Published in final edited form as:

Am J Emerg Med. 2008 June ; 26(5): 537–544. doi:10.1016/j.ajem.2007.08.019.

Alcohol Misuse and Report of Recent Depression Symptoms among Emergency Department Patients

Shahrazad Bazargan-Hejazi, Ph.D.^{1,2}, Mohsen Bazargan, Ph.D.^{1,5}, Tommie Gaines, MS⁴, and Michael Jemanez, MD³

¹ Charles R. Drew University of Medicine & Science, Department of Psychiatry

² David Geffen UCLA School of Medicine

³ Charles R. Drew University of Medicine & Science, School of Medicine

⁴ University of California, Los Angeles, Department of Biostatistics

⁵ Charles R. Drew University of Medicine & Science, Research Centers in Minority Institutions (RCMI)

Abstract

Objective—This study examines the magnitude of association between alcohol misuse with recent depressive symptoms.

Methods—A cross-sectional study of 412 randomly selected patients 18 seeking ED care.

Results—51.0% reported depressive symptoms. At-risk drinking was reported by 26.0% of the sample, 28.2% scored positive for RAPS4. Alcohol abuse, and Binge drinking were reported by 25.1% and 28% of the patients, respectively. According to our results at-risk drinking (OR 2.49; CI 1.47–4.20; P .001), problem drinking (OR 2.11; CI 1.27–3.51; P .004), drinking abuse (OR 2.58; CI 1.51–4.40; P < .001), and binge drinking (OR 1.89; CI 1.13–3.15; P < .001) were all related to manifestation of depression symptoms.

Conclusion—The findings of this study yield information that could be used by emergency department health care practitioners and health educators to educate ED patients at-risk for alcohol misuse and depression.

Keywords

Alcohol misuse; AUDIT; RAPS4; Alcohol abuse; Binge drinking; depression symptoms; CES-D; Emergency Department

Address correspondence to: Shahrazad Bazargan-Hejazi, PhD, Assistant Professor, Psychiatry/Pediatrics Drew/UCLA, 1731 E. 120th Street, Los Angeles, Ca 90059.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

INTRODUCTION

Background

It is well documented that depression is a risk factor for number of physical, functional and social impairments [1]. However, some evidence suggest depressed patients may not meet diagnostic criteria for depression and instead present vague somatic complaints [2] that preclude clinical or self assessment of mental health illness. These subsyndromal depressive symptoms nonetheless could leads to serious distress [3].

While alcohol use is common in the United States there are many forms of excessive drinking that lead to significant medical and mental health problems. They include high level drinking each day, repeated episodes of drinking to intoxication (binge drinking), drinking that result in physical or mental harm (alcohol abuse), and drinking that results in chemical dependence to alcohol (alcohol dependence)[4].

Longitudinal studies have been inconclusive in identifying alcohol as a risk factor for depression [5]. Some studies have documented an elevated frequency of depressive disorders in alcoholic clinical and community populations [1, 6, 7], young adults with hazardous and harmful consumption [8], and elderly population with heavy drinking, and binge drinking. Even among former alcohol users, specific associations exists between prior alcohol dependence and current or recent major depression [10].

Studies which have documented the relationship between the symptomatology of depression and level of alcohol use [11, 14–16], Graham, et al. suggests that lack of consistency in relationship between alcohol consumption and depression could be in part related to way these variables are measured. For example depression has been measured as recent depressive symptoms using Epidemiolical Studies Depression Scale (CES-D) [11] or as a psychiatric diagnoses according to DSM-III criteria, such as the one used by Diagnostic Interview Scheduled (DIS) [12]. Studies using the impact of these measures on alcohol have shown various findings [13, 14]. Similarly, studies which have measured alcohol consumption as volume of consumption [15, 16] frequency of drinking [9] or quantity per occasion [15, 17] have shown varying results.

Studies of ED populations have been especially important in discerning the relationship between the level of alcohol use and recent depression symptoms, given the high prevalence of alcohol use among ED patients [18, 19], and the lack of access to primary care to receive necessary treatment [20]. In fact primary care providers often are the sole contacts for more than 50% of patients with mental illness. Furthermore, numerous studies point to significant episodes of under-recognized and untreated depression in African American and Hispanic communities {Kessler RC, 2003 #3307; Minsky S, 2003 #3308; Chung H, 2003 #3309}.

The overall goal of this study is to find out if the association between alcohol misuse and recent symptoms of depression is sensitive to the level of alcohol consumption. The specific aim of this study is to examine the association between four levels of alcohol misuse including: at-risk drinking, problem drinking, alcohol abuse, and binge drinking with recent depressive symptoms measured by CES_D among a random sample of Emergency

Department (ED) patients receiving care from an inner city hospital. The study null hypothesis is that there is no statistically significant association between levels of alcohol misuse and recent symptoms of depression.

METHODS

Setting

Data for this study was collected continuously for 24 hours per day over 35-day period between March–April, 2001, in an inner-city emergency department (King/Drew Medical Center Emergency Department (KDMC-ED)). This hospital is the primary provider of healthcare services for the 1.7 million residents in South Central Los Angeles with an annual census of 50,000–60,000 ED visits. South Central Los Angeles is one of the most heavily populated and ethnically, socially, and economically diverse counties in the United States. The community serviced by (KDMC-ED) is predominantly Latino (60.0%) and African-American (23%). Approximately 32.0% of the population lives below the federal poverty level, and 36% of adults are uninsured.

Selection of participants

Patients were considered eligible for the study if they were 18 years of age or older, and were in the KDMC-ED to receive medical care. Patients were considered ineligible for the study if they showed any sign of cognitive impairment, if they spoke a language other than English or Spanish, or if they were in police custody. Patients who required immediate medical attention as determined by the attending doctor were approached to participate in the study following their treatment. Interviewers delayed their work with sampled patients who showed signs of intoxication. Patients who gave written informed consent to participate were included. Hispanic respondents were given a choice of being interviewed in English or in Spanish. KDMC-ED computerized logs were used to select study sample. This log reflected consecutive patients who arrived and registered in the ED triage area. This list was continuously generated and updated. Every other consecutive patient was selected as a potential candidate. Every other consecutive patient was selected to avoid overload of potential candidates on study staff. A total of 412 eligible patients provided informed consent and completed the 45-minute face-to-face study survey. This study received full review and approval by the institutional review board of our institution.

Study Measures—The main outcome variable for this study was “recent depressive symptoms” which was measured using the Center for Epidemiologic Studies Depression Scale (CES-D) [11] providing an estimate of depressive symptomatology prevalence over the last 7 days such as frequency of experiencing loss of appetite, feeling happy or depressed, lack of energy, and having crying spells. Numerous studies have found the scale to be valid and reliable (Coefficient alpha = .80) for this purpose [21]. The final score was constructed from a list of 20 items scored from 0 to 3 based on frequency of occurrence of the symptom (“rarely”= 0; “most of the time”= 3) with the possible range of 0 to 60. A response for each item was summed. Respondents with the overall sum score 15 or less were classified as “Not having depressive symptoms” = 0 and were set as the reference group, and

respondents whose overall sum values were equal or more than 16 were classified as “Having symptoms of depression” = 1.

Alcohol Measures—Five validated and widely used measures of the alcohol consumption were used to depict a continuum of alcohol misuse in the last 12 months. They include: *At-risk drinking* was measured by *AUDIT* (Alcohol Use Disorders Identification Test) which is a 10-item index with validated psychometric properties [22]. Items are scored from 0–4 with the composite index ranging from 0–40. A cutoff point of 8 is set to reflect at-risk drinking.

RAPS4 [23] [24] is a screening test that measures problem drinking using four items with the score of 0 = No or 1= Yes. Positive scores on any one of the questions is considered positive on RAPS4 for problem drinking.

Alcohol-Abuse symptoms were measured by six items reflecting significant negative physical, social, legal, and psychosocial consequences of drinking [25]. These items operationalized DSM-IV criteria for alcohol abuse [24]. They included the following: (1) Have you continued to drink even though you knew it was causing trouble with your family or friends? (2) Did you drive a car, motorcycle, truck, boat, or other vehicle after having too much to drink? (3) Did you get into a situation while drinking or after drinking that increased your chances of getting hurt, like swimming, using machinery, or walking in a dangerous area or around heavy traffic? (4) Did you get arrested or held at a police station because of your drinking? (5) Did you get drunk or have a hangover when you were supposed to be doing something important like being at work, school, or taking care of your home or family? (6) Did you get drunk or have a hangover when you were actually doing something important like being at work, school, or taking care of your home or family? Each item was scored as zero vs. one. Positive on one or more of the items was considered positive for alcohol abuse.

Binge drinking was measured by asking respondents to report the number of standard drinks they usually take at one time/occasion. Those reporting drinking 5 or more drinks at one time during the last 12 months were classified as binger drinkers = 1, with the reference group being those reported 4 or less drinks at one time during the same period = 0.

Socio-demographic Measures—Demographic variables used in this study are listed below with the category specified as the comparison group shown in *italic*. Gender (*female* vs. male); age (coded as three categories: *18–35*, *36–55*, *> 56*); education (*less than high school diploma* vs. high school diploma or more); marital status (*married or living with someone* vs. single, separated or divorce, widowed); employment (*Employed fulltime/Part-time/Self* vs. unemployed). Ethnicity was categorized as African American VS. Latino. Thirteen (13) patients who identified themselves as White, Asian, Middle Eastern and Native American Indian were excluded from the analysis in addition to four (4) who refused answering this question.

Primary Data Analysis

Descriptive statistics were generated for the demographic and main variables in the study. Bivariate associations between each of the four alcohol measures were calculated through

the phi-coefficient. This statistic can be interpreted as a correlation coefficient for variables in a 2×2 table where values near 0 indicate little association and values near 1 indicate perfect predictability. To assess the impact of each alcohol measure on depression symptoms, Pearson Chi-Square tests were performed. These analyses establish whether or not the independent variables are related to the main outcome. A series of multiple logistic regression analyses were conducted to predict the relationship between depression symptoms and alcohol predictors controlling for socio-demographic characteristics. A variable was retained in the model as a confounder if it altered the odds ratio (OR) of one or more variables in the model by 10% [26] or remained a significant independent risk factor at the 0.10 level upon entry into the model. All analyses were performed using SPSS Inc. version 12.0, (2004). A p-value 0.05 was considered statistically significant.

RESULTS

From a sample of 579 eligible patients, 412 consented to be interviewed, representing a 71% completion rate. Among the eligible patients, the primary reason for non-response was refusal (23%, n= 133) due to discomfort, hearing difficulties, and medical condition interfering with ability to talk. No statistically significant difference was detected between gender, ethnicity and age of those interviewed and those not interviewed.

Characteristics of study subjects

Table 1 includes the overall characteristics of the sample as well as results of Bivariate associations between independent variables and depression. The study sample included, 58.9 % female and 41.1% male, and the majority were not married (61.0%). Latino and African American participants were 53.2% and 46.8%, respectively. Nearly forty six percent (45.9%) of the participants were between the ages of 18–35, and 64.0% were unemployed, with nearly half of the sample (49.8%) having greater than a high school education.

A large percentage of the sample reported depressive symptoms (51.0%). Among the alcohol users (n= 364, 88.0%), at-risk drinking was reported by 26.0% of the sample, while 28.2% scored positive for RAPS4. Furthermore, alcohol abuse and binge drinking at least once during the past 12 months were reported by 25.1% and 28% of the respondents, respectively.

Characteristics of sample by depression—Results of Chi-Square tests (Table 1) revealed that patients with depressive symptoms (CES_D 16) were more likely to be at-risk drinker based on their AUDIT score (64.9%), and problem drinkers based on their RAPS4 scores (61.8%), (P .001). Furthermore, patients with depressive symptoms were more likely to report abusing alcohol (65.9%) and binge drinking (47.5%) (P .005) (Table 1). Among socio-demographic variables, we found statistically significant association between education, employment, and symptoms of depression. Slightly over fifty six percent (56.1%) of the patients with less than high school degree, and 55.2% of patients with unemployment status reported symptoms of depression (P .05).

Associations among the Alcohol Measures: The phi coefficient was used to measure the degree of association between each of the alcohol measures as shown in Table 2. The values

range from 0.51 to 0.76 indicating an appreciable magnitude of association between each of the alcohol measures. Although these values don't indicate perfect predictability it does provide moderately strong support that a person identified as meeting criteria for alcohol misuse on one measure will also be meeting the criteria for alcohol misuse on the remaining alcohol measures.

Recent Depression and At-risk Drinking: Result of the adjusted regression analysis with AUDIT as the main independent alcohol measure along with other socio-demographic variables in the study is reported in Table 3, Model 1. According to this table at-risk drinking (OR 2.49; CI 1.47–4.20; P .001), male gender (OR 1.86; CI 1.16–2.97; P .009), having less than high school degree (OR 1.72; CI 1.05–2.82; P .031), unemployment, (OR .554; CI .345–.891; P .015), and younger age (OR 2.34; CI 1.24–4.88; P .023) all are independent predictors of report of depression symptoms.

Recent Depression and Problem Drinking: Model 2 in Table 3 shows result of the regression analysis with RAPS4 as the main independent alcohol variable along with other socio-demographic variables. These results reveal a statistically significant association between problem drinking and report of depression symptoms while controlling for other variables in the model (OR 2.11; CI 1.27–3.51; P .004). Similar to the previous model being male (OR 1.83; CI 1.14–2.91; P .011), having less than high school degree (OR 1.66; CI 1.01–2.72; P .042), unemployment, (OR .579; CI .362–.927; P .023), and younger age (OR 2.51; CI 1.21–5.22; P .013) remained to be independent predictors of symptoms of recent depression.

Recent Depression and Alcohol Abuse: Results for the independent association between alcohol abuse and reports of recent depression is reported in model 3, Table 3 This results reveal that alcohol abuser are two and half times more likely to report symptoms of depression than non- abusers (OR 2.58; CI 1.51–4.40; P < .001). Furthermore, being male (OR 1.87; CI 1.17–2.98; P < .009), unemployment, (OR .565; CI .352–.907; P < .018), and younger age (OR 2.31; CI 1.11–4.82; P < .025) remained to be independent predictors of symptoms of depression.

Recent Depression and Binge Drinking: Last model in Table 3 reveals association between binge drinking and depression while controlling for other socio-demographic variables. This model also points to a statistically significant association between binge drinking and report of depression symptoms. Binge drinkers are nearly two times more likely to report symptoms of depression vs. non-binge drinkers (OR 1.89; CI 1.13–3.15; P < .001). Furthermore, being male (OR 1.83; CI 1.14–2.94; P < .014), having less than high school education (OR 1.73; CI 1.06–2.83), unemployment, (OR .563; CI .351–.900; P < .017), and younger age (OR 2.43; CI 1.17–5.04; P < .014), remained to be independent predictors of symptoms of depression.

Discussion

In this study we have tested if different measures of alcohol misuse impacts recent depression symptomatology in a similar manner among a sample of ED patients. Our

findings indicate a high prevalence of recent depression symptoms, (51%) in this sample. This rate is twice as high as depressive symptoms rate in adult population (24%) suggesting that diagnosis of depressive symptoms in ED patients may present unique challenges for healthcare delivery systems, health providers and patients.

Across measures of alcohol misuse, the highest prevalence of alcohol misuse is found for problem drinking based on RAPS4 (28.6%) with an appreciable association among the four measures. Additionally, our findings reveal a statistically significant association between alcohol misuses as measured by the four different screening tools (RAPS4, AUDIT, DSM4- Abuse, binge drinking). and recent symptoms of depression. Furthermore, we observe an overlap between 95% CI's of the four measures' (Table 3) suggesting a common magnitude of association between alcohol misuse and recent depression. This is expected since we observed a moderately strong association between all the four alcohol measures.

In general our results are consistent with current findings pertaining to the role of alcohol in presentation of some level of depression, even though the data for this study is 6 years old. In a sample of 14,063 Canadian residents using four types of alcohol measures (frequency, usual and maximum quantity per occasion, volume, and heavy episodic drinking) and two types of depression measures (major depression, and recent depressed affect) Graham et al, 2007 revealed that major depression was primarily related to drinking large quantities of alcohol per occasion, less related to drinking volume and unrelated to drinking frequency. In another study Blow et al [27] reported that individual's at-risk and problem drinking elevated the risk of depressive symptoms. Results of a fourteen years longitudinal study revealed that at the baseline and 14-year follow-up alcohol consumption was linearly and positively associated with depressive symptoms; prevalence of symptoms increased with greater alcohol consumption [28]. Golstein, using a community survey, showed that the prevalence of depression increased significantly across drinking groups (i.e., 25% among minimal drinkers, to 30% moderate drinkers, to 44% among heavy drinkers) [29]. Furthermore, *results from the 2005 National Survey on Drug Use and Health: National findings* point to the associations between mental disorders and alcohol use behaviors that do not meet the criteria for substance use disorders such as heavy drinking (i.e., drinking five or more drinks on the same occasion) [30].

It is difficult to compare our findings with those in the literature since we examined a different population and used different measures of alcohol and depression. However, we can conclude that there is statistically significant evidence of an association between alcohol misuse and depression symptomatology and the magnitude of this association is consistent across our measures of alcohol consumption (i.e. RAPS, AUDIT, DSM IV- Abuse, and binge drinking).

Results of this study cautions ED health professionals not to overlook evaluation of depressive symptoms among ED patients who experience problems related to alcohol misuse but do not meet criteria for alcohol dependence. ED care providers should be wary about the mental outcomes of at-risk drinking as much as they should be concern about problem drinking, beige drinking, or drinking abuse. This is especially important among their patients since they are more likely to be at higher risk for alcohol misuse and depression [31–33]

however are unwilling to disclose these problems to their physicians for fear of being stigmatized [34]. For example, African Americans have significantly lower rates of treatment seeking and are less likely than Whites to find the use of conventional antidepressant medication acceptable [35]. Therefore, screening for alcohol misuse in the ED may expose patients to early evaluation, prevention, and treatment of depression which otherwise may go undetected for these patients [32, 36, 37]. Shared responsibilities of ED sector regarding patients' mental health needs may curtail the disparity gap that exist in depression treatment due to lack of access to health care services [38, 39].

In this study we were also able to show the differences between ED patients who reported symptoms of depression and those who didn't report such symptoms in respect to age, gender, education, and employment status. Overall, our findings revealed that among this sample of ED patients those who were male, younger, had less than high school education, and were unemployed were more at risk for symptoms of depression. Previous studies have highlighted female gender, younger age, and low socio-economic status (e.g., unemployment, lower education) to be among other numerous other risk factors for depression.

There is an opportunity and need for ED health care providers to ensure access to different mental treatment modalities among patients that would benefit. Findings of this study regarding the co-existence of alcohol misuse and depressive symptoms for ED population will have implications for prevention and treatment for this population. Results of this study may also elucidate some of the inconsistencies issues that exist in the literature regarding expression of alcohol misuse on depression symptomatology.

One major limitation of this study has to do with the inheriting nature of cross-sectional study, which doesn't allow separation of cause from effect, and only allows the discussion of association between two variables, without respect to their direction. In addition, our study has the following limitations: self-report, bias related to respondent recall, and social desirability of responses. This study utilized standardized measures and intensive training of research assistants to minimize any such bias. In addition to the above, the study instruments included several alcohol related measures for assessing subject's alcohol consumption to guard against acquiescence bias (subject's tendency to express agreement or disagreement toward a statement regardless of its content) [40]. Reliability of alcohol intake based on self-report is based upon evidence for a close correlation between biological markers and self-report of alcohol intake.[41, 42].

Conclusion

This paper attempts to evaluate the role of various levels of alcohol misuse in depression symptomatology among ED patients using a variety of widely-used measures of alcohol intake. We conclude that there is statistically significant evidence of an association between alcohol misuse and depression and the magnitude of this association is consistent across all measures of alcohol consumption (i.e. RAPS, AUDIT, DSM IV- Abuse, and binge drinking). The findings of this study yield information that could be used by emergency department health care practitioners and health educators to educate ED patients at-risk for alcohol

misuse and depression. Cautioning ED providers that the role of at-risk drinking, binge problem drinking and drinking abuse in depressive symptoms should not be underestimated. The focus on minorities, systematic sampling, collection of data on a 24-hour basis, and achieving high rates of participation are among other factors that strengthen the results of this study.

Acknowledgments

Source of Support: Work on this paper was supported by a grant (U24AA11899-05) from the National Institute on Alcohol Abuse and Alcoholism to the Charles R. Drew University of Medicine and Science, and National Center for Research Resources G12-RR03026.

References

1. Jane-Llopis E, Matytsina I. Mental health and alcohol, drugs and tobacco: A review of the comorbidity between mental disorders and the use of alcohol, tobacco and illicit drugs. *Drug and Alcohol Review*. 2006; 25:515–536. [PubMed: 17132571]
2. Walters, PTAWPA. Early detection and management of mental disorders. Maj, SNM.; Sato, M.; Okasha, A., editors. John Wiley; Chichester: 2005.
3. Hammen, C.; Rudolph, RD. Childhood depression. In: JMaRAB, editor. *Child Psychopathology*. Guilford; New York: 1996.
4. AMA A.P.A . DSM-IV, Diagnostic and Statistical Manual of Mental Disorders. 4. Washington DC: American Psychiatric Association (AMA); 1994.
5. Haynes JC, Singleton FM, Meltzer N, Araya H, Lewis R, Wiles NJG. Alcohol consumption as a risk factor for anxiety and depression: results from the longitudinal follow-up of the National Psychiatric Morbidity Survey. *Br J Psychiatry*. 2005 Dec;187:544–51. [PubMed: 16319407]
6. Roy A, DeJong J, Lamparski D, George T, Linnoila M. Depression among alcoholics. Relationship to clinical and cerebrospinal fluid variables. *Arch Gen Psychiatry*. 1991; 48:428–32. [PubMed: 2021295]
7. Hasin DSGB. Major depression in 6050 former drinkers. Association with past alcohol dependence. *Arch Gen Psychiatry*. 2002 Sep;59:794–800. [PubMed: 12215078]
8. Caldwell TMRB, Jorm AF, Christensen H, Jacomb PA, Korten AE, Lynskey MT. Patterns of association between alcohol consumption and symptoms of depression and anxiety in young adults. *Addiction*. 2002 May; 97(5):583–94. [PubMed: 12033659]
9. Graham K, et al. Does the Association Between Alcohol Consumption and Depression Depend on How They Are Measured? *Alcoholism: Clinical and Experimental Research*. 2007; 31(1):78–88.
10. Deborah SH PhD, Grant Bridget F. Depression in Former Drinkers; Association With Past Alcohol Dependence. *Arch Gen Psychiatry*. 2002; 59:794–800. [PubMed: 12215078]
11. Radloff L. The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1(3):385–401.
12. Robins LNHJ, Croughan J, Ratcliff KS. National Institute of Mental Health Diagnostic Interview Schedule. Its history, characteristics, and validity. *Arch Gen Psychiatry*. 1981 Apr; 38(4):381–9. [PubMed: 6260053]
13. Virkkunen MLM. Serotonin in early-onset alcoholism. *Recent Dev Alcohol*. 1997; 13:173–89. [PubMed: 9122495]
14. Berger BDAV. Gender differences in using alcohol to cope with depression. *Addict Behav*. 1991; 16(5):315–27. [PubMed: 1776547]
15. Graham KSG. Alcohol use and psychosocial well-being among older adults. *J Stud Alcohol*. 1999 May; 60(3):345–51. [PubMed: 10371262]
16. Wang JPS. Alcohol consumption and major depression: findings from a follow-up study. *Can J Psychiatry*. 2001 Sep; 46(7):632–8. [PubMed: 11582825]
17. Patten SB. Alcohol consumption and major depression in the Canadian population. *Can J Psychiatry*. 1998 Jun; 43(5):502–6. [PubMed: 9653535]

18. Bazargan-Hejazi SBE, Bazargan M, Der-Martirosian G, Hardin E, Bernstein J, Bernstein E. Evaluation of a Brief Intervention in an Inner-City Emergency Department. *Annals of Emergency Medicine*. 2005; 46(1):67–76. [PubMed: 15988430]
19. Cherpitel CJ, et al. A cross-national meta-analysis of alcohol and injury: data from the Emergency Room Collaborative Alcohol Analysis Project (ERCAAP). *Addiction*. 2003; 98(9):1277–1286. [PubMed: 12930215]
20. Bazargan M, Johnson KH, Stein JA. Emergency department utilization among Hispanic and African-American under-served patients with type 2 diabetes. *Ethnicity & Disease*. 2003; 13(3): 369–75. [PubMed: 12894962]
21. Roberts R, Vernon SW. The Center for Epidemiologic Studies Depression Scale, its use in a community sample. *American J of Psychiatry*. 1983; 140(1):41–46.
22. Saunders JB, et al. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption--II. *Addiction*. 1993; 88(6):791–804. [PubMed: 8329970]
23. Cherpitel CJ. A brief screening instrument for problem drinking in the emergency room: the RAPS4. *Rapid Alcohol Problems Screen*. *Journal of Studies on Alcohol*. 2000; 61(3):447–9. [PubMed: 10807217]
24. Cherpitel CJ, Bazargan S. Screening for alcohol problems: comparison of the audit, RAPS4 and RAPS4-QF among African American and Hispanic patients in an inner city emergency department. *Drug & Alcohol Dependence*. 2003 Sep 10; 71(3):275–80. [PubMed: 12957345]
25. Grant B. Alcohol consumption, alcohol abuse and alcohol dependence: The United States as an example. *Addiction*. 1994; 89(11):1357–1365. [PubMed: 7841843]
26. Maldonado, GaGS. Simulation study of confounder-selection strategies. *Am J Epidemiol*. 1993; 138:923–936. [PubMed: 8256780]
27. Blow FCSA, Barry KL. Late-life depression and alcoholism. *Curr Psychiatry Rep*. 2007 Feb; 9(1): 14–9. Links. [PubMed: 17257508]
28. Alati RLD, Najman JM, Williams GM, Bor W, O'Callaghan M. s there really a 'J-shaped' curve in the association between alcohol consumption and symptoms of depression and anxiety? Findings from the Mater-University Study of Pregnancy and its outcomes. *Addiction*. 2005 May; 100(5): 643–51. [PubMed: 15847622]
29. Goldstein BILA. Is current alcohol consumption associated with increased lifetime prevalence of major depression and suicidality? Results from a pilot community survey. *Compr Psychiatry*. 47(5):330–3. Epub 2006. Sep–Oct. [PubMed: 16905393]
30. Office of Applied Studies. Results from the 2005 National Survey on Drug Use and Health: National findings (DHHS Publication No. SMA 06-4194, N.S.H.-R., 2006.
31. Barry KLMK, Blow FC, Impens A, Welsh D, Amash J. Screening psychiatric emergency department patients with major mental illnesses for at-risk drinking. *Psychiatr Serv*. 2006 Jul; 57(7):1039–42. [PubMed: 16816292]
32. Valente S, Nemec C. An evidence-based project to improve depression and alcohol use screening. *J Nurs Care Qual*. 2006 Jan-Mar; 21(1):93–8. [PubMed: 16340695]
33. Li GKP, Rothman R, Chanmugam A, Kelen GD. Epidemiology of alcohol-related emergency department visits. *Acad Emerg Med*. 1998 Aug; 5(8):788–95. [PubMed: 9715240]
34. Goldman LSNN, Champion HC. Awareness, diagnosis, and treatment of depression. *J Gen Intern Med*. 1999 Sep; 14(9):569–80. [PubMed: 10491249]
35. Sue, S.; Young, K. *Psychotherapy and Behavior Change*. John Wiley & Sons; New York: 1994. Research in psychotherapy with culturally diverse populations; p. 783-817.
36. Hustey FM. The use of a brief depression screen in older emergency department patients. *Acad Emerg Med*. 2005; 12:905–8. [PubMed: 16141028]
37. Houry DKR, Click LA, Kaslow NJ. Development of a brief mental health screen for intimate partner violence victims in the emergency department. *Acad Emerg Med*. 2007 Mar; 14(3):202–9. Epub 2007 Jan 22. [PubMed: 17242384]
38. Harman JSEM, Fortney JC. Disparities in the adequacy of depression treatment in the United States. *Psychiatr Serv*. 2004 Dec; 55(12):1379–85. [PubMed: 15572565]

39. Vasiliadis HMLA, Adair C, Wang PS, Kessler RC. Do Canada and the United States differ in prevalence of depression and utilization of services? *Psychiatr Serv.* 2007 Jan; 58(1):63–71. [PubMed: 17215414]
40. Selltiz, C.; Wrightsman, L.; Cook, S. *Research Methods in Social Relations.* 3. San Francisco: Holt, Rinehart & Winston; 1976. p. 165
41. Gentilello LM, et al. Alcohol interventions in a trauma center as a means of reducing the risk of injury recurrence. *Annals of Surgery.* 1999; 230(4):473–80. discussion 480–3. [PubMed: 10522717]
42. World Health Organization (WHO), B.I.S.G. A cross national trial of brief interventions with heavy drinkers. *Am J Public Health.* 1996; 86:948–55. [PubMed: 8669518]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 1

Overall Sample Characteristics and its Bivariate Association with Depression (N = 412).

Variable	Categories	F	(%)	Not Dep. < 16 (n = 201)		Depressed 16 (n = 208)	
				F	%	F	%
Ethnicity	Latino	217	53.2	104	47.9	113	52.1
	AA	191	46.8	96	50.3	95	49.7
Marital Status	Married	159	39	83	52.2	76	47.8
	N. Married	249	61	117	47.0	132	53.0
Gender	Female	243	59	126	52.3	115	47.7
	Male	169	41	75	44.6	93	55.4
Age	18-35	187	45.9	92	49.2	95	50.8
	36-55	165	40.5	77	46.7	88	53.3
	55+	55	13.5	31	56.4	24	43.6
Education *	HS	203	49.8	110	54.2	93	45.8
	< HS	205	50.2	90	43.9	115	56.1
Employment *	No	261	64	117	44.8	144	55.2
	Yes	147	36	83	56.5	64	43.5
Depression	No	201	49.1	--	--	-	--
	Yes	208	50.9	--	--	--	--
At-Risk Drinking *	> 8	268	73.6	146	54.5	122	45.5
	8	96	26.4	33	35.1	61	64.9
RAFS4 *	> 1	260	71.4	140	53.8	120	46.2
	1	104	28.6	39	38.2	63	61.8
Alcohol Abuse *	> 1	271	74.5	148	54.6	123	45.4
	1	93	25.5	31	34.1	60	65.9
Binge Drinking *	No	263	72.3	138	52.5	125	47.5
	Yes	101	27.7	41	41.4	58	58.6

* Variable Statistically Significant $p < 0.05$

Table 2

distribution of Phi-Coefficient Among the Four Alcohol Measures

	AUDIT	RAPS4	Alcohol Abuse	Binge-Drinking
AUDIT	1.00	.0698	0.764	0.673
RAPS4	-	1.00	0.661	0.518
Alcohol Abuse	-	-	1.00	0.636
Binge Drinking	-	-	-	1.00

Table 3

Four Multiple Logistic Regression Models Presenting Association between Alcohol Misuse, and Self Report of Depression Symptoms.

	Model 1		Model 2		Model 3		Model 4	
	AUDIT [†]		RAPS4 [†]		Alcohol Abuse [†]		Binge Drinking	
	OR ^{a,b}	95% CI ^c	OR ^{a,b}	95% CI ^c	OR ^{a,b}	95% CI ^c	OR ^{a,b}	95% CI ^c
Alcohol variable	2.49	1.47–4.20	2.11	1.27–3.51	2.58	1.51–4.40	1.89	1.13–3.15
Age in years	2.49	1.12–4.88	2.5	1.21–5.22	2.31	1.11–4.82	2.43	1.17–4.96
Gender	1.86	1.16–2.97	1.83	1.14–2.91	1.87	1.17–2.98	1.83	1.14–2.94
Ethnicity	NS	--	NS	--	NS	--	NS	--
Education	1.72	1.05–2.82	1.66	1.01–2.72	NS	--	1.73	1.06–2.83
Marital status	NS	--	NS	--	NS	--	NS	--
Employment	.554	.345–.891	.579	.362–.927	.563	.352–.907	.563	.351–.900

^aOdds Ratio displayed if value statistically significant ($p < 0.05$)

^bExpected β -value

^c95% Confidence Interval