could include approaches from crime-prevention, family-based intervention, and injury prevention models of treatment. Moreover, in addition to the need for intervention to prevent future re-injury, a significant subset of these at-risk youth also needs intervention that addresses their substance use. In fact, a strong association of alcohol/drug use with injury and with re-injury among adult trauma patients²⁶⁻³² has prompted investigators to argue for treating trauma center admission as a secondary symptom of underlying substance use problems. Any efforts to reduce the risk of re-injury are unlikely to be successful if the underlying problem is not addressed.

One objective of this study was to assess the willingness of the injured youth to participate in interventions addressing the underlying risk behaviors. We found that while youth were highly willing to participate in survey only studies (such as the current study), they were less willing to participate in interventions, especially if it would entail more than one session. This willingness was related to family functioning—specifically the family cohesion subscale, with greater cohesion predicting a greater likelihood of being willing to participate. In addition, a greater willingness was observed for adolescents whose injuries were assault-related rather than unintentional, and those with lower problematic substance use. However, these are the youth less likely to need treatment, and may not benefit as much. For example, previous studies have found that more serious adolescent substance users are motivated better to change at the outset of treatment and experience more rapid declines in substance use after treatment begins.³³

Consistent with the recommendations of the American Academy of Pediatrics and other organizations, violence risk screening protocols need to be integrated into the care of adolescents with orofacial injuries treated at urban trauma centers. A history of substance use problems, detected by brief screens such as the AUDIT, is a likely indicator that adolescents with orofacial injury should be referred for intervention. Knowledge of the risk factors as well as sensitivity to the willingness of the patient should be critical in choosing a target intervention. In previous studies, adolescent willingness to participate in an intervention trial (e.g., an HIV vaccine trial) has been related to the length of the adolescents' community involvement and the prevalence of risk in their community.³⁴ Thus, for adolescent orofacial injury associated

with violence and/or substance use, information presented at the time of injury that addresses these factors may motivate youth to seek treatment.

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Table 1Adolescent Demographic and Family Variables by Type of Injury in Past Six Months (N = 67)^a

	Unintentional injuries (% or mean)	Assault-related injuries (% or mean)	Statistical test
Sex			$\chi^2(1)=4.8, p=.028$
Male	75.9%	94.6%	
Female	24.1%	5.4%	
Mean (SD) age	17.3 (1.6)	18.1 (1.4)	$t(64) = -2.05, p=.044$
Ethnicity			$\chi^2(3)=7.9, p=.075$
African American	10.3%	24.3%	
Mexican	65.5%	56.8%	
South or Central American	6.9%	16.2%	
Other	17.2%	2.7%	
Grade ^a			$\chi^2(3)=12.1, p=.007$
10th	22.7%	2.8%	
11th	31.8%	13.9%	
12th	22.7%	16.7%	
Not in school now	22.7%	66.7%	
Country of Birth			$\chi^2(1)=0.6, p=.438$
USA	81.5%	85.0%	
Other	18.5%	15.0%	
Family member has/had alcohol problem	17.2%	40.5%	$\chi^2(1)=4.2, p=.041$
family has/had member drug problem	20.7%	35.1%	$\chi^2(1)=1.7, p=.198$
Number of close friends who ever had drug problems			$\chi^2(2)=3.7, p=.161$
None	55.3%	37.8%	
One	41.4%	45.9%	
Two or more	3.4%	16.2%	
Mean (SD) family cohesion score	12.45 (2.15)	11.95 (2.30)	$t(64) = 0.91, p=.368$

^a Study sample is 67 but for Grade there are 9 missing.

Table 2

Drug and Alcohol Use among Adolescents by Injury Type (N = 67)

	Unintentional injuries (% or mean)	Assault-related injuries (% or mean)	Statistical test
% Lifetime use: ^a			
Tobacco	44.8%	67.6%	$\chi^2(1)=3.4$, $p=.064$
Any alcohol	86.2%	97.3%	$\chi^2(1)=2.9$, $p=.091$
Alcohol to intoxication	58.6%	73.0%	$\chi^2(1)=1.5$, $p=.220$
Marijuana/Hashish	55.2%	73.0%	$\chi^2(1)=2.3$, $p=.132$
% Used in Last 30 Days: ^b			
Tobacco	11.1%	40.0%	$\chi^2(1)=4.6$, $p=.031$
Alcohol	19.2%	46.3%	$\chi^2(1)=5.1$, $p=.024$
Alcohol to intoxication	13.8%	21.6%	$\chi^2(1)=0.8$, $p=.413$
Marijuana/Hashish	10.3%	35.1%	$\chi^2(1)=5.4$, $p=.020$
Mean (SD) AUDIT score	3.8 (4.8)	7.4 (8.0)	$t(60) = -2.07$, $p=.043$
Mean (SD) CRAFFT score	2.0 (2.2)	2.9 (2.3)	$t(64) = -1.61$, $p=.112$

^aBased on the question, "How old were you the first time you tried [drug/alcohol]?"

^bBased on the question: "How long ago did you last use [drug/alcohol]?" Reported % is among users.

Table 3Any Arrests and Type of Crime when Arrested for First Time by Injury Type^a

	Unintentional injuries	Assault-related injuries	Statistical test
Any arrests (N=67)	55.6%	57.5%	$\chi^2(1)=0.0$, $p=.898$
Type of crime (n=38)			$\chi^2(7)=6.2$, $p=.515$
Assault and battery	14.3%	13.6%	
Weapons violations	14.3%	13.6%	
Vandalism	7.1%	22.7%	
Truancy, curfew	14.3%	13.6%	
Theft	21.4%	13.6%	
Robbery	0%	9.1%	
Alcohol and drugs	21.4%	4.5%	
Probation violation, obstructing justice	7.1%	9.1%	

^a 55.2% (38 out of 67) reported being arrested

Table 4**Adolescents' Characteristics Associated with Willingness to Participate in a Counseling Intervention^a**

	Unwilling to participate (% or mean)	Willing to participate (% or mean)	Statistical test
Assault (vs. unintentional) injuries	69.4%	41.4%	$\chi^2(1)=5.2, p=.023$
Mean (SD) age	17.89	17.52	$t(63)=0.96, p=.343$
Ethnicity			$\chi^2(3)=10.3, p=.016$
African American	22.2%	13.8%	
Mexican	69.4%	48.3%	
South or Central American	8.3%	17.2%	
Other	.0%	20.7%	
Mean (SD) family cohesion score	11.61 (2.30)	12.83 (2.02)	$t(63)=-2.24, p=.029$
Mean (SD) AUDIT score	7.49 (7.89)	3.88 (5.09)	$t(59)=2.03, p=.047$
Mean (SD) CRAFFT score	3.08 (2.29)	1.83 (2.09)	$t(63)=2.29, p=.026$
Lifetime tobacco use	72.2%	41.4%	$\chi^2(1)=6.3, p=.012$
Lifetime alcohol use	97.2%	86.2%	$\chi^2(1)=2.7, p=.098$
Lifetime alcohol use to intoxication	77.8%	55.2%	$\chi^2(1)=3.8, p=.053$
Lifetime marijuana use	75.0%	55.2%	$\chi^2(1)=2.8, p=.093$
Family member has/had alcohol problem	41.7%	17.2%	$\chi^2(1)=4.5, p=.034$
Family member has/had drug problem	38.9%	17.2%	$\chi^2(1)=3.6, p=.056$
Number of close friends who ever had drug problems			$\chi^2(2)=6.6, p=.037$
None	38.9%	55.2%	
One	41.7%	44.8%	
Two or more	19.4%	.0%	
Any arrests	63.9%	48.3%	$\chi^2(1)=1.6, p=.206$

^aNo significant differences in willingness to participate in an intervention were observed by adolescent gender, country of birth, grade/school attendance, or recent tobacco, alcohol, alcohol use to intoxication or drug use.