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Incidence and Correlates of Emergency Department Visits for Deliberate Self-Harm among Asian American Youths

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Abstract

Purpose: This study examined the epidemiology of self-harm emergency department (ED) visits among Asian American/Pacific Islander (AAPI) youths, and associated factors.

Methods: We used California ED visit records in 2010 and 2011 to calculate incidence rates of self-harm ED visits for AAPI vs. non-Hispanic White (NHW) patients aged 10–29 years. Demographic and clinical characteristics were compared for AAPI vs. NHW patients presenting with self-harm. We used modified Poisson regression models to estimate the relative risk of recurrent ED self-harm visits for AAPI vs. NHW patients, and examined the association of insurance type and gender with recurrent self-harm among AAPIs.

Results: Rates of self-harm ED visits for young AAPI patients were 38 and 26 per 100,000 among females and males, respectively. Although AAPI patients presenting with self-harm were equally or less likely than NHW patients to have comorbid psychological and substance use diagnoses at their index visit, they were 25% more likely to be admitted to hospital. However, they were 40% less like to have a recurrent ED self-harm visit. Among AAPI patients, those who used Medicaid were significantly more likely than those with other insurance to be admitted as inpatients.

Conclusions: Young AAPI patients presenting to EDs with deliberate self-harm have different sociodemographic and clinical profiles compared with non-Hispanic White patients. Our study also demonstrates significant heterogeneity in risk of recurrent self-harm by gender and insurance type among AAPI patients. This information may be useful for future intervention programs among self-harming AAPI youths.

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Research data for this article

Due to the sensitive nature of the data and restricted data use agreement between the authors' affiliations and data administrator, the raw data used in this study must remain confidential and cannot be shared.

Keywords

Deliberate self-harm; emergency department visit; Asian American

There is growing attention to the mental health needs of Asian American populations [1]. In particular, recent data on increasing suicide rates in this racial group, especially for youths, have been a cause for alarm. According to a recent report published by the Centers for Disease Control and Prevention [2], Asian American/Pacific Islanders (AAPIs) aged 15–24 are the only racial/ethnic group with suicide as the first leading cause of death. Among AAPIs aged 10–14 and 25–29, suicide is the second leading cause of death. A recent study using a nationally representative data set found that the overall trend in suicidal behaviors among Asian American adolescents fluctuated from 1991 to 2019, with a peak that occurred in 2003 and slightly decrease afterwards [3]. However, the prevalence of suicide attempts and injury by suicide attempt increased over the study period among female but not male adolescents.

Although existing literature indicates that serious deliberate self-harm (DSH) is strongly associated with subsequent suicide fatality and other suicidal behavior [4–6], little is known about the epidemiology of DSH among Asian American youths. Most clinical studies on racial/ethnic disparities in DSH have typically either omitted Asian American youths entirely or combined their data with that of other racial groups [7]. As a result, DSH among this racial group is often underreported and ignored [8].

Asian American populations are the least likely of any racial group to seek and utilize mental health services of any kind [9–13]. Possible contributing factors to this disparity include culture-related stigma associated with disclosing mental disorders, language barriers [14], perceived burdensomeness to family members [9], and underestimation of the severity of their mental health issues [10]. Shame and loss of face is a central concern related to mental health issues for Asian American patients [15]. Because underutilization of community mental health services, reluctance to disclose self-injury [9], and delayed interventions can escalate the severity of DSH and increase risk for emergency department (ED) visits [16], examining ED visit data may be an important avenue for understanding DSH among Asian American youths. Although only a subset of self-harming patients present for care to an ED, these patients' self-harm injuries, concomitant psychological problems, and long-term outcomes tend to be relatively severe [17,18], making them an important population to study. Moreover, the rate of self-harm ED visits among youths aged 10–29 years increased from 196 per 100,000 to 322 per 100,000 between 2001 and 2020 [19], underscoring the growing public health importance of this clinical setting. The 2012 National Strategy for Suicide Prevention also highlights the ED as a critical context for identification and treatment of individuals at high risk for suicide [20].

Only a small amount of research has directly compared the prevalence of DSH between Asian American vs. White youths, and this work is largely from educational settings and relies on self-reported DSH. Results are inconsistent, with some suggesting that Asian American and White youths have similar rates of self-harm [21], while others report that Asian American young adults have a lower DSH rate than their White peers [22–26].

In the only two longitudinal studies that we are aware of, Jacobson and Gould [27] and Goldman-Mellor et al. [22] found that young Asian American patients who presented with self-harm were less likely than their White counterparts to engage in repeated DSH.

In this study, we examined the epidemiology of DSH emergency department visits among Asian American youths and their White counterparts using data from California in 2010–2011, and explored factors associated with ED utilization for DSH among Asian American youths. Specifically, we aimed to answer the follow questions: (1) What were the overall and gender-specific incidence rates of ED self-harm visits among Asian American youths vs. among White youths in this time period? (2) How did sociodemographic and clinical characteristics differ between Asian American patients vs. White patients presenting with self-harm? (3) How did rates of recurrent ED self-harm differ between Asian American vs. White patients? (4) Was there heterogeneity in sociodemographic and clinical characteristics, as well as risk of recurrent ED self-harm visits, by gender and socioeconomic status among Asian American patients [28–30]? The first two questions are aimed at understanding the overall rate and characteristics of ED self-harm visits among Asian American youths at the time of the study data. The third question, to investigate the likelihood of repeat ED visits among Asian American patients, may help health professionals develop prevention strategies for reducing Asian American youths' repeat DSH behaviors. Finally, previous studies have demonstrated the strong linkage of SES and gender with DSH [28–30]. Given the high level of diversity in socioeconomic status (SES) among Asian American communities, addressing the last question will provide some suggestions to mental health professionals on developing possible gender- or underserved group-specific prevention strategies.

METHODS

Data

This study was approved by the University of California, Merced Institutional Review Board. Data for the study came from the California Office of Health Care Access and Information (HCAI) and comprised non-public, de-identified, individual-level emergency department (ED) patient records from all state-licensed ED facilities. Records from federal (e.g., Veterans Administration) hospitals were excluded. More details on these data can be found in Goldman-Mellor and colleagues' study [22].

We used two different datasets for the study. First, to examine the overall and gender-specific incidence rates of ED self-harm visits among Asian American youths vs. among White youths, we used a dataset that consisted of all patient visits to any ED between January 2010 – December 2011 with a diagnosis of deliberate self-harm (ICD-9-CM codes E950-E958.9), and were made by patients aged 10 to 29 years who self-reported being Asian American or Pacific Islander or non-Hispanic White (NHW). Patients of other racial/ethnic identities, including individuals who self-reported multiple races/ethnicities, were excluded from all analyses to maintain the focus on Asian American patients, given how little attention this population has received in prior research.

The second dataset was a subgroup of those visits, and was used for follow-up analyses. This subgroup consisted of unique individual patients whose uniqueness was established via the presence of encrypted social security numbers recorded at their first observed self-harm visit (hereafter the "index visit"). These encrypted social security numbers were used to link to previous and subsequent visits made by those patients. These patients were aged 10 to 29 years, and self-reported as AAPI or non-Hispanic White, at their index visit.

Measures

Sociodemographic characteristics of interest for the overall sample included patient age group (10–17, 18–24, and 25–29 years) and gender (male and female). In follow-up analyses using the unique-identifiable patient subgroup, the outcome of interest was any subsequent ED visit for deliberate self-harm within 12 months of the index visit, to any ED facility within the state. In this subgroup, at each patient's index visit, we assessed insurance status (private insurance, Medicaid, self-pay, or other) as well as various clinical characteristics, including self-injury method (poisoning, hanging, cutting/piercing, or other method), visit disposition (discharged home, admitted as inpatient, died, or other), and presence of comorbid diagnoses assessed using ICD-9-Clinical Modification (CM) E-codes and Clinical Classification Software (CCS) codes. CCS codes aggregate ICD-9-CM diagnoses into mutually exclusive and clinically meaningful categories. We focused on conditions that have been previously associated with self-harm, including anxiety disorder (CCS code 651), mood disorder (CCS code 657), psychotic disorder (CCS code 659), substance use (CCS codes 660–661), borderline personality disorder (ICD-9-CM codes 301.83), suicidal ideation (ICD-9-CM codes V62.84); we also combined mental health-related conditions into a category of "any mental disorder" (CCS codes 650–659, 662, 663, or 670). We also assessed presence of other comorbid conditions at the index visit, measured using the Elixhauser comorbidity scale system. The Elixhauser Comorbidity Index is a method of categorizing comorbidities of patients based on the ICD diagnosis codes found in administrative patient data. There are 30 comorbidity categories, which are used to calculate an index score (ranging from 0 to 30) based on the total number of comorbidity categories indicated for an individual [31].

Patient history of prior ED visits to any facility in the state, for any reason, was assessed for the 12 months prior to each patient's index visit, using the patient's unique identifier. The number of each patient's past-year ED visits were counted and categorized into three groups (0, 1–4, or 5+ visits).

Statistical analyses

We used the first dataset — all California self-harm ED visit records in 2010 and 2011, regardless of availability of patients' unique identifiers — to calculate gender-specific incidence rates of self-harm emergency visits, per 100,000, for AAPI vs. non-Hispanic White youths. The formula was the number of race/ethnicity- and gender-specific self-harm ED visits divided by the estimated number of persons in that demographic category. The denominator estimates were derived from 2010 California Census data.

We next conducted follow-up analyses in the second dataset — the subgroup of AAPI vs. non-Hispanic White patients who had a valid unique identifier at their index visit. We used descriptive statistics to compare the two racial/ethnic groups' sociodemographic and clinical characteristics at index self-harm visit. Chi-square tests (or Fisher's exact test) were used for nominal or ordinal sociodemographic or clinical measures, while independent samples t-tests were used for interval or ratio measures. We then used generalized linear models (GLM) with a Poisson estimator and robust error variance (a.k.a., robust (modified) Poisson regression) to estimate the relative risk of follow-up ED self-harm visits within 12 months for AAPI vs. White patients [32]. Race was first entered in a bivariate GLM model. We then ran one fully adjusted GLM model that included race and other demographic and clinical factors together, to identify whether AAPI racial identity remained independently associated with risk of any recurrent self-harm ED visit after accounting for potentially confounding factors. Individuals who died at the index visit were excluded from all follow-up analyses.

Socioeconomic status varies considerably among AAPI populations in California. To examine the association between AAPI patients' socioeconomic status, as measured by insurance type, with other sociodemographic and clinical factors at the index visit or recurrent self-harm ED visit, we restricted the next follow-up analyses to only AAPI patients. We used frequency and chi-square tests (or Fisher's exact test) for categorical measures, and independent samples t-tests were used for interval or ratio measures. We ran modified Poisson regression models, first bivariate and then controlling for covariates, to examine whether insurance at index visit was associated with any recurrent ED visit within one year among AAPI patients. Again, patients who died at their index visit were excluded from the model.

All analyses were conducted using Stata 15.

RESULTS

Incidence rates of self-harm emergency visits.

During 2010–2011, there were a total of 1,217 ED self-harm visits made by AAPI patients (including *all* patient visits, both with and without valid unique identifiers), resulting in an overall incidence rate of 38 visits per 100,000. The majority of these visits were by female patients (n=796, 65.4%). We then calculated gender- and race-specific incidence rates of ED visits due to self-harm for young AAPI and NHW patients. In those years, the incidence rate among male AAPI patients was only 16% of that for male NHW patients (AAPI males: 26 visits per 100,000; NHW males: 165 visits per 100,000). In 2010–2011, visit rates among female AAPI (50 cases per 100,000) and NHW patients (245 cases per 100,000) were substantially higher than those among males; nevertheless, the gap between AAPI and NHW female patients was nearly as large as that among males (incidence rate ratio = 0.21, 95% CI = 0.19, 0.22).

Characteristics of patients included in follow-up analyses.

In 2010–2011, a total of 1,119 AAPI and 12,810 NHW youths presented to a California ED for deliberate self-harm injury and had an index visit that included a valid unique identifier,

allowing them to be included in follow-up analyses. At the index visit, approximately one-fifth of patients from both racial/ethnic groups were aged 10–17 years (20.7% for NHW vs. 19.9% for AAPI patients), and another half were aged 18–24 years for both groups (49.5% vs. 48.9%). The remaining one-third for both groups were aged 25–29. Compared with NHW patients, AAPI patients were more likely at their index visit to be female (65.5% vs. 57.1%, p<.001) and to use private insurance (49.1% vs. 40.7%, p<.001). Clinically, AAPI patients were more likely to be admitted to hospital (64.5% vs. 54.6%, p<.001) and to have poisoned themselves (68.5% vs. 58.1%, p<.001) at the index visit. AAPI and NHW patients had similar rates of most comorbid conditions at the index visit, although NHW patients were more likely to be diagnosed with comorbid anxiety (12.1% vs. 9.8%, p=.025) and substance use (29.6% vs. 17.0%, p<.001), and also had significantly higher Elixhauser comorbidity scores (1.0 vs. 0.9, p=.020). AAPI patients were less likely to have any past-year ED visit (67.7% vs. 49.4%, p<.001). More details are presented in Table 1.

Relative risk of follow-up ED self-harm visits for AAPIs vs. NHW youths.

Table 2 presents the results of Poisson regression models that examined the association of AAPI racial identity with recurrent ED self-harm visits within one year of index visit. Risk of any recurrent self-harm visit for AAPI patients was 50% lower compared to NHW patients in the bivariate model (RR=0.50, 95% confidence interval [0.39, 0.64]); after controlling for covariates, this difference was slightly reduced but remained statistically significant (RR=0.59 [0.47, 0.75]).

Sociodemographic and clinical characteristics by insurance status and gender.

In analyses restricted to AAPI patients, we further explored whether their sociodemographic and clinical characteristics differed by insurance status (see Table 3) and by gender (see Table 4). Among AAPI patients, insurance status was associated with differences in the risk of admission to hospital (p=.035), in likelihood of past-year ED utilization (p<.001), and in comorbid diagnosis with mood disorder (p=.049) or psychotic disorder (p=.002).

AAPI female patients were more likely than males to use private insurance at the index visit (52.3% vs. 43.0%), while males were more likely to self-pay (24.1% vs. 16.1%, p=0.003). Female patients were more likely than males to have used poison (76.7% vs. 52.9%), while males were more likely to have sustained cutting/piercing injuries (25.1% vs. 16.9%) or use other methods (18.9% vs. 5.6%, p<0.001). Psychiatric comorbidity also looked somewhat different between the two genders. Females were more likely to have comorbid diagnoses of mood disorder (43.9% vs. 32.1%, p<0.001), while males were more likely to have diagnoses of psychotic disorder (10.1% vs. 2.7%, p<0.001) and substance use (23.8% vs. 13.4%, p<0.001).

Association of follow-up visits with SES and gender.

Table 5 presents the results of Poisson regression models that examined the association of insurance type or gender with recurrent ED visits within 365 days of the index visit. Results showed that in both bivariate and fully adjusted models, neither insurance type nor gender predicted risk of recurrent ED visits in the 12 months after the index visit.

DISCUSSION

This study used population-based data from California in 2010–2011 to examine the incidence and correlates of, and heterogeneity in, ED deliberate self-harm visits among AAPI youths. We found that the incidence rate of ED self-harm visits for AAPI patients of both genders was just 15%−21% of that for non-Hispanic White peers. At index self-harm events, AAPI patients were more likely than NHW patients to be female, to use private insurance, to have used poison, and to be admitted to hospital, but they were less likely to have any past-year ED visit, to be diagnosed with comorbid anxiety or substance use, or to experience recurrent self-harm visits.

The finding of lower ED self-harm incidence rates among AAPI (vs. White) patients of both genders is consistent with previous studies, although the literature is scant [22]. Asian American youths appear to be less likely than NHW youths to engage in deliberate self-harm that culminates in an ED visit. Findings on AAPI vs. NHW youths' prevalence of self-reported suicidal behavior are conflicting, although several studies indicate that Asian American young adults have a lower rate of suicidal behavior than their White peers [22–26]. Together, however, results from the current study and prior work suggest that suicidal behavior of various levels of severity is less common among young AAPI populations. Similarly, the finding that female AAPI youths presented to the ED with self-harm at far higher rates than male AAPI youths is highly consistent with prior literature on nonfatal suicidal behavior (e.g., [33,34]), and underscores the far greater vulnerability of females for this outcome.

The significantly higher rate of hospitalization after self-harm ED visits among young AAPI patients (relative to White patients), even controlling for insurance status and other sociodemographic characteristics, was an unexpected finding. Previous research has found that when facing psychological problems, AAPI youths are reluctant to disclose or seek help for their mental health concerns [35]. Their reluctance could escalate the severity of the problem and lead to correspondingly higher likelihood of inpatient hospitalization. Such help-seeking delay would be consistent with previous studies of Asian American populations [36–38]. Another potential explanation for this finding is that AAPI patients were much more likely than White patients to have used poison at their index self-harm visit, while the NHW youth were more likely to have cutting/piercing injuries. Because poisoning more often requires medical hospitalization than does cutting, this could help explain AAPI patients' higher rates of admission. There might also be other reasons for AAPI patients' higher rate of admission after deliberate self-harm. Geography, patient or family preferences, insurance coverage, and other factors may also play a role, possibilities that we could not explore with our study data. Regardless of the reasons, future studies are needed to more fully elucidate why AAPI patients have a higher hospitalization rate after presenting to the ED with self-harm. Although inpatient hospitalization can provide DSH patients with a safe environment, access to comprehensive psychiatric assessment, and further needed treatments, and may be necessary for those with serious physical injuries, previous studies also suggest that hospitalization may be detrimental for some ED patients presenting with self-harm [39].

Despite AAPI patients' higher rate of admission, we found that their overall risk of any recurrent self-harm visit was 50% lower compared to NHW patients, a finding in line with other studies [22,27]. It is possible that AAPI youths are still engaging in recurrent DSH but either seeking no clinical care or care in non-ED settings. Further research is needed to understand how their mental health concerns are taken care of after the ED visit or hospitalization.

With respect to DSH methods, unlike in previous research which suggested cutting as the most common method by Asian patients [40], our study found that the most frequent method used by AAPI patients seeking ED care in California was poisoning. Our sample in California consisted of patients from a variety of Asian ethnic or cultural groups, while You and colleagues' study was conducted in one Asian country [40], which likely explains the difference in our findings. Notably, our study also found that AAPI patients whose index injury involved cutting or piercing had higher risk of recurrent self-harm compared with patients who poisoned themselves. Because cutting/piercing has been associated with more severe psychiatric disorders and suicide attempt among Asian populations [40], follow-up services may be especially needed among Asian American patients discharged from the ED with cutting or piercing self-injuries.

We also tested the relative frequency of comorbid mental disorders among DSH visits for AAPI patients vs. NHW patients. The relative proportions were similar, except that AAPI patients were significantly less likely to have a comorbid diagnosis of anxiety disorder or substance use disorder. This finding is consistent with previous research that AAPI youths initiate substance use later than White peers [41]. Differing from prior research, this study did not find any significant racial disparities in association of borderline personally disorder with DSH [40]. However, ascertainment and reporting of comorbid mental health disorders may be affected by racial biases in clinical settings [42]; in particular, due to Asian American populations' reluctance to disclose mental health concerns and the common clinician misconception of Asian American individuals as high-achieving, self-reliant, and mentally resilient, ED clinicians may be less likely to conduct assessments for these comorbid disorders in AAPI patients [41]. Future research is needed to examine whether and in which ways racial bias can contribute to ED clinicians' diagnosing practices with AAPI vs. other patients.

Among AAPI patients, insurance status was associated with risk of admission to hospital, likelihood of past-year ED utilization, and diagnosed comorbid mood disorder or psychotic disorder. Interestingly, AAPI patients who used Medicaid at their index visit were significantly more likely than those who used private insurance or self-paid to be admitted as inpatients; they also had the highest rates of repeat ED self-harm. When facing adverse life experiences, socioeconomically disadvantaged youth may receive less support or resources from their families, schools or communities. As a result, socioeconomic disadvantage among these AAPI youth might be linked with more severe and repeat DSH, potentially suggesting the need for culturally appropriate social-emotional learning programs, family intervention programs, or other wraparound services.

Finally, our study demonstrates quite different clinical characteristics at index visit among male vs. female AAPI patients. AAPI female patients were more likely to use private insurance, poison themselves and be diagnosed with mood disorders, while males were more likely to self-pay at their index visit, cut or pierce themselves, and be diagnosed with psychotic disorders or substance use. This pattern of gender differences among AAPI patients is also consistent with the findings among White patients where females are more likely to experience affective disorders while males exhibit more psychotic disorders and substance use [43]. These findings suggest that the development of gender-specific youth DSH prevention programs may be warranted.

LIMITATIONS

The present study makes a unique contribution to the existing literature on the clinical epidemiology of ED self-harm visits among AAPI youth. However, the study had several limitations. First, the study data were restricted to California in 2009–2013; more recent data were not available to us, limiting generalizability to current contexts, including trends during the COVID-19 pandemic. As newer data become available, it will be important to continue examination of ED self-harm visits among Asian American youth. Second, although the study included a large sample of AAPI patients, due to dataset limitations we were unable to distinguish among the many diverse subgroups of Asian American populations residing in California (e.g., those of Chinese, Japanese, Thai, Hmong, or Indian descent). Cultural, economic, geographic, and other sources of heterogeneity between these groups may contribute to significant differences in self-harm behavior, a possibility we could not examine. Third, the study's administrative dataset did not include many important risk and protective factors at the individual, family, school, and community levels that may be associated with DSH among AAPI populations. It is our hope that administrative datasets of this kind might be expanded to include data on LGBTQI identity in the future. Also, acculturation has been found to be a major moderator of mental health among AAPI populations, but such a variable was not available in our dataset. Finally, the study mainly focused on ED self-harm visits among AAPI in comparison with non-Hispanic White patients. Future studies are needed to explore the difference of ED self-harm visits between AAPIs and other racial/ethnic groups.

CONCLUSION

This study is, to the best of our knowledge, the first to examine AAPI youths' DSH behavior using population-based emergency department visit data. The study found that, compared with White youths, AAPI youths had substantially lower overall rates of ED visits for self-harm, and lower risk of recurrent DSH visits. However, they were more likely to poison themselves and to be admitted to inpatient care at their index visit for self-harm. Our study also demonstrates significant heterogeneity in ED self-harm visits by gender and insurance status among AAPI patients. These findings may be informative for future research investigating more recent patterns of self-harm, and the design of culturally appropriate prevention programs aimed at reducing self-harm behavior, among AAPI youths.

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Abbreviations:

AAPI	Asian-American/Pacific Islander
DSH	deliberate self-harm
OSHPD	California Office of Statewide Health Planning and Development
ED	emergency department
ICD-9-CM	ICD-9-Clinical Modification
CCS	Clinical Classification Software
GLM	generalized linear model

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Implications and Contribution

This population-based study found lower rates of overall and repeat emergency department utilization for deliberate self-harm among AAPI compared to White youths, but AAPI youths were more likely than White peers to be hospitalized after self-harm. Culturally appropriate ED-based interventions for self-harming AAPI youths are needed.

Table 1.

Demographic characteristics and clinical factors at index visit for AAPI and White patients

Characteristic	White (N=12,810)	AAPI (N=1,119)	Statistical test
	N (%)	N (%)	
Age in years at index visit			
10–17 years	2651 (20.7)	223 (19.9)	$\chi^2(2) = 1.03$, p=.597
18–24 years	6341 (49.5)	547 (48.9)	
25–29 years	3818(29.8)	349(31.2)	
Female	7309 (57.1)	733 (65.5)	$\chi^2(1) = 30.10$, p<.001
Insurance type at index visit			
Private (reference group)	5216 (40.7)	549 (49.1)	
Medicaid	3801 (29.7)	300 (26.8)	
Self-pay	2907 (22.7)	211 (18.9)	$\chi^2(3) = 30.93$, p<.001
Other categories	883 (6.9)	59 (5.3)	
Medicare	353 (2.8)	17 (1.5)	
Other/unknown	530 (4.1)	42 (3.8)	
Disposition at index visit			
Discharged home	5430 (42.4)	369 (33.0)	
Admitted	6998 (54.6)	722 (64.5)	$\chi^2(3) = 42.20$, p<.001
Other	332 (2.6)	22 (2.0)	
Died	50 (0.4)	6 (0.5)	
Self-injury method at index visit			
Poisoning	7444 (58.1)	766 (68.5)	
Hanging	252 (2.0)	18 (1.6)	
Cutting/piercing	3499 (27.3)	221 (19.8)	
Other:	1615 (12.6)	114 (10.2)	$\chi^2(3) = 46.27$, p<.001
Jumping from high place	83 (0.7)	4 (0.4)	
Submersion/drowning	12 (0.1)	0 (0.0)	
Firearm	45 (0.4)	5 (0.5)	
Other method	1475 (11.5)	105 (9.4)	
Comorbid diagnoses at index visit			
Any mental disorder	8329 (65.0)	704 (62.9)	$\chi^2(1) = 2.00$, p=.157
Any anxiety disorder	1549 (12.1)	110 (9.8)	$\chi^2(1) = 5.02$, p=.025
Any mood disorder	5174 (40.4)	446 (39.9)	$\chi^2(1) = 0.12$, p=.727
Any psychotic disorder	552 (4.3)	59 (5.3)	$\chi^2(1) = 2.28$, p=.131
Any substance use disorder	3791 (29.6)	190 (17.0)	$\chi^2(1) = 80.23$, p<.001
Any borderline personality disorder	168 (1.3)	10 (0.9)	$\chi^2(1) = 1.42$, p=.233
Any suicidal ideation	1453 (11.3)	130 (11.6)	$\chi^2(1) = 0.08$, p=.781
Elixhauser Comorbidity Score, mean (SD)	1.00 (1.1)	0.92 (1.0)	t=2.32, df = 13927, p=.020
Past-year ED visit			
0 visits	6332 (49.4)	757 (67.7)	$\chi^2(2) = 148.90$, p<.001

Characteristic	White (N=12,810)	AAPI (N=1,119)	Statistical test
	N (%)	N (%)	
1–4 visits	5348 (41.8)	330 (29.5)	
5+ visits	1130 (8.8)	32 (2.9)	
Recurrent self-harm visit within 12 months	1564 (12.2)	68 (6.1)	$\chi^2(1) = 37.41$, $p < .001$

Table 2.

Association of race/ethnicity with any recurrent self-harm ED visit within 12 months of index visit

Characteristic	Any recurrent self-harm visit within 12 months of index visit	
	Bivariate Models	Fully Adjusted Models
	RR [95% CI]	RR [95% CI]
Race/ethnicity		
Non-Hispanic White (reference group)	1.0	1.0
Asian/Pacific Islander	**0.50 [0.39, 0.64]**	**0.59 [0.47, 0.75]**
Age in years at index visit		
10–17 years (reference group)	1.0	1.0
18–24 years	**0.82 [0.73, 0.92]**	**0.72 [0.64, 0.81]**
25–29 years	0.92 [0.81, 1.04]	**0.74 [0.65, 0.85]**
Female	**1.12 [1.01, 1.23]**	1.03 [0.94, 1.14]
Insurance type		
Private (reference group)	1.0	1.0
Medicaid	**1.43 [1.28, 1.60]**	**1.12 [1.01, 1.25]**
Self-pay	0.93 [0.81, 1.07]	0.94 [0.82, 1.08]
Other category	1.36 [1.12, 1.64]	1.14 [0.96, 1.35]
Disposition at index visit		
Discharged home (reference group)	1.0	1.0
Admitted	**1.29 [1.16, 1.42]**	**1.25 [1.13, 1.38]**
Other	1.29 [0.95, 1.74]	1.13 [0.85, 1.50]
Self-injury method at index visit		
Poisoning (reference group)	1.0	1.0
Hanging	0.64 [0.40, 1.03]	0.67 [0.43, 1.05]
Cutting/piercing	**1.34 [1.21, 1.49]**	**1.41 [1.27, 1.56]**
Other	0.84 [0.71, 0.99]	0.98 [0.82, 1.16]
Comorbid diagnoses at index visit:		
Any mental disorder	**1.39 [1.24, 1.54]**	0.99 [0.88, 1.11]
Any anxiety disorder	**1.34 [1.17, 1.53]**	**1.21 [1.07, 1.37]**
Any mood disorder	**1.26 [1.14, 1.39]**	**1.22 [1.09, 1.37]**
Any psychotic disorder	**1.82 [1.52, 2.19]**	**1.55 [1.30, 1.84]**
Any substance use disorder	1.02 [0.91, 1.13]	0.98 [0.87, 1.11]
Any borderline personality disorder	**2.23 [1.66, 2.99]**	**1.64 [1.26, 2.12]**
Any suicidal ideation	**1.20 [1.04, 1.38]**	1.10 [0.96, 1.25]
Elixhauser comorbidity score	**1.10 [1.05, 1.15]**	0.99 [0.94, 1.05]
Past-year ED visits		
0 visits (reference group)	1.0	1.0
1–4 visits	**1.61 [1.44, 1.79]**	**1.53 [1.38, 1.70]**
5+ visits	**3.95 [3.46, 4.51]**	**3.59 [3.17, 4.08]**

Bold font indicates statistically significant association.

Table 3.

Sociodemographic and clinical characteristics of AAPI patients at index visit, by insurance status

Characteristic	Private insurance (N=549)	Medicaid (N=300)	Self-pay (N=211)	Other (N=59)	Statistical test
	N (%)	N (%)	N (%)	N (%)	
Age in years at index visit					
10–17 years	132 (24.0)	74 (24.7)	5 (2.4)	12 (20.3)	$\chi^2(6) = 67.1$, p<.001
18–24 years	273 (49.7)	144 (48.0)	104 (49.3)	26 (44.1)	
25–29 years	144 (26.2)	82 (27.3)	102 (48.3)	21 (35.6)	
Female	383 (69.8)	197 (65.7)	118 (55.9)	35 (59.3)	$\chi^2(3) = 14.0$, p=.003
Disposition after index visit					
Discharged home	189 (34.4)	80 (26.7)	83 (39.3)	17 (28.8)	Fisher's exact=.035
Admitted	345 (62.8)	215 (71.7)	120 (56.9)	42 (71.2)	
Other	13 (2.4)	3 (1.0)	6 (2.8)	0 (0.0)	
Died	2 (0.4)	2 (0.7)	2 (1.0)	0 (0.0)	
Self-harm method at index visit					
Poisoning	391 (71.2)	202 (67.3)	129 (61.1)	44 (74.6)	Fisher's exact=.353
Hanging	7 (1.3)	6 (2.0)	4 (1.9)	1 (1.7)	
Cut/pierce	103 (18.8)	61 (20.3)	48 (22.8)	9 (15.3)	
Other	48 (8.7)	31 (10.3)	30 (14.2)	5 (8.5)	
Comorbid diagnoses at index visit					
Any mental disorder	357 (65.0)	193 (64.3)	116 (55.0)	38 (64.4)	$\chi^2(3) = 7.1$, p=.070
Any anxiety	50 (9.1)	32 (10.7)	22 (10.4)	6 (10.2)	$\chi^2(3) = 0.7$, p=.884
Any mood disorder	238 (43.4)	118 (39.3)	72 (34.1)	18 (30.5)	$\chi^2(3) = 7.9$, p=.049
Any psychotic disorder	20 (3.6)	23 (7.7)	8 (3.8)	8 (13.6)	$\chi^2(3) = 15.4$, p=.002
Any substance use	101 (18.4)	38 (12.7)	36 (17.1)	15 (25.4)	$\chi^2(3) = 7.7$, p=.052
Any borderline disorder	5 (0.9)	2 (0.7)	2 (1.0)	1 (1.7)	Fisher's exact=.695
Any suicidal ideation	68 (12.4)	37 (12.3)	22 (10.4)	3 (5.1)	Fisher's exact=.371
Elixhauser comorbidity score, mean (SD)	0.9 (1.0)	1.0 (1.0)	0.8 (1.0)	1.3 (1.4)	F(3,1115) = 3.7, p=.011
Past-year ED visit history					
0 visit	384 (70.0)	183 (61.0)	151 (71.6)	39 (66.1)	Fisher's exact<.001
1–4 visits	160 (29.1)	100 (33.3)	54 (25.6)	16 (27.1)	
5+ visits	5 (0.9)	17 (5.7)	6 (2.8)	4 (6.8)	
Recurrent ED self-harm visit within 365 days	36 (6.6)	17 (5.7)	13 (6.2)	2 (3.4)	Fisher's exact=.858

Table 4.

Sociodemographic and clinical characteristics of AAPI patients, by gender

Characteristic	Male (N=386)	Female (N=733)	Statistical test
	N (%)	N (%)	
Age in years at index visit			
10–17 years	58 (15.0)	165 (22.5)	$\chi^2(2) = 9.0$, p=.011
18–24 years	198 (51.3)	349 (47.6)	
25–29 years	130 (33.7)	219 (29.9)	
Disposition at index visit			
Discharged home	144 (37.3)	225 (30.7)	
Admitted	231 (59.8)	491 (67.0)	Fisher's exact=.107
Other	9 (2.3)	13 (1.8)	
Died	2 (0.5)	4 (0.6)	
Insurance type			
Private insurance	166(43.0)	383(52.3)	
Medicaid	103(26.7)	197(26.9)	$\chi^2(3) = 14.0$, p=.003
Self-pay	93(24.1)	118(16.1)	
Other categories	24(6.2)	35(4.8)	
Self-harm method at index visit			
Poisoning	204 (52.9)	562 (76.7)	
Hanging	12 (3.1)	6 (0.8)	$\chi^2(3) = 81.9$, p<.001
Cut/pierce	97 (25.1)	124 (16.9)	
Other	73 (18.9)	41 (5.6)	
Comorbidity diagnoses at index visit			
Any mental disorder visit	235 (60.9)	469 (64.0)	$\chi^2(1) = 1.0$, p=.307
Any anxiety visit	36 (9.3)	74 (10.1)	$\chi^2(1) = 0.2$, p=.681
Any mood disorder visit	124 (32.1)	322 (43.9)	$\chi^2(1) = 14.7$, p<.001
Any psychotic disorder visit	39 (10.1)	20 (2.7)	$\chi^2(1) = 27.5$, p<.001
Any substance use visit	92 (23.8)	98 (13.4)	$\chi^2(1) = 19.6$, p<.001
Any borderline disorder visit	2 (0.5)	8 (1.1)	Fisher's exact=.508
Any suicidal ideation visit	35 (9.1)	95 (13.0)	$\chi^2(1) = 3.7$, p=.053
Elixhauser comorbidity score at index visit, mean (SD)	1.0 (1.0)	0.9 (1.0)	t = 1.0, df=1117, p=.337
Past-year ED visits			
0 visit	266 (68.9)	491 (67.0)	
1–4 visits	109 (28.2)	221 (30.2)	$\chi^2(2) = 0.5$, p=.798
5+ visits	11 (2.9)	21 (2.9)	
Recurrent ED self-harm visit within 365 days	23(6.0)	45 (6.1)	$\chi^2(1) = 0.1$, p=.904

Table 5.

Association of insurance type and gender with any recurrent self-harm ED visit within 12 months among AAPI patients

Characteristic	Recurrent visit within 12 months of the index visit	
	Bivariate Models RR [95% CI]	Fully Adjusted Models RR [95% CI]
Age in years at index visit		
10–17 years (reference group)		1.0
18–24 years		0.71 [0.39, 1.29]
25–29 years		0.79 [0.40, 1.54]
Female	1.03 [0.62, 1.70]	1.18 [0.70, 1.97]
Insurance type		
Private insurance (reference group)	1.0	1.0
Medicaid	0.87 [0.49, 1.54]	0.69 [0.37, 1.28]
Self-pay	0.95 [0.50, 1.78]	1.04 [0.56, 1.92]
Other categories	0.52 [0.12, 2.14]	0.42 [0.10, 1.75]
Disposition at index visit		
Discharged home (reference group)		1.0
Admitted		1.03 [0.60, 1.77]
Other		0.88 [0.13, 6.13]
Self-harm method at index visit		
Poisoning (reference group)		1.0
Hanging		[n/a]
Cut/pierce		**1.85 [1.05, 3.25]**
Other		1.50 [0.68, 3.30]
Comorbidity diagnoses:		
Any mental health visit		0.93 [0.40, 2.16]
Any anxiety visit		0.92 [0.42, 2.01]
Any mood disorder visit		**2.93 [1.61, 5.33]**
Any psychotic disorder visit		**4.04 [1.90, 8.61]**
Any substance use visit		1.35 [0.70, 2.61]
Any borderline disorder visit		1.42 [0.57, 3.55]
Any suicidal ideation visit		0.66 [0.29, 1.51]
Elixhauser comorbidity score		0.81 [0.61, 1.07]
Past-year ED visits		
0 visits (reference group)		1.0
1–4 visits		1.27 [0.76, 2.12]
5+ visits		**4.39 [1.99, 9.68]**

Bold font indicates statistically significant association.