



Suicide Attempts Among Racial and Ethnic Groups in a Nationally Representative Sample

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Abstract

Objective Evaluate suicide attempt prevalence and potentially related sociodemographic and psychiatric factors among racial and ethnic groups.

Methods Between 2012 and 2013, the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III) conducted semi-structured interviews with 36,309 adults in the USA. We identified lifetime suicide attempt prevalence and significant predictors for each racial/ethnic group using stratified logistic regressions. Analyses were exploratory without a priori hypotheses.

Results Asian/Native Hawaiian/other Pacific Islander and Black individuals had the lowest prevalence of suicide attempts while Alaska Native/American Indian and White individuals had the highest prevalence. Identifying as female and meeting criteria for psychiatric diagnoses featuring mood regulation difficulties (depression, borderline personality disorder, bipolar I disorder) were consistently related to a suicide attempt history across racial and ethnic groups, whereas substance abuse disorders and other sociodemographic factors differed between racial and ethnic groups in their associations with suicide attempt history.

Conclusions Although several factors were consistently related to suicide risk across racial and ethnic groups, the prevalence of suicide attempts and overall pattern of related factors were not uniform between racial and ethnic groups.

Policy Implications Study findings highlight the importance of considering suicide risk within the context of race and ethnicity both regarding the overall prevalence of risk and in determining personal factors associated with elevated risk. A failure to appreciate experiences related to race and ethnicity may adversely impact suicide risk assessment and treatment, ultimately contributing to health disparities. Results suggest that additional research is warranted.

Keywords Suicide attempt · Race · Ethnicity · Disparities

The opinions expressed in this work are those of the authors and do not necessarily represent of the institutions, the Department of Veterans Affairs, the Department of Defense, or the US Government.

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Introduction

Suicide is a major public health concern in the USA, having claimed the lives of nearly 50 thousand people in 2018 alone [1]. Since 1999, the annual rate of suicide has steadily risen, motivating increased efforts to understand and prevent suicide [2]. In 2018, suicide rates were highest among White individuals (16.84 per 100,000), but suicide deaths have also rapidly risen across all racial/ethnic minority populations including American Indians (AI; 14.12 per 100,000), Black Americans (7.03 per 100,000), Asian and Pacific Islanders (API; 7.16 per 100,000), and Hispanic Americans (7.20 per 100,000)[1].

Extant research assessing suicide risk has primarily focused on individuals who identify as White, with few inquiries delving into suicide risk among racial/ethnic minorities [3, 4]. Additionally, a recent review found that over 20% of research in this area failed to report the racial characteristics of

participants and over 50% failed to report participant ethnicity (e.g., Hispanic/Latinx) [3]. Among studies that reported sample racial characteristics, the average sample was 70.2% White [3], which is consistent with racial characteristics in the broader US population [5]. However, suicide-related research studies have an average sample size of just 167 participants [6]; smaller studies with representative samples result in very small racial and ethnic groups and findings that can be difficult to interpret. As a result, it is unclear whether our knowledge of suicide attempt prevalence and correlates is generalizable to members of racial and ethnic minority groups.

Psychiatric symptoms have consistently been identified as a robust predictor of suicide attempts [6]. Although having any psychiatric disorder is associated with an elevated risk of having made a suicide attempt, mood disorders such as depression, bipolar disorder, and substance use disorders have shown the strongest associations [7]. Among personality disorders, borderline personality disorder (BPD) has been most strongly associated with an increased risk of having made a suicide attempt [8]. However, a recent nationally representative study of over 200,000 individuals who participated in the 2008–2013 National Survey on Drug Use and Health suggests that psychiatric diagnoses commonly accepted as being associated with suicidal thoughts and behaviors are not consistently associated with suicide attempts among all racial and ethnic groups [9]. For instance, although depression has historically been considered a strong correlate of suicide attempts [10], Cheref and colleagues found that depression was associated with suicide attempts only among those identifying as AI, API, Hispanic, or White, and not among those that identified as Black or Multiracial [9]. Similarly, while meta-analyses have found alcohol and substance abuse to have strong associations with suicidal thoughts and behaviors [11, 12], Cheref and colleagues found that marijuana dependence was associated with suicide attempts only among White individuals [9]. In addition, alcohol dependence was only associated with suicide attempts among individuals identifying as AI, Black, or White, but not among API, Hispanic, or Multiracial individuals. Thus, a pattern has emerged suggesting that psychiatric diagnoses are not uniformly associated with suicide risk across racial and ethnic groups. Unfortunately, additional psychiatric diagnoses with strong associations with suicidal thoughts and behaviors such as bipolar I disorder and BPD have yet to be examined for potential differences among racial and ethnic groups [13, 14]. Researchers have called for additional large scale studies of the general public to identify how patterns of suicide risk may vary among racial and ethnic groups [9, 15].

Similarly, recent research suggests that several sociodemographic factors commonly associated with suicidal thoughts and behaviors may not generalize to all racial and ethnic groups. Age and gender are typically associated with

suicidal thoughts and behaviors, so much so that it has become common practice to adjust suicide rates by both age and gender. Briefly, while men are nearly four times more likely to die by suicide than women (22.8 versus 6.2 per 100,000 in 2018), women are somewhat more likely to have thoughts about suicide and to make suicide attempts [1]. With regard to age, while those in the youngest age group assessed (18–25) are far more likely to report thoughts about suicide or to make suicide attempts than older Americans, older individuals are more likely to die by suicide; men over 75 and women ages 45–64 at the greatest risk [1]. When the intersection between these person factors and race and ethnicity are considered, findings are mixed. On the one hand, Assari found no differences in age and gender risks between Black and White individuals who had attempted suicide [16], while on the other hand, Baca-Garcia and colleagues found that age and gender were differentially associated with suicide attempts across racial and ethnic groups [17]. Specifically, API, Black, Hispanic, and White individuals all showed women as being more likely than men to have had a suicide attempt, whereas among ANAI people, the pattern was reversed. Regarding age, 18–24 year olds were most likely to have had a suicide attempt among ANAI, Black, Hispanic, and White individuals, whereas among API individuals, one sample showed the highest prevalence among 25–44 year olds and a second sample among 45–64-year-old API individuals [17].

Other demographics commonly linked to suicide risk have also been inconsistently linked to suicide attempts when assessed within racial and ethnic minority groups. For example, Cheref and colleagues found that education level was only significantly associated with suicide attempts among White individuals and income was only associated with suicide attempts among API and Hispanic individuals, with higher education and income relating to a lower likelihood of having had a suicide attempt [9]. While these findings are notable, it is also important to consider sociodemographic factors beyond gender, age, education, and income. For instance, sociodemographic factors such as marital status and history of military service may have more utility, given their associations with suicide death [18, 19] and the ability to target individuals during critical time periods such as during a divorce [20, 21] or transitioning out of the military [22]. However, it is unclear whether the association between suicide attempts and marital status and military service history shows the same patterns across racial and ethnic groups.

Another important sociodemographic factor to consider is sexual orientation. Research has consistently indicated disparities in suicidal thoughts and behaviors, with sexual minorities being more likely to have had a suicide attempt as compared to their heterosexual counterparts [23, 24]. This disparity is likely influenced by a range of stressors such as discrimination, family attitudes, and internalized homophobia [25]. Emerging research with adolescents suggests that rates of

suicide attempts may be elevated among sexual minority people of color [26, 27]. However, research with adults has been inconsistent with some studies finding sexual minority people of color to have higher suicide risk [28], some finding White sexual minority people to have higher rates of suicide attempts [29], and some finding that patterns differ among sexual minority people within different racial and ethnic groups [30].

The current study employed a nationally representative sample to assess how the prevalence of suicide attempts and related sociodemographic factors and psychiatric diagnoses differed between members of racial and ethnic groups. We built upon previous studies by moving beyond basic demographics to add sociodemographic factors that have consistently been linked with suicidal thoughts and behaviors, including relationship status, a history of military service, and whether an individual identifies as a sexual minority. The study also assesses psychiatric disorders with strong links to suicide attempts: BPD, bipolar I disorder, depression disorder, alcohol use disorder, and drug use disorder. Given the breadth of sociodemographic and psychiatric factors considered, analyses were exploratory without a priori hypotheses.

Method

The present study consists of secondary data analysis of the cross-sectional National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), conducted in the USA between 2012 and 2013. Semi-structured interviews were conducted with 36,309 adults from across all 50 of the USA and the District of Columbia, resulting in a nationally representative sample. Detailed information on NESARC-III procedures and participant demographics can be found elsewhere [31].

Race and ethnicity were assessed with a single self-report question in which participants indicated whether they identified as White, Black, Alaska Native/American Indian (ANAI), Asian/Native Hawaiian/other Pacific Islander (API), or Hispanic. Participants were able to select multiple racial or ethnic groups; responses were coded into single responses based upon the standardized algorithm established by the Census Bureau. An individual who endorsed identifying as Hispanic was coded as “Hispanic, any race.” If two or more racial groups were selected, a single racial group was coded based upon the Census Bureau algorithm. Specifically, a single racial category is identified based on the first race selected from the following ordered list: (1) Black or African American, (2) American Indian or Alaska Native, (3) Native Hawaiian or other Pacific Islander, (4) Asian, and (5) White. For instance, if an individual endorsed both Asian and White, they were coded as Asian, as Asian is given first on the above list. If an individual endorsed Black, Asian, and White, they were coded as Black. Additional details about the algorithm

can be found in information about NESARC-III data [32] and from the US government [33]. Participants were coded as having had a lifetime suicide attempt if they responded affirmatively to at least one question assessing suicide attempts. Questions assessing a history of suicide attempts were found in the medical conditions section asked of all participants (“In your ENTIRE life did you EVER attempt suicide?”), the lifetime major depressive episode diagnostic criteria asked of participants that endorsed any depressive episode screener items (“Did you attempt suicide or try to kill yourself?”), and the lifetime manic episode criteria asked of participants that endorsed any mania screener items (“Did you attempt suicide?”).

Sociodemographic factors were assessed via self-report and included sex, sexual orientation, past year income, educational attainment, marital status, and military service history. Sex was restricted to binary male/female in the NESARC data. Marital status was dichotomized into whether or not they were married or living with someone as if married. Sexual orientation was dichotomized into sexual minority (gay, lesbian, bisexual) or heterosexual, and military service history was dichotomized such that military service was comprised of those who had been active duty, reserves, or national guard. Income was categorized into three categories, up to \$19,999, \$20,000–\$34,999, and \$35,000–\$59,999, and educational attainment was categorized into less than high school education, completion of high school, or more than high school education.

Lifetime psychiatric diagnoses were selected for inclusion based upon their consistent association with suicidal ideation and behavior [7, 34] and included the following: depression disorder, bipolar I, BPD, drug use disorder, and alcohol use disorder. Symptoms were measured via a detailed interview that has been shown to be a reliable and valid assessment of psychiatric disorders [35–37]. Lifetime history of a diagnoses was coded as being either present or not present based upon diagnostic criteria as outlined in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* [38]. Detailed descriptions of the measures are publicly available [39].

Statistical Analyses

All analyses were conducted in *Mplus Version 8* [40] to account for the complex survey design. Sampling weights accounted for variables’ probabilities of selection, respondents’ differential nonresponse weights, and possible shortcomings in sampling to more accurately resemble known population totals for subgroups including geographic region, sex, age, and racial or ethnic category [31]. Logistic regressions determined adjusted odds of endorsing a lifetime suicide attempt for each of the racial and ethnic groups while accounting for all other variables. Subsequently, weighted descriptive statistics characterized the prevalence of suicide attempts,

psychiatric diagnoses, and demographic characteristics in each racial/ethnic category. Finally, in line with previous studies [9, 41, 42], logistic regressions stratified by racial/ethnic category were used to determine the adjusted odds of reporting a lifetime suicide attempt, accounting for demographic and psychiatric characteristics. All analyses accounted for sampling weights as determined by the NESARC study design. Missing data were estimated with maximum likelihood with a sandwich estimator for standard errors [40].

Results

Descriptive statistics for the complete NESARC-III sample have been reported elsewhere [31]. See Table 1 for the prevalence of sociodemographic information, psychiatric diagnoses, and suicide attempt history stratified by race and ethnicity. Supplementary Tables are available which include the unweighted prevalence of sociodemographic information and psychiatric diagnoses within each racial and ethnic group, stratified by suicide attempt history.

Suicide Attempt History Prevalence by Race and Ethnicity

The prevalence of having a suicide attempt history is reported in Table 1. ANAI individuals reported the highest prevalence of suicide attempts (11.9%), nearly double the next highest prevalence, reported by White, non-Hispanic respondents (6.1%). As shown in Table 2, when accounting for sociodemographic factors and psychiatric diagnoses, Black (AOR = 0.82, 95% CI [0.69, 0.98]) and API individuals (AOR = 0.55, 95% CI [0.41, 0.74]) were identified as having significantly lower adjusted odds of a lifetime suicide attempt when compared to White respondents.

Sociodemographic Factors Associated with Suicide Attempt History by Race and Ethnicity

Adjusted odds of reporting a lifetime suicide attempt, stratified by race, are reported in Table 3. Overall, only female sex was significantly associated with a higher likelihood of reporting a suicide attempt in all racial and ethnic groups. Among ANAI respondents, female sex (AOR = 2.55, 95% CI [1.00, 6.51]) and being married or partnered (AOR = 2.35, 95% CI [1.05, 5.26]) were associated with increased odds of reporting a suicide attempt. API respondents had greater odds of endorsing lifetime suicide attempt when they were female (AOR = 4.28, 95% CI [1.26, 14.50]), in the lowest income bracket (AOR = 3.48, 95% CI [1.49, 8.13]), and had a history of military service (AOR = 28.76, 95% CI [6.81, 121.54]). Among Black respondents, female sex (AOR = 1.59, 95% CI [1.19, 2.11]), sexual minority status (AOR =

2.68, 95% CI [1.46, 4.92]), and having a history of military service (AOR = 2.45, 95% CI [1.40, 4.28]) were significantly associated with having made a suicide attempt. Hispanic respondents had higher odds of endorsing a lifetime suicide attempt if they were female (AOR = 1.93, 95% CI [1.42, 2.61]), sexual minority (AOR = 1.60, 95% CI [1.02, 2.52]), in the lowest (AOR = 1.48, 95% CI [1.00, 2.20]) or second lowest (AOR = 1.50, 95% CI [1.03, 2.19]) income bracket, in the lowest (AOR = 1.44, 95% CI [1.04, 2.00]) or second lowest (AOR = 1.40, 95% CI [1.01, 1.95]) educational attainment category, and had a history of military service (AOR = 2.18, 95% CI [1.09, 4.37]). Among White respondents, for each year increase in age, the odds of having had a suicide attempt history decreased (AOR = 0.99, 95% CI [0.99, 1.00]). Additionally, female sex (AOR = 1.78, 95% CI [1.48, 2.14]), sexual minority status (AOR = 2.13, 95% CI [1.56, 2.90]), lower income (AOR = 2.08, 95% CI [1.70, 2.54]), and lower education (AOR = 1.38, 95% CI [1.34, 2.06]) were associated with higher odds of reporting a suicide attempt.

Lifetime Psychiatric Diagnoses Associated with Suicide Attempt History by Race and Ethnicity

Depression disorder and BPD were each significantly associated with a higher likelihood of reporting a suicide attempt in all racial and ethnic groups with AORs ranging from 4.08 to 23.92 and 3.39 to 4.74, respectively. Bipolar I disorder was significantly associated with suicide attempt history among API (AOR = 28.27, 95% CI [5.139, 155.50]), Black (AOR = 2.42, 95% CI [1.21, 4.85]), Hispanic (AOR = 7.24, 95% CI [4.65, 11.26]), and White (AOR = 5.30, 95% CI [3.75, 7.48]) individuals, but not among ANAI individuals. Alcohol use disorder was significantly associated with suicide attempt history among ANAI (AOR = 2.70, 95% CI [1.30, 5.63]), Black (AOR = 1.49, 95% CI [1.12, 1.98]), and White (AOR = 1.59, 95% CI [1.35, 1.86]) individuals, whereas drug use disorder was only significantly associated with suicide attempt history among Hispanic (AOR = 1.83, 95% CI [1.16, 2.90]) and White (AOR = 1.81, 95% CI [1.51, 2.18]) individuals.

Discussion

Much of our understanding of suicide attempt history and related factors is based upon samples comprised of primarily White and non-Hispanic individuals, limiting generalizability. The current study used nationally representative data to assess whether the prevalence of suicide attempt history and associated sociodemographic factors and psychiatric diagnoses were consistent across racial and ethnic groups. Overall, findings indicated that gender and psychiatric diagnoses featuring mood regulation difficulties were consistently related to a suicide attempt history across racial and ethnic groups, whereas

Table 1 Prevalence of suicide attempts, demographics, and psychiatric diagnoses indicators stratified by race and ethnicity groups, % (SE)^a

	American Indian, Alaska Native, non-Hispanic (ANAI) (n = 511)	Asian, Native Hawaiian, Pacific Islander, non-Hispanic (API) (n = 1,801)	Black, non-Hispanic (n = 7,766)	Hispanic, any race (n = 7,037)	White, non-Hispanic (n = 19,194)
Sociodemographic factors					
Suicide attempt, lifetime	11.9 (1.5)	2.1 (0.3)	4.9 (0.3)	5.5 (0.4)	6.1 (0.2)
Age, M (SE) ^b	44.68 (0.84)	43.16 (0.72)	43.46 (0.31)	40.16 (0.28)	48.85 (0.23)
Female	40.7 (2.7)	48.3 (1.2)	44.9 (0.7)	49.7 (0.6)	48.4 (0.4)
Income					
Up to \$19,999	30.9 (2.3)	16.0 (1.0)	34.2 (1.0)	25.5 (0.7)	17.3 (0.6)
\$20,000–\$34,999	17.6 (1.9)	15.5 (0.9)	22.1 (0.6)	25.3 (0.6)	16.9 (0.4)
\$35,000–\$59,999	21.4 (2.1)	18.8 (1.1)	20.5 (0.7)	23.1 (0.6)	21.3 (0.4)
\$60,000 or more	30.1 (2.6)	49.7 (1.7)	23.2 (0.9)	26.2 (0.9)	44.6 (0.9)
Education					
Less than high school	15.1 (2.2)	10.5 (1.0)	16.2 (0.8)	30.5 (1.1)	8.7 (0.5)
Completed high school/GED	25.7 (2.4)	15.0 (1.5)	31.7 (0.9)	28.1 (0.8)	25.1 (0.7)
More than high school	59.2 (3.2)	74.5 (1.8)	52.0 (1.3)	41.4 (1.1)	66.2 (1.0)
Sexual minority	4.7 (1.2)	2.1 (0.4)	4.0 (0.3)	3.4 (0.2)	3.3 (0.2)
Married or partnered	54.9 (2.4)	65.8 (1.5)	36.5 (0.9)	56.2 (0.7)	61.4 (0.5)
Veteran	11.8 (1.6)	2.8 (0.5)	8.5 (0.5)	4.2 (0.4)	11.6 (0.3)
Psychiatric diagnoses					
Major depressive disorder	28.2 (2.1)	12.2 (0.8)	15.2 (0.5)	16.2 (0.5)	23.1 (0.5)
Alcohol use disorder	43.4 (2.8)	15.0 (1.2)	22.0 (0.8)	22.9 (0.6)	32.6 (0.6)
Drug use disorder	9.8 (1.6)	1.8 (0.4)	4.1 (0.3)	3.9 (0.3)	6.5 (0.2)
Bipolar 1 disorder	5.6 (1.0)	1.0 (0.3)	2.0 (0.2)	1.9 (0.2)	2.1 (0.1)
Borderline personality disorder	20.6 (1.8)	6.0 (0.7)	11.9 (0.6)	9.9 (0.5)	11.9 (0.4)

^a Based on weighted data

^b To protect the privacy of NESARC-III respondents aged 90 or older (n = 187), exact ages for these individuals were not reported. Accordingly, our computations of mean (SE) age are relevant to a population younger than 90, as are the adjusted odds ratios based on regression models with age as an explanatory variable

substance use disorders and other sociodemographic factors differed across racial and ethnic groups in their associations with suicide attempt history.

Mirroring trends found in rates of death by suicide [1], individuals identifying as API and Black had the lowest prevalence of lifetime suicide attempts and ANAI individuals had the highest prevalence of suicide attempts. However, the adjusted odds ratio (AOR = 1.27) comparing ANAI individuals with the White referent group was not significant. This finding may indicate that the prevalence of suicide attempts among ANAI individuals is similar to that of White individuals when sociodemographic factors and psychiatric diagnoses are considered. However, it should also be considered that the markedly smaller sample of ANAI individuals may well have reduced power.

The next sections discuss which of the sociodemographic factors and psychiatric comorbidities were associated with a history of suicide attempt among the racial and ethnic groups. Notably, cross-sectional data cannot speak to the temporal

sequencing or contiguity of these factors to each other or to respondents’ suicide attempt(s). Additionally, the current study represents only the first step in considering personal factors associated with suicide attempts within the context of race and ethnicity. It is expected that future studies assessing the intersectionality of personal factors (e.g., interactions between sociodemographic and psychiatric diagnoses) will likely reveal additional nuances in findings.

Sociodemographic Factors

Consistent with national trends showing that females are more likely to have made past suicide attempts than males [1], the current study found that among all racial and ethnic groups, those identifying as female were significantly more likely to have reported a suicide attempt compared to those identifying as male. This association was particularly pronounced among those identifying as API, among whom females were over four times more likely to have reported a suicide attempt as

Table 2 Adjusted associations of race and ethnicity with having had a lifetime suicide attempt

	AOR	95% CI	P
Sociodemographic factors			
Race (ref: White, non-Hispanic)			
American Indian/Alaska Native, non-Hispanic (ANAI)	1.27	0.89–1.80	.186
Asian/Native Hawaiian/other Pacific Islander, non-Hispanic (API)	0.55	0.41–0.74	.000
Black, non-Hispanic	0.82	0.69–0.98	.033
Hispanic, any race	0.98	0.82–1.18	.833
Age	0.99	0.99–1.00	.003
Female (ref: male)	1.81	1.57–2.09	.000
Income (ref: ≥\$60,000)			
Up to \$19,999	1.96	1.66–2.31	.000
\$20,000–\$34,999	1.63	1.38–1.92	.000
\$35,000–\$59,999	1.24	1.03–1.50	.021
Education (ref: more than high school)			
Less than high school	1.34	1.11–1.62	.003
Completed high school/GED	1.16	1.01–1.34	.034
Sexual minority (ref: heterosexual)	2.09	1.63–2.68	.000
Married or partnered (ref: no)	1.07	0.94–1.22	.300
Veteran (ref: no)	1.33	1.07–1.66	.011
Psychiatric diagnoses			
Depression disorder (ref: no)	4.93	4.27–5.70	.000
Alcohol use disorder (ref: no)	1.51	1.33–1.71	.000
Drug use disorder (ref: no)	1.82	1.55–2.13	.000
Bipolar 1 disorder (ref: no)	5.12	3.94–6.64	.000
Borderline personality disorder (ref: no)	3.59	3.18–4.05	.000

compared to males. This finding is similar to studies indicating that API women may be more likely to attempt suicide than API men [43], with the highest global suicide rate among women found in Asia [44]. Nonetheless, it is important to contextualize these findings and recall that while women are consistently found to have higher prevalence of past suicide attempts than men, men are far more likely to die by suicide than women [1].

Although post-high school education has previously been shown to have a protective effect against suicide attempts and death [45, 46], this association was only found among White and Hispanic respondents. Racial minority students often face additional challenges in higher education including longer completion times and lower graduation rates [47]. Additionally, following graduation, they often see lower employment rates and salary [47]. Thus, higher education may not confer equal protective benefits among all racial and ethnic groups. Findings also indicated that White and Hispanic respondents with income under \$35,000 were significantly more likely than individuals earning over \$60,000 to have had a suicide attempt. Although this association was non-significant for other racial and ethnic groups, the adjusted odds ratios were of similar strength and directionality, suggesting that the larger sample of White and Hispanic

participants may have been better powered to detect the effect. In support of this, large studies, including those using the US census, have consistently linked low income to increased likelihood of suicide attempts and death [48, 49].

With regard to sexual orientation, among White, Black, and Hispanic respondents, identifying as a sexual minority was positively associated with a history of suicide attempts. Although the odds ratios were comparable for ANAI and API individuals, sexual minority status was not significantly associated with suicide attempts for these groups, likely reflecting reduced power to find effects given that the ANAI and API samples were smaller than other racial and ethnic groups. Overall, these findings are consistent with previous studies suggesting that experiences related to gender and sexual identity have meaningful associations with suicidal behaviors [50, 51].

A history of military service was also associated with a higher likelihood of suicide attempt, but only among racial and ethnic minority groups. This pattern deviates from Department of Veterans Affairs statistics indicating that veterans who die by suicide are disproportionately White [52]. It is possible that this discrepancy is driven by differences in suicide attempts versus suicide mortality and perhaps differences in the lethality of means used by White and racial and

Table 3 AORs (95% CI) of having had a suicide attempt stratified by race and ethnicity groups^a

	American Indian, Alaska Native, non-Hispanic (n =495)	Asian, Native Hawaiian, other Pacific Islander, non-Hispanic (n =1,759)	Black, non-Hispanic (n =7,559)	Hispanic, any race (n =6,868)	White, non-Hispanic (n =18,906)
Sociodemographic factors					
Age	0.99 (0.97–1.02)	1.00 (0.98–1.03)	1.00 (0.99–1.01)	1.00 (0.99–1.01)	0.99 (0.99–1.00)
Female (ref: male)	2.55 (1.00–6.51)	4.28 (1.26–14.50)	1.59 (1.19–2.11)	1.93 (1.42–2.61)	1.78 (1.48–2.14)
Income (ref: ≥\$60,000)					
Up to \$19,999	2.58 (0.99–6.72)	3.48 (1.49–8.13)	1.69 (0.96–3.00)	1.48 (1.00–2.20)	2.08 (1.70–2.54)
\$20,000–\$34,999	3.33 (1.00–11.07)	2.34 (0.92–5.98)	1.17 (0.70–1.95)	1.50 (1.03–2.19)	1.66 (1.34–2.06)
\$35,000–\$59,999	0.96 (0.28–3.30)	1.95 (0.66–5.72)	1.24 (0.70–2.20)	1.17 (0.77–1.77)	1.23 (0.96–1.56)
Education (ref: more than high school)					
Less than high school	1.90 (0.91–4.00)	0.72 (0.23–2.21)	1.04 (0.66–1.65)	1.44 (1.04–2.00)	1.38 (1.07–1.78)
Completed high school/GED	0.78 (0.34–1.80)	0.71 (0.37–1.35)	0.79 (0.56–1.10)	1.40 (1.01–1.95)	1.23 (1.04–1.45)
Sexual minority (ref: heterosexual)	2.68 (0.89–8.10)	2.17 (0.30–15.86)	2.68 (1.46–4.92)	1.60 (1.02–2.52)	2.13 (1.56–2.90)
Married or partnered (ref: no)	2.35 (1.05–5.26)	1.02 (0.42–2.49)	1.02 (0.73–1.43)	0.95 (0.68–1.32)	1.07 (0.92–1.26)
Veteran (ref: no)	1.31 (0.51–3.38)	28.76 (6.81–121.54)	2.45 (1.40–4.28)	2.18 (1.09–4.37)	1.04 (0.80–1.36)
Psychiatric diagnoses					
Depression disorder (ref: no)	4.08 (2.02–8.23)	23.92 (12.32–46.43)	4.31 (3.15–5.88)	5.67 (4.12–7.78)	4.75 (4.00–5.64)
Alcohol use disorder (ref: no)	2.70 (1.30–5.63)	0.78 (0.27–2.25)	1.49 (1.12–1.98)	1.15 (0.86–1.52)	1.59 (1.35–1.86)
Drug use disorder (ref: no)	1.83 (0.63–5.34)	2.21 (0.56–8.79)	1.56 (0.95–2.44)	1.83 (1.16–2.90)	1.81 (1.51–2.18)
Bipolar I disorder (ref: no)	2.71 (0.85–8.68)	28.27 (5.139–155.50)	2.42 (1.21–4.85)	7.24 (4.65–11.26)	5.30 (3.75–7.48)
Borderline personality disorder (ref: no)	4.73 (2.14–10.49)	4.10 (1.55–10.85)	4.31 (3.00–6.18)	3.74 (2.80–5.00)	3.39 (2.94–3.92)

Note: Bolded text denotes statistically significant relationships at $p < .05$

^a All models used in the computation of Adjusted Odds Ratio Estimates utilized weighted data

ethnic minority veterans. Few assessments of suicide attempts among veterans have assessed the influence of race, but initial studies have found similar or elevated prevalence of suicide attempts in racial and ethnic minority veterans as compared to White veterans [53, 54].

Diverging from some previous research [51, 55], we found that relationship status was unrelated to suicide attempt history for all racial and ethnic groups other than those identifying as ANAI. Although this pattern of findings is counter to studies reporting marriage as a protective factor [19], it may be that treating relationship status as a binary indicator masks important nuance in relationships. For instance, a cross-sectional study found that suicidal ideation among people in a high-satisfaction relationship was significantly lower than those not in a relationship, but that individuals in a low-satisfaction relationship reported the highest rates of suicidal ideation [56]. This is in keeping with the body of research supporting relationship distress, perhaps more so than status, as a powerful correlate of suicidal ideation [57]. Unexpectedly, among the sample of ANAI people, being married was associated with a higher likelihood of having had a suicide attempt. It is important to first state that the sample of ANAI individuals was relatively small in comparison to the

other racial and ethnic groups assessed ($n = 511$) and this finding should not be assumed to generalize to broader ANAI populations that are varied in their identities, culture, and relationship norms. This finding becomes even more difficult to interpret given the dearth of research regarding romantic relationships and marriage among ANAI people [58]. The current finding underscores the need to better understand and support ANAI people in their romantic relationships through efforts such as identifying areas of resiliency among these families and considering culturally-tailored relationship programs [58, 59].

Psychiatric Diagnoses

Three of the psychiatric disorders we analyzed were consistently related to having had a suicide attempt among most or all of the racial and ethnic groups in this sample. First, depression was significantly and positively related to having had a suicide attempt among all racial and ethnic groups, supporting the many studies closely linking depression with suicidal thoughts and behaviors [10]. Given that depression symptoms among racial and ethnic minority groups are likely to be chronic and untreated, and are often associated with distinct

precipitants, such as discrimination [60], future research would benefit from continued assessment of how the development and treatment of depression and suicidal thoughts and behaviors may vary based on experiences related to race and ethnicity.

BPD was also significantly associated with an increased likelihood of having had a suicide attempt among all racial and ethnic groups, as was bipolar I disorder in all groups but ANAI people. The elevated adjusted odds ratio of 2.71 for ANAI people, however, suggests that the aforementioned non-significant finding may be due to the small sample of ANAI participants relative to other racial and ethnic groups. The consistency of the association between BPD and bipolar I disorder and suicide attempt history across racial and ethnic groups suggest that these disorders are consistent factors associated with suicide risk. The clinical significance of these findings should be considered within the context of regular misdiagnosis of BPD and bipolar I disorder, particularly among racial and ethnic minority groups [61, 62]. For instance, in the USA, emotional expression norms are typically based on White individuals, who are the dominant racial group of the USA, and deviations from these norms may be pathologized as mood disturbances or affective lability even when they adhere to an individual's cultural norms [63, 64].

Of note, the presence of depression, bipolar I, and BPD were particularly strongly associated with suicide attempts among API individuals. However, the unusually large AORs were likely inflated by the small number of API individuals that reported having made a suicide attempt and endorsed these disorders; for instance, only 19 API individuals in the sample met criteria for bipolar I disorder. Although the odds ratios should not be considered reliable, it is noteworthy that all mood-related disorders were associated with a history of having had a suicide attempt among API individuals. Prior research has demonstrated that over 70% of API individuals with a history of suicide attempts had a previous mental illness history [65]. It is important to note, however, that prior research also found that 52% of API individuals who attempted suicide reported that non-psychiatric risk factors, including sociocultural difficulties, the presence of a medical illness, and diminished functioning were important drivers of their suicide attempts [65], which is consistent with our finding that API individuals in the lowest income bracket were particularly at risk of having a history of attempting suicide. Taking the two sets of findings together, it appears that API individuals with histories of mood disorders may be at elevated risk for acting on suicidal impulses, particularly when they are faced with additional life stressors.

Alcohol use disorder was only associated with a greater likelihood of having made a suicide attempt among individuals identifying as ANAI, Black, or White, but not among API and Hispanic individuals, which replicates the pattern of findings by Cheref and colleagues using data from the National

Survey on Drug Use and Health [9]. The consistency of findings between two distinct and nationally representative samples is notable. It is possible that both API and Hispanic communities have high rates of immigration to the USA [66] and first-generation immigrants have a lower prevalence of drinking and alcohol use disorder than later-generation immigrants, with acculturation associated with higher rates of problematic or disordered drinking patterns [67]. The current study also found that drug use disorder was only associated with a higher likelihood of having had a suicide attempt among White and Hispanic individuals, although other racial and ethnic groups showed adjusted odds ratios similar in size and directionality. Thus, this finding requires replication. Additionally, given that drug types have shown differing associations with suicidal ideation and behaviors [12], future research would benefit from considering whether the link between drug type and suicide risk is consistent across racial and ethnic groups.

Limitations

The current study should be considered within the context of several limitations. First, the differing sample sizes among racial and ethnic minority groups resulted in unequal power to detect between group differences. In particular, the smaller number of ANAI and API individuals likely resulted in less power to detect small but meaningful associations between suicide attempts and sociodemographic and psychiatric factors. Thus, a non-significant association among the 495 ANAI participants should not be interpreted with the same confidence a non-significant association for among the 18,906 White participants. Additionally, the smaller sample sizes among racial and ethnic minority groups prevented analysis from using more complex statistical approaches, including assessment of interaction effects among predictors and assessing for potential nonlinear associations, such as whether age had a nonlinear association with having had a suicide attempt. Second, given that analyses included a series of five logistic regressions, there is the possibility of inflated Type I error. Thus, continued replication of the findings is critical. It is also important to highlight the limitations of how race and ethnicity were measured in the current study. In order for the sample to be representative of race and ethnicity within the USA, the dataset coded race and ethnicity according to the algorithm of the United States Census Bureau which categorizes each individual into a single race without including a multiracial category. Given that multiracial individuals may show distinct patterns of how sociodemographic and psychiatric disorders relate to suicide attempts [9], it is important that future papers examine these patterns among multiracial individuals. Additionally, the cross-sectional nature of the study precludes any conclusions relating to temporality of how personal factors may relate to suicide attempts. One should also consider that the data were collected from 2012 to 2013 when

the Black Lives Matter movement first emerged and same-sex marriage was not yet recognized nationally. Given the rapid evolution of racial justice movements and sexual minority rights since data were collected, participant responses may not fully reflect the experiences of racial, ethnic, and sexual minority individuals today. Additionally, the health disparities observed during the COVID-19 pandemic have been striking, and preliminary data have shown different suicide trends for racial groups during the pandemic [68, 69]; these historic contextual changes were not reflected in our data. Finally, individuals belonging to minority racial and ethnic groups have diverse lived experiences influenced by intersecting identities such as gender, sexual orientation, and immigration history [70]. Although the current study offers an important first step in assessing how intersecting identities may have differential effects within racial and ethnic minority groups, the unique experiences and impacts of intersecting identities were not systematically assessed. Given the importance of understanding how intersectionality may influence on mental health, the subject warrants further exploration in future studies.

Conclusion

Findings from a nationally representative sample of over thirty-thousand respondents suggest that respondents' sex along with lifetime histories of psychiatric diagnoses featuring mood regulation difficulties (depression, BPD, bipolar I disorder) are consistently related to suicide attempt history across racial and ethnic groups. However, alcohol abuse disorder and other sociodemographic factors such as military status differed between racial and ethnic groups in their associations with suicide attempt history. Findings highlight the importance of considering suicide risk within the context of race and ethnicity, which signals the importance of future research studies in this area including racially and ethnically diverse samples and working with communities of color to best understand their unique experiences and priorities, and to disseminate findings in ways that promote and empower minority communities [71].

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Data Availability The National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III) data are publically available through the NIAAA.

Code Availability Code is available upon request.

Declarations

Ethics Approval The current study was reviewed and approved by the VA Puget Sound Health Care System institutional review board.

Consent to Participate NESARC-III obtained informed consent from all individual participants included in the study. Details are available through NIAAA [31].

Conflicts of Interest The authors declare no competing interests.

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