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Visits by the elderly to United States EDs for alcohol-related disorders^{☆,☆☆}

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Abstract

Objectives—The objectives are to estimate the number of elderly patients presenting to emergency departments (EDs) in the United States from 2006 to 2011 for alcohol-related disorders and examine their demographic and clinical features.

Methods—This study used 2006 to 2011 data from the Nationwide ED Sample, a stratified, multistage sample designed to give national estimates of US ED visits each year. Clinical Classifications Software 660 code (“alcohol-related disorders”) was used. The clinical and demographic features that were examined were as follows: number of admissions, disposition, sex, age, expected payer, income, geographic region, charges, and primary diagnoses and procedures performed.

Results—From 2006 to 2011, there were 1620345 ED visits for alcohol-related disorders in elderly patients. Roughly one-third were discharged from the ED, whereas 66% (1078677) were admitted to the hospital. Approximately 73% were male, and the mean age was 73 years. Most patients used Medicare (84%), resided in neighborhoods with the lowest median income national quartile (29%), and lived in the South (36.4%). The average charge for discharged patients was \$4274.95 (4050.30–4499.61) and \$37857.20 (36813.00–38901.40) for admitted patients. The total charges for all patients treated and released from the ED were \$2166082965.40 and admitted was \$40835690924.40.

Conclusions—This study provided insight not only into the sociodemographic characteristics of this patient population but also the health care costs related to alcohol-related ED visits. These results may contribute to the development of future interventions targeted toward this population.

1. Introduction

Alcohol use is a growing public health concern for elderly adults [1]. Elderly patients, meaning patients ages 65 years and older, comprise the fastest growing portion of the US population [2]. By 2040, the elderly will comprise more than 20% of the total population

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[2]. Compared with all other substances, alcohol is the most commonly used among the elderly, and thus, the risks of drinking by older Americans will undoubtedly become an increasing issue as this population rises over the coming decades [3,4].

Merrick et al [5] examined drinking patterns in the elderly and propose that almost 1 in 10 elderly Medicare beneficiaries have an unhealthy relationship with alcohol, which was defined as risky use, problem drinking, abuse, and dependence. The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, defines alcohol abuse as “maladaptive patterns of alcohol consumption manifested by symptoms leading to clinically significant impairment or distress [6].” They also found an increased prevalence of unhealthy drinking in White males and those with higher levels of income and education; better health statuses; and who are either divorced, separated, or single [5]. A study by Moore et al [7] noted an increased mortality rate in elderly men who partake in unhealthy drinking. It has also been proposed that at least 10% of persons age older than 60 years in the community and 40% of those living in nursing homes meet the criteria for alcohol abuse [8].

Identifying alcohol abuse in the elderly is just as important as in younger age groups. Older adults commonly have comorbidities and take prescription medications; concurrent alcohol abuse contributes to declining physical health and may cause potentially significant medication interactions [9]. The elderly are more apt to mix medications and alcohol and are at a greater risk for adverse reactions, and they consume 25% to 30% of all prescription medications [10]. In the elderly, alcohol abuse has a higher correlation with impairment in functioning than age, smoking, sedative use, and stroke [1].

Although studies to date have focused on areas such as adverse effects of alcohol in the elderly [8,11], alcohol misuse in elderly in the community and primary care settings, and drinking patterns in the elderly, few studies have addressed alcohol consumption specifically in elderly emergency department (ED) patients [8,9,11,12]. Prior studies have shown that the prevalence of alcohol dependence in the elderly is underappreciated [13,14]. To our knowledge, no study to date has examined alcohol-related ED visits by the elderly at a national level. The objectives of this study were to determine the number of elderly patients presenting to EDs in the United States during the study period (2006–2011) for alcohol-related disorders and examine selected demographic and clinical features of this population.

2. Methods

This was retrospective cohort study using 6 years of discharge data (2006–2011) from the Nationwide ED Sample, Healthcare Cost and Utilization Project, and Agency for Healthcare Research and Quality [15]. The Nationwide ED Sample is a stratified, multistage sample designed to give national estimates of US ED visits each year. It contains more than 25 million records and is the largest all-payer ED database in the United States. A list of data partners that contribute to Healthcare Cost and Utilization Project can be found at www.hcup-us.ahrq.gov/hcupdatapartners.jsp [15].

Clinical Classifications Software (CCS) was used to identify elderly patients with an alcohol-related ED visit. We selected cases with a CCS code of 660 (“alcohol-related disorders”) in any of the CCS discharge diagnoses. The clinical and demographic features that were examined are as follows: number of admissions, disposition, sex, age, expected payer, income, geographic region, charges, and primary diagnoses and procedures performed. SAS-Callable SUDAAN software was used to create unbiased SEs and to produce weighted estimates.

3. Results

3.1. Patient characteristics

From 2006 to 2011, there were 1620345 ED visits for alcohol-related disorders for elderly patients. Almost one-third (506692) were discharged from the ED, whereas 66% (1078677) were admitted to the hospital. Almost three-quarters (73%, 1184482) were male (Table 1). The overall mean age for this patient population, for both men and women, was 72.6 years (95% confidence interval [CI], 72.54–72.69), and the primary payer for most visits was Medicare (84%). Most visits (82%) were from patients residing in metropolitan areas and in neighborhoods with the lowest median income national quartile (29%). Significantly more visits occurred in the southern United States (36.4%; 95% CI, 34.4%–38.4%) when compared with the Northeast (22.8%; 95% CI, 21.1%–24.6%), Midwest (18.8%; 95% CI, 17.3%–20.3%), and West (22.0%; 95% CI, 20.5%–23.6%).

3.2. Charges

The average charge for discharged patients was \$4274.95 (4050.30–4499.61) and \$37857.20 (36813.00–38901.40) for admitted patients. The average charge was significantly higher for males who were admitted to the hospital (\$39123.77; 38033.08–40214.46) compared with females (\$34419.44; 33398.12–35440.76). The total charges for all patients treated and released from the ED were \$2166082965.40 and were \$40835690924.40.

3.3. Primary diagnoses and principal procedures

Alcohol-related disorders were the primary diagnosis for approximately 17.2% of the sample (Table 2). Other common primary diagnoses included chronic obstructive pulmonary disease (3.5%), cardiac dysrhythmias (2.8%), acute cerebrovascular disease (2.6%), and pneumonia (2.6%). Other therapeutic procedures (23.7%), suture of skin and subcutaneous tissue (19.4%), and other diagnostic procedures (12.3%) were among the top 3 primary procedures performed on these patients (Table 2).

4. Discussion

Substance abuse among the elderly population in the United States was predicted to double between the years of 2002 and 2020, as the baby boomers age [16]. Binge drinking is even seen in this age group, with more than 14% of men and 3% of women reporting binge drinking [17]. Yet, health care workers may not be adequately educated or trained in the recognition and management of older adults with alcohol abuse [18]. In addition, traditional screening tools used for younger adults may not be relevant to older adults [19]. If the health

care provider does not consider alcohol misuse in the patient, a missed opportunity for intervention may result. Elderly patients presenting with frequent falls, for example, should be screened for alcohol use as a contributing factor in addition to medical causes of ataxia and syncope.

4.1. Limitations

The primary limitation of this study is that it is retrospective in design, which may affect the internal validity, as the data were not originally collected specifically for this study. Thus, we were unable to evaluate any variables that were not readily available in the database, such as blood alcohol level. In addition, this study only examined ED visits for alcohol-related disorders and therefore likely underestimates the true incidence of elderly alcohol use.

5. Conclusion

This study estimated that there were nearly 1620345 visits to EDs by elderly patients for alcohol-related disorders from 2006 to 2011. A majority of visits occurred in metropolitan areas, with the southern United States contributing the highest number of patients. An increased incidence was noted in males, consistent with findings in previous studies [5,14,20]. Most patients were insured by Medicare and majority were admitted. Several distinct patterns are identified and associated with sociodemographic characteristics, which may contribute to the development of additional targeted approaches to decrease alcohol abuse in the elderly. However, the most effective method of prevention and treatment of alcohol misuse in this age group remains unclear.

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Table 1

Demographic characteristics of elderly patients (≥ 65 years) with alcohol-related ED visits from 2006 to 2011

Characteristic	n (%)
Total number	1620345
Sex	
Male	1184482 (73.10%) [†]
Female	435570 (26.88%)
Payer	
Medicare	1365888 (84.30%) [†]
Medicaid	38364 (2.37%)
Private insurance	145988 (9.01%)
Self-pay	46619 (2.88%)
Other/no charge	21586 (1.33%)
Urban-rural location ^a	
Metropolitan	1338598 (82.61%) [†]
Nonmetropolitan	262199 (16.18%)
Income ^b	
1st quartile (< \$38999)	466979 (28.82%) [†]
2nd quartile (\$39000–47999)	400382 (24.71%)
3rd quartile (48000–62999)	362998 (22.40%)
4th quartile (≥ \$63000)	332845 (20.54%)
Region of hospital	
Northeast	369542 (22.81%)
Midwest	303919 (18.76%)
South	589718 (36.39%) [†]
West	357165 (22.04%)

Abbreviation: †, significantly higher ($P < .05$) than all other categories. Population size of less than 50000.^aMetropolitan = population size of 50000 to greater than or equal to 1 million, nonmetropolitan.^bEstimated median household income of residents in the patient's ZIP code.

Table 2

Top 10 primary diagnosis and procedures for alcohol-related ED visits from 2006 to 2011

CCS categories			
Top 10 primary diagnoses	Rank	%	95% CI
Alcohol-related disorders	1	17.17	16.64–17.72
Chronic obstructive pulmonary disease	2	3.48	3.38–3.58
Cardiac dysrhythmias	3	2.76	2.68–2.84
Acute cerebrovascular disease	4	2.58	2.50–2.66
Pneumonia (except that caused by tuberculosis)	5	2.58	2.50–2.66
Congestive heart failure, nonhypertensive	6	2.54	2.46–2.62
Fluid and electrolyte disorders	7	2.44	2.37–2.50
Syncope	8	2.36	2.29–2.42
Gastrointestinal hemorrhage	9	2.31	2.25–2.38
Nonspecific chest pain	10	2.24	2.16–2.32
Top 10 primary procedures	Rank	%	95% CI
Other therapeutic procedures	1	23.66	20.88–26.68
Suture of skin and subcutaneous tissue	2	19.42	17.83–21.10
Other diagnostic procedures (interview, evaluation, and consultation)	3	12.32	10.00–15.09
CT scan head	4	6.16	4.86–7.77
Indwelling catheter	5	3.42	3.00–3.90
Routine chest x-ray	6	2.92	2.18–3.91
Traction, splints, and other wound care	7	2.35	2.05–2.70
Other therapeutic procedures on eyelids, conjunctiva, and cornea	8	2.24	1.95–2.58
Prophylactic vaccinations and inoculations	9	2.20	1.82–2.67
Alcohol and drug rehabilitation/detoxification	10	1.45	1.09–1.93

Abbreviation: CT, computed axial tomography.