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Emergency department visits for alcohol-related incidents in the United States

Ateequr R [1,*], Gabriella Schmit [1], Sara Rahman [2] and Lejla Cukovic [1]

[1] *College of Pharmacy, Rosalind Franklin University of Medicine and Sciences, North Chicago, IL, 60064*
[2] *Glenbrook South High School, Glenview, IL 60026, US.*

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Abstract

Alcoholism is the fourth leading cause of preventable death in the United States and was found to be the global leading risk factor for death in persons 15-49 years old. According to the National Survey on Drug Use and Health (NSDUH) conducted in 2021, 29.5 million people aged 12 years and older in the United States (US) were diagnosed with Alcohol Use Disorder thus causing alarm in many communities. This study was aimed to determine if Emergency Department (ED) visits for alcohol-related issues in the US are affected by the type of insurance coverage and regional location while assessing its outcomes on the respective patient demographics and populations. A total of 3236 patients with alcohol-related incidents (ICD-10 Code: F10.2) met the study criteria and were extracted from the 2019 United States National Hospital Ambulatory Care Survey (NHAMCS) tabulated by the Centers for Disease Control and Prevention (CDC). Statistical Package for Social Sciences (SPSS) software was used to analyze the data using descriptive analysis and chi-squared tests with an alpha significance of 0.05. The study found that patients visiting the ED in the US for alcohol-related issues were affected by patient demographics, type of insurance, and regional location. Moreover, the clinical and mortality outcomes also vary significantly across patient demographics.

Keywords: Alcohol Consumption; Emergency Department Visits; Preventable Death; Patient Demographics

1. Introduction

In 2016, alcohol misuse was found to be one of the global leading factors for death and disability and the single highest risk of death for ages 15-49 years.[1] In the United States (US) alone, 29.5 million Americans ages 12 years and older have been diagnosed with Alcohol Use Disorder.[2]As the rates of alcohol consumption continue to increase on a global scale, the amount of alcohol consumption that is considered "healthy" comes into question. While moderate alcohol consumption is recommended for persons aged 50 years and older by various sources, it is not recommended that those who currently abstain from drinking begin to consume alcohol as the risk of mortality rises with the increased amount of alcohol. The accepted level of alcohol consumption to minimize health loss is zero.[1,3]

Alcohol misuse is commonly defined as the consumption of alcohol that puts an individual at a heightened risk for serious social or health repercussions. In the US, alcohol misuse and heavy drinking are defined as more than 8 drinks per week for women and more than 15 drinks per week for men by the CDC.[4] As it stands, alcohol contributes to 18.5% of all emergency department visits with white patients contributing the highest consumption rates in the US.[5] The consumption of alcohol, and subsequently binge drinking, in the US, has significantly increased over the past 10-15 years impacting middle-aged and older populations the most as observed through national surveys conducted by the Research Society of Alcoholism in 2018.[6] Moreover, alcohol binge drinking is frequently observed in adults aged 18-24 years but tends to increase again beginning at age 65 years. Alcohol binge drinking is considered the consumption of over 4 or 5 drinks in under 120 minutes for women and men respectively. It is of note that the amount of liquor

* Corresponding author: Ateequr R

considered a singular "drink" is difficult to define and does differ between countries thus making it difficult to procure accurate clinical data on an international scale.[7]

According to the US Medical Council of Alcohol, the number of deaths attributed to alcohol-related causes occurred in 81% of patients aged 20-64 years old whereas death occurred in 40% of patients aged 65 years and older in a total population of 60, 612 adults which is reflective of drinking patterns on a national scale.[8] While younger persons are more likely to consume alcohol at a rapid rate, persons over the age of 50 years are more likely to struggle with adverse health-related outcomes that include an increased risk of cancer.[1] Even though alcohol is a normalized social feature in many cultures, the risks observed with the consumption of alcohol begin to beg the question of whether or not the risk is worth any of the benefits, thus prompting this research.

2. Material and Methods

The cases analyzed were extrapolated from the 2019 United States National Hospital Ambulatory Care Survey (NHAMCS) provided by the CDC using the ICD-10 Code "F10.2". The National Ambulatory Care Survey is designed to meet the need for objective, reliable information about the provision and use of ambulatory medical care services in the United States.

A total of 3236 patients met the inclusion criteria. Patient age, sex, race, source of payment for the ED visit, and reason for the visit were among the operational factors used in the analysis of the data. Sources of payment were defined as Medicaid, Medicare, self-pay, or private insurance. Age was categorized as under 21, 21-30, 31-40, 41-50, and above 50 years old. Race was defined as white, Black, Asian, Hispanic, and other. Sex was defined as male or female. The region was defined as Northeast, South, West, and Midwest. Finally, the type of payment was categorized as Medicaid, private insurance, self-pay, and others.

The data was analyzed through the Statistical Package for Social Sciences (SPSS) software Version 29.0 using descriptive analysis and chi-squared tests with an alpha significance of 0.05. The extracted data was checked for equality and integrity in all aspects of the demographics. The hypothesis focused on emergency department visits to determine whether the reasons for the visit and negative health outcomes were related to demographic variables such as age, gender, race, and payment type.

3. Results and Discussion

The discoveries of this study highlighted the impact of alcohol use throughout the United States. The majority of the population that presented to the ED for alcohol-related incidences were aged 21-30 years. Similarly, white patients were most likely to visit the ED for alcohol-related dispositions more frequently than other races. The southern region of the US and those with Medicaid most frequently used the ED for alcohol-related incidences, noting the highest rate of incidence compared to others in their respective categories.

624 patients (19.3%, Table 1) were observed to be under the US legal drinking age of 21 years. Of the population studied, 1435 (44.3%) were female and 1801 (55.6%) (Table 1) were male, but no difference was found in the outcome rate based on sex alone. Overconsumption of alcohol was the most frequent reason for visiting the ED (44.7%) whereas 17.4% of deaths were related to chronic alcohol use ($p \leq 0.003$) (Table 2). White patients experienced higher rates of death compared to all other races ($p \leq 0.001$). Medicaid was the most common payment method ($p \leq 0.001$). Moreover, Medicaid patients were also more likely to die due to alcohol-related reasons than patients using self-pay or private insurance ($p \leq 0.001$). Regionally, the majority of visits were from the southern region of the US (34.1%) whereas the Midwest exhibited the highest rates of death compared to other regions ($p \leq 0.001$)

Table 1 Demographics of Patients Presenting to the Emergency Department for Alcohol-Related Dispositions in the United States

Demographic Variables	Frequency (=3236)	Percentage (%)
Sex		
Female	1435	44.3
Male	1801	55.6
Age Range		

Under 21	624	19.3
21-30	1440	44.5
31-40	627	19.4
41-50	207	6.4
50 and above	338	10.4
Race		
White	1446	44.7
Black	700	21.6
Asian	360	11.1
Hispanic	500	15.5
Other	230	7.1
Region		
Northeast	798	24.7
Midwest	633	19.6
South	1102	34.1
West	703	21.7

Table 2 Mortality Related to Alcohol-Related Visits in Emergency Departments

Demographic Variables	**Died**	**Discharged**	**Significance *(p)***
Sex			
Female	258 (17.9%)	1177 (82.1%)	0.412
Male	304 (16.9%)	1497 (83.1%)	
Age Range			
Under 21	94 (15.1%)	530 (84.9%)	0.001
21-30	282 (19.6%)	1158 (80.4%)	
31-40	94 (15%)	533 (85%)	
41-50	47 (22.7%)	160 (77.3%)	
50 and above	45 (13.3%)	293 (86.7%)	
Race			
White	296 (20.5%)	1150 (79.5%)	<0.001
Black	109 (15.6%)	591 (84.4%)	
Asian	41 (11.4%)	319 (88.6%)	
Hispanic	82 (16.4%)	418 (83.6%)	
Other	34 (14.8%)	196 (85.2%)	
Type of Payment			
Medicaid	277 (21.5%)	1008 (78.5%)	0.001
Private Insurance	123 (15.5%)	671 (84.5%)	

Self-Pay	109 (13.8%)	681 (86.2%)	
Others	53 (14.4%)	314 (85.6%)	
Reasons for Visit			
Overconsumption of alcohol	262 (18.4%)	1184 (81.6%)	0.003
Mixing alcohol with other substances	94 (13.9%)	584 (86.1%)	
Chronic alcohol use	79 (22.9%)	265 (77.1%)	
Alcohol-induced injuries	127 (16.5%)	641 (83.5%)	
Region			
Northeast	132 (16.5%)	666 (83.5%)	< 0.001
Midwest	132 (20.8%)	501 (79.2%)	
South	207 (18.8%)	895 (81.2%)	
West	91 (12.9%)	612 (87.1%)	

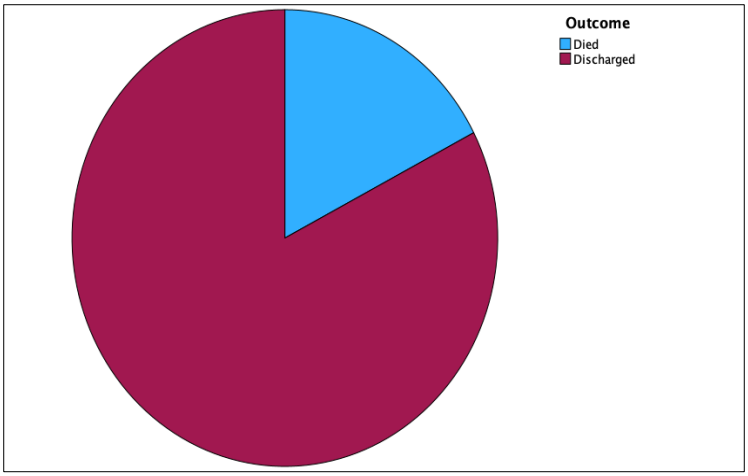

Figure 1 Mortality rate of patients with alcohol-related visits

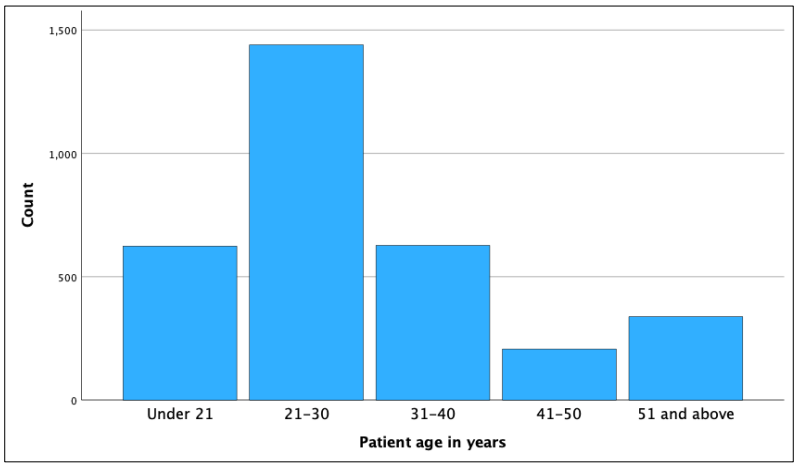

Figure 2 Age distribution of patients with alcohol-related visits

The findings of this study revealed that alcohol misuse and abuse is prevalent across all demographics thus necessitating the need for intervention by policymakers and medical professionals. With the overwhelming number of deaths attributed to chronic alcohol use, it begs the question of when should healthcare providers step in to prevent such damages and how do we begin to bring about awareness of the health-related damages alcohol causes. The disproportionately high numbers of chronic alcohol abuse from the southern area of the US can potentially be credited to the socio-economic status of the region, indicating a need for increased educational focus and intervention in this part of the country but this is not the only area of concern.

As the highest levels of death are observed in the Midwest, it is recommended that a more widespread initiative begin to spread awareness of the dangers of alcohol beyond those that currently exist. While sober driving campaigns do help with decreasing some levels of inappropriate alcohol use, the goal is to decrease alcohol consumption nationwide as a whole. Responsible use of alcohol would decrease morbidity and mortality, thereby increasing the quality of life and lowering healthcare costs to both the patient and the healthcare system. Increasing awareness of the harm of alcohol, particularly to those ages who experience such high rates of poor outcomes will positively impact further generations and potentially decrease social dependency.

The findings of this study emphasize that the risks of death, cancer, and other adverse outcomes associated with alcohol consumption far outweigh the benefits that may be observed. The findings of this research were limited to patients visiting providers in 2019 and by the operational definitions of the study. Patients involved in alcohol-related motor vehicle accidents were not included in the data analysis thus limiting the scope of the findings and external applicability.

The rate of increased deaths observed particularly in the population of persons 41-50 years of age is of special concern as they only make up 6.4% of the population of this study but contribute to the highest rate of deaths within the ED (22.7%). This alarming rate calls for interventions beyond those currently used to target this demographic in order to lower the morbidity and mortality rates in this group of population.

4. Conclusion

The results support several findings that alcohol use is prevalent in all demographics and is related to morbidity and mortality in patients presenting to the ED in the US. It is proposed to intervene with education and resources to decrease the misuse of alcohol and the subsequent harmful reactions. Responsible use of alcohol could decrease mortality and morbidity across all demographics thereby increasing the quality of life and saving healthcare costs.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

There is no conflict of interest among the authors in this paper.

Statement of ethical approval

The present research work does not contain any studies performed on animals/human subjects by any of the authors.

Statement of informed consent

Informed consent disclosure is not applicable to the present study as a secondary database was utilized.

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