

Suicidal ideation and sobriety: Should acute alcohol intoxication be taken into account for psychiatric evaluation?

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Abstract

Background: When evaluating an emergency department (ED) patient who presents with suicidal ideation, it is a common practice is to wait until the ethanol level is known or calculated to be less than 80 mg/dL to evaluate patient safety. We are not aware of any study that establishes the association between the degree of alcohol intoxication based on blood alcohol levels (BALs) and reported suicidal ideation (SI) upon recovery.

Methods: This study is a retrospective review of patients evaluated in a pre-COVID Midwestern ED for one calendar year. Cases were selected based on the criteria of having a Psychiatric Social Work (SW) consult and blood alcohol level drawn while in the ED. Patients were selected from the same two days each week in 2017 to meet the sample size requirements of the study, resulting in 1084 cases for review. Chi-square analysis was used for comparison of variables of suicidal ideation with or without alcohol intoxication as defined by blood alcohol level (BAL) \geq 80 mg/dL.

Results: Patients presenting with suicidal ideation and concurrent alcohol levels \geq 80 mg/dL were no longer reporting suicidal ideation at blood alcohol level $<$ 80 mg/dL in 69% of cases, compared to 38% for patients without alcohol levels on presentation (Chi-square, $p=0.000012$).

Conclusion: Our data suggest that patients presenting to the ED with complaints related to suicidal behavior who are found to have concurrent BAL \geq 80 mg/dL are more likely to deny suicidal ideation when they have a BAL $<$ 80 mg/dL than patients with similar presenting complaints and no alcohol intoxication. This finding suggests confirmation of the common ED practice when assessing suicidal ideation in intoxicated individuals.

Key words

Suicide assessment, Suicidal ideation, Acute alcohol intoxication, Alcohol-related disorders,
Emergency services

Introduction

Suicide is an important societal problem, and suicidal patients frequently present to the nation's emergency departments (EDs). Data from the National Hospital Ambulatory Medical Care Survey revealed that there are more than 400,000 ED visits annually for attempted suicide (Canner et al. 2018) (Doshi 2005). Of these, approximately one-third of individuals are admitted to the hospital. Suicide is the 10th most common cause of death in the US and the second most common cause in the 15-34 years age group. According to the Centers for Disease Control and Prevention (CDC), in the US there were over 47,000 deaths due to suicide in 2017 and 383,000 emergency department visits for "self-inflicted injury," which includes self-harm with or without suicidal ideation (U.S. Department of Health and Human Services 2017).

Acute alcohol ingestion often accompanies suicidal ideation (Cherpitel et al 2004). According to data from the National Violent Death Reporting System, alcohol was detected in nearly 36% of males and 28% of female suicide decedents (Kaplan et. al 2012). Acute alcohol use is a potent risk factor for suicidal ideation and suicide attempt (Conner, et. al 2014). There is an extensive body of literature on alcohol intoxication which uses the terms "inebriation" and "intoxication", defined as BAL < 80 mg/dL, interchangeably, and the authors will follow this practice in the ensuing discussion. The terms "sober" and "sobriety" are also widely used and for the purposes of this investigation will be defined as having a BAL > 80 mg/dL.

It is commonly assumed that patients cannot be definitively diagnosed as suicidal until they are clinically sober. The current norm in the emergency setting is to wait until intoxicated suicidal individuals "sober up" and then reassess them for safety (Conner et. al 2014, Simpson et. al 2019, Betz et. al 2016). In 2015, the Suicide Prevention Resource Center (SPRC) published "Caring for Adult Patients with Suicide Risk, A consensus guide for emergency departments." It

recommends that the person evaluating the patient with suicide risk should “wait until the patient is sober to perform assessments.” (Allen M et al 2015). A nationwide survey of emergency psychiatrists and behavioral health specialists found that most use “clinical sobriety” when assessing an inebriated patient, while a large subset used a patient’s repeat blood alcohol level (BAL) as compared to a pre-specified number (Simpson S 2019). A specific alcohol level of 0.08 g/dL (80 mg/dL) was adopted nationally in 1998 as an enforceable marker of intoxication for motor vehicle enforcement (NIAAA 2001), and this number is also used by many practitioners as a numerical estimate of sobriety and decisional capacity. However, we are not aware of any study that evaluates whether a temporal association exists between the degree of alcohol intoxication and the intensity of reported suicidality. Specifically, it is important to determine if patients intoxicated with alcohol, who are identified to be at risk for suicide by the emergency practitioner and/or behavioral specialists, ultimately will be more or less likely to be suicidal upon sobriety (BAL < 80 mg/dL) as compared to non-intoxicated patients.

In many institutions, psychiatric consultation may be used to determine the appropriate disposition of the patient. In others, the emergency practitioner determines this independently. This is particularly true in the case of suicidal ideation. Only larger tertiary-care institutions typically have specialized psychiatric emergency departments, numbering approximately 100 across the US, making real-time ED evaluations by a psychiatrist uncommon (California Health Line 2019).

The importance of identifying suicidal ideation in patients before leaving the hospital cannot be overstated. If a patient presenting with suicidal ideation is sent home prematurely, they are at risk of injuring themselves or others. This could also result in legal and financial ramifications for

the practitioner and the hospital or healthcare system that releases them (The Law Offices of Skip Simpson: Attorneys and Counselors).

During the COVID-19 pandemic, increases in depression and suicide have been reported, especially in the adolescent age range, less so among adults (Santomauro, D. et al. 2021) (Yard E. et al. 2021). In addition, presentations for alcohol intoxication increased substantially during the pandemic (Keyes et al 2021). For this reason, it may be important to examine the impact of sobriety on the diagnosis of suicidality prior to the pandemic when it can be evaluated in its more natural context.

Goals of this Investigation

Our hypothesis is that patients presenting with blood alcohol levels (BAL) \geq 80 mg/dL and suicidal ideation are more likely to have a resolution of their SI than suicidal patients presenting to the ED with BAL $<$ 80 mg/dL.

Materials and Methods

Study Design and Setting

This was a retrospective study of pre-COVID medical records for patients who were evaluated for suicidal ideation in the emergency department from January through December 2017 when a policy of repeat ethanol level determination was in place at the study site. This research was approved by the St Joseph Health System Institutional Review Board (IRB).

Selection of Participants

This study was performed at a medium-sized community hospital and trauma center, with an approximate annual emergency department volume of 50,000 visits. Adults (\geq 18 years) were

included if they stated suicidal intent and had an alcohol level drawn and received a social work/behavioral health specialist evaluation in the ED on the same two days per week in 2017. Blood alcohol level (BAL) was routinely drawn on all psychiatric adult patients at this institution on arrival. An ethanol level ≥ 80 mg/dL was defined as alcohol intoxication for the purposes of this study. A repeat ethanol BAL < 80 mg/dL was required prior to social work evaluation. Basic demographics as well as the presence of co-ingestants at the time of evaluation were collected.

Outcome Measures

Our primary outcome was the resolution of suicidality upon BAL < 80 mg/dL as determined by a social worker or psychiatrist through a direct interview and evaluation of the patient after BAL < 80 mg/dL was achieved.

Data Collection, processing, and analysis

Encounters were obtained by identifying all medical records of patients who received a social work/behavioral health evaluation. An abstraction tool and data dictionary were developed. Abstractors were trained in the use of these tools. After a test of these tools on a subset of records by all of the abstractors, the tools were modified and implemented for the remaining data collection. A one-week convenience sample was used to determine the sample size, including 118 social work consults, and these were filtered for any patients that were evaluated for suicidal ideation with or without alcohol intoxication. This subset of patients was used for the calculation of a sample size requirement of approximately 1050 encounters. This was achieved by taking the study sample from the same two days per week throughout one calendar year. The use of a complete year was done to remove the influence of seasonality on the sample. Chi-square analysis was used to evaluate the relation of suicidal ideation with alcohol intoxication, and descriptive statistics were used for age, gender, and initial ethanol level.

Statistical analysis was performed using SAS statistical software (SAS, version 9.4, SAS Institute Inc., Cary, NC).

Results

There were a total of 1084 encounters reviewed for the study (Figure 1). Participants had a mean age of 39.5 years, and females constituted 48% of the participants. Of the 740 excluded, 451 did not express SI, 102 were under 18, 148 were not evaluated by ED SW (132 no ED SW due to no SW present, on-duty at the time of evaluation, 14 community outpatient for psychiatric emergencies (COPE) patients, 2 left against medical advice), and 39 were duplicate generated consults on the same visit with the same financial identification number (FIN).

There were 344 total encounters identified with positive suicidal ideation at the initial emergency practitioner (EP) evaluation. Of these, 61 were found to have a BAL \geq 80 mg/dL, and 19/61 (31%) continued to have suicidal ideation at BAL $<$ 80 mg/dL, whereas 42/61 (69%) no longer expressed suicidal thoughts. In contrast, of the 283 cases with an initial BAL $<$ 80 mg/dL, 175/283 (62%) remained with suicidal ideation at re-assessment and 108/283 (38%) no longer expressed suicidal thoughts (Chi-square $p < .0001$) (Table 1).

This difference persisted when analyzing for individual sex, both for males ($p = 0.003$) and females ($p = 0.0005$) (Table 2). Having a BAL \geq 80 mg/dL upon presentation to the ED was more common in males (44/180, 24%) than in females (17/164, 10%). Stratification by race was examined, but no significant results were obtained due to a low number of minority patient encounters. Of the 344 cases evaluated for SI, 15 cases did not have race reported. Depression

was the most common psychiatric diagnosis, 230/344 (67%, Table 3). Tetrahydrocannabinol (THC) was the most common agent found in urine drug screens, found in 115/197 (58%) positive drug screens (Table 4).

Discussion

In this retrospective study, a cohort of patients who presented to the ED with suicidal ideation were evaluated for alcohol exposure. Patients who had evidence of alcohol intoxication on presentation, as defined by BAL \geq 80 mg/dL, were compared to those who were not intoxicated with alcohol at presentation. We found that there was a much lower likelihood of persistent suicidal ideation upon evaluation by a behavioral specialist among those who initially presented with alcohol intoxication. This finding would seem to support the current practice at the index health center and many other institutions of waiting until the BAL was $<$ 80 mg/dL for definitive evaluation of suicidality).

There is an inherent risk of death for patients who are discharged with suicidality. In addition, mental health inpatient resources are increasingly scarce, and it is critical that an efficient and accurate allocation of resources exist in this realm (Wood et al. 2018). The risk tolerance of individual emergency practitioners may also be influenced by medico-legal concerns when discharging a suicidal individual. These important factors result in heightened concern about accurately triaging selected patients to inpatient services.

Intoxication is inherently associated with high-risk behaviors, and this includes suicidal ideation and attempted suicide (Darvishi et al. 2015). The current study looks at the relationship of alcohol inebriation with suicidal ideation upon sobriety. It is possible that patients may be at increased risk for suicidal ideation *while they are intoxicated*. The current study did not address

the ability to predict the potential for suicide upon future re-inebriation. However, the proximate concern of the emergency provider and behavioral health specialists is to establish safety upon discharge.

Suicidal ideation and risk assessment

The clinician faces an important decision with respect to providing optimal psychiatric care and, in some cases, even holding a patient against their will for their own protection. It is important to recognize that the question addressed in this study is not whether the evaluation of suicidality when the patient is intoxicated is invalid. In actuality, expression of suicidal ideation and actual risk assessment are related but not identical. Suicidal ideation (SI) is the expression of intent for self-harm. Suicide risk assessment takes into account SI, along with any other aggravating or attenuating characteristics to determine the objective likelihood of self-harm. Current practice in the evaluation of these patients begins with the patient's expression of suicidal ideation. The fact that expert consensus recommends awaiting sobriety implies that the risk of suicide is better evaluated once the patient is sober. Waiting until the patient is sober may be an effective way to mitigate the risk of clinician mismanagement of the psychiatric patient. The major finding in this study that many patients who express suicidality when intoxicated no longer do so upon sobriety seems to support this common practice.

It is noteworthy that the currently used Diagnostic and Statistical Manual of Mental Disorders (DSM) 5th Edition includes suicide as one potential symptom in the diagnosis of Major Depressive Disorder (MDD) (American Psychiatric Association 2013). In light of the worldwide increase in the suicide rate, it has recently been proposed that a new diagnosis of Suicide Behavior Disorder be added to future versions of the DSM (Fehling & Selby 2021).

Limitations

The finding that patients presenting with alcohol intoxication may have a greater intensity of reported suicidal ideation does not mean that their thoughts of self-harm should be ignored, or that there is no risk of completed suicide. All patients who present with suicidal ideation require careful evaluation and management.

This was a retrospective study, necessitated by the fact that ethical consent is very challenging for patients who are intoxicated and/or have a potentially serious psychiatric condition, both of which constitute important vulnerable populations. The study avoided confounding by the COVID-19 pandemic by using data prior to its onset.

Our Institutional Review Board requested that we use de-identified data in order to comply with state laws for substance use disorders. We chose to perform the analysis using this format, which precluded the possibility to evaluate for return visits.

In the current study, no specific scale or instrument was used to determine a final diagnosis of suicidality. Various instruments have been designed to evaluate the risk of suicide and safe disposition, and the American College of Emergency Physicians (ACEP) clinical policy criticizes these scales as being ineffective at predicting the risk of self-harm or death (Mullinax et al 2018). Additionally, this study may lack external validity due to being a single-institution sample and generally lacking minority representation.

Dual diagnosis is a term used to describe those who have both a mental health diagnosis and a co-occurring substance use disorder. This is a frequently seen subset of patients in emergency health settings. Thorough assessments and treatment of each diagnosis are accepted best

practices for these patients (Rodriguez-Cintas et al 2017) (Szerman N et al 2012). Most, if not all of these patients may be considered “dual diagnosis.” In the current study, we have chosen to focus solely on examining any relationship between intoxication and suicidality irrespective of “dual diagnosis.” It has also been suggested that the tendency to use alcohol as a coping strategy may be a marker of the risk of increased alcohol use prior to a suicide attempt (Gauthier et al 2019).

The authors acknowledge that there may be some variability between the diagnosticians who determined the final diagnosis of SI. No attempt was made to evaluate the data using a block analysis based on individual practitioners.

The Department of Transportation’s Appropriations Act for FY2001 made federal highway construction funds dependent on states enacting laws prohibiting driving with 0.08 g/dL (80 mg/dL) or greater blood alcohol concentration (BAC) (US Department of Transportation, 2001). Although sobriety has been defined by some in terms of these specific blood levels, they may not correlate with clinical sobriety in all individuals. It is known that alcohol tolerance can impact cognitive ability and mechanical performance (NIAAA 1995) (Tabakoff et al 1986). For example, chronic alcohol use is known to result in increased tolerance in some individuals, and these individuals may be clinically sober at higher levels of serum alcohol (Roberts et al 2010). It has been observed that the effects on cognition are greater when serum levels are increasing than when they are decreasing (Mellanby effect), which suggests an opportunity for future research on the timing of alcohol measurement in these patients (Holland et al 2017). Additionally, a clinical evaluation of intoxication can be affected by the presence of certain drugs and individual variations in body metabolism, including pharmacokinetics and pharmacodynamics.

The presence of co-ingestants was documented as part of the data abstraction process. However, no analysis of the association between toxicology screening results and the major outcome measure was performed because the limited sample size would result in low reliability. Also, it is impossible to determine if patients with positive urine drug screens are under the influence of that particular agent at the time of the test. Many agents are known to be detectable by qualitative methods long after their effects are clinically manifested. Future research should evaluate the impact of various individual agents on SI, perhaps using a similar methodology as the current study. This may require the use of quantitative methods to correlate more closely with intoxication. Also, future investigations are needed to directly assess the likelihood of actual completed suicide among patients who express suicidal ideation only while intoxicated. In other words, it is possible that patients who only express SI while intoxicated are at some increased risk of future self-harm. In addition, it would be helpful to evaluate the contribution of other intoxicating agents to the dynamics of suicidal ideation.

Conclusion

In this study of pre-COVID-19 patients presenting to an emergency department with suicidal ideation, alcohol intoxication was clearly associated with a greater intensity of reported suicidality as measured by behavioral professional specialist evaluation upon blood alcohol level decreasing to less than 80 mg/dL. Prior to sobriety from alcohol, a definitive risk assessment in an intoxicated patient may be premature. This suggests that it is prudent to await sobriety prior to the definitive assessment of patients with a risk of self-harm.

References

"Alcohol and Tolerance". National Institute on Alcohol Abuse and Alcoholism (NIAAA), Alcohol Alert (28). April 1995. Retrieved 2021-11-29.

Allen, M., Anna Gary Behrman, C., Jon Berlin, L., Berman, L., Bernstein, E., Emmy Betz, F., Edwin Boudreaux, M., Boyer, E., Brown, P., Greg Brown, M., Bruguier Zimmerman, M., Stuart Buttlair, M., Joel Carr, M., Jennifer Chaffin, L., Claassen, C., Justin Coffey, M., Cooper, M., Glenn Currier, R., Susan De Luca, M., Draper, J, Duckworth, K. Fishkind, A., Goldstein, A., Gutierrez, P, Harkavy-Friedman, J., Harman, C. R., Havens, M., Horowitz, L., Jaffe, D., Kaminer, B., Kneer, S., Knesper, D., Knight, R., Lenehan, G., Lezine, D., Nan Mallory, M., Manton, A., McKeon, R., Miller, V., Mltchiner, J., Murphy G., Nadler-Moodle, M., Narashimhan, M., Palowitch, E., Powsner, S., Raymond, L., Brett, S., Self, S., Silverman, M. Souders, C., Stanley, B., Whiteside, L., Wild, R., Wilson, M., Wintersteen, M., Zatzick, D., Zeller, S., Zun, L. (2015). *Caring for Adult Patients with Suicide Risk A Consensus Guide for Emergency Departments Suicide Prevention Resource Center SPRC Caring for Adult Patients with Suicide Risk: A Consensus Guide for Consensus Panel Members.*

American Psychiatric Association. Diagnostic and statistical manual of mental disorders: DSM-5. fifth ed. Arlington, VA: American Psychiatric Association; 2013

Betz, M. E., & Boudreaux, E. D. (2016). Managing Suicidal Patients in the Emergency Department. *Annals of Emergency Medicine*, 67(2), 276–282.
<https://doi.org/10.1016/j.annemergmed.2015.09.001>

California Healthline, "She was dancing on the roof and talking gibberish. A special type of ER helped her. <https://californiahealthline.org/news/psychiatric-ers-on-the-rise-as-mental-health-needs-climb/>; March 19, 2019. Accessed 3/30/2020.

Canner JK, Giuliano K, Selvarajah S, Hammond ER, Schneider EB. Emergency department visits for attempted suicide and self harm in the USA: 2006-2013. *Epidemiol Psychiatr Sci*. 2018;27(1):94–102.

Cherpitel, C. J., Borges, G. L. G., & Wilcox, H. C. (2004). Acute Alcohol Use and Suicidal Behavior: A Review of the Literature. *Alcoholism: Clinical and Experimental Research*, 28(5), 18S-28S. <https://doi.org/10.1097/01.alc.0000127411.61634.14>

"Cognitive Impairment and Recovery From Alcoholism". National Institute on Alcohol Abuse and Alcoholism (NIAAA), Alcohol Alert (28). July 2001. Retrieved 2021-11-29.

Conner, K. R., Bagge, C. L., Goldston, D. B., & Ilgen, M. A. (2014). Alcohol and Suicidal Behavior. *American Journal of Preventive Medicine*, 47(3), S204–S208. <http://doi.org/10.1016/j.amepre.2014.06.007>

COVID-19 Mental Disorders Collaborators. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *The Lancet*, 398(10312), 1700–1712. [https://doi.org/10.1016/s0140-6736\(21\)02143-7](https://doi.org/10.1016/s0140-6736(21)02143-7)

Darvishi, N., Farhadi, M., Haghtalab, T., Poorolajal, J. (2015). Alcohol-Related Risk of Suicidal Ideation, Suicide Attempt, and Completed Suicide: A Meta-Analysis. PLOS ONE.

<https://doi.org/10.1371/journal.pone.0126870>

Doshi, A., Boudreaux, E. D., Wang, N., Pelletier, A. J., & Camargo, C. A. (2005). National Study of US Emergency Department Visits for Attempted Suicide and Self-Inflicted Injury, 1997-2001. *Annals of Emergency Medicine*, 46(4), 369–375.

Fehling, K. B., & Selby, E. A. (2021). Suicide in DSM-5: Current Evidence for the Proposed Suicide Behavior Disorder and Other Possible Improvements. In *Frontiers in Psychiatry* (Vol. 11). Frontiers Media S.A. <https://doi.org/10.3389/fpsy.2020.499980>

Gauthier, J. M., Cole, A. B., & Bagge, C. L. (2019). A preliminary examination of the association between drinking as a typical coping strategy and level of acute alcohol consumption prior to a suicide attempt. *Psychiatry Research*, 282, 112626.

<https://doi.org/10.1016/j.psychres.2019.112626>

Holland, M. G., & Ferner, R. E. (2017). A systematic review of the evidence for acute tolerance to alcohol—the “Mellanby effect.” In *Clinical Toxicology* (Vol. 55, Issue 6, pp. 545–556). Taylor and Francis Ltd. <https://doi.org/10.1080/15563650.2017.1296576>

Kaplan, M. S., McFarland, B. H., Huguet, N., Conner, K., Caetano, R., Giesbrecht, N., & Nolte, K. B. (2012). Acute alcohol intoxication and suicide: a gender-stratified analysis of the National Violent Death Reporting System. *Injury Prevention*, 38–43. <http://doi.org/10.1136/injuryprev-2012-040317>

Keyes, D., Hardin, B., Sweeney, B., Shedden, K. (2021). Change in urban and non-urban pattern of ED use during the COVID-19 pandemic in 28 Michigan hospitals: an observational study. *BMJ Open*. <https://doi.org/10.1136/bmjopen-2020-043024>

Law Offices of Skip Simpson: Attorneys and Counselors. (n.d.). "Premature Discharge". Retrieved November 28, 2021, from <https://www.skipsimpson.com/personal-injury/premature-discharge>

Mullinax, S., Chalmers, C. E., Brennan, J., Vilke, G. M., Nordstrom, K., & Wilson, M. P. (2018). Suicide screening scales may not adequately predict disposition of suicidal patients from the emergency department. *American Journal of Emergency Medicine*, 36(10), 1779–1783. <https://doi.org/10.1016/j.ajem.2018.01.087>

Roberts, J. R., & Dollard, D. (2010). Alcohol Levels Do Not Accurately Predict Physical or Mental Impairment in Ethanol-Tolerant Subjects: Relevance to Emergency Medicine and Dram Shop Laws. *Journal of Medical Toxicology*, 6(4), 438–442. <https://doi.org/10.1007/s13181-010-0048-z>

Rodríguez-Cintas L, Daigre C, Braquehais MD, Palma-Alvarez RF, Grau-López L, Ros-Cucurull E, Rodríguez-Martos L, Abad AC, Roncero C (2018) Factors associated with lifetime suicidal ideation and suicide attempts in outpatients with substance use disorders. *Psychiatry Res*, 262: 440-445.

SAS Institute Inc 2013. SAS/ACCESS® 9.4 Interface to ADABAS: Reference. Cary, NC: SAS Institute Inc.

Simpson, S. A. (2019). A Survey of Clinical Approaches to Suicide Risk Assessment for Patients Intoxicated on Alcohol. *Psychosomatics*, 60(2), 197–203.

<https://doi.org/10.1016/j.psych.2018.07.003>

Szerman N, Lopez-Castroman J, Arias F, Morant C, Babín F, Mesías B, Basurte I, Vega P, Baca-García E (2012) Dual diagnosis and suicide risk in a Spanish outpatient sample. *Subst Use Misuse*. 47:383-389.

Tabakoff, B, Cornell, N, Hoffman, P.L. Alcohol tolerance. *Annals of Emergency Medicine* 15(9):1005-1012, 1986

U.S. Department of Health and Human Services (Center for Disease Control and Prevention). 10 Leading Causes of Death By Age Group, United States - 2017 [Internet]. 2017. Available from: <https://www.cdc.gov/injury/images/lc-charts/leading-causes-of-death-by-age-group-2017-1100w850h.jpg>

U.S. Department of Transportation. (2001). *A Legislative History of 0.8 per se Laws*. Available at: www.nhtsa.dot.gov. Accessed November 30, 2021

Wood, P., Burwell, J., Rawlett, K. (2018, October 10). New Study Reveals Lack of Access as Root Cause for Mental Health Crisis in America. National Council for Mental Wellbeing. <https://www.thenationalcouncil.org/press-releases/new-study-reveals-lack-of-access-as-root-cause-for-mental-health-crisis-in-america/>

Yard, E., Radhakrishnan, L., Ballesteros, M. F., Sheppard, M., Gates, A., Stein, Z., Hartnett, K., Kite-Powell, A., Rodgers, L., Adjemian, J., Ehlman, D. C., Holland, K., Idaikkadar, N., Ivey-Stephenson, A., Martinez, P., Law, ; Royal, & Stone Scd, D. M. (2021). *Morbidity and Mortality Weekly Report Emergency Department Visits for Suspected Suicide Attempts Among Persons Aged 12-25 Years Before and During the COVID-19 Pandemic-United States.*

<https://stacks.cdc.gov/view/cdc/106694>

Figure Legends

Figure 1: Study Flowchart

BAL = blood alcohol level; SI = suicidal ideation; SW = social worker/behavioral health specialist. FIN = financial identification number (specific to that visit). ED = emergency department. ETOH = ethanol intoxication

Table 1

	Suicidal Ideation at Sobriety/Reassessment		
BAL \geq 80 mg/dL	SI present (%)	No SI present (%)	Total
Positive	19 (31.1%)	42 (68.9%)	61
Negative	175 (61.8%)	108 (38.2%)	283
Total	194	150	344

Table 2

	Male n = 180		Female n = 164		Total
	SI present (%) [X2]	No SI present (%) [X2]	SI present (%) [X2]	No SI present (%) [X2]	
BAL < 80 mg/dL	84 (46.7%) [0.94]	52 (28.9%) [1.18]	91 (55.5%) [0.54]	56 (34.1%) [0.72]	283
BAL ≥ 80 mg/dL	16 (8.9%) [2.92]	28 (15.6%) [3.65]	3 (1.8%) [4.67]	14 (8.5%) [6.27]	61
Total	100	80	94	70	344

Table 3

Diagnoses	
Depression	230
Bipolar disorder	61
Alcohol use disorder	50
Anxiety	40
THC use disorder	25
Psychosis	23
Opiate use disorder	23
Other	16
Cocaine use disorder	15
Benzodiazepine use disorder	9
ADHD	5

Adjustment disorder

2

Table 4

Co-Intoxicant/Diagnoses	Number of Cases	Percent of Study Cases
THC	115	33.4%
Benzodiazepines	92	26.7%
Cocaine	52	15.1%
Opiates	38	11.0%
Amphetamines	15	4.4%
Barbiturates	9	2.6%
No co-intoxicant	147	42.7%

Table Legends

Table 1: Emergency department cases in which suicidal ideation is being evaluated compared against alcohol intoxication.

BAL = blood alcohol level, SI = suicidal ideation. Percentages are calculated using BAL \geq 80 mg/dL positive/negative as the denominator and SI present/not present as the numerator.

Table 2: Emergency department cases in which suicidal ideation is being evaluated compared against alcohol intoxication. Gender subanalysis.

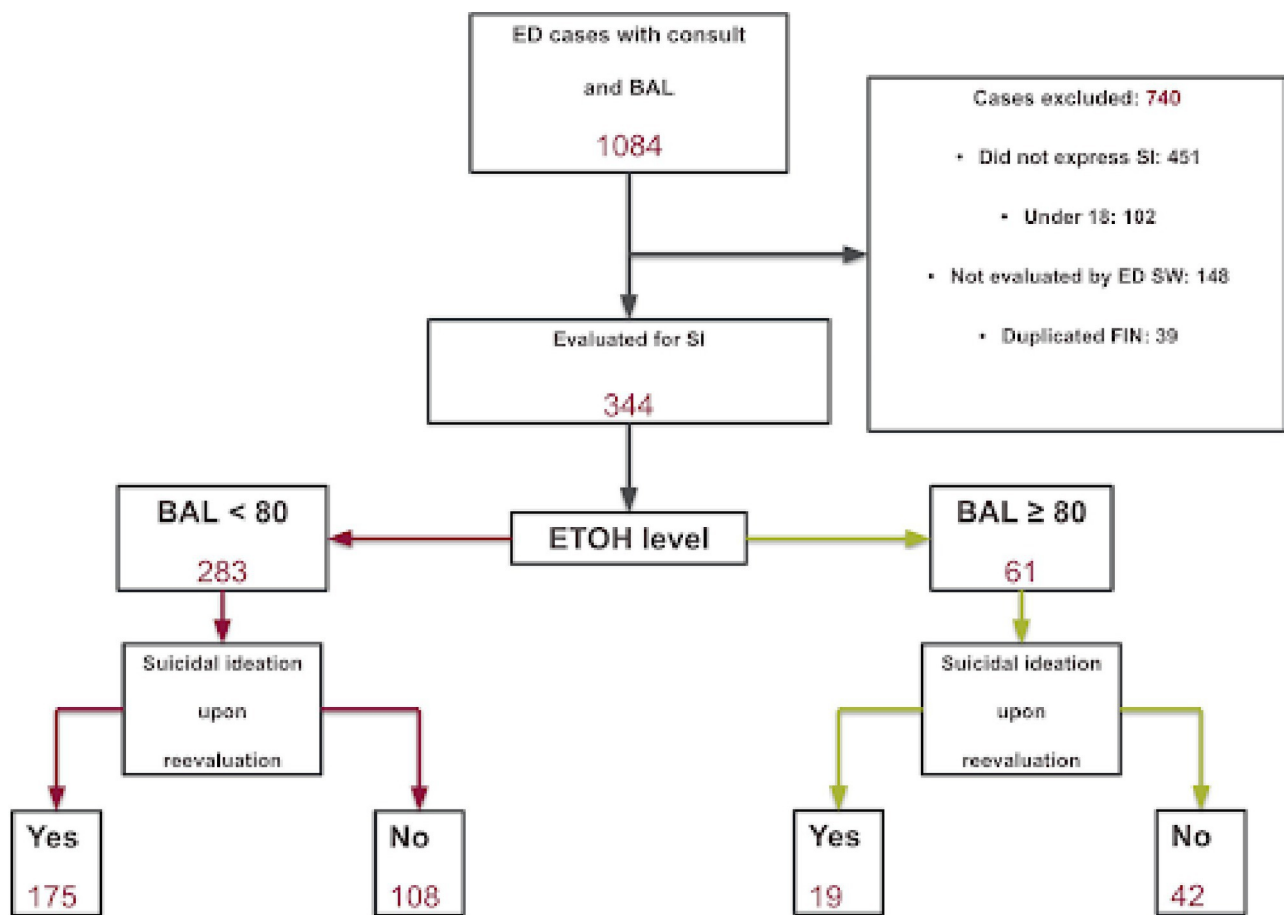
For males, $X^2(1, N = 180) = 8.6872, p = .003205$. For females, $X^2(1, N = 164) = 12.2001, p = .000478$. Percentages were calculated using the total number of males and females separately. Chi-square values were evaluated for significance using $p < .05$. BAL = blood alcohol level, SI = suicidal ideation

Table 3: Top 12 Most Common Diagnoses Among Patients Presenting with Suicidal Ideation

The total number of patients being evaluated in the emergency department for suicidal ideation is 344. BAL = blood alcohol level, SI = suicidal ideation, THC = tetrahydrocannabinol, ADHD = attention-deficit/hyperactivity disorder

Table 4: Most common co-intoxicants done in a standard urine drug screen done in the emergency department.

THC = tetrahydrocannabinol



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