

The Role of Racial Disaggregation in Understanding AI/AN Adolescent Suicidal Behavior: Assessment of the Youth Risk Behavior Surveillance System

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***Abstract:** This study compared rates of suicidal ideation and suicide attempts among adolescents categorized as American Indian/Alaska Native (AI/AN) using the computed raceeth variable in the Youth Risk Behavior Surveillance System (YRBSS) to those identified through self-reported ethnoracial identity. We conducted a cross-sectional analysis of the 2021 YRBSS, examining rates of suicidal ideation and attempts using both the raceeth variable and self-reported ethnoracial combinations. Population-weighted percentages were calculated using survey design and sampling weights. Adolescents categorized as AI/AN (non-Hispanic) using the raceeth variable had population-weighted suicidal ideation and attempt rates of 27.3% and 21.85%, respectively. However, those self-reporting as AI/AN with multiple ethnoracial identities had significantly higher rates. Suicidal ideation was highest among AI/AN + White (Hispanic) at 42.3%, AI/AN + Black (non-Hispanic) at 33.3%, and AI/AN + Black + White (non-Hispanic) at 41.05%. Suicide attempts were highest for AI/AN + Black + White (non-Hispanic) at 43.6% and AI/AN + White (Hispanic) at 32.43%. The raceeth variable may exclude key AI/AN subgroups at elevated risk. Addressing disparities among multiracial AI/AN adolescents requires healthcare awareness and inclusive public health research methods.*

INTRODUCTION

Suicide is one of the leading causes of death in the United States, accounting for 48,183 deaths in 2021 alone (CDC, 2023b). Children and young adults are particularly impacted by suicide with it being the second leading cause of death for children 10-14 and the third leading cause of death for individuals 15-24 (CDC, 2023b). Suicide disproportionately impacts individuals across sociodemographic factors, including ethnoracial groups where non-Hispanic American Indians and Alaska Natives (AI/AN) experience 28.1 deaths from suicide per 100,000 individuals (Ivey-Stephenson et al., 2017; CDC, 2023b). Additionally, within this group, another national survey—the National Violent Death Reporting System—showed a 20% increase in suicide from 2015-2020, compared to a less than 1% increase among the overall U.S. population (Stone et al., 2022). In an examination of suicidal ideation and suicide attempts among adolescent students aged 12-19 in the Minnesota Student Survey, individuals reported as AI/AN demonstrated elevated rates compared to other ethnic groups (Wiglesworth et al., 2022).

While these datasets show the rate of suicide is highest among non-Hispanic AI/AN peoples, rates of suicide and suicidal ideation may vary from what is included within these surveys as a result of data genocide (Friedman et al., 2023). Data genocide can be defined as the erasure or aggregation of data that can lead to deleterious health outcomes in Indigenous communities (Friedman et al., 2023). Many large-scale datasets, including the Bureau of Labor Statistics and the Centers for Disease Control and Prevention (CDC), only recognize AI/ANs when those individuals identify as single-race, non-Hispanic AI/AN—a category that only represents 23% of all AI/ANs. Data genocide and racial misclassification can mean AI/AN individuals often do not receive adequate resources, including healthcare (Maxim et al., 2023). This ultimately results in the reduction of vital resources, thus further perpetuating health disparities (Haozous et al., 2014). Recent research has shown that computed race/ethnicity variables in national datasets overwhelmingly place AI/AN individuals in other categories (Gatewood et al., 2024).

Given that racial classification aggregation may affect reported rates of health behaviors, the primary aim of this study was to compare the rates of suicidal ideation and suicide attempts among AI/AN adolescents using the computed *raceeth* variable in the Youth Risk Behavior

Surveillance System (YRBSS) to the self-reported ethnoracial identity among all adolescents identifying as AI/AN alone, AI/AN with other races, and AI/AN with Hispanic ethnicity.

METHODS

We performed a cross-sectional analysis of the 2021 YRBSS, a national survey conducted by the CDC, which includes state, territorial, tribal, and local-school-based surveys of 9th- through 12th-grade students from 45 states across the country (CDC, 2023c). YRBSS is used to determine the prevalence of youth health behaviors among various student demographics (CDC, 2023c).

Race & Ethnicity

Adolescents can self-report their race; however, YRBSS combines the participants' race and ethnicity to formulate the *raceeth* variable. This variable is separated into three classifications based on adolescent responses: a singular race designation if only one race is selected, a multiple race designation if more than one race is selected, and the Hispanic ethnicity designation, irrespective of the selection of another race.

Suicidal Behaviors

To evaluate suicidal ideation, we utilized the following question from YRBSS: “*In the last 12 months, did you ever seriously consider attempting suicide?*” Participants were given a ‘yes’ or ‘no’ response option. Additionally, to assess suicide attempts, we used the following question: “*In the last 12 months, how many times did you actually attempt suicide?*” Responses ranged from 0 times to 6 or more times, which was recorded as a binary variable to assess if the participant reported making a suicide attempt or not.

Statistical Analyses

Employing the survey design and sampling weights provided by YRBSS, we reported the sample size and the population-weighted percentages of self-reported AI/AN alone with and without Hispanic ethnicity, and in combination with other races, and within the *raceeth* variable—which reflects the previous work by Gatewood et al. (Gatewood et al., 2024). From these groups, we calculated the prevalence of suicidal ideation and suicide attempts by each subgroup. Statistical significance was determined through non-overlapping 95% confidence intervals; however, only ethnoracial groups whose denominator was ≥ 30 were analyzed per the 2021 methodological

guidelines of YRBSS (CDC, 2023a; Mpofu et al., 2023). Analyses were conducted in Stata v19 (StataCorp, LLC., College Station, TX), which allows for modeling data with complex survey design and sampling weights.

Ethical Statement

This study was determined to be non-human subjects research by the Oklahoma State University Institutional Review Board. This study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

RESULTS

The sample size of individuals self-identifying as AI/AN was 816, with 3.9% and 8.3% of missing data among the assessed suicide ideation and attempts questions, respectively, which were omitted from analysis. Our analyses revealed that among all AI/AN individuals, 27.74% (94 out of 340) of those with Hispanic ethnicity and 29.60% (130 out of 444) without Hispanic ethnicity reported suicidal ideation, compared to YRBSS's previously imputed *raceeth* variable with 27.3% (37 out of 143) reporting suicidal ideation, corresponding to only those who self-reported as single-race, non-Hispanic AI/AN (Table 1). Within the self-reported race/ethnicity data, we found higher rates of suicidal ideation within several groups, including AI/AN + White (Hispanic) at 42.31%, AI/AN + Black or African American (non-Hispanic) at 33.33%, and AI/AN + Black or African American + White (non-Hispanic) at 41.05% (Table 1).

When evaluating rates of suicide attempts, we found that 24.06% (75 out of 331) of AI/AN individuals with Hispanic ethnicity and 24.08% (107 out of 417) of those without Hispanic ethnicity reported attempting suicide (Figure 1). This is compared to the *raceeth* variable's single-race, non-Hispanic AI/AN participant rate of 21.85% (32 out of 129; Table 1). Within the self-reported race/ethnicity data, the groups with the highest rates of attempting suicide were AI/AN + Black or African American + White (non-Hispanic) at 43.6% and AI/AN + White (Hispanic) at 32.43% (Table 1); however, the confidence intervals overlapped within all groups with samples greater than 30 (Figure 1).

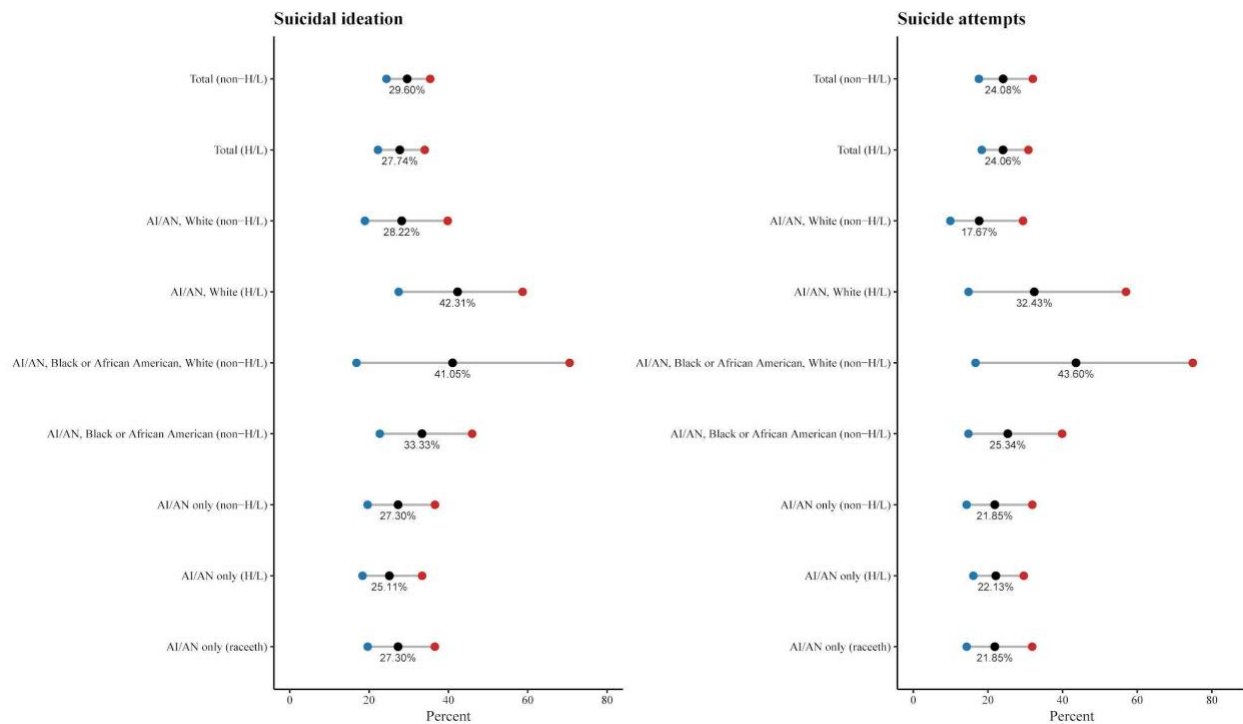
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Table 1.
Percentage of adolescents who reported ever seriously considering attempting suicide (suicidal ideation) and reported suicide attempts in the past 12 months by self-reported and imputed ethnoracial groupings in YRBSS

	Suicidal ideation		Suicide attempts	
	Hispanic or Latino	Non-Hispanic or Latino	Hispanic or Latino	Non-Hispanic or Latino
	No. (%)	No. (%)	No. (%)	No. (%)
<i>Raceeth variable from YRBSS</i>				
*AI/AN only	-	37 of 143 (27.30)	-	32 of 129 (21.85)
<i>Self-selected race from YRBSS</i>				
AI/AN only	61 of 242 (25.11)	37 of 143 (27.30)	49 of 237 (22.13)	32 of 129 (21.85)
AI/AN, White	15 of 39 (42.31)	52 of 172 (28.22)	11 of 38 (32.43)	40 of 161 (17.67)
AI/AN, NH/PI	1 of 4	0 of 0	1 of 4	0 of 0
AI/AN, NH/PI, White	0 of 4	1 of 2	0 of 4	1 of 2
AI/AN, Black or African American	8 of 22 (26.79)	20 of 64 (33.33)	8 of 21	12 of 61 (25.34)
AI/AN, Black or African American, White	0 of 5	11 of 30 (41.05)	0 of 4	10 of 31 (43.60)
AI/AN, Black or African American, NH/PI	0 of 1	1 of 1	0 of 1	1 of 1
AI/AN, Black or African American, NH/PI, White	1 of 1	0 of 1	1 of 1	1 of 1
AI/AN, Asian	1 of 6	0 of 4	1 of 6	1 of 4
AI/AN, Asian, White	0 of 0	2 of 9	0 of 0	2 of 9
AI/AN, Asian, NH/PI	0 of 1	2 of 2	0 of 1	1 of 2
AI/AN, Asian, NH/PI, White	0 of 1	1 of 2	0 of 1	1 of 2
AI/AN, Asian, Black or African American	2 of 2	1 of 1	0 of 2	0 of 1
AI/AN, Asian, Black or African American, White	1 of 1	0 of 2	1 of 1	0 of 2
AI/AN, Asian, Black or African American, NH/PI	1 of 1	0 of 0	1 of 1	0 of 0
AI/AN, Asian, Black or African American, NH/PI, White	3 of 10	2 of 10	2 of 9	4 of 10
All Race combinations including other races not listed	0 of 0	0 of 1	0 of 0	1 of 1
Total	94 of 340 (27.74)	130 of 444 (29.60)	75 of 331 (24.06)	107 of 417 (24.08)

*Only group in YRBSS aggregate race variable (*raceeth*) indicating AI/AN. The *raceeth* variable is calculated by YRBSS and provided for researchers to use. Statistics reported here are the number of respondents within the sample group and weighted percentages. Percentages are not displayed for groups with denominators < 30 as indicated by YRBSS methodology.

Figure 1. Prevalence of adolescents who reported ever seriously considering attempting suicide (suicidal ideation) and reported suicide attempts in the past 12 months by self-reported and imputed ethnoracial groupings in YRBSS among those with > 30 participants



DISCUSSION

Our study showed that significant segments of the AI/AN community are excluded from the reported data within YRBSS, which is consistent with previous findings (Gatewood et al., 2024). Notably, AI/AN adolescents with ethnoracial combinations of White and Black/African American exhibited the highest rates of both suicidal ideation and suicide attempts, with both groups having point estimates 12-21% higher than AI/AN alone (non-Hispanic) from the *raceeth* variable.

Our findings for individuals classified as AI/AN alone reflect national estimates of suicidal ideation and suicide attempts reported within previous work. This includes a 2018 study by Subica and Wu, which found the rates of suicidal ideation in this population to be 25.43%, compared to our 27.3%, and the suicide attempt rate to be 16.77%, compared to our 21.85%, which is in line with increasing rates over the last 10 years (Stone et al., 2022; Subica & Wu, 2018). The Minnesota Student survey from 2022 reflects some of the elevated rates of suicidal ideation and suicide

attempts within several of the multiracial AI/AN groups. In this study, adolescents identifying as AI/AN and Black/African American, as well as AI/AN and White, exhibited elevated rates of suicidal ideation compared to the monoracial AI/AN group (Wiglesworth et al., 2022).

Additionally, the elevated rates of suicidal ideation and attempts in multiracial AI/ANs may relate to research showing elevated rates of depression in multiracial groups from lacking a sense of belonging (Sanchez, 2010). According to a systematic review from 2016-2022, most multiracial individuals reported worse mental health outcomes than their monoracial peers (Oh et al., 2024), with multiracial adolescents displaying less internal pride and cultural connectivity, which could lead to a diminished sense of belonging (Charmaraman & Grossman, 2010).

Implications & Recommendations

The findings of our study have several notable implications both for researchers, clinicians, and policy makers. First, the findings underscore the need for disaggregated race and ethnicity data in large data sets (Gatewood et al., 2024)—specifically by including the self-reported identity variables. While YRBSS provides this disaggregated data, which is a notable strength of the data, other large data sets do not. Further, a shift in research methodology needs to occur to account for the complexity of identity, when possible, particularly for AI/AN individuals given the history of federal assimilation policies—a sentiment shared by Friedman et al. in their investigation in data genocide among AI/AN populations regarding deaths of despair (Friedman et al., 2023). A recent report using 2020 Decennial Census data indicated that 61% of AI/AN individuals were classified as multiracial (Maxim et al., 2023). As such, it is imperative that researchers and agencies creating large data sets begin to account for the complexity of identity in their respective work. This shift in practice will allow for more precise reporting of group strengths and areas for intervention, likely enhancing future public health initiatives focused on suicide prevention.

In 2021, an American Academy of Pediatrics policy statement titled “Caring for American Indian and Alaska Native Children and Adolescents” touched specifically on suicide and mental health for AI/AN populations and considerations for treatment (Bell et al., 2021). Current recommendations include community-driven interventions that are both strength-based and culturally centered (Bell et al., 2021). Further, providers must be aware of the possible impact of historical trauma on the mental health of Indigenous populations (Bell et al., 2021; Mohatt et al., 2014). Possible interventions include treatment modalities such as “Honoring Children, Mending the Circle” (HC-MC), a trauma-focused cognitive-based therapy (TF-CBT) for AI/AN children

(Bigfoot, 2022; BigFoot & Schmidt, 2009, 2010). This particular treatment method was created by merging AI/AN cultural components with the traditional TF-CBT framework (BigFoot & Schmidt, 2009, 2010). It is important to note that frameworks such as HC-MC are recommended for individuals with a strong AI/AN cultural affiliation (BigFoot & Schmidt, 2010). As such, providers should assess an individual's cultural affiliation instead of making assumptions about affiliation based solely on self-reported race and ethnicity (BigFoot & Schmidt, 2010). It is also critical that providers demonstrate the cultural competence needed to refer adolescents and their families to AI/AN providers specializing in culturally centered health care delivery when it is in the best interests of the child's health (Kodjo, 2009).

For both primary care and mental health providers, especially those within the osteopathic profession, assessing and triaging suicide risk is a vital part of clinical practice and a necessary part of holistic care. Identifying children at risk for suicide is critical on an individual, community, and population level. Valid suicide-risk stratification requires clinicians to be aware of the level of risk associated with certain patient demographics such as age, race, ethnicity, socioeconomic factors, and past psychiatric history. By extension, clinicians are dependent on the data that qualifies the level of risk. Professionals should reflect and take an active role to ensure their individual practices, organizations, and healthcare systems are properly identifying high risk populations.

Limitations and Future Research

While YRBSS lacks nationwide representation, with only 45 of the 50 states participating, it is one of the largest youth data sets available for assessing youth health and risk behaviors (CDC, 2023d). Furthermore, the data collection process for YRBSS relies on self-reporting, which enables adolescents to provide their own responses. This introduces a potential self-report bias, which may result in underreporting of suicidal ideation and suicide attempts. Adolescents could be minimizing their experiences in order to avoid perceived stigma and unwanted help (Deming et al., 2021). Future studies may extend this line of research to investigate differences among other ethnoracial groups, as well as explore other differences among self-reported identity. This is a particularly important topic for future research, including with Native Hawaiians and Pacific Islanders (NHPI), a group that also includes a high rate of multiracial individuals (Maxim et al., 2023). Further, evidence remains that some state and federal agencies are still labeling NHPI

individuals under the label “Asian American or Pacific Islander,” despite guidance in 1997 that created the NHPI race/ethnicity category (Quint et al., 2023).

CONCLUSION

As the *raceeth* variable within YRBSS captures only single-race, non-Hispanic AI/AN youth, our study found it excluded nearly 61% of youth identifying as AI/AN within the dataset representing a substantial proportion of AI/AN youth being systematically excluded from analyses using this variable. Our findings demonstrate that this aggregation obscures meaningful variation in suicidal ideation and attempts and contributes to ongoing data erasure, limiting the visibility of disparities within AI/AN communities. These findings underscore the need for surveillance systems to adopt inclusive racial classification approaches that allow for multiracial identification and disaggregated reporting to ensure more accurate representation of youth to inform targeted, culturally responsive suicide prevention efforts.

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CONFLICT OF INTEREST

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