

# Suicidal Behaviors Among Youths in Mississippi, United States.

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**Abstract-** Suicidal behaviors play a major role in suicidal deaths among adolescents in the United States. This study examines the prevalence of suicidal behaviors among youths in Mississippi by age, race/ethnicity, grade, and gender. Data were analyzed from the Mississippi Youth Risk Behavior Survey for 2019. The survey employed a representative sample of students in grades 9 – 12. The prevalence of suicidal behaviors among participants was adjusted for gender, age, race, and grade reference data from the CDC growth chart. Differences in the groups were examined with univariate t-test statistical analysis at p-value < 0.05 and frequency distribution to determine the percentage differences. Female youths had higher prevalence rates of seriously considering suicide (23.2%) and making a plan to attempt suicide (14.1%) when compared to the male participants with prevalence rates of 14.1% and 12.1% respectively. Black female youths (16.2%) had higher rates of attempting suicide than the black male youths (13.0%). However, male youths (4.0%) had a higher rate of “suicide attempt with an injury that requires medical treatment” when compared to females (3.4%); with the black male youths (13.0%) having higher rates than the white male youths (7.8%). Participants in 12th grade had higher rates of suicide attempts when compared to other grades. There is a concerning increased risk of suicidal behaviors especially among male youths and black youths in Mississippi. Prevention and intervention programs should target these groups in order to reduce these suicidal behavioral risks.

**Index Terms-** Suicidal Behaviors, suicide, prevalence, youths, Mississippi

## I. INTRODUCTION

Suicide has increasingly become a serious concern in public health. Every year, over 700,000 people commit suicide globally and many more attempt suicide [1]. Suicide is the leading cause of death among adolescents between the ages of 15 and 19 years in the United States (US) [2]. Every day, over 3,703 suicide attempts are made by young people in grades 9-12 nationwide [2]. Researchers have demonstrated that adolescents and young adults die more from suicide than from birth defects, influenza, heart disease, cancers all combined [3]. Suicidal behaviors are essential contributors to suicide in late adolescence [4]. The initiation of suicidal behavior begins during the period of adolescence and young adulthood [5,6]. Suicidal behavior refers to a range of ideas

or thoughts which center around suicide or death referred to as “suicidal ideation” and extends to the actual completion of suicide [7]. Between suicidal ideation and completion of suicide are suicide threats and suicide attempts, which are verbal statements or behavioral acts to suggest an intent to take one’s life [8,9].

Evidence shows that both suicidal ideation and suicide attempt have been linked with different psychosocial factors.[10] These risk factors include but are not limited to hopelessness, low self-perception, early traumatic life experiences, and drug use contribute immensely to suicidal behaviors [10,11]. Studies have demonstrated other fixed risk factors that increase the risk for suicidal behavior including male gender, lesbian, gay, bisexual, transgender or questioning sexual orientation, family history of mental health issues, family history of suicide or suicidal attempt [12]. Individuals who have personal mental problems have a history of suicide attempts, history of sexual abuse, substance abuse, post-traumatic stress disorders, and sleep disorders are highly at risk for more expression of suicidal behaviors [12,13].

In the United States, the rates of suicide doubled between the 1960s and 1990s in adolescents aged 15 to 19 years and tripled among those 10 to 14 years of age [14,15]. Studies also show that among adolescents and youths in the year 2000, the suicide rate was 8 per 100,000 with no significant change in the trend between 2000 and 2007, although the trend increased between 2007 and 2014 [16]. Various researchers have demonstrated disparities between different groups when compared to others. These suicide rate variations occur by race/ethnicity, age, and other factors. Amongst the various racial groups/ ethnicity, Non- Hispanic White and American Indian/Alaska Natives record the highest rates of suicide in the US [17]. Studies have shown that youths who identify as LGBTQ have higher rates of suicidal behaviors than youths who identify as being “straight” [18]. Other studies have demonstrated that between 1991 and 2017, there were significant decreases in self-reported suicidal ideation and plan across all sex and racial/ ethnic groups with females having significant decreases in suicidal attempts. Researchers also found that black male youths had a significant linear increase in the attempts to commit suicide, which led to injury [19].

In Mississippi (MS), suicide is the 6th leading cause of death among youths between the ages of 10 to 14 years [20]. Research has shown that about 35,000 children and youths in MS have severe and persistent mental health needs [21]. National Survey of Children’s Health report of 2011 to 2012 reveals that about 20% of MS adolescents between 12 to 17 years old have one

or more developmental, behavioral, or emotional issues, which were relatively higher than the percentage in 2007 with only 52.9% of children and adolescents (2 to 17 years old) receiving mental healthcare counseling or treatment when it was required [21]. In 2015, the MS Youth Risk Behavior Surveillance System (YRBSS) data showed that about 17.0% of high school students seriously considered attempting suicide in the twelve months before the survey; 15.1% of them made a plan to attempt suicide; 12.7% attempted suicide once or twice; and 5.7% attempted suicide that had to be treated by a doctor or nurse because of an injury, poisoning, or overdose [22]. These rates in 2015 were significantly higher than the US average rate of 2.8% [22]. Between 1993 and 2001, the trends in suicide rates were on a steady decline, however from 2003, suicide rates have steadily increased exceeding the US rates in 2007 [22]. According to healthy people 2030, the rates of suicide attempts is getting worse and the desired decrease of 1.8 per 100 population of students in grades 9 through 12 needs to be achieved [23]. The aim of this study is to examine the prevalence of sexual behaviors among Mississippi youths by age, grade, race/ethnicity, gender, and sexual orientation.

## II. METHODS

Data from the 2019 Mississippi High School Youth Risk Behavior Survey (YRBS) was used for the analyses. YRBS is a cross-sectional school-based survey from which data is collected from public and private school students in grades 9th to 12th grade in Mississippi, the United States. The data assessed the variations in the demographic subdivision, thus increasing the size of the sample and observing any change in prevalence. The sample size for 2019 is 1740. Demographic characteristics of the participants included race/ethnicity (White, Black, Hispanic, and Other), grade level (9th, 10th, 11th, and 12th), gender, age (15 or younger, 16 or 17, 18 or older).

Suicidal behavior was assessed by asking the following questions: [1] "During the past 12 months, did you ever seriously consider attempting suicide?", [2] "During the past 12 months, did you make a plan about how you would attempt suicide?", [3] "During the past 12 months, how many times did you actually attempt suicide?", [4] "If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?". The response options were dichotomized into categories: "yes" and "no." The estimated prevalence of suicidal behavior among participants was adjusted based on their age, race, gender, and grade reference data from the CDC growth chart. Differences in the groups were examined with univariate t-test statistical analysis at  $p$ -value < 0.05 and frequency distribution to determine the percentage differences.

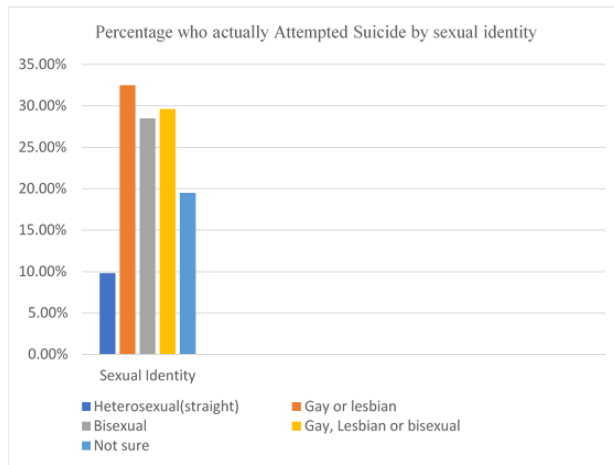
## III. RESULTS

According to the 2019 YRBSS, out of 1,740 self-reported participants, 23.2% of females reported having seriously considered attempting suicide, which was higher than males (14.1%) [Table 1]. Female participants who were 16 or 17 years old (23.5%) reported higher rates of seriously considering attempting suicide than those who were 15 years or younger (21.9%). Those in 9th grade (20.6%) reported higher rates when compared to participants in 10th (15.0%), 11th (20.2%), 12th (19.6%). According to race, whites reported higher rates of seriously considering attempting suicide than blacks (16.9%), and Hispanics (19.9%). Table 2 shows the percentages of students who made a plan about attempting suicide. Students who were 15 or younger (1.4%) reported higher rates of planning how they would attempt suicide when compared to other age groups with female youths (21.1%) having higher rates than the males (11.2%) in the same age group. Hispanics reported higher rates (19.3%) of making a plan on how to attempt suicide when compared to the other races. Black male youths (13.0%) also reported higher rates of attempting suicide when compared to their white counterparts (7.8%) (Table 3.). The percentages reported for students who attempted suicide was higher for black participants (14.8%) when compared to other races with black female youths (16.2%) having higher rates than the black male youths (13.0%).

Furthermore, table 4 shows the percentages of students with a suicide attempt that resulted in injury, poisoning, or overdose that had to be treated by a doctor or nurse. Male youths (4.0%) reported higher rates of attempted suicide that resulted in injury than female youths (3.4%) with those 16 or 17 years old (3.9%) having higher rates when compared to the other age groups. However, female youths who were 15 years or younger (3.0%) had higher rates of suicide attempts that resulted in an injury requiring treatment than male youths in the same age group (2.3%). According to race, blacks (4.6%) had higher rates of suicide attempts that resulted in injury when compared to other races. Black male youths (6.0%) reported higher rates than the black females (3.5%), while black female youths (3.5%) reported higher rates of suicide attempt that resulted in an injury, poisoning or overdose that had to be treated by a doctor or nurse, than the white females.

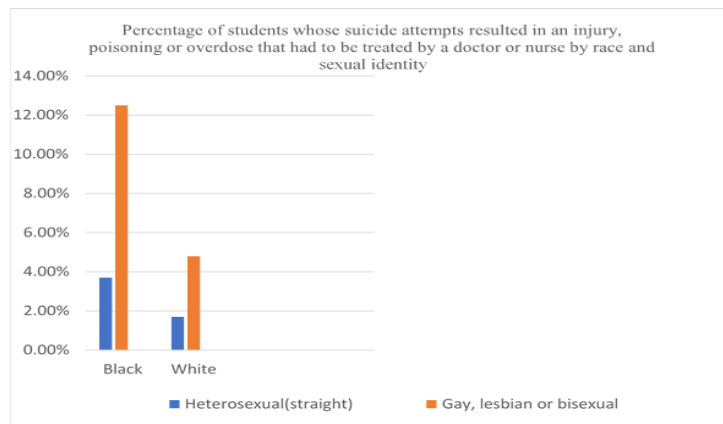
Figure 1 shows the percentage of students who actually attempted suicide by sexual identity. Youths who identified as either gay, lesbian, or bisexual (32.5%) had higher rates of actually attempting suicide when compared to youths who identified as heterosexual (straight) (9.8%). Black youths who identified as gay, lesbian, or bisexual (12.5%) reported higher suicide attempts that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse when compared to the white youths who identified as gay, lesbian, or bisexual (4.8%) [Figure 2.]. Black youths who were gay, lesbian, or bisexual (12.5%) had higher rates of suicide attempts that resulted in injury when compared to the heterosexual black youths (3.7%).

Figure1.



Source: Youth Risk Behavioral Surveillance System (YRBSS), 2019.

Figure2.



Source: Youth Risk Behavioral Surveillance System (YRBSS), 2019.

Table 1. Seriously Considered Attempting Suicide\*

	<b>Total</b>		<b>Male</b>		<b>Female</b>	
	Percentage (%)	Total (n)	percentage	Total (n)	Percentage	Total(n)
<b>Total</b>	18.8	1740	14.1	851	23.2	877
<b>Race</b>						
Black	16.9	685	11.5	318	21.6	365
White	20.0	719	15.2	369	25.3	347
Hispanic/Latino	19.9	142	N/A	75	N/A	65
<b>Grade</b>						
9 <sup>th</sup>	20.6	577	16.4	291	24.2	282
10 <sup>th</sup>	15.0	431	8.4	214	21.7	217
11 <sup>th</sup>	20.2	339	17.1	166	23.4	172
12 <sup>th</sup>	19.6	380	15.0	174	24.0	203
<b>Age</b>						
15 or younger	18.6	829	14.5	393	21.9	429
16 or 17	18.8	778	14.1	387	23.5	388
18 or older	20.3	130	N/A	70	N/A	59

Abbreviations: N/A: Not Available. Source: Youth Risk Behavioral Surveillance System (YRBSS), 2019.

\* during the 12 months before the survey

Table 2. Made A Plan About How They Would Attempt Suicide\*

	<b>Total</b>		<b>Male</b>		<b>Female</b>	
	Percentage (%)	Total (n)	percentage	Total (n)	Percentage	Total(n)
<b>Total</b>	15.6	1730	12.1	844	19.0	874
<b>Race</b>						
Black	14.9	681	10.7	315	18.3	364
White	15.4	720	12.2	371	19.1	346
Hispanic/Latino	19.3	140	N/A	74	N/A	63
<b>Grade</b>						
9 <sup>th</sup>	18.0	575	13.9	290	22.3	281
10 <sup>th</sup>	13.9	427	6.7	210	20.9	215
11 <sup>th</sup>	15.8	338	13.5	164	18.2	172
12 <sup>th</sup>	14.3	377	14.6	174	14.0	203
<b>Age</b>						
15 or younger	16.4	824	11.2	393	21.1	426
16 or 17	14.9	773	12.4	381	17.2	388
18 or older	15.8	130	N/A	69	N/A	59

Abbreviations: N/A: Not Available. Source: Youth Risk Behavioral Surveillance System (YRBSS), 2019.

\* during the 12 months before the survey

Table 3. Actually Attempted Suicide\*

	Total		Male		Female	
	Percentage (%)	Total (n)	percentage	Total (n)	Percentage	Total(n)
<b>Total</b>	12.7	1389	10.1	661	14.7	717
<b>Race</b>						
Black	14.8	500	13.0	220	16.2	280
White	10.0	112	7.8	59	12.4	305
Hispanic/Latino	13.3	622	N/A	N/A	N/A	49
<b>Grade</b>						
9 <sup>th</sup>	13.8	459	10.9	221	16.5	235
10 <sup>th</sup>	10.9	330	6.5	157	14.8	171
11 <sup>th</sup>	11.8	275	11.5	130	12.3	143
12 <sup>th</sup>	14.2	317	12.5	149	15.1	166
<b>Age</b>						
15 or younger	12.4	662	8.4	308	15.6	347
16 or 17	12.0	626	10.5	294	13.3	331
18 or older	N/A	99	N/A	58	N/A	39

Abbreviations: N/A: Not Available. Source: Youth Risk Behavioral Surveillance System (YRBSS), 2019.

\*during the 12 months before the survey

Table 4. Suicide Attempt Resulted In An Injury, Poisoning, Or Overdose That Had To Be Treated By A Doctor Or Nurse \*

	Total		Male		Female	
	Percentage (%)	Total (n)	percentage	Total (n)	Percentage	Total(n)
<b>Total</b>	3.8	1377	4.0	653	3.4	715
<b>Race</b>						
Black	4.6	493	6.0	215	3.5	278
White	2.7	623	2.4	314	3.0	307
Hispanic/Latino	4.3	111	N/A	60	N/A	N/A
<b>Grade</b>						
9 <sup>th</sup>	3.3	458	3.4	220	3.1	235
10 <sup>th</sup>	2.6	328	2.0	155	2.9	171
11 <sup>th</sup>	4.0	274	6.3	129	2.0	143
12 <sup>th</sup>	5.3	309	4.5	145	6.1	164
<b>Age</b>						
15 or younger	2.8	656	2.3	304	3.0	347
16 or 17	3.9	620	4.9	290	2.9	329
18 or older	N/A	99	N/A	58	N/A	39

Abbreviations: N/A: Not Available. Source: Youth Risk Behavioral Surveillance System (YRBSS), 2019.

\* during the 12 months before the survey

#### IV. DISCUSSION

In this 2019 YRBS survey, some notable findings emerged about suicidal behaviors among the youths. Comparing

Mississippi statistics with national data, the survey shows that Mississippi had similar rates of youths who seriously considered attempting suicide (18.8% to 18%) and making plans of attempting suicide (15.6% to 15.7%), while having higher rates of

attempted suicide (12.7% to 8.9%), and suicide attempted resulting in injury (3.8% to 2.5%) [18]. A previous study found that females have higher rates than males in seriously considering attempting suicide, making plans of attempting suicide, actually attempting suicide, and making suicide attempts requiring treatment [24]. However, in this study, females had higher rates of seriously considering attempting suicide (23.2% to 14.1%) and making plans about suicide (19% to 12.1%), attempted suicide (14.7% to 10.1%); while the males have a slightly higher rate of attempted suicide resulting in injury (4% to 3.4%). Another noticeable pattern in this study shows that, unlike a previous study that found the risk of making a suicide plan increased among males with an increase in grades [18], this study found that among males, the 9th grade had the 2nd highest rate after the 12th grade and among females, the 11th grade had the highest rate. Also notable is the observation that Hispanic/Latinos had higher rates (19.3%) of making a plan on how to attempt suicide than white (15.4%) and blacks (14.9%).

Though there is no available data for youths 18 years and above, the rates for youths actually attempting suicide seemed to increase with age with 15 years and younger having a rate of 2.8% and 16 to 17 years with a rate of 3.9%. This finding is in agreement with the previous study that also found that rates of actually attempted suicide increased with age among the youths [24]. Black males (6.0%) and black females (3.5%) had higher rates of attempted suicide resulting in injury requiring treatment than the white males (2.4%) and white females (3.0%) while data for Hispanics/ Latino are not available. In line with a previous study [19], this study found that black male students had the lowest rates of suicide ideation across all races and gender. Considering actually attempted suicide, black males (13.0%) and females (16.2%) had higher rates than their white counterparts (males 7.8% and females 12.4%), while there is no available data for Hispanic/Latino. A previous study also found higher rates with the blacks [18][19].

While the white males and females had higher rates of seriously considering attempting suicide and making plans about attempting suicide, their black counterparts had higher rates of actually attempting suicide and suicide attempts resulting in injuries requiring treatment. This demographic pattern should be considered in designing interventions on suicidal behaviors among the youth.

In accord with previous studies, this study found that the sexual orientation and sex of the participants played a significant role in their suicidal behaviors [18] [24]. Those who identified as lesbian, gay, or bisexual had significantly higher rates of seriously considering attempting suicide, making plans about attempting suicide, actually attempting suicide, and suicide attempts resulting in injuries requiring treatment than those who identify as heterosexual (straight). The findings of this study on sexual identity and suicidal behavior have been attributed to social rejection and complex psychological issues [25][26]. The high prevalence of suicidal ideation and increased risk for suicide makes further research imperative.

## V. CONCLUSION

Adolescents are at a stage of rapid but complex changes that involve the development of personality and sexual identity

and that can be very stressful. This critical development period is usually the stage of the onset of suicidal behavior. Also, young Black males have an increased risk of actually committing suicide. Interventions intended to prevent or disrupt the progression of suicidal ideation to suicidal action should target this stage and demographics. Since this age group loves electronic gadgets and spends so much time on social media, mobile technologies and social media influencers can play a major role in the intervention programs.

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