

Suicide among Youth aged 10-24 Years in Oklahoma: Data from the Oklahoma Violent Death Reporting System and the Oklahoma Youth Risk Behavior Survey

October 2017

INTRODUCTION

As the second leading cause of death among youth ages 10-24 years in the United States and Oklahoma, suicide is a serious public health problem.^{1,2} In the past 10 years, data have shown that Oklahoma and the U.S. have experienced increasing suicide rates among this age group. Every week, on average, two Oklahomans between the ages of 10-24 die by suicide. For the United States, suicide is the third leading cause of death among 10-14 year olds, and the 2nd leading cause of death among 15-24 year olds.³ From 2011-2015, Oklahoma ranked 10th highest (worst) in the nation for youth suicide rates.

Suicidal behavior is complex and there is typically no one single cause as to why someone commits suicide.^{4,5} Suicide often occurs when someone who suffers from a mental health condition is unable to cope with life's stressors or who has diminished ability to cope. Untreated conditions, like substance abuse and unmet mental health needs, are factors that contribute to an increased risk for suicide. The purpose of this study is to assess suicide rates over time and differences in suicide rates of youth by demographic characteristics, methods/means, and contributing factors.

METHODOLOGY

Oklahoma Violent Death Reporting System (OKVDRS)

Data were obtained from the National Violent Death Reporting System (NVDRS), a population-based active surveillance system that collects

data on violent deaths from 40 participating states and two territories. Each state uses the same case definitions and coding manual and enters data in NVDRS web-based software. The Oklahoma Violent Death Reporting System (OKVDRS) began collecting data in 2004. Violent deaths include suicides, homicides, and legal interventions; deaths of undetermined manner (intent); and unintentional firearm injuries are also included. Data in the OKVDRS are collected from medical examiner reports, Vital Statistics (death certificates), and law enforcement reports for all violent deaths that occur in the state; toxicology testing and results are extracted from medical examiner reports. A trained abstractor assigns the manner of death based on the narratives and the manner of death recorded in the medical examiner's report, the death certificate, or law enforcement report. A suicide case in the NVDRS is defined as "a death resulting from the intentional use of force against oneself. A preponderance of evidence should indicate the use of force was intentional."

Youth Risk Behavior Survey (YRBS)

The statewide, randomized YRBS is conducted biennially in odd-numbered years. The survey covers six categories of health-risk behaviors, the prevalence of obesity, and other health-related topics. Samples were selected using a two-stage sampling design. Schools were first selected for participation based on probability proportional to enrollment size. Then classes

were selected from each school using systematic equal probability sampling with a random start. The sample was weighted to be representative of public high school students in grades 9 through 12 in Oklahoma. Five questions relating to suicide risk were analyzed from the Youth Risk Behavior Survey (YRBS). All five questions referred to the time period of the 12 months before the survey.

RESULTS

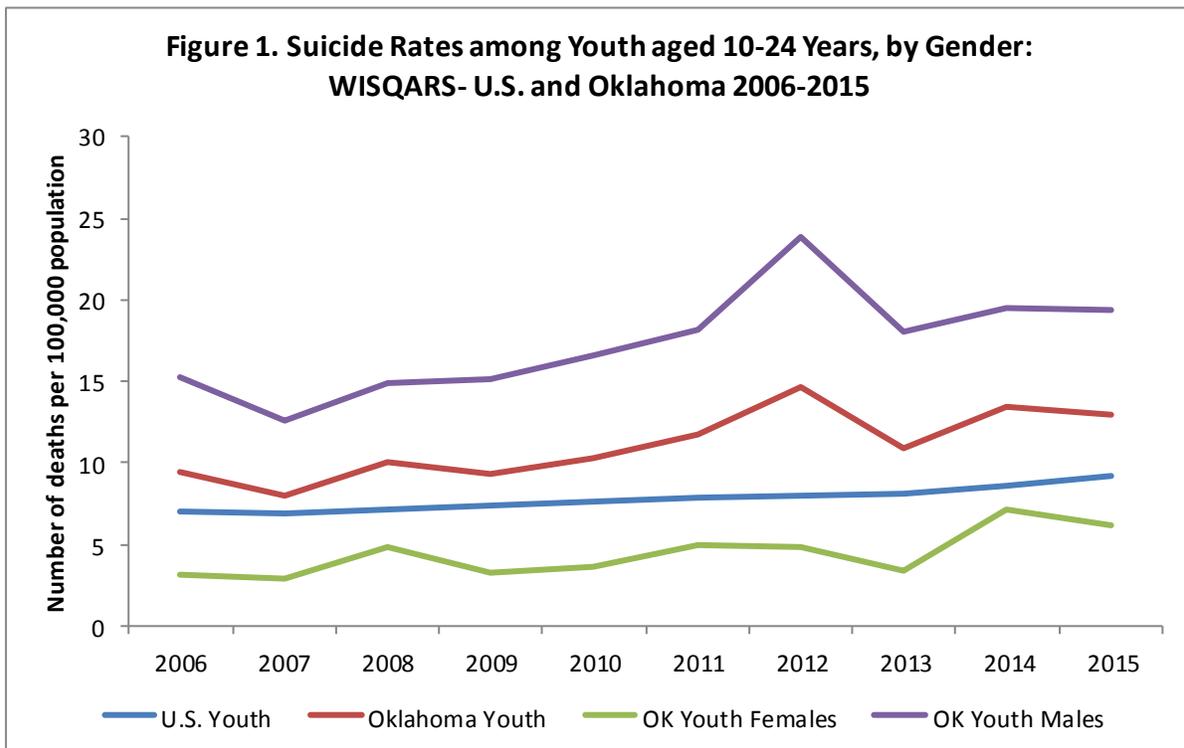
Data from the Web-Based Injury Statistics and Reporting System (WISQARS) show that suicide rates among 10-24 year olds in Oklahoma and the U.S. have been trending upward over the past 10 years (Figure 1).¹ The Oklahoma youth suicide rate increased 41% since 2006, compared to a 33% increase in the youth suicide rate nationally for the same time period. The Oklahoma youth male suicide rate increased 23% since 2006, and the youth female suicide rate increased 79% in the same time frame. The

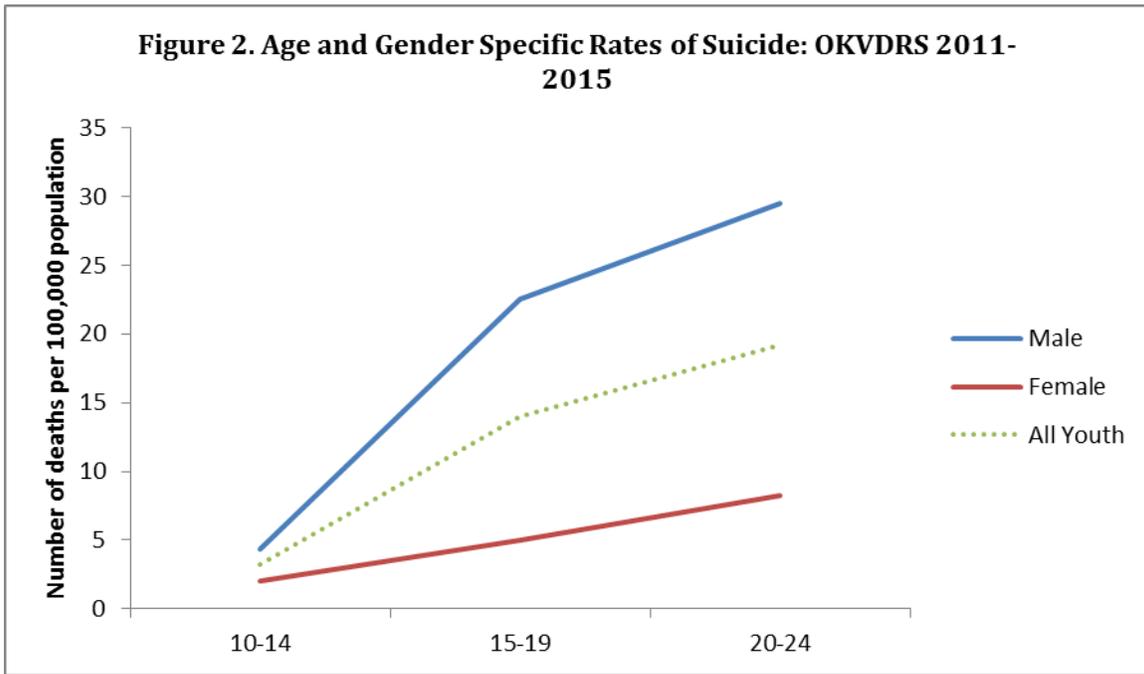
Oklahoma youth male suicide rate was nearly three times that of the rate of suicide for 10-24 year old Oklahoma females. From 2011 to 2015, there were 497 suicides among Oklahoma youth ages 10-24. This is an average of 99 deaths per year at a rate of 12.3 deaths per 100,000 persons ages 10-24. Among this age group, the average age at the time of the suicide death was 19.6 years, and 80% of suicides were completed by males.

Oklahoma Violent Death Reporting System (OKVDRS)

The suicide rate among male and female youth increased with age (Figure 2). The rate of male suicide among youth increased nearly seven fold as they aged. Females aged 20-24 had a rate four times that of the rate for 10-14 year olds.

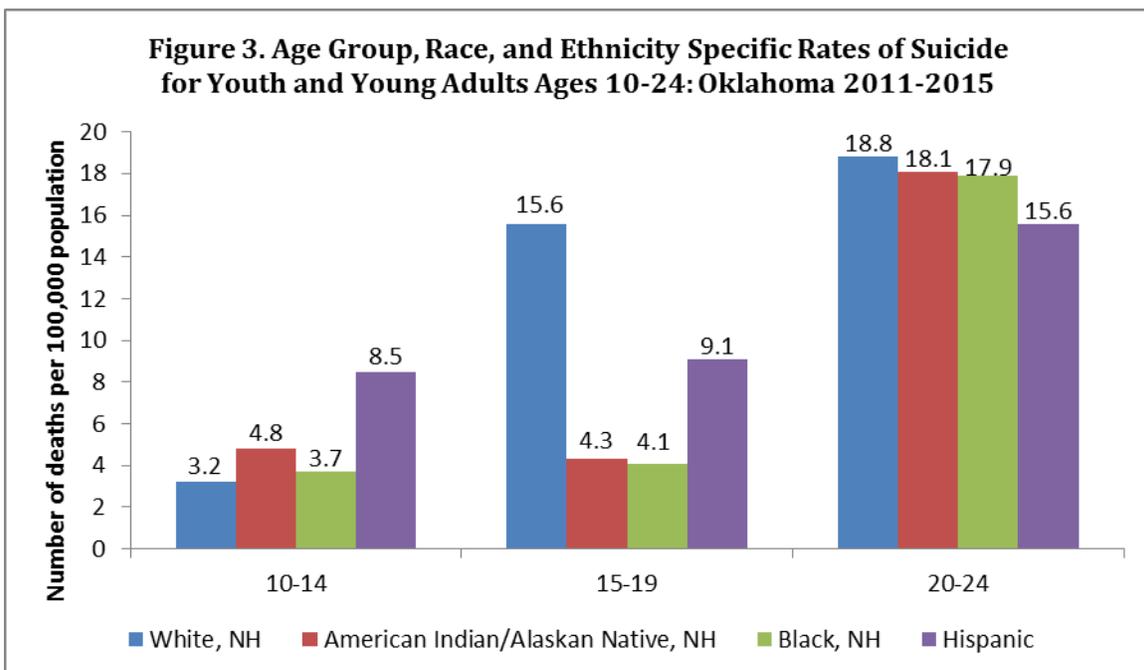
Hispanic youth had the highest rate of suicide among the 10-14 age group, followed by American Indian/Alaskan Native, non-Hispanic





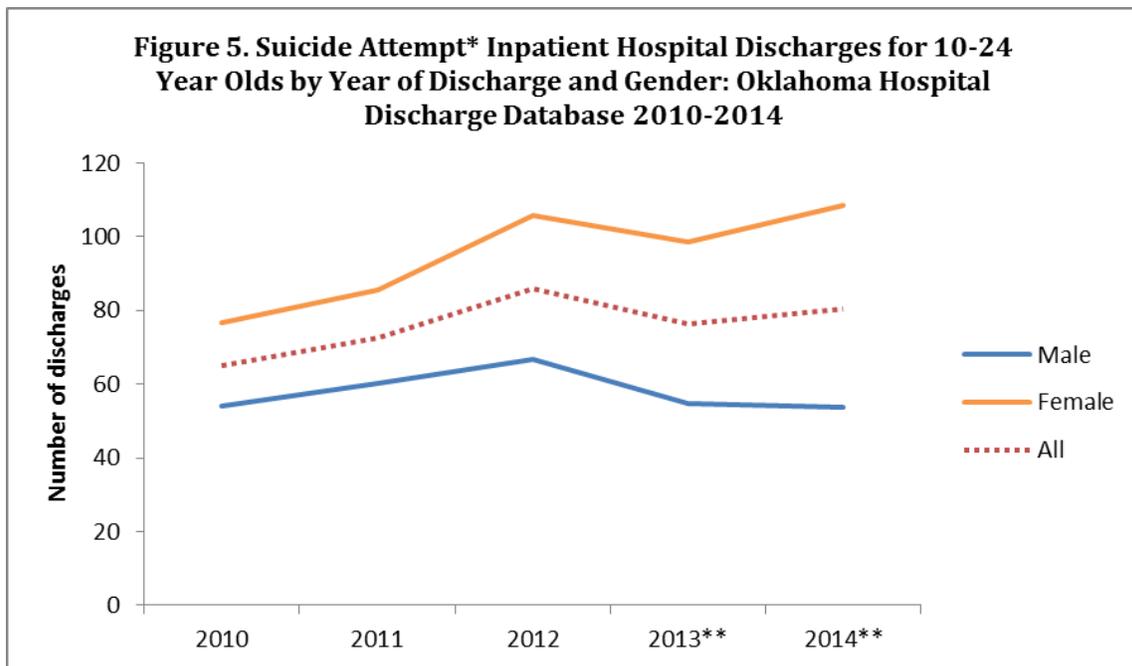
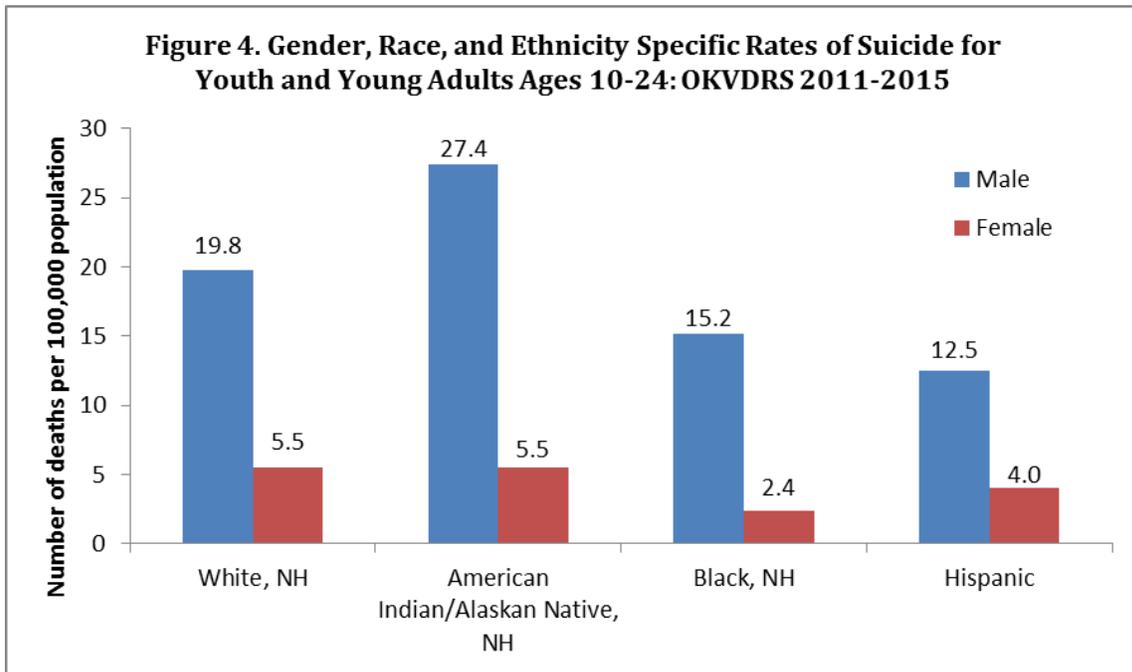
youth (Figure 3). White, non-Hispanic youth had the highest suicide rates for 15-24 year olds. Hispanic youth had the second highest rate among 15-19 year olds and American Indian/Alaskan Native, non-Hispanic youths had the second highest rate of suicide among 20-24 year olds. Males consistently had higher rates of suicide than females among all race and ethnic groups. American Indian/Alaskan Native, non-Hispanic

males aged 10-24 had the highest suicide rate among all gender, race, and ethnic groups, with a rate 39% higher than white males, who had the second highest rate among all groups (Figure 4). White, non-Hispanics and American Indian/Alaskan Native, non-Hispanics had the highest rate among females. Black, non-Hispanic females experienced the lowest suicide rate among all gender, race, and ethnic groups.



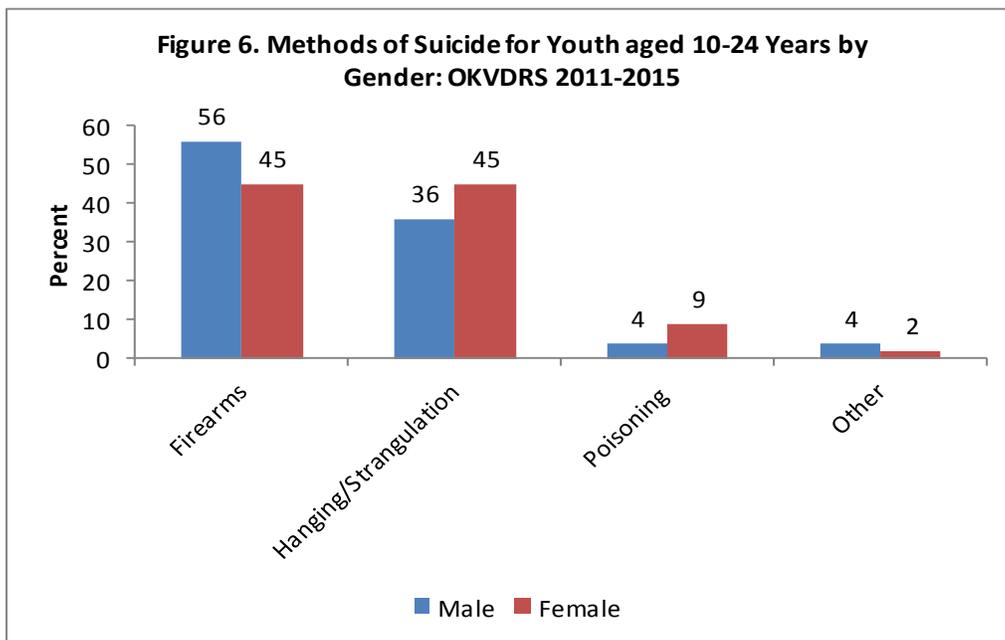
Females had more hospital admissions due to attempted suicide than males (Figure 5). The number of female suicide attempt discharges steadily increased over that of male discharges from 41% higher in 2010 to over twice the number of male discharges in 2014.

Firearms were utilized by over half of the youth (53%) who died by suicide; the majority used a handgun (Figure 6). Nearly two out of five (38%) suicides were from hanging/strangulation/suffocation. Other methods include blunt instruments, sharp instruments, falls, fire/burns, motor vehicle, and other



*First-listed valid external cause of injury code is E950-E959

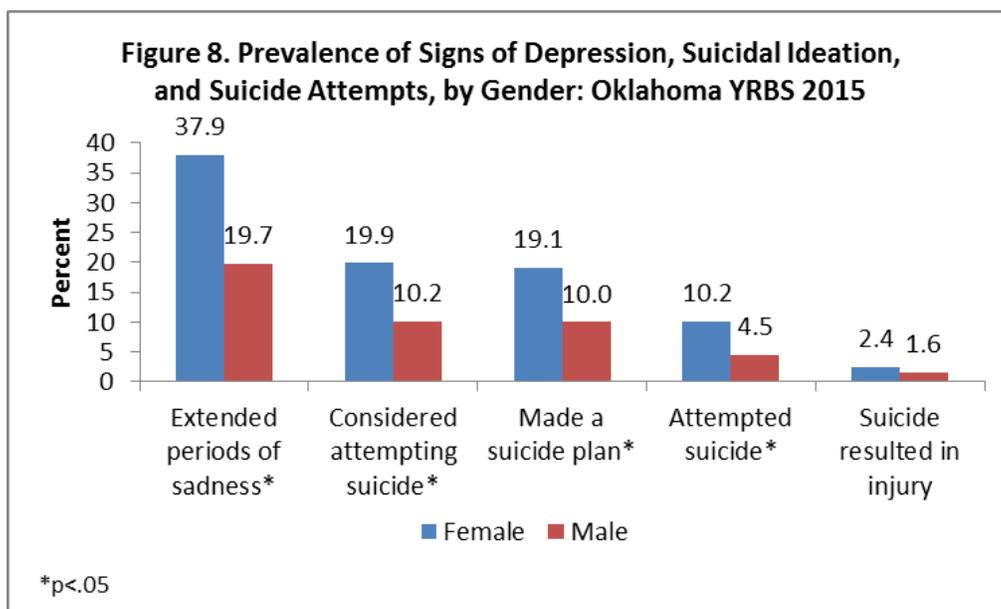
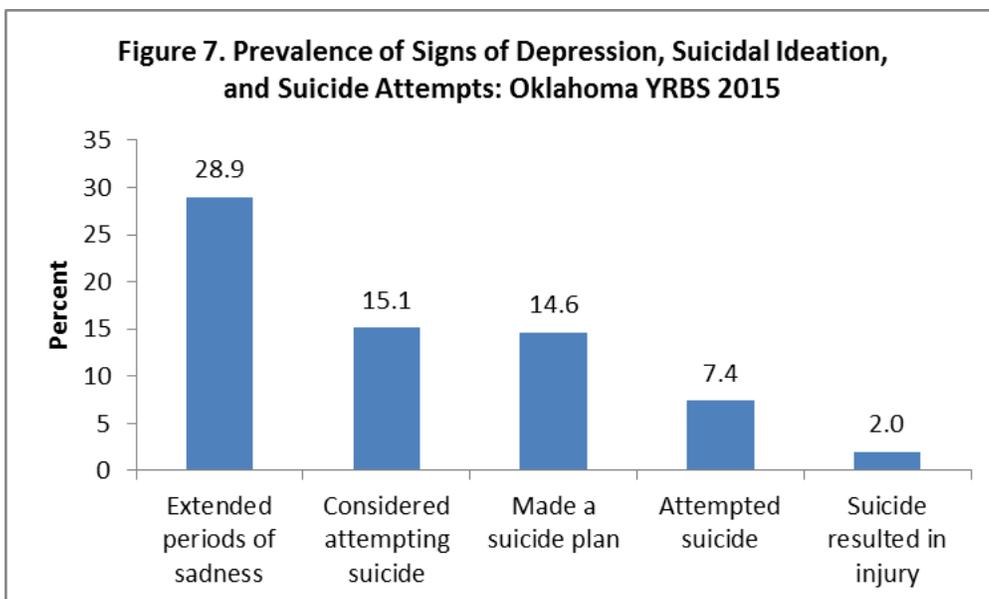
**Due to reporting issues for external cause of injury codes, the number of discharges may be underestimated for 2013 and 2014.



transport vehicles. Differences were observed by gender as males aged 10-24 predominantly used firearms as a means of suicide followed by hanging/strangulation/suffocation, whereas females aged 10-24 used firearms and hanging/strangulation equally.

Intimate partner problems were the leading circumstance associated with suicide for youth aged 10-24, followed by one or more diagnosed/treated mental health issues and depressed mood (data not shown). Depressed mood in these data represented a general mood or attitude noted in the record by friends and family upon interview after the death. Of those identified as having a mental health problem, 69% had depression, followed by bipolar disorder (10%), schizophrenia (8%), Attention Deficit/Hyperactivity Disorder (6%), anxiety disorder (5%), and post-traumatic stress disorder (3%).

Oklahoma Youth Risk Behavior Survey (YRBS) Data from the Oklahoma 2015 YRBS showed that more than one-fourth (28.9%) of public high school students reported feeling so sad or hopeless almost every day for two or more weeks in a row that they stopped doing usual activities (Figure 7). More than one in seven students (15.1%) seriously considered attempting suicide, 14.6% made a plan about how they would attempt suicide, 7.4% attempted suicide, and 2.0% had a suicide attempt that resulted in an injury, poisoning, or overdose that had to be treated by a doctor or nurse. Females were more likely than males to report extended periods of sadness or hopelessness (37.9% vs. 19.7%), to have considered attempting suicide (19.9% vs. 10.2%), to have made a suicide plan (19.1% vs. 10.0%), and to have attempted suicide (10.2% vs. 4.5%) (Figure 8).



DISCUSSION

These data show that suicide among youth aged 10-24 in Oklahoma is an ever pressing public health concern and is trending upward over time. Males aged 10-24 had a significantly higher suicide rate than females; however, females had higher rates of attempted suicide than males. Data from the YRBS showed that more than one-fourth of public high school students reported feeling so sad or hopeless almost every day for two or more weeks in a row that they stopped

doing usual activities. However, 37.9% of females reported these feelings compared to 19.7% of males. YRBS data also showed that females were more likely than males to have considered attempting suicide, made a plan about attempting suicide, and attempted suicide. While this study shows that females had more suicide attempts that resulted in hospitalization than males, females had a lower suicide rate overall. Current mental health problems and intimate partner problems were the two leading

circumstances associated with youth suicide in Oklahoma. Of those identified as having a mental health problem, 69% had depression, while the next closest condition was bipolar disorder at 10%. According to the Centers for Disease Control and Prevention (CDC), there is no single reason an individual considers, attempts, or completes suicide. Although risk factors are associated with suicide rather than the direct cause of suicide, it is important to know the risk factors and warning signs of suicide.⁶ Similarly, parents and professionals should know there are protective factors or ways in which to prevent youth suicide.⁷ If you suspect someone you know is suicidal, there are resources that can help you assist them (see resource list at the end of the paper).

OKVDRS Limitations

The findings of this study are limited to suicide deaths that occurred in Oklahoma of Oklahoma residents aged 10-24 years, and are not generalizable to the population as a whole. The data are abstracted from documents prepared by various officials. A wide range of variation exists in the amount of detail and information documented in the records provided to OKVDRS, likely introducing information bias. The study provides annual incidence, race-, ethnicity-, gender-, and age-specific rates, mechanism of injury, and prevalence of circumstances and other factors documented in the records and coded using NVDRS guidelines. Rates based on small numbers may be unstable. No external comparison group was used for the analysis; only internal group comparisons were conducted. Figure 5 includes inpatient hospital discharges from all non-federal, acute care hospitals licensed by the state. The number of discharges is not

necessarily unique patients. Patients could be hospitalized more than once for the same injury or transferred between hospitals. Federal hospitals, such as the Indian Health Service, tribal hospitals, and military hospitals, are not required to report inpatient hospital discharge data; therefore, discharges due to attempted suicide may be underestimated for populations that use these facilities.

YRBS Limitations

Adolescents who attended private institutions, were home-schooled, or did not attend any school were not represented in this study. There is potential underreporting of risk behaviors by students participating in the YRBS. Despite efforts to conduct the YRBS in such a manner as to preserve confidentiality, some students may not report events if they feel their answers will in some way identify them. Furthermore, students read and interpret the questions and form their answers without any external assistance; therefore, students may have different interpretations of the YRBS questions and response options. Statistically significant differences were not observed by grade or race/ethnicity for the depression and suicide questions; however, this is likely due to sample size.

REFERENCES

1. National Vital Statistics System, National Center for Health Statistics, CDC. Produced by: National Center for Injury Prevention and Control, CDC using WISQARS™.
2. Oklahoma State Department of Health (OSDH), Center for Health Statistics, Health Care Information, Vital Statistics 2015, on Oklahoma Statistics on Health Available for Everyone (OK2SHARE). Accessed at <http://www.health.ok.gov/ok2share> on 17Jul2017:10:31:38.
3. Centers for Disease Control and Prevention (CDC). Suicide: Facts at a Glance. <https://www.cdc.gov/violenceprevention/pdf/suicide-datasheet-a.pdf>
4. Epstein JA, Spirito A. Risk factors for suicidality among a nationally representative sample of high school students. *Suicide and Life-Threatening Behavior*. 2009;39(3):241-51.
5. Karch D, Logan J, McDaniel D, et al. Precipitating Circumstances of Suicide Among Youth Aged 10-17 Years by Sex. *J of Adolescent Health*. 2013; (53): S51–S53.
6. National Institute of Mental Health <https://www.nimh.nih.gov/health/topics/suicide-prevention/index.shtml>
7. Centers for Disease Control and Prevention (CDC). Suicide: Risk and Protective Factors. <https://www.cdc.gov/violenceprevention/suicide/riskprotectivefactors.html>

RESOURCES

1. Suicide Prevention Lifeline <https://suicidepreventionlifeline.org/> 1-800-273-TALK (8255)
2. Reachout Hotline 1-800-522-9054
3. Oklahoma Department of Mental Health And Substance Abuse Services [https://www.ok.gov/odmhas/Prevention /Prevention Initiatives/Suicide Prevention and Early Intervention Initiative/index.html](https://www.ok.gov/odmhas/Prevention/Prevention%20Initiatives/Suicide%20Prevention%20and%20Early%20Intervention%20Initiative/index.html) (405) 248-9274
4. Oklahoma State Department of Health (OSDH) [https://www.ok.gov/health/Protective Health/Injury Prevention Service/Oklahoma Violent Death Reporting System/index.html](https://www.ok.gov/health/Protective_Health/Injury_Prevention_Service/Oklahoma_Violent_Death_Reporting_System/index.html)
5. NAMI Oklahoma <https://namioklahoma.org/crisis-info/>
6. Heartline <http://www.heartlineoklahoma.org/>
7. Mental Health Association of Oklahoma <http://mhaok.org/>

The Oklahoma Violent Death Reporting System is supported by Grant Number 5 U17 CE002618-04 from the CDC. The content is solely the responsibility of the authors and does not necessarily represent the official views of the CDC. For more information about the Oklahoma Violent Death Reporting System please call the Injury Prevention Service at 405.271.3430.

This publication was supported by the Cooperative Agreement Number, **NU87PS004145**, funded by the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention or the Department of Health and Human Services. For more information about the Youth Risk Behavior Survey please call the Maternal and Child Health Service, MCH Assessment at 405.271.6761 or visit <http://yrbs.health.ok.gov>.

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