

Trends in emergency department visits with injury among students in a public university

Duc Anh Ngo MD DrPH¹, Saumitra Rege PhD², Kenneth Tolley¹, Christopher Holstege MD^{1,2}

¹Department of Student Health/Division of Student Affairs, ²Department of Emergency Medicine/School of Medicine;

University of Virginia, Charlottesville, VA

Introduction

- Injury presents a major health problem among college students with many related to alcohol misuse.
- Due to the acute nature of injury, the Emergency Department (ED) is often the first healthcare access point for clinical evaluation and treatment.
- Limited studies have examined epidemiology of injuries presenting to the ED among college students.
- This study aimed to evaluate the prevalence and demographic trends in injuries associated with university hospital emergency department (ED) visits.

Data source and data analysis

- The ED electronic medical records from 8 academic years 2009-10 to 2016-17 were queried for student visits and their records were linked to the university's student admission dataset that contains information on student demographics, academic involvements, and organizational affiliations.
- Student injury-related ED visits were identified based on ICD-9 and ICD-10 codes.
- Prevalences (per 100 student ED visits) of injuries overall, head injuries, and injuries with alcohol use were analyzed.
- Overall trend and trends by student characteristics were evaluated using Poisson regression.

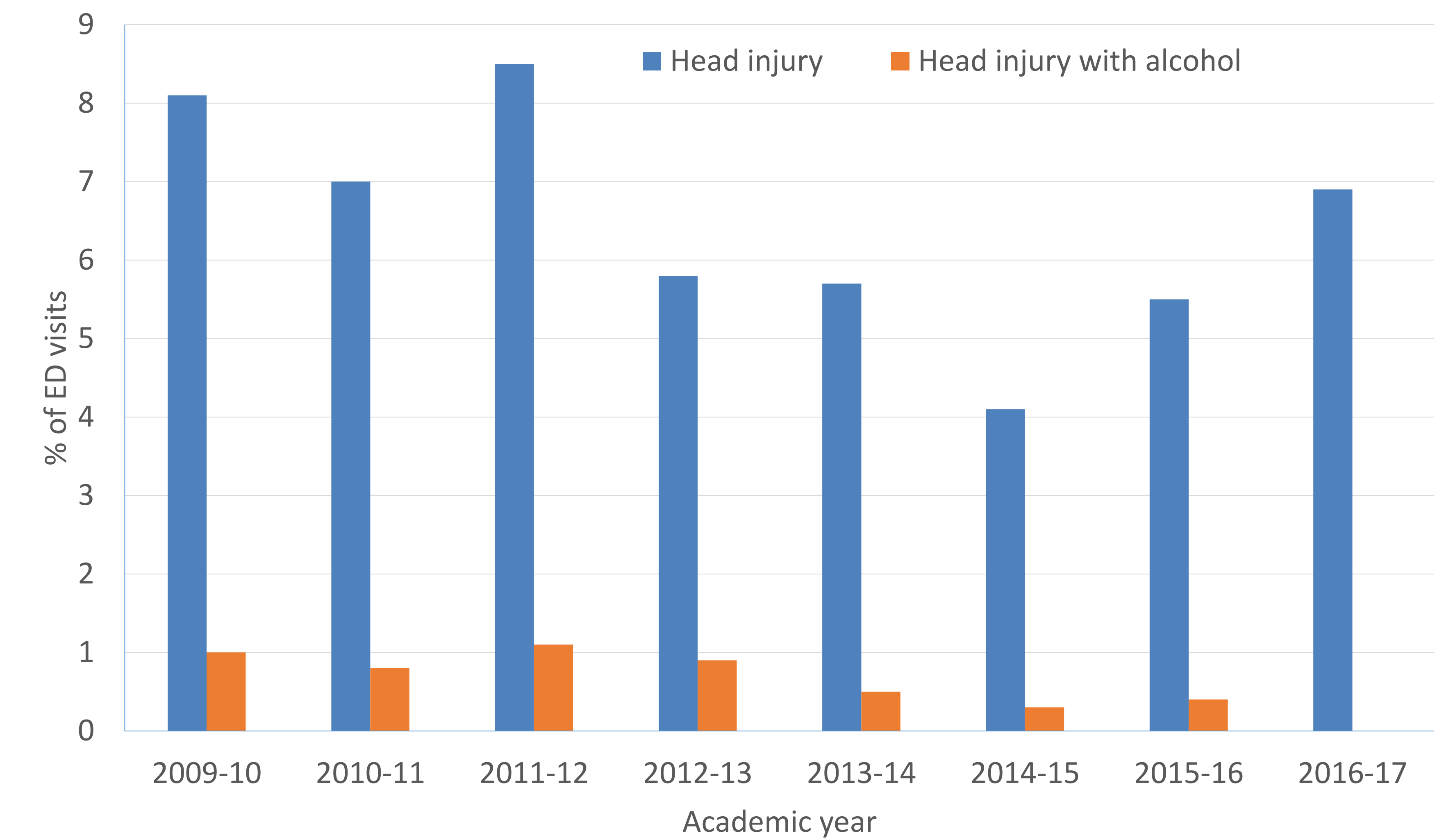
Key findings

- A total of 12,450 student ED visits were recorded. 4,635 (37.2 per 100 student ED visits) visits were given an ICD diagnostic code for injury of which 267 injuries (5.8% of total injuries) were related to alcohol.
- There was a marked difference in injury prevalence by age and gender, but not by other student characteristics.
- Prevalence in males (44 per 100 student ED visits) was higher than females (31 per 100 student ED visits).
- Ages 25-29 appeared to have the highest prevalence of injury-related ED visits (41 per 100 student ED visits), compared to the lowest (30 per 100 student ED visits) among ages 30-49.
- There was a declining trend from 2009-10 to 2016-17 (42 to 30 per 100 student ED visits) for all injuries and from 3.3% to 2.2% for injuries co-occurring with alcohol misuse ($p < 0.01$).
- Athletic students did not experience a significantly higher prevalence of injury associated with ED visits compared to non-athletic peers (43 vs. 39 per 100 student ED visits).

Trends in prevalence of student injury-related ED visits

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	All year
Gender									
Male	48.9	49.7	47.3	45.1	45.7	41.9	36	37.2	44.1
Female	34.9	32.4	35.6	33.6	31.6	31.8	20.5	22.9	30.6
Age group									
16-19	38.6	38.3	40.2	37.4	36.3	33.3	25.9	29.2	34
20-24	43.6	42.5	42.8	41.9	39	38.3	29.7	36.2	39.8
25-29	46.6	46.7	42.4	32.8	45	43.7	30.2	30.8	41.1
30-49	25.5	26.3	32	29.8	31	45.5	32	16.7	30.1
Ethnicity									
White	45	41	41.2	38.4	38.8	38.7	29.7	31.8	38.3
Asian	41.1	43.5	40.9	40	39.1	31.8	26.7	29.9	36.7
African American	26.7	38.6	40.9	39.8	30.8	31.8	24.2	21.1	32
Hispanic	30.5	35.4	51.9	41	42.9	30	24.1	12	34.7
Other	43.1	44.4	41.8	41.7	38.2	35.1	26.7	28.2	36.8
Academic level									
Undergraduate	41.7	40.8	41.9	39.9	37.5	35.8	28	29.1	36.9
Graduate	42.1	37.9	47.3	42.2	42.9	37.3	28.5	33.3	39.4
Professional	41	47.3	35.3	29.2	40.7	46.4	30.8	33.3	38.2
Athlete									
No	41.7	40.9	41.5	39.1	38.3	36.6	28.5	29.9	37.2
Yes	40.5	59.1	48.1	45.8	36.4	43.5	12.5	16.7	40
Greek									
No	41.1	41.8	40.8	38.1	36.7	36.5	26.4	28.9	36.6
Yes	45.8	38.3	44.5	42.5	43.3	37.3	33.3	33.1	39.5

Trends in student ED visits with head injury



- Head injury (n=965) accounted for 21% of total injuries presenting to ED
- Prevalence of ED visits with head injury fluctuated, with a decline in the first 6 years followed by a steady increase in the last 3 years
- There was a small number of head injuries related to alcohol (n= 126).

Discussion and conclusion

- The study describes the trends in injuries associated with student ED visits over an extended period of time
- Injuries appeared to be the leading cause of student visits to the university ED under the study
- Although there was a declining trend over the study period, the steady increase in prevalence of head injuries in the last 3 academic years (2014/15-2016/17) is of concern
- There is a decline in prevalence of alcohol-related injuries that may suggest effectiveness of intervention efforts targeting risky drinking among students in this particular campus such as the Brief Alcohol Screening and Intervention (BASICS) program, the general medicine clinic screening survey for alcohol use disorders, and the dean's enhanced referral system of students to appropriate services when alcohol infractions occur.
- The study highlights that linking student administrative data with ED clinical data enables the study of a wide range of student characteristics associated with student ED presentation due to injuries.
- Since ED is a major source of clinical evaluation and care for injuries, especially serious injuries, the ED could provide an important data source to monitor the temporal trends in injuries in a student population and evaluation of the intervention efforts.

% student ED visits with any injury

