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Racial/ethnic differences in adolescents' non-response to suicide attempt: Findings from the Youth Risk Behavior Survey, 2015–2019

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ABSTRACT

Racial/ethnic minority adolescents are at greater risk of attempting suicide compared to their White counterparts. Yet, racial/ethnic minority adolescents are more likely to not respond to questions on suicidal behaviors. The objective of this study was to investigate the association between race/ethnicity and missing response to suicide attempt among adolescents in the United States. Data for this study were obtained the 2015–2019 national Youth Risk Behavior Survey ($n = 40,360$). The outcome variable investigated in this study was missing response to suicide attempt and the main explanatory variable was race/ethnicity. Two hierarchical binary logistic regression models were fitted to examine the association between race/ethnicity and missing response to suicide attempt. Of the 40,036 adolescents, 13.4% had missing response to suicide attempt. Controlling for the effects of demographic factors and symptoms of depression, adolescents who self-identified as non-Hispanic Black had more than threefold higher odds of having missing response to suicide attempt when compared to their non-Hispanic White counterparts (AOR = 3.62, $p < .001$, 95% CI = 2.45–5.34). Adolescent males and adolescents questioning their sexual identity had higher odds of having missing response to suicide attempt. Adolescents with depressive symptoms had lower odds of having missing response to suicide attempt. Missing response to suicide attempt among adolescents continues to differ by race/ethnicity and other demographic factors. The use of a single item in assessing suicide attempt history may be inadequate in capturing national estimates of adolescent suicide metrics.

1. Introduction

Suicide in the United States (U.S.) has been identified as a major public health concern and is the second leading cause of death among adolescents and young adults (Ehlman, 2022). Data from the most recent national Youth Risk Behavior Survey (YRBS) show that in 2019, 18.8% of adolescents seriously considered attempting suicide, 15.7%

made a suicide plan, and 8.9% had attempted suicide during the past 12 months (Ivey-Stephenson et al., 2020). The YRBS has been used extensively to understand adolescent health risk behaviors, including suicidal behaviors (Baiden et al., 2019, 2020; Baiden et al., 2021; Baiden et al., 2022; Jacobs et al., 2023; Johns et al., 2021; Lindsey et al., 2019; McBee-Strayer et al., 2020; Pontes et al., 2018, 2020, 2021; Price and Khubchandani, 2017; Romanelli et al., 2022; Stone et al., 2014; Turpin

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et al., 2020; Vélez-Grau et al., 2022). Notwithstanding the fact that the YRBS is nationally representative, concerns remain about the amount of missing data on sensitive questions, especially questions that ask about suicidal behaviors (Baiden et al., 2022). Moreover, few studies have examined whether non-response to the question on suicide attempt among adolescents in the YRBS is dependent on race/ethnicity (Anderson et al., 2015). Thus, the objective of this study was to investigate the association between race/ethnicity and missing response to the item asking whether an adolescent attempted suicide in the past year using data from the 2015, 2017, and 2019 YRBS.

Available research indicates that the rate of suicidal behaviors among non-Hispanic White adolescents differs from racial/ethnic minority individuals (Baiden et al., 2020; Ivey-Stephenson et al., 2020). For instance, whereas some studies have found that suicidal ideation is more prevalent among non-Hispanic White adolescents than non-Hispanic Black adolescents (Kann et al., 2018; Lorenzo-Luaces and Phillips, 2014), this pattern is reversed when looking at suicide attempt, with non-Hispanic Black and Native American adolescents having the highest risk of suicide attempt (Bridge et al., 2018; Lindsey et al., 2019). Baiden et al. (2023) examined data from the 2017 national YRBS and found that whereas non-Hispanic Black adolescents were 27% less likely to report experiencing suicidal ideation compared to their non-Hispanic White counterparts, non-Hispanic Black adolescents had almost double the odds of making a suicide attempt when compared to their non-Hispanic White counterparts. Furthermore, racial/ethnic disparities with suicidal ideation may worsen when combined with other known risk factors, including symptoms of depression (Hong et al., 2021) and across intersecting identities of gender and sexual identity (Figueiredo and Abreu, 2015).

Preliminary analysis of the YRBS indicates that in 2015, 19.6% of adolescents did not respond to the question, “During the past 12 months, how many times did you actually attempt suicide?” In 2017, that percentage rose to 27.6%, and 23.1% in 2019. Although various studies have examined suicide attempt using the YRBS (Baiden et al., 2019, 2020; Baiden et al., 2021; Jacobs et al., 2023; Johns et al., 2021; McBee-Strayer et al., 2020; Richardson et al., 2022; Romanelli et al., 2022; Stone et al., 2014; Turpin et al., 2020; Vélez-Grau et al., 2022), few studies have explicitly addressed factors associated with missing data on the question on suicide attempt (Anderson et al., 2015). Existing studies either use complete case analysis by excluding missing responses to suicide attempt (Baiden et al., 2019; Baiden et al., 2021; Baiden et al., 2022; Jacobs et al., 2023; Johns et al., 2021; McBee-Strayer et al., 2020; Richardson et al., 2022; Romanelli et al., 2022), impute missing values (Baiden et al., 2020; Turpin et al., 2020; Vélez-Grau et al., 2022), or do not mention how missing data were handled (Pontes et al., 2018, 2020, 2021; Stone et al., 2014).

1.1. Current study

There is a dearth of research that examines the association between race/ethnicity and missing response to suicide attempt. Apter et al. (2001) investigated the relationship between self-disclosure and suicidal behaviors among 80 patients hospitalized for major depressive disorder after controlling for depression, anxiety, and hopelessness and found that willingness for self-disclosure significantly differentiated the serious attempters from the suicide ideators with the most serious attempters less willing to disclose that they are seriously considering their suicide plans. They also found that feelings of hopelessness and depression/anxiety did not mediate the relationship between self-disclosure and more lethal suicide attempt. Anderson et al. (2015) examined data from the 2011 YRBS and found that although racial minority adolescents were at greater risk for serious suicidal behaviors, they were also more likely to not respond to questions pertaining to suicide attempt. However, the study by Anderson et al. (2015) failed to control for other important demographic factors such as sex and sexual identity. Given the level of stigma adolescent males (Bröer and

Agyekum, 2021; Clark et al., 2020; Ewert, 2021) and adolescents who self-identified as a sexual minority (Caputi et al., 2017; English et al., 2022; Hatzenbuehler, 2017; Quinn et al., 2019; Salway et al., 2018) face in answering sensitive questions on mental health and suicidal behaviors, it is important to control for these two important factors to ascertain the true association between race/ethnicity and missing response to suicide attempt.

Thus, the objective of this study was to investigate the association between race/ethnicity and missing response to suicide attempt among adolescents. Based on the extant literature demonstrating mental health stigma among racial/ethnic minority adolescents (DuPont-Reyes et al., 2020; Swann et al., 2020; Turner et al., 2015; Wong et al., 2018), sexual minority adolescents (Caputi et al., 2017; English et al., 2022; Hatzenbuehler, 2017; Quinn et al., 2019; Salway et al., 2018), and adolescent boys (Bröer and Agyekum, 2021; Clark et al., 2020; Ewert, 2021), we hypothesized that: 1) there would be an association between race/ethnicity and missing response to suicide attempt, 2) sex would be associated with missing response to suicide attempt, and 3) sexual identity would be associated with missing response to suicide attempt.

2. Methods

2.1. Data source

Data for this study were obtained from the Youth Risk Behavior Survey (YRBS). The YRBS is a cross-sectional school-based national survey conducted by the Centers for Disease Control and Prevention (CDC) every two years to examine health-risk behaviors that contribute to the leading causes of death and disability among adolescents in the U. S. The objectives, methodology, and sampling procedure for the YRBS have been described elsewhere (Brener et al., 2013; Kann et al., 2018; Underwood et al., 2020) and in other publications by the authors (Baiden et al., 2022b, 2023). The YRBS was approved by the CDC’s Institutional Review Board (IRB), and the de-identified data are publicly available. The lead author’s institution exempted the current study from IRB approval.

2.2. Sample

For the purposes of this study, data from the 2015, 2017, and 2019 national YRBS were combined to obtain a sufficient sample size to examine the association between race/ethnicity and missing response to suicide attempt. The school response rates for 2015, 2017, and 2019 national YRBS were 69%, 75.0%, and 75.1%, respectively, and student response rates were 86%, 81%, and 80.3%, respectively. The overall response rate, which is a product of the school and student response rates for each cycle, was 60% for all three years (Kann et al., 2018; Underwood et al., 2020). The initial sample size for the 2015, 2017, and 2019 national YRBS was 15,624, 14,765, and 13,677, respectively. The resulting sample size for the combined 2015, 2017, and 2019 national YRBS was 44,066 high school students. An examination of missing values revealed that the proportion of missing data ranges from 0.4% on sex to 5% on sexual identity. Missing data was handled using listwise deletion given that none of the variables had missing data greater than 5% (Tabachnick and Fidell, 2007). This resulted in the final analytic sample of 40,036 adolescents aged 14 and 18.

2.3. Variables

2.3.1. Outcome variable

The outcome variable examined in this study was missing response to suicide attempt and was measured as a binary variable. Adolescents were asked, “During the past 12 months, how many times did you actually attempt suicide?” with the following response options “0 times,” “1 time,” “2 or 3 times,” “4 or 5 times,” and “6 or more times.” For the purposes of this study, adolescents who indicated “0 times,” “1

time,” “2 or 3 times,” “4 or 5 times,” and “6 or more times” were coded as 0, whereas adolescents who did not respond to suicide attempt were coded as 1.

2.3.2. Explanatory variable

The main explanatory variable examined in this study was race/ethnicity. Race/ethnicity was measured using two questions that asked adolescents: 1) “Are you Hispanic or Latino?” with response options as “yes” or “no,” and 2) “What is your race?” with response options as “American Indian or Alaska Native,” “Asian,” “Black or African American,” “Native Hawaiian or other Pacific Islander,” or “White.” For the purposes of this study, race/ethnicity was recoded as a nominal variable into the following categories, “0 = non-Hispanic White,” “1 = non-Hispanic Black,” “2 = Hispanic,” and “3 = Asian,” “4 = American Indian or Alaska Native/Native Hawaiian or other Pacific Islander (AIAN/NHPI),” and “5 = Other.”

2.3.3. Demographic and control variables

Symptoms of depression, survey year, age, sex, and sexual identity were also included in the analysis as control variables. Symptoms of depression were measured based on response to the question, “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” Adolescents who answered “yes” were coded as 1, whereas adolescents who answered “no” were coded as 0. The survey year was coded into “0 = 2015,” “1 = 2017,” and “2 = 2019.” Age in years was measured as a continuous variable, whereas sex was coded as “0 = Female” and “1 = Male.” Sexual identity was coded as a nominal variable into “0 = Straight,” “1 = Gay or lesbian,” “2 = Bisexual,” and “3 = Questioning.”

2.4. Data analyses

Data were analyzed using descriptive, bivariate, and multivariable analytic techniques. First, the general distribution of all the study variables was examined using frequencies and percentages. Second, using Pearson chi-square test of association, we examined the bivariate association between missing response to suicide attempt and the study variables. The main analysis involved using binary logistic regression to examine the association between race/ethnicity and missing response to suicide attempt, while simultaneously controlling for survey year, age, sex, sexual identity, and symptoms of depression. Two hierarchical logistic regression models were fitted. In Model 1, we regressed missing response to suicide attempt on race/ethnicity. In Model 2, we regressed missing response to suicide attempt on race/ethnicity while controlling for survey year, age, sex, sexual identity, and symptoms of depression. Odds ratio (OR) and adjusted odds ratios (AOR) are reported with their 95% Confidence Intervals (CI). All analyses were two-tailed, and variables were considered significant if the *p*-value was <.05. Stata’s “svyset” command was used to account for the weighting and complexity of the cluster sampling design employed by the YRBS. All analyses were performed using Stata version 17.

3. Results

3.1. Sample characteristics

Table 1 shows the general distribution of the study variables. Of the 40,036 adolescents, 13.4% had missing response to suicide attempt. More than half of the adolescents (52.9%) self-identified as non-Hispanic White, 24.1% as Hispanic, 12.9% as non-Hispanic Black, 4.1% as Asian, 1.1% as AIAN/NHPI, and 4.69% as “Other.” The average age of the adolescents in this sample was 16.05 (SE = 0.01). The sample was evenly distributed by sex, with females making up 50.5% of the sample. About 87% of the adolescents self-identified as straight, 7.5% as bisexual, 3.7% as questioning, and 2.2% as lesbian/gay. Close to one in

Table 1
Sample characteristics (N = 40,036).

Variables	Frequency (Weighted %)
Outcome variable	
Missing response to suicide attempt	
No	34677 (86.6)
Yes	5359 (13.4)
Main independent variable	
Race/ethnicity	
Non-Hispanic Whites	21160 (52.9)
Non-Hispanic Black	5172 (12.9)
Hispanic	9633 (24.1)
Asian	1656 (4.1)
Native American	451 (1.1)
Other	1964 (4.9)
Control variables	
Survey year	
2015	14226 (35.5)
2017	13497 (33.7)
2019	12313 (30.8)
Age	
14 years	4402 (11.0)
15 years	10076 (25.2)
16 years	10224 (25.5)
17 years	9652 (24.1)
18 years	5682 (14.2)
Sex	
Female	20217 (50.5)
Male	19819 (49.5)
Sexual identity	
Straight	34663 (86.6)
Gay/lesbian	886 (2.2)
Bisexual	2986 (7.5)
Questioning	1501 (3.7)
Had symptoms of depression	
No	27005 (67.4)
Yes	13031 (32.6)

three adolescents (32.6%) had symptoms of depression.

3.2. Bivariate association between missing response to suicide attempt and sample characteristics

Table 2 shows the bivariate association between missing response to suicide attempt and the study variables. Overall, 27.2% of adolescents who self-identified as non-Hispanic Black, 20.0% of adolescents who self-identified as AIAN/NHPI, 15.1% of Hispanics, 12.6% of Asian, 10.6% of adolescents who self-identified as “Other,” and 9.4% of adolescents who self-identified as non-Hispanic White had missing response to suicide attempt ($\chi^2(5) = 1189.51, p < .001$). The proportion of adolescent males that had missing response to suicide attempt was statistically significantly greater than the proportion of adolescent females with missing response to suicide attempt (14.4% vs. 12.3%; $\chi^2(2) = 36.81, p < .001$). Close to one in five adolescents who question their sexual identity (17.4%), compared 15.5% of lesbians/gays, 13.3% of straights, and 11.6% of bisexuals had missing response to suicide attempt ($\chi^2(3) = 32.46, p < .001$). The proportion of adolescents who had symptoms of depression and had missing response to suicide attempt was significantly lower than the proportion of adolescents who did not have symptoms of depression and had missing response to suicide attempt ($\chi^2(1) = 26.86, p < .001$).

3.3. Multivariable logistic regression examining the association between race/ethnicity and missing response to suicide attempt

Although race/ethnicity was significantly associated with missing response to suicide attempt at the bivariate level, because there were no controls at the bivariate level, we could not assess the true association between race/ethnicity and missing response to suicide attempt. Therefore, in the multivariable logistic regression, we controlled for the

Table 2
Bivariate association between sample characteristics and missing responses to suicide attempt (N = 40,036).

Variables	Missing response to suicide attempt		Chi-square test (sig.)
	No, %	Yes, %	
Race/ethnicity			1189.51 (p < .001)
Non-Hispanic Whites	90.6	9.4	
Non-Hispanic Black	72.8	27.2	
Hispanic	84.9	15.1	
Asian	87.4	12.6	
Native American	80.0	20.0	
Other	89.4	10.6	
Survey year			157.62 (p = .311)
2015	89.5	10.5	
2017	85.5	14.5	
2019	84.6	15.4	
Age			10.87 (p = .498)
14 years	86.0	14.0	
15 years	87.5	12.5	
16 years	86.4	13.6	
17 years	86.5	13.5	
18 years	86.0	14.0	
Sex			36.81 (p < .001)
Female	87.7	12.3	
Male	85.6	14.4	
Sexual identity			32.46 (p < .001)
Straight	86.7	13.3	
Gay/lesbian	84.5	15.5	
Bisexual	88.4	11.6	
Questioning	82.6	17.4	
Had symptoms of depression			26.86 (p < .001)
No	86.0	14.0	
Yes	87.9	12.1	

Table 3
Multivariate logistic regression results examining the association between race/ethnicity and missing responses to suicide attempt (N = 40,036).

Variables	Model 1		Model 2	
	OR (95% C.I.)	P-value	AOR (95% C.I.)	P-value
Race/ethnicity (Non-Hispanic White)				
Non-Hispanic Black	3.59 (2.47–5.21)	<.001	3.62 (2.45–5.34)	<.001
Hispanic	1.71 (1.21–2.42)	.003	1.70 (1.20–2.41)	.003
Asian	1.39 (0.86–2.25)	.181	1.33 (0.83–2.15)	.234
Native American	2.40 (1.63–3.54)	<.001	2.39 (1.61–3.56)	<.001
Other	1.14 (0.85–1.55)	.374	1.15 (0.86–1.55)	.348
Survey year (2015)				
2017			1.45 (0.85–2.49)	.170
2019			1.59 (0.87–2.91)	.128
Age in years			1.03 (0.96–1.10)	.394
Sex (Female)				
Male			1.16 (1.07–1.27)	.001
Sexual identity (Straight)				
Lesbian/gay			1.10 (0.87–1.40)	.430
Bisexual			0.89 (0.76–1.05)	.157
Questioning			1.37 (1.17–1.62)	<.001
Had symptoms of depression (No)				
Yes			0.87 (0.80–0.95)	.001

effects of survey year, age, sex, sexual identity, and symptoms of depression. Table 3 shows the multivariable logistic regression results examining the association between race/ethnicity and missing response to suicide attempt. In Model 1, race/ethnicity was significantly associated with missing response to suicide attempt. This significant effect remained after adjusting for the effects of survey year, age, sex, sexual identity, and symptoms of depression. Controlling with the effects of demographic factors and symptoms of depression in Model 2, adolescents who self-identified as non-Hispanic Black had more than threefold higher odds of having missing response to suicide attempt when compared to their non-Hispanic White counterparts (AOR = 3.62, p < .001, 95% CI = 2.45–5.34). Compared to non-Hispanic Whites, adolescents who self-identified AIAN/NHPI (AOR = 2.39, p < .001, 95% CI = 1.61–3.56) or Hispanic (AOR = 1.70, p = .003, 95% CI = 1.20–2.41) had greater odds of having missing response to suicide attempt. Controlling for the effects of survey year, age, sex, sexual identity, and symptoms of depression, adolescent males had 1.16 times higher odds of having missing response to suicide attempt (AOR = 1.16, p = .001, 95% CI = 1.07–1.27). Compared to adolescents who self-identified as straight, adolescents who are questioning their sexual identity had 1.37 times higher odds of having missing response to suicide attempt (AOR = 1.37, p < .001, 95% CI = 1.17–1.62). Lastly, the odds were 13% lower for adolescents who had symptoms of depression to have missing response to suicide attempt (AOR = 0.87, p < .001, 95% CI = 0.80–0.95).

4. Discussion

Adolescents who decline to provide information regarding their history of suicide behaviors may be at elevated risk for suicide risk (Kyron et al., 2020; Podlogar et al., 2016; Stanley et al., 2022). Using data from a large, nationally representative sample of adolescents in the U.S., the primary objective of this study was to investigate the association between race/ethnicity and missing response to suicide attempt. Overall, our analysis showed that about 1 in 7 adolescents (13.4%) had missing response to the question on suicide attempt on the YRBS. We found the following factors were significantly positively associated with missing response to suicide attempt among adolescents: race/ethnicity, sex, and sexual identity, whereas adolescents with symptoms of depression had lower odds of missing response to suicide attempt.

We found that a little over one in four non-Hispanic Black adolescents (27.2%) compared to 9.4% of non-Hispanic White adolescents did not respond to the question on suicide attempt in the YRBS. We found support for our hypothesis of an association between race/ethnicity with missing response to suicide attempt. Controlling for demographic and health related factors in the fully adjusted model, we observed that racial/ethnic minority adolescents who self-identified as non-Hispanic Black, AIAN/NHPI or Hispanic respectively had 3.62, 2.39, and 1.70 times higher odds of having missing response to suicide attempt when compared to their non-Hispanic White counterparts. These findings are timely, offer useful insights, and extend the literature on racial/ethnic differences in responding to suicidal items among adolescents. To our knowledge, this is one of the few population-based studies to examine the association between race/ethnicity and missing response to suicide attempt in national surveys. For comparison, our findings extend previous research by Anderson et al. (2015) who utilized data from the 2011 YRBS to examine racial/ethnic differences in rates of missing response to suicide attempt. Our focus on adolescents, use of relatively recent data, and adjustment for other demographic characteristics and symptoms of depression highlight the novelty of these results.

While the reasons for non-response were not available in our data, several theorized factors may account for these results. First, some scholars have attributed the amount of missing data on suicidal behaviors to the sensitive nature of questions on suicidal behaviors (Bebbington et al., 2010; Podlogar et al., 2016; Resnik et al., 2021; Taylor et al., 2011). Other scholars posit that respondents to questions on suicidal behaviors might be concerned about the risk of disclosing their

history of suicidal behaviors to a third party (Hom et al., 2016; Rice et al., 2018). Another potential explanation may be related to the role of stigma surrounding mental health, including suicidal behaviors. As a result, questions on suicidal behaviors may be prone to social desirability bias (Hom et al., 2016; Karam et al., 2015). Given emerging evidence that individuals who decline to respond to survey questions about suicide are a vulnerable group with elevated suicide risk (Kyron et al., 2020; Podlogar et al., 2016; Stanley et al., 2022), our findings are crucial and support calls for targeted strategies to enhance suicide risk screening beyond the use of single-item questions in population level surveys (Hom et al., 2016).

Although the mechanisms behind the association between race/ethnicity and non-response to suicide items are unclear from our study, multiple studies have consistently highlighted that racial/ethnic (Baiden et al., 2022; Bridge et al., 2006; Joe et al., 2008; Lindsey et al., 2019) and sexual minority adolescents (Salway et al., 2019; Stone et al., 2014; Thullen et al., 2016) are at high risk of attempting suicide. Thus, the finding that the same high-risk group of adolescents are less likely to respond to survey items on suicide attempt is problematic and warrants serious empirical attention. One potential explanation for this racial/ethnic and sexual identity differences could be the role of minority stress (Meyer, 2003). Considering that racial/ethnic minority populations experience greater stigma toward mental health (DuPont-Reyes et al., 2020; Swann et al., 2020; Turner et al., 2015; Wong et al., 2018), it is possible that racial/ethnic and sexual minority adolescents try to avoid disclosure of past suicide attempt due to anticipated discrimination for their behavior. This is a serious public health concern as non-disclosure of suicide could delay connection to timely mental health services (Hendricks and Testa, 2012; Meyer, 2003), especially in light of evidence suggesting a lack of access to mental health treatment among racial/ethnic and sexual minority adolescents (Filice and Meyer, 2018; Mills, 2012; Rodgers et al., 2022). Future research should explore this concept further by examining if minority stress in the form of perceived racial or sexual identity-based discrimination mediates the link between race/ethnicity and sexual identity and missing response to suicide attempt.

Additionally, cultural factors may help explain the connection between racial/ethnic minority adolescents and their greater propensity to decline responding to questions on suicide attempt. Culture may impact perceptions and beliefs; thus, suicidal behaviors may be perceived differently among different racial/ethnic communities which resultantly may affect disclosure. This reasoning is supported by a large body of evidence demonstrating the relevance of culture on suicide (Chu et al., 2019; Goldston et al., 2008). Culture may also impact help-seeking and coping behaviors among adolescents experiencing suicide. Past works have found that attitudes and cultural beliefs about seeking mental health support may lead to suicide non-disclosure and low propensity to seek help. For example, Freedenthal and Stiffman (2007) sampled 101 young American Indians and found that among young American Indian adolescents, stigma, a belief that nobody could help, and self-reliance were associated with not seeking help when suicidal. There is also a evidence suggesting that Asian American cultures have a cultural preference to suppressing emotions as a coping mechanism (Cheung and Park, 2010; Soto et al., 2016). Thus, understanding the role of cultural contexts in suicide research among adolescents warrants further empirical attention.

In addition to race/ethnicity, we also found significant demographic factors linked with missing response to suicide attempt. Our analysis revealed that compared to adolescent females, adolescent males had 1.16 times higher odds of having missing response to suicide attempt. While the reasons for the sex differences remains unclear, it is plausible that differences in socialization whereby adolescent males are socialized to display masculinity and suppress internal emotions may account for their increased likelihood of not responding to the question on suicide attempt. This line of reasoning is contrasted by research demonstrating no sex differences in disclosure of suicidal ideation (Lee and Wong,

2020).

We also found that compared to adolescents who self-identified as straight, adolescents questioning their sexual identity had 1.37 times higher odds of having missing response to suicide attempt. One potential reason for this finding could be that adolescents who are questioning their sexual identity may be more likely to experience stigma (Hatzenbuehler, 2017; Salway et al., 2018) or have no social support network (Garcia et al., 2020; Seil et al., 2014) which may have impacted their willingness to disclose sensitive information. Examining the contributory roles of minority stress and thwarted belongingness to suicide-related behaviors among persons with multiple marginalized identities, Kaufman et al. (2022) found significant interaction between minority stress and thwarted belongingness in predicting suicidal ideation, whereby the effect of gender identity status on suicidal ideation through minority stress was strongest for individuals with higher levels of thwarted belongingness.

It is also possible that adolescents who are questioning their sexual identity may not be out, or not fully out with their sexual identity. This may impact decision making around disclosing sensitive information on a survey, in similar fashions to what research has supported impacts access and utilization of mental healthcare. A scoping review conducted to identify patterns, predictors, and outcomes of mental health service utilization among sexual minority individuals found that although sexual minority individuals were more likely to report a perceived need for mental health services when compared to their heterosexual counterparts, sexual minority individuals were more likely to avoid accessing mental health services (Filice and Meyer, 2018). Our results highlight the importance of further research among adolescents to explore reasons for omitting responses to suicide-related questions among adolescents who are questioning their sexual identity.

4.1. Implications

The findings of this study have implications for clinicians, psychologists, school counselors, policymakers, and public health practitioners working toward suicide prevention in schools. First, the findings of this study suggest racial/ethnic disparities exist when it comes to adolescents responding to questions on suicide attempt on the YRBS. Thus, it is possible that estimates of suicide attempt among adolescents at the national level may be seriously underestimated particularly for racial/ethnic minority adolescents who may be feeling suicidal but at the same time less likely to respond to suicide-related questions. Second, consistent with past research (Hom et al., 2016), the findings of this study suggest that single-item assessments of suicide attempt history may be grossly inadequate to capture national estimates of adolescent suicide metrics. Beyond the potential for misclassification of prior suicidal behaviors, our results adds that missingness/non-response to suicide attempt remains a concern and it differs significantly by race/ethnicity, sex, and sexual identity. Third, we propose that employing a qualitative approach can enhance the effectiveness of suicide screening in adolescents within school settings. Qualitative techniques can offer valuable insights and explore reasons for non-response, potentially leading to improved suicide screening protocols and ultimately better support for at-risk adolescents. Relatedly, there is the need for increased clarity regarding what happens when suicidality is endorsed in such screenings. It is possible that the lack of transparency on the consequences of endorsing suicide attempt in the YRBS may be contributing to adolescents' non-response to suicide attempt.

Moreover, the importance of including researchers of diverse backgrounds in creating questions assessing suicide risk cannot be over-emphasized. A recent study by Molock et al. (2023) acknowledged gaps in measures and procedures for assessing suicide risk among adolescents of color. Molock et al. (2023) offered some important culturally responsive considerations when assessing suicidal behaviors among adolescents of color, including developing suicide risk assessment tools that take steps to mitigate historical trauma caused by psychological

assessments developed in the context of structural racism, taking an intersectional approach that recognizes multiple aspects of an adolescent's identity, as well as involving adolescents of color and their parents in the development of suicide risk assessments. Finally, the racial/ethnic variation in missing response to suicide attempt lends support to the role of cultural context in suicide research (Goldston et al., 2008; Joe et al., 2008). Thus, findings emphasize the need to consider culture in designing and implementing suicide screening and prevention programs among adolescents (Chu et al., 2017).

4.2. Limitations

There are some limitations of this study that are worth mentioning. First, the cross-sectional nature of the data used in this study precludes our ability to draw causal inferences between race/ethnicity and missing response to suicide attempt. Second, given the nature of the questions contained in the survey, it was not possible to deduce from our findings the reasons for not responding to the question on suicide attempt. Also, it is plausible that missingness on response to suicide attempt could be more prevalent, especially among adolescents with multiple marginalized identities (e.g., LGBTQ + adolescents of color). This is an important area for future research consideration. Future qualitative research that seeks to query reasons for non-response to suicide attempt may be a useful extension of our findings. Third, we were limited by other theoretical factors such as cultural beliefs about suicide, understanding of the question, and perception of stigma which may have confounded our findings. Fourth, future studies should examine whether the amount of missingness is unique to suicide-related items or is general to other items in the YRBS. This is beyond the scope and objective of this study. Lastly, although nationally representative, the self-reported nature of the response induces the possibility for recall and social desirability bias (Mars et al., 2016) which may have impacted our findings. However, the possibility of recall bias or false reporting was addressed in the YRBS by screening the data for responses that conflicted in logical terms (Brenner et al., 2013).

4.3. Conclusion

Using a nationally representative sample, we found that about one in seven adolescents did not respond to suicide attempt in the national YRBS, and there was a significant association between race/ethnicity and missing response to suicide attempt among adolescents. The findings of this study underscore the need to integrate culturally relevant factors in the design of surveys of suicidal behaviors and the implementation of suicide screening and prevention interventions.

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CRediT authorship contribution statement

Philip Baiden: Conceptualization, Data curation, Formal analysis, Methodology, Writing – review & editing. **Henry K. Onyeaka:** Conceptualization, Data curation, Formal analysis, Methodology, Writing – review & editing. **Kammarache Aneni:** Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. **Bethany M. Wood:** Writing – original draft, Writing – review & editing. **Catherine A. LaBrenz:** Writing – original draft, Writing – review & editing. **Aaron Hagedorn:** Methodology, Writing – original draft, Writing – review & editing. **Chioma Muoghalu:** Writing – original draft, Writing – review & editing. **Edinam C. Gobodzo:** Writing – original draft, Writing – review & editing. **John F. Baiden:** Writing – original draft, Writing – review & editing. **Yvonne Adeku:** Writing – original draft, Writing – review & editing. **Vera E. Mets:** Writing – original draft, Writing – review & editing. **Fawn A. Brown:** Writing – original draft,

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Declaration of competing interest

The authors declare that they have no conflicts of interests with respect to the authorship and/or the publication of this manuscript.

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