



Risk Factors for Suicide Attempt among Rural Appalachian Middle School Adolescents

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Presenter Disclosures

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The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No Relationships to Disclose

Acknowledgement

- **Jennifer Burns**
- **John McCall**
Carroll County Family and Children First Council, Carrollton, OH
- **Susie Frew, RN, BSN**
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- **Robert Mehno, MS**
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Background

- Suicide is the third leading cause of death among adolescents in the United States.*
- In 2008:*

 - 215 cases of suicide among 10-14 year olds
 - 4,298 cases of suicide among 15-24 year olds

*CDC: <http://www.cdc.gov/injury/wisqars/pdf/10LCD-Age-Grp-US-2008-a.pdf>. Accessed October 27, 2011.

Background (continued)

- Risk factors for high-school aged adolescent suicide include:*

 - body mass index and perceived weight
 - sexual activity
 - dating violence
 - perceived low academic performance
 - sexual orientation
 - family history of suicide
 - psychopathology
 - stressful life events
 - substance abuse
 - access to firearms

*Reviewed in: Cash SJ, Bridge JA. Epidemiology of Youth Suicide and Suicidal Behavior. *Curr Opin Pediatr* 2009;21(5):613-619.

Background (continued)

- Epidemiology of Adolescent suicide exhibits a gender paradox*

 - Boys have a suicide completion rate 6-times higher than girls; girls have twice the rate of suicide attempts than boys

- Role of experiencing bullying (on the internet/ social media or in school) as a contributing factor for adolescent suicide has been of increasing interest due to several recent cases of teen suicide nationally.

*Eaton DK, Kann L, Kinchen S, et al. Youth risk behavior surveillance—United States, 2007. *MMWR Surveill Summ* 2008;57(4):1-131.

Rationale & Objective

- Most studies of adolescent suicide tendencies (ideation, planning and/or attempt) have focused on high-school aged adolescents.
- Studies examining the risk factors for suicide attempts, including experiencing bullying, among middle school adolescents, particularly in rural areas, are limited.
- The purpose of the study is to examine the risk factors, including being bullied in school, for suicide attempts among middle school adolescents in a rural Appalachian County in Ohio.

Methods

- **Study Design:** A Cross-Sectional Study
- **Study Setting:** A rural Appalachian county in East Central Ohio
- **Study Population:** Middle school (6th - 8th grade) students in the county in 2009



Methods (continued)

- **Survey Instrument:** The 2009 National Middle School Youth Risk Behavior Survey (YRBS)-- a confidential, voluntary, and self-administered instrument
- The 2009 Middle School YRBS included 50 questions on:
 - Demographics; Behaviors that contribute to unintentional injuries and violence; Tobacco use; Alcohol and other drug use; Sexual risk behaviors; Unhealthy dietary behaviors; Physical inactivity.

Methods (continued)

- **Primary Outcome of Interest:** Suicide Attempt (binary)
 - Have you ever **tried** to kill yourself?
- **Putative Risk Factors:** Age; Sex; Race/Ethnicity; Self-perception of weight; sexual activity; experiencing bullying in school; smoking; alcohol use; marijuana use; cocaine use; glue sniffing; steroid use

Methods (continued)

- **Data Analyses**
 - Descriptive
 - Logistic regression analyses to assess the relationship between suicide attempt and putative risk factors
 - In the stepwise multivariable logistic regression models entry criteria of $p=0.5$ and $p=0.15$ for variable remaining in the model were used
 - All analyses performed using SAS 9.1.3® (Cary, NC).

Results

Survey Response Rate

- Of the 1,032 middle school students (6th - 8th grades) in the county in 2009, 47.5% (n=490) completed the survey
- Included 2 out of 3 public school districts in the county

Results (continued)

Table 1 Demographics, High-risk Behaviors, Bullying Experience in School and Suicidal Tendencies among Rural Appalachian Middle School Adolescents, 2009 (N= 490)

	n	%	
<i>Age (years)</i>	≤ 12	142	30.0
	13	186	39.2
	≥ 14	146	30.8
<i>Sex</i>	Female	236	48.2
	Male	254	51.8
<i>Race/Ethnicity</i>	American Indian or Alaska Native	24	5.3
	Asian/Native Hawaiian or Other Pacific Islanders	8	1.8
	Black or African American	7	1.5
	Hispanic or Latino	23	5.0
	White	395	86.4

Results (continued)

Table 1 (continued) (N= 490)

	n	%	
<i>Self-perception of weight</i>	Very underweight	30	6.4
	Slightly underweight/About the right weight	317	67.6
	Slightly overweight/Very overweight	122	26.0
<i>Ever had sexual intercourse</i>	Yes	82	17.5
	No	387	82.5
<i>Ever tried cigarette smoking</i>	Yes	139	29.5
	No	332	70.5
<i>Ever had a drink of alcohol</i>	Yes	183	39.0
	No	286	61.0

Results (continued)

Table 1 (continued) (N= 490)

	n	%	
<i>Ever used marijuana</i>	Yes	41	8.7
	No	431	91.3
<i>Ever used any form of cocaine, including powder, crack, or freebase</i>	Yes	7	3.6
	No	455	96.4
<i>Ever sniffed glue, or breathed the contents of spray cans, or inhaled any paints or sprays to get high</i>	Yes	50	10.6
	No	423	90.4
<i>Ever used steroid pills or shots without a doctor's prescription</i>	Yes	13	2.8
	No	458	97.2

Results (continued)

Table 1 (continued) (N= 490)

	n	%	
<i>Ever been bullied on school property</i>	Yes	229	47.0
	No	258	53.0
<i>Ever seriously thought about killing yourself</i>	Yes	109	22.3
	No	379	77.7
<i>Ever made a plan about how you would kill yourself</i>	Yes	66	13.6
	No	419	86.4
<i>Ever tried to kill yourself</i>	Yes	40	8.3
	No	443	91.7

Results (continued)

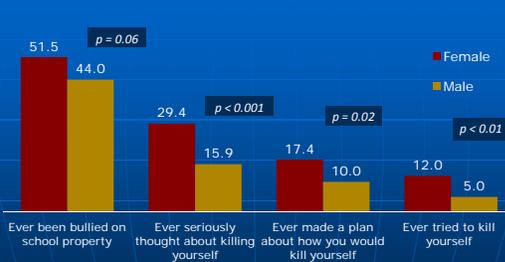


FIGURE 1 Proportion of Middle School Rural Appalachian Adolescents Reporting Experiencing Bullying in School and Suicidal Tendencies by Sex, 2009

Results (continued)

Table 2 Univariable Analyses of Association between Suicide Attempt and Putative Risk Factors among Rural Appalachian Middle School Adolescents, 2009

	<i>Suicide Attempt</i>		<i>Crude OR (95% C.I.)^a</i>
	<i>Yes</i>	<i>No</i>	
<i>Age (years)</i>	≥14	132	1.9 (0.76 - 4.6)
	13	177	1.6 (0.68 - 3.9)
	≤12	8	Referent
<i>Sex</i>	Female	27	2.8 (1.4 - 5.9)
	Male	11	Referent
<i>Self-perception of weight</i>	Very underweight	4	2.7 (0.84 - 8.5)
	Slightly overweight/Very overweight	16	2.6 (1.3 - 5.3)
	Slightly underweight/About the right weight	18	Referent

^aOR = Odds Ratio; C.I. = Confidence Interval

Results (continued)

Table 2 (continued)

	Suicide Attempt		Crude OR (95% C.I.)*
	Yes	No	
Ever had sex	Yes	18	5.5 (2.8 - 11.1)
	No	19	
Ever tried cigarette smoking	Yes	22	3.7 (1.9 - 7.3)
	No	16	
Ever had a drink of alcohol	Yes	20	1.8 (0.93 - 3.5)
	No	18	
Ever used marijuana	Yes	9	3.8 (1.7 - 8.8)
	No	29	

*OR = Odd Ratio; C.I. = Confidence Interval

Results (continued)

Table 2 (continued)

	Suicide Attempt		Crude OR (95% C.I.)*
	Yes	No	
Ever used any form of cocaine	Yes	4	3.9 (1.2 - 12.7)
	No	34	
Ever sniffed glue/breathed the contents of spray cans/inhaled any paints or sprays to get high	Yes	14	6.4 (3.1 - 13.5)
	No	24	
Ever used steroid pills or shots without a doctor's prescription	Yes	4	5.7 (1.7 - 19.5)
	No	34	
Ever been bullied on school property	Yes	30	3.8 (1.8 - 7.9)
	No	194	

*OR = Odd Ratio; C.I. = Confidence Interval

Results (continued)

Table 3 Multivariable Logistic Regression Analysis of Suicide Attempt and Putative Risk Factors among Rural Appalachian Middle School Adolescents, 2009

	Adjusted OR (95% C.I.)*
Female	3.4 (1.5 - 7.8)
Slightly overweight/Very overweight	2.1 (0.9 - 4.6)
Ever had sex	4.2 (1.9 - 9.2)
Ever sniffed glue, or breathed the contents of spray cans, or inhaled any paints or sprays to get high	5.0 (2.1 - 11.9)
Ever used steroid pills or shots without a doctor's prescription	3.2 (0.8 - 12.7)
Ever been bullied on school property	3.4 (1.5 - 8.0)

*OR = Odd Ratio; C.I. = Confidence Interval

Discussion

- Several previously identified risk factors for suicide attempts among adolescents were also observed in this rural Appalachian middle school adolescents population.
 - Female
 - Being sexually active
 - Substance abuse
 - Self-perception of being over-weight
- Additionally, ever have been bullied in school was found to be significantly associated with suicide attempt in this study (OR = 3.4)

Limitations

- A cross-sectional study
 - Temporality
- Sample from a small (~30,000 pop.) rural county
 - Although findings are consistent with previous studies including gender paradox
- Fairly homogenous population (86% white)
 - Racial distribution was similar to the overall Ohio population distribution by race.

Strengths

- A fairly large sample size (n=490) and included almost half of the county middle school adolescent population
- One of the few studies of suicide attempt among middle school rural adolescents
- One of the first of examine the association of bullying with suicide attempt in this population
- Provided local level data for public health program and action

Conclusions

- Results of this study should be replicated in other populations, especially the role of bullying as a risk factor for suicide tendencies among middle school adolescents.
- Elucidating the risk factors for adolescent suicide attempt have important public health implications for identifying at-risk individuals as early as middle school for targeted suicide prevention programs.

Public Health in Action



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