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TRAUMA HEALTHCARE PROVIDERS' KNOWLEDGE OF ALCOHOL ABUSE

Craig Andrew Field, PhD,

University of Texas at Austin, Health Behavior Research and Training Institute, University Medical Center at Brackenridge, 1717 West 6th St, Suite 295, Austin TX, 78703, Phone: (512) 232-0624, Fax: (512) 232-0638

Gerald Cochran, MSW,

The University of Texas at Austin, School of Social Work, Health Behavior Research and Training Institute

Kelli Foulkrod, MS, and

University Medical Center at Brackenridge

Carlos Brown, MD

University Medical Center at Brackenridge

Craig Andrew Field: craig.field@austin.utexas.edu; Gerald Cochran: jcochran@mail.utexas.edu; Kelli Foulkrod: kellifoulkrod@gmail.com; Carlos Brown: cvrbrown@seton.org

INTRODUCTION

Screening and brief intervention (SBI) for alcohol misuse is an evidence-based practice that can be delivered in a number of health care settings^{1–3}. Brief alcohol interventions for patients in trauma settings have demonstrated significant reductions in drinking behaviors over time^{4,5}, other injury related risk behaviors, and subsequent arrests for driving while intoxicated⁶. In addition, brief intervention resulted in savings in reduced health expenditures of \$3.81 for every \$1.00 spent on screening and intervention⁷. Based on the growing body of evidence supporting the effectiveness of brief intervention for alcohol problems, the Committee on Trauma required that Level I and Level II trauma centers have the means to identify patients with alcohol problems, and that Level I trauma centers develop a mechanism for providing brief intervention to injured patients with alcohol problems.

Throughout the development and implementation of this evidence-based approach, a number of trauma center surveys have been conducted to gauge the knowledge and attitudes of trauma center personnel regarding alcohol problems. For instance, Gentilello and colleagues⁸ found that despite the importance placed on substance screening by surgeons, these providers' beliefs about state insurance policies had a potentially negative influence on screening rates. Schermer et al.⁹ similarly documented that support for SBI programs depended on the beliefs and knowledge that surgeons had about screenings and interventions. As well, in addition to individual support for SBI within trauma centers, Terrell and colleagues¹⁰ found that trauma center implementation of SBI programs had great variability across the nation, and financial resources and recent SBI program modifications were the strongest predictors of program activity and quality.

Despite this level of understanding, the knowledge and attitudes toward alcohol misuse, screening, and intervention services among various trauma care personnel within an individual trauma center have not been investigated. In studies of other medical conditions, poorer health outcomes for patients have been shown as a result of provider attitudes and knowledge towards patients and patients' medical conditions ¹¹⁻¹⁵. For instance, McCaffery and colleagues ¹⁵ observed that nearly 80 percent of nurses in their study disbelieved patients' levels of reported pain, which resulted in more than 90 percent of nurses administering less pain medication than appropriate for pain management. In a similar sense, it is possible that the beliefs, attitudes, and knowledge of the various providers in trauma care settings towards alcohol misuse and related services could also influence the quality of care provided to patients with alcohol related injuries and at-risk drinking. Therefore, it is necessary to obtain a greater understanding of trauma department staff members' attitudes, beliefs, and knowledge with respect to alcohol misuse and SBI services. The purpose of this study was to obtain cross-sectional data regarding the knowledge and attitudes related to screening and brief intervention for alcohol problems in the trauma care setting from trauma care staff in a single Level 1 Trauma Center.

MATERIALS AND METHODS

Target Population and Method of Administration

A cross-sectional online survey was administered to employees of the University Medical Center at Brackenridge, a Level-I trauma center with an SBI program and SBI clinical research trials underway, over a four week period of time. The survey consisted of demographic, alcoholism, and SBI related questions. Surveys were solicited from hospital staff responsible for the care of trauma patients and included doctors, nurses, nurse's aides, and technicians. This survey was administered to trauma center staff after the College on Trauma mandated that Level I trauma centers identify patients with alcohol problems and provide brief intervention but prior to both the implementation of the brief intervention program and SBI research at the medical center. The primary purpose in conducting this project was to capture baseline data of provider knowledge and attitudes toward alcoholism and brief intervention. The survey instrument and its administration were approved by the institutional review board of the medical center and The University of Texas at Austin. Per the Institutional Review Board, participants were not asked for identifying information in the survey in order to ensure confidentiality. As a result, it is conceivable that respondents may have completed the survey more than once. However, this is considered unlikely due to the fact that the survey was administered during work hours, and dedicated time to complete the survey was not provided by the hospital.

Instruments

An adapted version of the Trauma Surgeons' Screening Perceptions and Practices questionnaire ⁸ was included in the survey and was called the Brief Alcohol Interventions in Trauma Centers assessment (see table 1). This instrument is comprised of 11 five-point Likert scale statements; including strongly disagree, mostly disagree, neither agree nor disagree, mostly agree, to strongly agree. Respondents were asked to indicate how much they agreed to the statements included in the measure according to the Likert scale. Examples of survey statements are, "Traumatic injury increases a patient's motivation to accept a brief alcohol intervention," and "Alcohol use disorders among patients are a significant burden on my trauma center." The purpose of this questionnaire is to determine respondents' attitudes and knowledge regarding alcohol, injury, and brief interventions in a trauma center.

The Understanding Alcoholism Scale ¹⁶ was also included in the survey to providers (see table 2). This instrument is comprised of 40 five-point Likert scale statements; including strongly disagree, mostly disagree, neither agree nor disagree, mostly agree, and strongly agree. Participants were asked to rate the extent to which they agreed or disagreed to the items in the survey according to this Likert scale. The instrument contains four subscales: psychosocial, moral spiritual, heterogeneity, and disease model. Examples of statements in this measure are, “A person’s environment plays an important role in determining whether he or she develops alcoholism,” and “The more a person drinks, the greater the chances of becoming an alcoholic.” The overall purpose of this instrument is to assess knowledge and attitudes towards alcoholism, its origins, and the ability of individuals to change drinking behaviors. Scores derived from the individual scales of this instrument provide an indication of providers’ understanding of the underlying cause of alcohol problems.

Participants at the trauma center also answered one section from the Motivational Interviewing Knowledge and Attitudes Test ¹⁷ (see table 3). This section of the survey examines participants’ knowledge regarding brief alcohol interventions based in motivational interviewing (MI). Motivational interviewing is an underlying treatment modality for SBI in many different settings, including trauma centers ^{4,18–23}. This section includes 15 true/false questions, which test a person’s knowledge by asking questions about MI and MI consistent and inconsistent approaches utilized during brief alcohol interventions. Participants were asked to indicate which principles listed in the measure were a part of a brief intervention approach. For instance, respondents must indicate if expressing *empathy* is a component of MI. Respondents were also allowed to answer “I don’t know.” The percentages of correctly identified techniques are an indication of an individual’s knowledge level of MI adherent or non-adherent behaviors

Data Analysis

Data collected were entered into and analyzed in the Statistical Package for Social Sciences 17.0. Specifically, frequencies and statistics of central tendency were calculated for each question. Subscale scores and overall mean scores were calculated for individual instruments. Independent sample t-tests and one-way ANOVAs were calculated to test differences on scale scores and instrument means for demographic variables. Lastly, bivariate correlations were calculated to assess associations between scale scores and some demographic variables. In the case of the Brief Alcohol Interventions in Trauma Centers assessment and Understanding of Alcoholism Scale, the scale scores were re-coded to be –2 through +2. This scale score conversion was done to facilitate interpretation of the findings. An average score of –2 would be consistent with strongly disagree, an overall average score of +2 would reflect that respondents strongly agreed, and 0 would represent a neutral viewpoint.

RESULTS

Demographics

A total of 579 trauma care staff members were asked to respond to the survey. Of those, 362 staff members responded to the survey—resulting in a 63% response rate. Of those staff members, 72 percent were females, and the average age of respondents was 39 years. The majority of trauma care staff members were white (79.3%, n=287); followed by black/African Americans (9.9%, n=36), Hispanics (3.3%, n=12), Asians (2.8%, n=10), and others (4.7%, n=17). The largest part of those who responded to the survey held BS/BA degrees (43.1%, n=156) or Associates’ degrees in nursing degrees (33.7%, n=122). However, respondents also held doctoral degrees (9.9%, n=36), masters degrees (8.6%, n=31), or high school diplomas/GEDs (4.7%, n=17). Of these individuals, the average years of

professional practice was 8.6. The shifts reported by participants as most worked were the day shift (from 8am to 4pm; 43.9%, n=159) and the evening shift (from 4pm to midnight; 33.1, n=120). Staff from the night shift (from midnight to 8am; 12.7%, n=46) and weekend shifts (9.9%, n=36) responded least (one respondent did not report a shift).

Instrument Analyses

The first instrument in the survey was the Brief Alcohol Interventions in Trauma Centers assessment (see table 1). The mean participant (n=267) score on this scale was .54, which lies between neither agree nor disagree and mostly agree (see figure 1).

The second instrument in this survey was the Understanding Alcoholism measure (see table 2). This instrument contains four subscales, and the mean scores for these were: psychosocial .43 (n=279), moral spiritual $-.54$ (n=279), heterogeneity $-.04$ (n=283), and disease model .19 (n=273; see figure 2).

The last measure within the survey was the brief alcohol intervention quiz that examined participants' knowledge of MI and MI adherent behaviors (see table 3) and contains 15 true/false and "I don't know" items. Overall, respondents were able to correctly identify MI adherent behaviors 8.5 percent of the time and MI non-adherent behaviors 57.9 percent of the time. Respondents also reported not knowing 22.7 percent of the time whether behaviors were MI adherent or non-adherent. The average number of correct responses of all items on the quiz was 7 per person—just under 50 percent correct (see figure 3). The highest score of correct answers on the quiz, a 93 percent, was achieved by one person (0.3%). Twenty-two individuals (6.1%) had no correct answers on the quiz.

In addition to descriptive statistics, independent samples t-tests were performed to assess mean differences in the Alcohol in Trauma Center mean score, Understanding Alcoholism subscale scores, and number of correct responses for the gender of the participant and the level of education (coded as MD level of education and less than MD level of education). No significant differences in mean scores were noted based on gender or education of respondent. Specifically examining differences based on education, the absence of significant differences in mean scores for scale endorsement indicates a similar knowledge base and attitudes amongst all providers, regardless of responsibility in directing or carrying out patient care (see table 4). One-way ANOVA statistical tests were also used to analyze mean differences in the Alcohol in Trauma Center overall mean score, Understanding Alcoholism subscale scores, and number of correct quiz questions for race/ethnicity and shift worked at the hospital. Overall tests for each ANOVA showed no significant differences for scores based on race/ethnicity or shift worked. Lastly, bivariate correlations between the Understanding Alcoholism subscale scores and total years of practice were calculated. Although weak, there was a positive correlation between years of practice and endorsement of the disease model subscale ($r=.16, p=.009$).

DISCUSSION

The findings from this survey contribute to the understanding of how health care providers in a Level I trauma center view alcohol misuse, screening, and intervention services prior to the implementation of an SBI program and research. Mean scores on the Understanding Alcoholism assessment indicated providers' modest agreement that alcoholism is a result and condition of psychosocial factors ($\mu=.43, n=279$). Respondents were slightly more neutral in endorsing the view that alcoholism is a disease ($\mu=.19, n=273$). Those who participated in the survey also indicated that they did not agree that alcoholism was a heterogeneous condition ($\mu=-.04, n=283$) or that it is caused by a moral or spiritual failing within an individual's life or personality ($\mu=-.54, n=279$). These data suggest that trauma

care staff members do not strongly endorse any particular causal model for the development of alcohol problems and, likewise, appropriate treatment for alcohol problems. There was a tendency for younger staff to be less likely to endorse the disease model. Endorsement of the disease model has been associated with poorer treatment outcomes, and, therefore, this shift reflects a positive trend²⁴. This may represent a shift in the understanding of alcohol problems among younger medical staff members in a trauma care center.

Beyond providers' opinions of alcoholism, participants also indicated (regardless of sex, race, educational level, or shift worked) a mild level of agreement ($\mu=.54$, $n=267$) with trauma centers being valuable locations for SBI delivery. This mild level of agreement could be indicative of participants' knowledge of the seemingly mixed evidence for alcohol SBI in trauma centers, and therefore respondents were hesitant to express support for SBI in trauma centers. However, equally likely is that this mild level of support could point towards providers' being unfamiliar with research about SBI in trauma centers, and as a result, the nearly neutral level of agreement represents their uncertainty.

With regard to trauma care staff knowledge pertaining to brief intervention, there appears to be a limited understanding of the components of brief intervention. As was cited above, MI is provides the theoretical framework for SBI in primary care and emergency/trauma department settings. While staff members were better able to identify approaches that were inconsistent with brief intervention, they were far less likely to successfully identify approaches that were consistent with brief intervention. Moreover, there was also a significant amount of "don't know" responses. For instance, providers knew that stating consequences of behaviors and educating about risks were not goals of MI. However they were unable to recognize supporting self-efficacy and expressing empathy as central features of brief motivational interventions. Similarly, providers did not know whether rolling with resistance and developing discrepancy were features of brief motivational intervention. This is particularly noteworthy given that supporting self-efficacy, expressing empathy, rolling with resistance and developing discrepancy are four core principles of brief motivational intervention. In brief, trauma care staff members appear to know what brief intervention is not but not what brief intervention is. This lack of knowledge may negatively influence the viability of screening and brief intervention programs and potentially impact program performance and possibly patient outcomes. More research is needed to identify the relationship between staff knowledge and attitudes, program implementation and patient outcomes.

Previous research conducted on a similar subject matter suggests information such as that collected in this project can act as a catalyst for education and further evaluation of providers²⁵. The University Medical Center at Brackenridge has invested a significant amount of resources (the full-time equivalent of 2.5 employees including a Program Director, Clinical Coordinator, and Research Coordinator) into identifying patients with alcohol problems and providing brief alcohol interventions. In addition, the trauma center is collaborating with The University of Texas at Austin on two federally funded research projects evaluating the effectiveness of brief interventions (Field and Velasquez, 5R01DA026088-02 and Field, 1R01AA015439). In conjunction with the program implementation and the conduct of federally funded research, a number of efforts were undertaken to increase knowledge regarding screening and brief intervention efforts and positively influence overall attitudes toward intervening with injured patients identified with alcohol problems. These efforts were necessarily informed by the results of this survey. Program metrics and barriers to implementation are regularly reported at the monthly performance improvement meeting for trauma services. In addition, the clinical coordinator attends unit staff meetings and managerial meetings to report on clinical services and related research that is provided for injured patients with substance abuse problems. Furthermore,

nurse education workshops now include information about brief alcohol interventions for injured patients. More recently, plans for a preconference workshop at the annual statewide trauma conference have been planned to focus on program improvement procedures and barriers to implementation at regional Level I and Level II trauma centers. The anticipated changes in staff knowledge and attitudes resulting from these education efforts are currently being captured in an annual organizational survey conducted at the medical center. Future studies will evaluate changes in knowledge and attitudes over time and the association of staff knowledge and attitudes on implementation of screening and brief intervention and study outcomes

The results from this study have shown that trauma department staff members' knowledge of brief alcohol interventions in trauma centers may be limited. Moreover, staff's attitudes regarding those who misuse alcohol, while indicating an intimation of being on par with the evidence base, demonstrated a somewhat weak understanding of the etiology of alcoholism and the effectiveness of brief intervention and referral for treatment. This limited knowledge and the neutral attitudes regarding alcohol problems may indirectly influence metrics of program success, such as the number of blood alcohol concentrations drawn, the percentage of patients screened, and the facilitation of providing brief intervention to patients identified with alcohol problems. In trauma care centers where medical staff are chiefly responsible for screening and providing brief intervention for injured patients with alcohol problems, attitudes and knowledge may impact drinking related outcomes. The potential impact of staff knowledge and attitudes regarding alcohol problems on program metrics and patient outcomes is not currently known and should be further explored. It is worth noting that the knowledge and attitudes regarding screening and brief intervention are neutral (as opposed to being negative). Therefore, there is reason to be optimistic that trauma care staff will benefit from the additional training regarding alcohol problems and brief intervention. This study and the study findings are noteworthy because they represent the first investigation of trauma care staff and knowledge related to alcohol problems within a Level I trauma center conducting screening to identify alcohol problems and providing brief alcohol interventions.

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Figure 1. Brief Alcohol Interventions in Trauma Centers

Figure 2. Understanding Alcoholism

Figure 3. Percent of Adherent, Non-Adherent, and Correct Responses in MI Quiz

Table 1

BRIEF ALCOHOL INTERVENTIONS IN TRAUMA CENTERS

Please indicate how much you agree with each of the following statements:

Statement	Percent of Total					n
	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	
Traumatic injury increases a patient's motivation to accept a brief alcohol intervention.	0.7	11.1	16.3	55.6	16.3	270
Blood alcohol testing is a means to identify patients with alcohol problems.	11.8	32.1	21.4	30.3	4.4	271
Alcohol intervention in a trauma center benefits some patients with alcohol use disorders.	1.8	4.1	14.8	62.7	16.6	271
Alcohol intervention increases a trauma patient's drinking problem.	24.7	43.5	26.2	4.8	0.7	271
Trauma prevention programs should include addressing alcohol problems.	1.5	1.5	6.3	48.3	42.4	271
It is a physician's responsibility to screen his/her trauma patients for signs of alcohol use disorders.	1.8	8.5	18.5	45	26.2	271
My trauma center currently does enough to address alcohol problems in our patients.	5.2	15.9	33.9	35.4	9.6	271
Brief alcohol intervention is an effective means of reducing re-injury in trauma patients.	5.2	15.9	33.9	35.4	9.6	271
Alcohol use disorders among patients are a significant burden on my trauma center.	1.9	1.1	9.7	40.5	46.8	269
Drug abuse among patients is a significant burden on my trauma center.	1.1	1.5	8.1	42.1	47.2	271
Assuming no legal barriers, I would be willing to work with my trauma center to establish a brief alcohol intervention service if I were provided a clinical kit detailing how to establish such a program.	7.4	6.3	23.2	37.6	25.5	271

Table 2

UNDERSTANDING ALCOHOLISM SCALE

For each of the following statements, rate the extent to which you agree or disagree, using the rating scale provided.

Statement	Proportion of Total					n
	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	
Environment plays an important role in determining whether one develops alcoholism.	2.9	8.4	15.8	55.5	17.4	310
If an alcoholic has a drink, he or she loses control and is unable to keep from getting drunk.	4.5	24.6	28.5	35	7.4	309
Anyone can develop alcoholism if he or she drinks enough.	6.8	21.3	18.7	40	12.9	310
Denial is part of the personality of alcoholics.	1.9	7.8	11	44.7	34.6	309
People can be born alcoholic.	12.6	24.3	29.8	23	10.4	309
Alcoholics tend to be weak in morals or character.	27.1	41.6	20	10.3	1	310
AA is the only really successful route to recovery.	19.9	38.6	26.7	12.9	1.9	311
Spiritual problems lie at the core of alcoholism.	25.9	34	27.5	9.1	3.6	309
Alcoholism is caused, in part, by growing up in a troubled family.	11.3	30	35.8	21.9	1	310
Alcoholics can sometimes learn to control their drinking.	13	28.6	16.6	31.2	10.7	308
Alcoholics who are drinking usually lie about how much they drink.	0.3	2.9	11.3	55.6	29.9	311
Anyone who has blackouts is an alcoholic.	16.4	36.3	29.3	15.1	2.9	311
As long as an alcoholic keeps drinking, the problems get worse.	1	1.9	11.6	52.4	33.1	311
There are alcoholics who have never had a drink.	23	24.9	28.5	18.1	5.5	309
The more a person drinks, the greater the chance of becoming an alcoholic.	1.9	13.5	21.9	50.5	12.2	311
A person's genes determine whether he or she will be an alcoholic.	3.5	14.8	39.9	36.7	5.1	311
Alcoholism is, in part, a spiritual problem.	20.8	27.9	31.2	15.6	4.5	308
Alcoholics who are drinking can't make good decisions for themselves.	1.9	12.3	20	48.7	17.1	310
Alcoholism is caused, in part, by what one learns about alcohol and the drinking patterns of family and friends.	4.5	16.8	23.9	46.3	8.4	309
Each alcoholic must accept that he or she is powerless over alcohol and can never drink again.	4.5	7.7	14.6	47.7	25.8	287
In the long run, most alcoholics recover and live normal lives.	6.6	39	33.1	19.9	1.4	287
Drinking alcoholics are liars and cannot be trusted.	9.8	29.1	36.5	21.4	3.2	285
There are only 2 possibilities for an alcoholic: lifelong abstinence or death.	6.3	24	25.1	33.4	11.1	287

For each of the following statements, rate the extent to which you agree or disagree, using the rating scale provided.

Statement	Proportion of Total					n
	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	
Unless alcoholics rely on God or a Higher Power, they will not recover.	23.4	31.5	26.9	14	4.2	286
Some alcoholics recover without AA or any treatment.	2.8	16.1	22	45.8	13.3	286
The society or culture one grows up in has a significant influence on whether or not one becomes alcoholic.	1.4	11.9	20.3	54.2	12.2	286
Even when they are not drinking, alcoholics' bodies are different from non-alcoholics.	3.8	11.5	29.6	48.1	7	287
A person can develop alcoholism because of underlying psychological problems.	0.3	5.6	14.3	64.7	15	286
There are "problem drinkers" who have significant alcohol problems, but are not an alcoholic.	3.1	22	15.3	47.7	11.8	287
Most alcoholics relapse after treatment.	0.9	7.7	36.6	48.8	6.6	287
The development of a spiritual faith is crucial for recovery from alcoholism.	13.2	19.9	33.8	26.5	6.6	287
Every alcoholic is one drink away from relapse.	0.7	9.4	21.3	49.3	19.2	286
There are no shades of gray; either you are an alcoholic or you aren't.	6	23.9	24.6	31.6	14	285
Weakness of character is an important cause of alcoholism.	22.8	34.7	22.8	17.2	2.5	285
Alcoholics have a different personality than other people.	8	31.1	32.5	25.5	2.8	286
Alcoholism is not caused by drinking.	13.7	31.3	33.1	19.4	2.5	284
Alcoholics are more self-centered than most people.	10.2	32	35.9	16.9	4.9	284
Compared to others, alcoholics show a lack of strong moral values, even when they are not drinking.	23.9	42.5	24.2	7.4	2.1	285
Alcoholism is cause, in part, by underlying emotional problems.	1.4	12.2	24.8	50.7	10.8	286

Table 3**BRIEF ALCOHOL INTERVENTION QUIZ**

Indicate which of the following are principles of a brief alcohol intervention approach.

Principle	Percent of Total			n
	Correct	Incorrect	I don't know	
Breakdown denial	68.8	7.2	23.9	276
Express empathy	7.7	73.7	18.6	274
Maximize external pressure	24.5	49.6	25.9	274
Roll with resistance	21.2	38.3	40.5	274
Require abstinence as only acceptable goal	49.6	27.9	22.5	276
Develop discrepancies	24.8	26.3	48.9	274
Acceptance of label ("alcoholic/addict") is required	57.7	21.2	21.2	274
Use subtle coercion	25.2	47.8	27	274
Give direct advice	64.1	17.8	18.1	279
Encourage submission to disease	40.4	34.9	24.7	275
Confront resistance	69.5	13.1	17.5	275
Educate about risks	89.5	10.5	0	275
Support self-efficacy	3.3	79.9	16.8	274
State clear consequences of their behavior	89.9	0.7	9.4	276
Avoid argumentation	14.2	71.2	14.6	274

Table 4

T-tests of demographic differences based on education *

Scale	Education	
	Mean of MD	Mean of Less than MD
Alcohol in Trauma Centers	.62 (.62)	.53 (.37)
Psychosocial Subscale	.31 (.5)	.44 (.48)
Moral Spiritual Subscale	.82 (.61)	-.051 (.69)
Heterogeneity Subscale	.07 (.48)	-.57 (.5)
Disease Model Subscale	.07 (.5)	.21 (.45)
Alcohol Intervention Quiz Number Correct	7.31 (3.03)	6.92 (2.94)

* No statistically significant differences were found

Standard Deviations appear in parentheses below means