

CORRELATES OF READINESS TO CHANGE PROBLEM DRINKING AMONG A SAMPLE OF PROBLEM DRINKERS RECEIVING CARE FROM AN INNER-CITY EMERGENCY DEPARTMENT

Background: The high rate of alcohol use among emergency department (ED) patients makes the ED setting an obvious target for increased screening and interventions. However, interventions to change alcohol behavior may be applied inappropriately if a patient's motivation to change is not factored in. In this study, we identify correlates of readiness to change problem drinking among a sample of ED patients with problem drinking.

Method: Cross-sectional study of 295 ED patients who scored positive for alcohol problems on the CAGE questionnaire (score ≥ 1). Study measures include illicit drug use, exposure to violence, and having a primary care doctor as the main predictor variables and level of readiness to change problem drinking as the outcome measure.

Results: Participants were 64% African American, 30% Latino, and 80% male; 46% had less than a high school diploma; 85% were not married; 72% had no health insurance; and 85% had no primary care provider. Whereas 12% of patients were not ready to change their drinking behaviors, 47% and 41% were unsure and ready, respectively. Multiple linear regression analysis showed that only the use of illicit drugs significantly affected the likelihood of changing one's level of readiness-to-change problem drinking ($P < .05$). Female and married participants were also more likely to be ready to change their alcohol use behaviors.

Conclusions: Recognizing that approximately half of ED patients with problem drinking are ambivalent to changing their behaviors supports further investigation into specific clinical interventions aimed at motivating such individuals along the continuum of readiness to change. Such interventions should also incorporate strategies for addressing the co-occurrence of illicit substance use. (*Ethn Dis.* 2008;18[Suppl 2]:S2-93-S2-98)

Key Words: Readiness to change, Problem Drinking, Emergency Departments

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BACKGROUND

Millions of Americans are unhealthy users of alcohol, from risky use of alcohol to alcohol dependence.¹ Alcohol abuse and dependence alone affect an estimated 18 million Americans; however, only 13% of individuals with either alcohol abuse or alcohol dependence receive treatment to change unhealthy alcohol intake.² Alcohol intoxication is a leading risk factor for injury among emergency department (ED) patients.³⁻⁶ The public health and economic consequences of unhealthy alcohol use^{7,8} have driven research to improve patient screening for unhealthy alcohol use during the physician encounter. Because ED physicians have a unique opportunity during these visits to intervene, investigators have supported screening and brief interventions for alcohol use during ED visits.^{5,9-11}

The stages of change theory by Prochaska is a common tool for assessing an individual's level of readiness to change risky behaviors and includes levels of readiness and desired behavioral change termed precontemplation, contemplation, preparation, action, and maintenance.¹² This process is gradual in evolution and sometimes circular in motion. Readiness to change has been identified as a major predictor of commitment to change and receptiveness to

change risky behavior.¹³⁻¹⁵ The value of brief interventions in the context of motivation to change has been documented by investigators who reported reduction in subsequent alcohol intake and injury recidivism.¹⁶⁻²² Brief interventions are particularly effective in the ED.²³⁻²⁷

EDs provide teachable moments for brief interventions in individuals who misuse alcohol.²⁸ Clinical interventions and practice guidelines typically place considerable emphasis on engaging participant intent-to-change behaviors or move them along the continuum of intent to change. Little research has examined specific predictors of change during these teachable encounters among ED patients. This study explored these correlates with the aim of describing potentially modifiable factors that might enhance interventions in ED settings. We hypothesize that 1) problem drinking patients who report having a primary care physician are significantly more likely to report a higher level of readiness to change problem drinking; 2) problem drinking patients with a history of illicit drug use are more likely to report a higher level of readiness to change problem drinking; and 3) problem drinking patients who report a higher level of exposure to violence are more likely to report a higher level of readiness to change drinking behavior.

METHODS

This was a cross-sectional study. The data were originally collected from a sample of 295 ED patients with self-reported alcohol problems based on the CAGE questionnaire (score ≥ 1). Details of the data collection methods have

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been reported previously.²⁹ A total of 1058 subjects were approached; 22 (2.1%) refused to be screened for eligibility, and 295 met all the eligibility criteria consented to be enrolled in the study. Participants were recruited and eligible if they were ≥ 18 years old, presented in the ED to receive medical care, spoke English or Spanish, used alcohol within the past 12 months, and answered at least one out of four CAGE questions affirmatively. Patients were excluded from the study if 1) they reported receiving professional alcohol counseling within the past 12 months; 2) they exhibited evidence of cognitive impairment that made it impossible for them to provide informed consent; 3) the requirements of medical treatment prevented them from being interviewed; or 4) they were in police custody. Recruitment was conducted by bilingual English and Spanish health promotion advocates in the waiting area of the ED from 9:00 AM to 6:00 PM, every day except weekends from August through December 2001. This study was reviewed and approved by the institutional review board of Charles Drew University of Medicine and Science.

Measurements

The initial screening tool measured alcohol problems by using the CAGE instrument. The sensitivity and specificity for CAGE score ≥ 1 ranges from 86%–90% to 52%–93% depending on the population surveyed.³⁰ CAGE is a mnemonic for the following questions: in the preceding 12 months, a) have you ever felt that you should cut down on your drinking; b) have people annoyed you by criticizing your drinking; c) have you ever felt bad or guilty about your drinking; d) have you ever had a drink first thing in the morning (eye-opener) to steady your nerves or get rid of a hangover? Reporting one positive response to any of the items identified the respondent as a “problem drinker.” Socioeconomic and demographic variables, information on access

to medical care, health insurance status, incidence of alcohol related injuries, exposure to violence, alcohol and drug use, types of drinks consumed, and readiness to change problem drinking variables were also collected. These variables were specifically collected to examine the socioeconomic, healthcare utilization, substance use, and adverse event predictors on the intention to change problem drinking behaviors.

Outcome Variable

Readiness to change problem drinking behavior as the outcome variable was measured by using a 10-point scale ranging from 1 to 10 (1 representing the lowest level of readiness to change problem drinking and 10 representing the highest level of readiness to change). The “Readiness to Change Ruler,” where patients are asked to mark an X to locate a position on the scale of 1–10, has been used in motivation intervention research as a means to identify individual stage of readiness to change behaviors, with a score of 1–3 designated as not ready, 4–7 as unsure, and 8–10 as ready.^{29,31,32}

Predictor Variables

Exposure to violence was derived from the following question: “In the past year have you been: pushed or shoved; hit or slapped; threatened or afraid; kicked; physically threatened; stabbed; shot; sexually violated; or none of the above?” The sum score was computed ranging from 0 to 8 (0 indicating no exposure to violence and 8 indicating high exposure). The exposure to violence score was then recoded into three groups: 0= no exposure, 1= one exposure, and 2= more than two exposures. Drug use was derived from the following question: “During the last 12 months did you take any or use any of the following: marijuana, cocaine, narcotics, sedatives, amphetamines, hallucinogens, heroin, ecstasy, or gamma-hydroxybutyric acid?” The sum score was computed ranging from 0 to 9 (0 indicating no drug use and 9 indicating

using all categories listed). This variable was recoded into two groups: 0= no drug use, 1= drug use. Primary care access was measured by asking each patient if he/she has a primary care doctor, with a dichotomous yes or no response. The following variables were included in the study to control for their confounding role: age (≤ 35 , 36–50, or ≥ 51 years), sex, ethnicity (African American, Latino, or other), marital status (single/separated/divorced vs married), education (less than high school vs high school and higher), and having health insurance.

Analysis of Data

Data were analyzed by using SPSS software, version 12.0 (SPSS Inc., Chicago, Ill). Frequency distributions of various behaviors were calculated. Bivariate analyses using analysis of variance (ANOVA) were performed to determine the effect of demographic variables (age, sex, marital status, education, and insurance coverage) and other independent variables (exposure to violence, illicit drug use, having primary care physicians) on the outcome measure (readiness to change). In addition, multiple linear regression analysis was performed to examine the independent effect of predictor variables on the dependent variable, adjusting for other potential confounding variables. A *P* value $< .05$ was considered statistically significant.

RESULTS

This study was a retrospective analysis of data collected from a sample of 295 problem drinkers visiting an inner-city ED to receive care. Participants were an average of 38.8 years of age. Most of the sample was male (80.3%), not married (85.4%), and African American (64.1%), and most had no health insurance (70.2%) (Table 1). More than 80% of the sample reported not having a primary care physician. Table 1 also shows the readiness to

Table 1. Characteristics of emergency department patients by readiness to change drinking behavior (N=295)

Characteristic	n (%)	Readiness to Change Score, Mean ± SD
Marital status (P<.01)		
Not married	252 (85.4)	6.6±2.6
Married	43 (14.6)	7.8±2.2
Age (P=.33)		
18–35 years	92 (31.7)	6.5±2.5
36–50 years	151 (52.1)	7.0±2.7
≥51 years	47 (16.2)	6.5±2.6
Education (P=.10)		
Less than high school	137 (46.5)	6.8±2.3
More than high school	158 (53.5)	6.7±2.8
Health insurance (P=.61)		
Not insured	207 (70.2)	6.9±2.5
Insured	88 (29.8)	6.7±2.8
Sex (P<.05)		
Male	237 (80.3)	7.5±2.6
Female	58 (19.7)	6.6±2.5
Ethnicity (P=.60)		
African American	189 (64.1)	6.8±2.5
Latino	89 (30.2)	6.7±2.6
Other	17 (5.8)	7.4±2.8
Primary physician (P=.73)		
No	250 (84.7)	6.8±2.5
Yes	45 (15.3)	6.7±3.0
Exposure to violence (P<.01)		
None	135 (46.6)	6.6±2.6
One	69 (23.5)	6.2±2.6
Two or more	88 (29.9)	7.7±2.4
Drug use (P<.05)		
Any drug use	200 (67.9)	7.0±2.5
No drug use	95 (32.1)	6.4±2.80
Readiness to change problem drinking		
Not ready (1–3)	35 (12.0)	6.8±2.6
Unsure (4–7)	137 (46.9)	
Ready (8–10)	120 (41.1)	

SD = standard deviation.

change alcohol behavior score (mean 6.81, standard deviation [SD] 2.61), illicit drug use score (mean 1.2, SD 1.1), and violence score (mean 1.28, SD 1.65). Furthermore, more than two thirds (67.9%) of the patients in the sample had used illicit drugs within the

past year. The most commonly used illicit drug was marijuana (44.4%), followed by crack cocaine (27.3%) and narcotic analgesics (18.9%). Approximately half of the sample (47%) reported “no exposure” to violence, while 30% reported two or more

episodes of violence (Table 1). The most commonly reported category of exposure to violence was being pushed or shoved (27.9%) and being hit or slapped (27.2%), followed by being threatened or afraid for their safety (23.1%).

The following variables were associated with readiness to change problem drinking behavior (P<.05): sex, marital status, illicit drug use, and exposure to violence. Using stepwise multiple linear regression analysis and controlling for the effect of all the confounding variables (Table 2), readiness to change problem drinking remained associated with illicit drug use [$t(265)=3.54$, $P<.001$], marital status [$t(265)=3.47$, $P<.001$], and sex [$t(265)=2.57$, $P<.011$]. Exposure to violence was no longer a predictor of the intention to change (P<.06). The adjusted coefficient of determination (R²), which is the measure of how much of the variability in the outcome is accounted for by the predictor, was .8%. The value of R² increased from .3% (when only illicit drug was included in the model), to .6% with illicit drug and marital status in the model, to .8% when all three predictors (drug, marital status, and sex) were added to the model, indicating that the inclusion of each predictor added to the overall predictability of the model.

DISCUSSION

The specific aim of this study was to identify correlates of readiness to change

Table 2. Predictors of readiness to change problem drinking behavior in previous 12 months among problem drinkers presenting to an inner-city hospital emergency department (N=295)

Model	B	Standard Error	β	t	P Value
Sex	.957	.372	.146	2.571	.011
Marital status	1.473	.424	.199	3.477	.001
Primary care doctor	-.180	.427	-.025	-.422	.673
Illicit drug use score	.556	.157	.202	3.54	.001
Exposure to violence score	.189	.100	.120	1.88	.06

problem drinking behavior among a sample of problem drinking patients who visited an inner-city hospital ED to receive care. We tested three hypotheses: 1) problem drinking patients who report having a primary care physician will be significantly more likely to report a higher level of readiness to change problem drinking behavior; 2) problem drinking patients who report exposure to violence will be significantly more likely to report a higher level of readiness to change problem drinking behavior; and 3) problem drinking patients with a history of illicit drug use will be significantly more likely to report a higher level of readiness to change problem drinking behavior.

In this study, we found having a primary care doctor and reporting any level of exposure to violence were not statistically associated with any level of readiness to change problem drinking. Speculating that having a primary care physician would be a positive influence to promote healthy behaviors is an assumption supported by previous studies using primary care patients.³³⁻³⁷ In our sample, however, of participants who reported having no primary care doctor (85%), 49% were "unsure" (5-7 in readiness scale) of their intention to change their problem drinking behavior. Physician-driven interventions usually emphasize willing participation as an indication to engage patient to change their behaviors. Because less emphasis is placed on gradual movement along the continuum of change, the result indicating no statistically significant difference between individuals with regular access to care and those not having any does not come as a surprise.

In this study we speculated that problem drinkers with exposure to violence would perceive alcohol as a catalyst of violence and, therefore, would be more likely to report a higher level of readiness to change problem drinking. However, we could not provide strong support for the predictive

role of exposure to violence and readiness to change problem drinking. Although a positive association was detected in the bivariate level, the effect of this variable was negated when other variables were entered into the final model. Other investigators have reported on the association of alcohol and violence, particularly alcohol and sexual assault,³⁸ injury by an intimate partner,³⁹ perpetrating violent act,^{40,41} and domestic violence.⁴² In our sample of problem drinkers who were exposed to some level of violence (53.4%), a large percentage (43%) were "ready" to change problem drinking (7-10 on the readiness scale). These data suggest that this group may perceive their drinking as related to their exposure to violence, and consequently these individuals may desire change. Taking into consideration that our data initially showed an association between these two variables, further investigation is warranted so that opportunities to prepare patients for changing risky drinking behavior is not missed in the ED setting.

We also found a positive association between use of illicit drug and readiness to change problem drinking. Our results revealed that as illicit drug use increases, readiness to change problem drinking also increases. In fact this variable had the strongest association ($t=3.54$). The literature shows that many patients treated in EDs with alcohol problems have concurrent illicit drug use, particularly among patients treated for orthopedic and trauma injuries.⁴³⁻⁴⁷ Cherpitel and Borges⁴⁸ found a higher prevalence of both six-hour and 12-month substance use among those reporting drinking 6-hour prior to an injury event and reporting alcohol dependent. Woolard et al⁴⁹ reported a high prevalence of marijuana use among injured problem drinkers. In our sample of problem drinkers, nearly 68% reported using some kind of illicit drug. Our finding suggests that the combination of being a problem drinker and using illicit drugs might make one more

vulnerable to physical, mental, and social consequences of substance abuse and subsequently make one more eager and motivated to seek information and a solution. Targeted, stage-specific substance abuse counseling programs in the ED can facilitate the process of change for these presumably treatment-seeking individuals. Our findings suggest that these programs may be more likely to be acceptable and therefore, more effective.

Furthermore, we found a positive relationship between marital status and readiness to change. The predictive power of this variable was strongest after illicit drug use in the model ($t=3.44$). Among our sample of problem drinkers, married patients were more likely to be ready to change their drinking behaviors. This finding supports assertions of the interdependence theory,⁵⁰ which suggests that dyadic processes between couples might influence adoption of risk-reducing habits. Lewis and Rook⁵¹ state that a relationship-centered model of motivation may transform motivation from doing what is best for self to what is best for the continuation of the relationship. This transformation can motivate a couple to cope communally and act cooperatively in adopting a healthy behavior.

We also found a positive relationship between sex and level of readiness to change drinking problem ($t=2.57$), with men more likely to report a higher level of readiness to change. This finding is in contrast to previous studies that suggest that women are more likely to enter substance use treatment⁵² and are more likely to be motivated to change drinking behaviors.⁵³ Our findings suggest further studies are needed to elucidate the role of sex in readiness to change among ED patients.

ED patients often present a segment of population who are more deeply affected by the socioeconomic disadvantages of their community, including limited infrastructure and disproportionate access to health care due to multiple barriers, therefore manifesting

the higher end of disease burden.^{54,55} Despite the fact that alcohol problems are highly prevalent among ED patients,^{29,56} little work has been done to elucidate the stage of change/level of readiness to change problem drinking and factors that are associated with these states among this population. Results of this study suggest that future efforts to reduce the burden of alcohol abuse in this population should be cognizant of the interplay of factors that may correlate with ED patients' level of readiness or willingness to participate in motivational prevention programs.

Limitations

The interpretation of our results must be considered with the limitations of recall bias and possible reporting errors. Another intrinsic limitation of this study was the sensitivity of the topic in the survey, which may have affected the reporting of behaviors. Despite these limitations, the findings of this study provide useful information on a sample of inner-city ED patients with alcohol problems and their receptiveness to interventions.

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