



Risk Behaviors and Experiences Among Youth Experiencing Homelessness—Youth Risk Behavior Survey, 23 U.S. States and 11 Local School Districts, 2019

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Abstract

Youth experiencing homelessness experience violence victimization, substance use, suicide risk, and sexual risk disproportionately, compared with their stably housed peers. Yet few large-scale assessments of these differences among high school students exist. The youth risk behavior survey (YRBS) is conducted biennially among local, state, and nationally representative samples of U.S. high school students in grades 9–12. In 2019, 23 states and 11 local school districts included a measure for housing status on their YRBS questionnaire. The prevalence of homelessness was assessed among states and local sites, and relationships between housing status and violence victimization, substance use, suicide risk, and sexual risk behaviors were evaluated using logistic regression. Compared with stably housed students, students experiencing homelessness were twice as likely to report misuse of prescription pain medicine, three times as likely to be threatened or injured with a weapon at school, and three times as likely to report attempting suicide. These findings indicate a need for intervention efforts to increase support, resources, and services for homeless youth.

Keywords Adolescent health · Youth experiencing homelessness · Youth risk behavior · School-based surveillance

Background

According to the National Center for Homeless Education, more than 1.38 million youth in the United States were identified as homeless (i.e., lacking a fixed, regular, and adequate nighttime residence) during the 2018–2019 school year. Of those, 76.7% were “doubled up”, living with other families; 12.0% were living in homeless shelters, transitional housing, or awaiting foster care; 7.1% were living in hotels or motels; and 4.0% were considered “unsheltered”, sleeping in cars, parks, campgrounds, temporary trailers, or abandoned

buildings, for example [1]. Youth experiencing homelessness in the United States face elevated risks for poor physical, mental, and sexual health outcomes, and experience barriers to care, compared to youth who are stably housed [2]. Homelessness is often associated with behaviors that increase youths’ risk for risky sexual behavior, including survival sex, alcohol and substance use, victimization and violence, and mental distress [2–6]. Yet few large-scale assessments of these differences among high school students exist.

Compared to their stably housed peers, youth experiencing homelessness report increased sexual risk behaviors [6]. They experience earlier sexual initiation, are more likely to have more than one partner and use substances during sex and are less likely to use condoms during sex [7, 8]. Youth experiencing homelessness are 6–12 times more likely to contract HIV, compared to stably housed youth, and also have higher prevalence of other sexually transmitted infections [8]. Rates of alcohol and other substance use among youth experiencing homelessness far exceed rates among stably housed youth [7, 9, 10], with 6.0–70.0% of youth experiencing homelessness reporting misuse of alcohol and use of other substances [9–11]. Alcohol and other substance

Disclaimer The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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use are 2–3 times more prevalent among youth experiencing homelessness, compared to their stably housed peers [12].

Youth experiencing homelessness are more likely than stably housed youth to report victimization and other forms of violence [13, 14]. Compared to stably housed youth, youth experiencing homelessness are more likely to have been a victim of sexual, physical, or emotional violence, including physical and sexual abuse preceding loss of stable housing [13, 15–17]. They also report higher rates of poor mental health, compared to their stably housed peers. Prevalence of depressive symptoms is significantly higher among youth experiencing homelessness [2], with these youth also facing increased odds of some chronic mental health conditions [18].

This study contributes to the evidence base regarding the extent to which youth experiencing homelessness report substance use, sexual risk behaviors, violence victimization, and poor mental health. This analysis reports prevalence estimates from the 2019 youth risk behavior survey (YRBS) for several health-related risk behaviors and experiences among U.S. youth experiencing homelessness. Variations in these behaviors and experiences by housing status were examined to guide public health professionals in implementing quality health education and health services that prevent STDs/HIV, unintended pregnancy, alcohol and other substance use, and support emotional and mental health.

The youth risk behavior surveillance system (YRBSS) is a system of surveys developed by the Centers for Disease Control and Prevention (CDC) to monitor health-related behaviors and experiences that contribute to the leading causes of morbidity, mortality, and social problems among youth and adults. These surveys are conducted biennially in odd-numbered years among representative samples of high school students. While the YRBSS provides a standard questionnaire for each survey cycle, state and local agencies conducting the YRBS in their jurisdiction can modify this questionnaire to address their needs. In 2005, Boston and Massachusetts added a question to their questionnaires assessing housing status. Other state and local agencies added similar questions to their questionnaires in subsequent cycles, and by 2015, 11 states and four local school districts asked such questions. For the 2017 YRBS cycle, CDC worked with external experts in youth housing instability to create a standard, single-item measure to assess the prevalence of homelessness among high school students. This question was added to the YRBSS optional question list for the 2017 and 2019 cycles, resulting in a large increase in the number of states and districts asking the question. In 2019, 23 states and 11 local school districts included this question and obtained representative data. This study combines data from these jurisdictions to gain a more complete understanding of the prevalence of homelessness

and associated risk behaviors and experiences among high school students.

Methods

In 2019, 23 states (Arkansas, California, Connecticut, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Mexico, New York (excluding New York City), North Carolina, North Dakota, Pennsylvania, Rhode Island, South Carolina, South Dakota, and Virginia) and 11 local school districts (Albuquerque, NM, Boston, MA, Cleveland, OH, District of Columbia, Eaton consortium, MI, Gaston County, NC, Genesee consortium, MI, Palm Beach County, FL, Philadelphia, PA, Seattle, WA, and Spartanburg County consortium, SC) included the measure for housing status and obtained representative data. The data for this study were combined from the 23 states (104,772 students) and 11 local school districts (22,996 students) that asked this question. Data were weighted to be representative of public-school students attending grades 9–12 in each jurisdiction. Survey procedures protected students' privacy, participation was anonymous and voluntary, and local procedures were followed to review and approve the YRBS and obtain parental consent.

Measures/Variables

To assess prevalence of homelessness, respondents were categorized based on responses to the question “During the past 30 days, where did you usually sleep?”: (A) In my parent's or guardian's home; (B) In the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing; (C) In a shelter or emergency housing; (D) In a motel or hotel; (E) In a car, park, campground, or other public place; (F) I do not have a usual place to sleep; (G) Somewhere else. Responses were categorized into the following two groups: (1) Stably housed students (response options A and G); and (2) Students experiencing homelessness (response options B–F). (The response option “G) Somewhere else” is included in the definition of “stably housed” as it provides students another option to the question in the event that they do not fully understand the question or response options, do not fall into any of the response option categories, or are in a situation that does not fit squarely within the definition of experiencing homelessness (e.g., parents are recently deceased or incarcerated, and student slept at their grandparent's house) (Box).

Box Homelessness question—youth risk behavior surveys, 23 U.S. states* and 11 local urban school districts, †2019

During the past 30 days, where did you usually sleep?

- A In my parent's or guardian's home
- B In the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing[§]
- C In a shelter or emergency housing[§]
- D In a motel or hotel[§]
- E In a car, park, campground, or other public place[§]
- F I do not have a usual place to sleep[§]
- G Somewhere else

*Arkansas, California, Connecticut, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Mexico, New York (excluding New York City), North Carolina, North Dakota, Pennsylvania, Rhode Island, South Carolina, South Dakota, and Virginia

†Albuquerque, New Mexico; Boston, Massachusetts; Cleveland, Ohio; District of Columbia; Eaton Consortium, Michigan; Gaston County, North Carolina; Genesee Consortium, Michigan; Palm Beach, Florida; Philadelphia, Pennsylvania; Seattle, Washington; and Spartanburg County, South Carolina

§Student response categorized as experiencing homelessness

In addition to the housing question, respondents also were asked about several types of risk behaviors. Current substance use was assessed with separate questions about alcohol, marijuana, cigarettes, and electronic vapor products; other questions used include lifetime misuse of prescription pain medicine and lifetime injection drug use. Sexual risk behaviors were assessed by students' responses to the following items: (1) had sexual intercourse during their life; (2) had sexual intercourse with four or more persons during their life; (3) had sexual intercourse during the past 3 months (currently sexually active); (4) did not use a condom during last sexual intercourse; (5) used effective hormonal birth control during last sexual intercourse; and (6) used a condom and effective hormonal birth control during last sexual intercourse. Violence victimization was assessed by students' responses to the following items: during the past 12 months (1) were threatened or injured with a weapon at school; (2) were electronically bullied; (3) were bullied at school; (4) experienced physical dating violence; (5) experienced sexual dating violence. Students also were asked whether they skipped school because of safety concerns during the past 30 days; and whether they were ever forced to have sexual intercourse. Poor mental health and suicide risk was assessed by responses to questions about whether, during the past 12 months, the student felt sad or hopeless, considered attempting suicide, made a suicide plan, attempted suicide, or were injured in a suicide attempt.

Statistical Analyses

To examine the prevalence of homelessness, weighted prevalence estimates with 95% confidence intervals (CIs) were calculated using Taylor series linearization in SUDAAN version 11.0.3. Differences in the distribution of homelessness by demographic characteristics and sexual identity were tested using Chi-square tests. Because homelessness varied by demographic characteristics, all associations were adjusted for sex, race/ethnicity, grade, and site. Predicted marginals from logistic regression models were used to calculate adjusted prevalence ratios (aPRs) with 95% CIs that measured the association between behavioral outcomes and housing status with stably housed students serving as the referent group. The Wald F-test was used to determine the statistical significance of associations. Statistical tests were considered significant if 2-sided $P < 0.05$.

Results

Among 23 States

Across the 23 states, 93.6% of students responded "In my parent's or guardian's home"; 3.0% responded "In the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing"; 1.0% responded "In a shelter or emergency housing"; 0.6% responded "In a motel or hotel"; 0.9% responded "In a car, park, campground, or other public place"; 0.4% responded "I do not have a usual place to sleep"; and 0.5% responded "somewhere else" (Table 1). Compared to stably housed students, students experiencing homelessness were more likely to be male, Hispanic, or non-Hispanic Black, and identify as gay, lesbian, or bisexual (Table 2).

After adjustment for sex, race/ethnicity, grade, and site, students experiencing homelessness in the 23 states were 4.89 times more likely than stably housed students to currently smoke (95% CI 4.26–5.61) and 2.06 times more likely to currently use an electronic vapor product (95% CI 1.83–2.31). After adjustment, students experiencing homelessness were 2.44 times more likely than stably housed students to report lifetime misuse of prescription pain medicine (95% CI 1.95–3.04) and 8.48 times more likely to report lifetime injection drug use (95% CI 4.52–15.91). Students experiencing homelessness were more likely than stably housed students to have ever had sex (aPR 1.43, 95% CI 1.27–1.63) and were more likely to report having sexual intercourse with four or more persons in their life (aPR 2.08; 95% CI 1.65–2.64) (Table 3).

The reported prevalence of all experiences assessing violence victimization was higher among students experiencing homelessness than among stably housed students in the 23

Table 1 Weighted percentage of homelessness item responses—23 U.S. states and 11 local school districts, youth risk behavior survey, 2019

Student response to “During the past 30 days, where did you usually sleep?”	Site			
	Selected state data ^a		Selected school district data ^b	
	No	% (range)	No	% (range)
In my parent’s or guardian’s home	99,503	93.6 (85.8–97.3)	21,285	92.7 (89.4–97.2)
In the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing	2323	3.0 (1.2–7.7)	787	3.6 (1.2–5.8)
In a shelter or emergency housing	772	1.0 (0.2–2.7)	338	1.4 (0.2–2.3)
In a motel or hotel	485	0.6 (0.1–2.0)	201	0.8 (0.5–1.3)
In a car, park, campground, or other public place	492	0.9 (0.1–2.2)	114	0.5 (0.1–0.7)
I do not have a usual place to sleep	435	0.4 (0.2–1.2)	90	0.4 (0.2–0.7)
Somewhere else	762	0.5 (0.1–2.1)	181	0.7 (0.4–1.9)

^aArkansas, California, Connecticut, Hawaii, Idaho, Illinois, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Mexico, New York (excluding New York City), North Carolina, North Dakota, Pennsylvania, Rhode Island, South Carolina, South Dakota, and Virginia

^bAlbuquerque, New Mexico; Boston, Massachusetts; Cleveland, Ohio; District of Columbia; Eaton Consortium, Michigan; Gaston County, North Carolina; Genesee Consortium, Michigan; Palm Beach, Florida; Philadelphia, Pennsylvania; Seattle, Washington; and Spartanburg County, South Carolina

Table 2 Demographic characteristics of students and their associations with homelessness—23 state youth risk behavior surveys, 2019

Characteristics	All % ^c	Homelessness Status ^{a,b} % (95% CI)		Chi-square p value
		Homeless (n = 4507) % (CI)	Stably housed (n = 100,265) % (CI)	
Total (N = 104,772) ^d	100	5.9 (4.9, 7.1)	94.1 (92.9, 95.1)	
Sex				< 0.0001
Female	48.9	36.3 (31.2, 41.9)	50.3 (49.3, 51.3)	
Male	51.1	63.7 (58.1, 68.9)	49.7 (48.7, 50.8)	
Race/ethnicity				< 0.0001
White, non-Hispanic	50.1	35.3 (28.6, 42.6)	51.5 (49.1, 53.9)	
Black, non-Hispanic	13.4	19.8 (15.8, 24.6)	12.5 (11.4, 13.6)	
Hispanic	25.0	36.0 (25.7, 47.8)	24.1 (21.3, 27.1)	
Grade				0.0025
9th	26.5	22.3 (18.7, 26.3)	26.6 (23.5, 30.0)	
10th	25.5	27.9 (20.3, 37.1)	25.3 (22.9, 27.8)	
11th	24.2	22.7 (17.9, 28.5)	24.4 (21.9, 27.1)	
12th	23.8	27.1 (20.3, 35.2)	23.8 (21.2, 26.5)	
Sexual identity ^e				< 0.0001
Heterosexual (straight)	83.3	68.6 (63.8, 73.1)	84.2 (83.5, 84.8)	
Gay, lesbian, bisexual	11.9	20.5 (17.5, 23.9)	11.5 (11.0, 12.0)	
Not sure	4.7	10.9 (7.8, 15.0)	4.4 (3.9, 4.9)	

CI confidence interval

^aHomelessness status was determined using the question: “During the past 30 days, where did you usually sleep?”

^bChi-square tests were used for each variable to examine differences within categories. Bold text indicates a significant difference in homelessness status across levels of the demographic characteristics. Differences were considered significant if the chi-square p value was < 0.05

^cWeighted percentages; because of rounding, percentages may not add up to 100%

^dUnweighted sample size

^eSexual identity not ascertained in Idaho, Kansas, Louisiana, Montana, or South Dakota

Table 3 Unadjusted prevalence (%) and adjusted prevalence ratios (aPRs) for selected risk behaviors by homelessness status among high school students in 23 states—youth risk behavior survey, 2019

Risk behavior	Bivariate analysis ^a		Multivariable logistic regression ^b	
	Homelessness status		aPR (95% CI) (ref: stably housed)	
	Homeless % (95% CI)	Stably housed % (95% CI)	aPR (95% CI)	Model details N/# states
Alcohol and other substances				
Current alcohol use ^c	39.3 (32.8, 46.2)	24.4 (23.3, 25.4)	1.55 (1.33, 1.81)	94,621/23
Current marijuana use ^d	31.9 (24.4, 40.4)	18.4 (17.1, 19.7)	1.67 (1.33, 2.10)	97,909/23
Current cigarette smoking ^c	26.8 (24.2, 29.6)	4.9 (4.6, 5.4)	4.89 (4.26, 5.61)	97,486/22
Current use of an electronic vapor product ^{c,e}	45.6 (40.6, 50.7)	21.9 (20.9, 22.9)	2.06 (1.83, 2.31)	92,362/23
Misuse of prescription pain medicine ^{f,g}	33.2 (26.7, 40.5)	12.7 (11.7, 13.9)	2.44 (1.95, 3.04)	80,648/20
Injection drug use ^f	26.6 (21.4, 32.6)	2.2 (1.3, 3.6)	8.48 (4.52, 15.91)	74,999/17
Sexual risk				
Ever had sex	59.7 (53.0, 66.0)	33.7 (32.2, 35.2)	1.67 (1.49, 1.88)	77,605/20
Had 4+ lifetime partners	28.0 (22.7, 34.1)	6.8 (6.2, 7.6)	3.36 (2.77, 4.08)	84,064/19
Were currently sexually active ^h	48.2 (42.1, 54.4)	24.0 (22.9, 25.2)	1.86 (1.63, 2.13)	88,123/22
Did not use a condom during last sexual intercourse	62.4 (54.3, 69.9)	44.9 (42.6, 47.1)	1.41 (1.27, 1.58)	21,543/22
Used effective hormonal birth control during last sexual intercourse	35.8 (28.9, 43.4)	34.7 (32.9, 36.5)	1.20 (0.99, 1.46)	21,106/21
Used a condom and effective hormonal birth control during last sexual intercourse	11.2 (6.2, 19.3)	12.1 (10.9, 13.4)	1.06 (0.60, 1.86)	20,894/21
Violence victimization				
Were threatened or injured with a weapon at school ⁱ	32.7 (26.6, 39.4)	7.3 (5.9, 9.0)	3.57 (2.85, 4.46)	84,836/19
Did not go to school because of safety concerns ^c	26.6 (21.2, 32.7)	8.7 (8.0, 9.3)	2.67 (2.10, 3.39)	98,256/22
Were electronically bullied ^{i,j}	26.6 (23.4, 29.9)	14.9 (14.4, 15.5)	1.94 (1.72, 2.21)	99,815/23
Were bullied at school ⁱ	38.7 (31.5, 46.4)	19.9 (18.4, 21.6)	1.90 (1.70, 2.13)	99,391/23
Were forced to have sex ^f	21.1 (17.3, 25.4)	8.1 (7.6, 8.6)	2.64 (2.22, 3.14)	57,998/20
Experienced physical dating violence ^{i,k}	23.0 (18.4, 28.4)	6.2 (5.7, 6.8)	3.50 (2.91, 4.21)	57,877/22
Experienced sexual dating violence ^{i,l}	22.5 (19.3, 26.1)	6.8 (6.3, 7.3)	3.10 (2.53, 3.80)	29,187/18
Mental health and suicide				
Experienced persistent feelings of sadness or hopelessness ⁱ	50.6 (43.3, 57.8)	36.9 (35.7, 38.1)	1.41 (1.28, 1.56)	99,467/23
Seriously considered attempting suicide ⁱ	41.5 (30.5, 53.3)	19.1 (17.3, 20.9)	2.12 (1.88, 2.39)	99,216/23
Made a suicide plan ⁱ	38.3 (27.1, 50.8)	15.8 (14.1, 17.6)	2.32 (1.99, 2.70)	97,505/22
Attempted suicide ⁱ	28.6 (24.8, 32.6)	7.9 (7.4, 8.5)	3.12 (2.63, 3.71)	54,971/22
Were injured in a suicide attempt ⁱ	15.3 (12.2, 18.9)	2.5 (2.2, 2.8)	4.76 (3.61, 6.29)	49,604/19

Bold text indicates a statistically significant correlation with a p-value < 0.05

^aWeighted prevalence

^baPR adjusted prevalence ratio; models adjusted for sex, race/ethnicity, grade, and site

^cOn at least one day during the 30 days before the survey

^dOne or more times during the 30 days before the survey

^eIncluding e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens (such as blu, NJOY, Vuse, MarkTen, Logic, Vapin Plus, eGo, and Halo)

^fOne or more times during the respondent's lifetime

^gIncluding codeine, vicodin, oxycontin, hydrocodone, and percocet

^hDuring the 3 months before the survey

ⁱDuring the 12 months before the survey

^jIncluding through texting, Instagram, Facebook, or other social media

^kBeing physically hurt on purpose by someone they were dating or going out with (counting such things as being hit, slammed into something, or injured with an object or weapon) among students who dated or went out with someone during the 12 months before the survey

^lBeing forced by someone they were dating or going out with to do sexual things [counting such things as kissing, touching, or being physically forced to have sexual intercourse] that they did not want to, one or more times during the 12 months before the survey, among students who dated or went out with someone during the 12 months before the survey

states, including 32.7% reporting being threatened or injured with a weapon at school (aPR 3.57, 95% CI 2.85–4.46) and 23.0% having experienced either physical or sexual dating violence (aPR 3.50, 95% CI 2.91–4.21). Students experiencing homelessness were more likely than stably housed students to have attempted suicide (aPR 3.12, 95% CI 2.63–3.71) and more likely to have been injured in a suicide attempt (aPR 4.76, 95% CI 3.61–6.29) (Table 3).

Among 11 Local School Districts

Across the 11 local school districts, 92.7% of students responded “In my parent's or guardian's home”; 3.6% responded “In the home of a friend, family member, or other person because I had to leave my home or my parent or guardian cannot afford housing”; 1.4% responded “In a shelter or emergency housing”; 0.8% responded “In a motel or hotel”; 0.5% responded “In a car, park, campground, or other public place”; 0.4% responded “I do not have a usual place to sleep”; and 0.7% responded “somewhere else” (Table 1). Compared to stably housed students, students experiencing

homelessness in the 11 local school districts were more likely to be male, non-Hispanic Black, and identify as gay, lesbian, or bisexual (Table 4).

Similar to adjusted results in the 23 states, the reported prevalence of behaviors related to alcohol and other substance use in the 11 school districts was higher among students experiencing homelessness than stably housed students. Students experiencing homelessness were more likely than stably housed students to currently smoke (aPR 5.79, 95% CI 4.72–7.12) and currently use an electronic vapor product (aPR 2.20, 95% CI 1.92–2.51). Students experiencing homelessness were more likely than stably housed students to report misuse of prescription pain medicine (aPR 2.80, 95% CI 2.43–3.21) and injection drug use (aPR 14.94, 95% CI 11.09–20.12). Students experiencing homelessness were more likely than stably housed students to report sexual intercourse with four or more persons in their life (aPR 2.08, 95% CI 1.65–2.64) (Table 5).

Students experiencing homelessness in the 11 school districts were more likely than stably housed students to have reported being threatened or injured with a weapon at

Table 4 Demographic characteristics of students and their associations with homelessness—11 local school districts—youth risk behavior survey, 2019

Characteristics	All % ^c	Homelessness status ^{a,b} % (95% CI)		Chi-square p value
		Homeless (n = 1530) % (CI)	Stably housed (n = 21,466) % (CI)	
Total (N = 22,996) ^d	100	6.6 (5.9, 7.4)	93.4 (92.6, 94.1)	
Sex				<0.0001
Female	49.5	37.4 (33.1, 42.0)	51.6 (50.1, 53.1)	
Male	50.5	62.6 (58.1, 66.9)	48.4 (46.9, 49.9)	
Race/ethnicity				<0.0001
White, non-Hispanic	27.9	16.9 (13.9, 20.4)	29.9 (28.6, 31.2)	
Black, non-Hispanic	33.8	43.4 (39.1, 47.8)	31.5 (29.8, 33.2)	
Hispanic	27.9	31.0 (26.9, 35.4)	27.8 (26.3, 29.3)	
Grade				0.4715
9th	28.1	26.1 (21.6, 31.2)	27.5 (24.6, 30.6)	
10th	25.7	25.2 (21.0, 30.0)	25.6 (23.0, 28.4)	
11th	23.6	22.5 (18.8, 26.7)	24.0 (21.3, 26.9)	
12th	22.7	26.2 (21.9, 31.0)	23.0 (20.1, 26.1)	
Sexual identity ^e				<0.0001
Heterosexual (straight)	80.5	65.1 (61.2, 68.8)	81.3 (80.3, 82.3)	
Gay, lesbian, bisexual	14.4	24.9 (21.8, 28.3)	14.0 (13.1, 14.8)	
Not sure	5.1	10.0 (7.6, 13.1)	4.7 (4.3, 5.2)	

CI confidence interval

^aHomelessness status was determined using the question: “During the past 30 days, where did you usually sleep?”

^bChi-square tests were used for each variable to examine differences within categories. Differences were considered significant if the chi-square p value was <0.05

^cWeighted percentages; because of rounding, percentages may not add up to 100%

^dUnweighted sample size

^eSexual identity not ascertained in Spartanburg County, SC

Table 5 Unadjusted prevalence (%) and adjusted prevalence ratios (aPRs) for selected risk behaviors by homelessness status among high school students in 11 local school districts—youth risk behavior survey, 2019

Risk behavior	Bivariate analysis ^a		Multivariable logistic regression ^b	
	Homelessness status		aPR (95% CI) (ref: stably housed)	
	Homeless	Stably housed	aPR (95% CI)	Model details N/# cities
	% (95% CI)	% (95% CI)		
Alcohol and other substances				
Current alcohol use ^c	41.9 (36.8, 47.3)	23.1 (22.0, 24.3)	1.84 (1.60, 2.11)	20,503/11
Current marijuana use ^d	40.2 (35.4, 45.1)	21.9 (21.0, 22.9)	1.78 (1.55, 2.03)	21,569/11
Current cigarette smoking ^c	20.5 (17.1, 24.2)	3.2 (2.9, 3.6)	5.79 (4.72, 7.12)	21,437/11
Current use of an electronic vapor product ^{c,e}	37.0 (32.8, 41.3)	17.0 (16.2, 17.9)	2.20 (1.92, 2.51)	20,450/11
Misuse of prescription pain medicine ^{f,g}	39.8 (35.4, 44.3)	13.1 (12.5, 13.8)	2.80 (2.43, 3.21)	21,844/11
Injection drug use ^f	27.9 (22.9, 33.5)	1.7 (1.4, 2.1)	14.94 (11.09, 20.12)	9032/6
Sexual risk				
Ever had sex	55.1 (48.5, 61.6)	36.4 (34.9, 37.9)	1.43 (1.27, 1.63)	16,371/10
Had 4+ lifetime partners	19.5 (15.5, 24.3)	8.5 (7.8, 9.3)	2.08 (1.65, 2.64)	19,101/11
Were currently sexually active ^h	45.2 (39.5, 51.1)	24.7 (23.5, 25.9)	1.71 (1.50, 1.95)	19,100/11
Did not use a condom during last sexual intercourse	54.8 (45.7, 63.5)	46.7 (44.2, 49.1)	1.20 (1.01, 1.42)	4562/10
Used effective hormonal birth control during last sexual intercourse	28.2 (21.3, 36.4)	28.8 (26.9, 30.8)	1.11 (0.84, 1.47)	4776/11
Used a condom and effective hormonal birth control during last sexual intercourse	6.2 (3.7, 10.3)	8.0 (7.0, 9.3)	0.91 (0.54, 1.53)	4489/10
Violence victimization				
Were threatened or injured with a weapon at school ⁱ	28.4 (23.9, 33.5)	6.9 (6.3, 7.5)	3.46 (2.86, 4.19)	18,936/10
Did not go to school because of safety concerns ^c	30.7 (27.0, 34.7)	10.1 (9.5, 10.8)	2.67 (2.26, 3.17)	21,822/11
Were electronically bullied ^{i,j}	23.1 (19.7, 27.0)	12.3 (11.6, 13.0)	1.95 (1.62, 2.34)	21,693/11
Were bullied at school ⁱ	22.3 (19.2, 25.7)	15.2 (14.4, 16.0)	1.47 (1.24, 1.73)	21,636/11
Were forced to have sex ^f	20.2 (17.3, 23.6)	8.7 (8.1, 9.4)	2.24 (1.84, 2.72)	20,708/10
Experienced physical dating violence ^{i,k}	26.3 (22.0, 31.0)	7.7 (7.1, 8.4)	3.40 (2.77, 4.17)	13,158/11
Experienced sexual dating violence ^{i,l}	19.3 (15.2, 24.2)	6.2 (5.6, 6.9)	3.28 (2.60, 4.15)	11,020/10
Mental health and suicide				
Experienced persistent feelings of sadness or hopelessness ⁱ	44.4 (40.3, 48.5)	35.9 (34.9, 37.0)	1.31 (1.19, 1.44)	21,686/11
Seriously considered attempting suicide ⁱ	27.7 (23.7, 32.0)	18.2 (17.3, 19.1)	1.67 (1.41, 1.98)	20,692/10
Made a suicide plan ⁱ	25.4 (22.1, 29.0)	14.8 (14.0, 15.6)	1.67 (1.40, 1.98)	21,668/11
Attempted suicide ⁱ	35.2 (30.1, 40.7)	9.6 (9.0, 10.4)	3.14 (2.55, 3.86)	17,925/10
Were injured in a suicide attempt ⁱ	16.2 (12.6, 20.7)	2.7 (2.4, 3.1)	5.10 (3.59, 7.26)	16,731/9

Bold text indicates a statistically significant correlation with a p-value < 0.05

^aWeighted prevalence

^baPR adjusted prevalence ratio; models adjusted for sex, race/ethnicity, grade, and site

^cOn at least one day during the 30 days before the survey

^dOne or more times during the 30 days before the survey

^eIncluding e-cigarettes, e-cigars, e-pipes, vape pipes, vaping pens, e-hookahs, and hookah pens (such as blu, NJOY, Vuse, MarkTen, Logic, Vapin Plus, eGo, and Halo)

^fOne or more times during the respondent's lifetime

^gIncluding codeine, vicodin, oxycontin, hydrocodone, and percocet

^hDuring the 3 months before the survey

ⁱDuring the 12 months before the survey

^jIncluding through texting, Instagram, Facebook, or other social media

^kBeing physically hurt on purpose by someone they were dating or going out with (counting such things as being hit, slammed into something, or injured with an object or weapon) among students who dated or went out with someone during the 12 months before the survey

^lBeing forced by someone they were dating or going out with to do sexual things [counting such things as kissing, touching, or being physically forced to have sexual intercourse] that they did not want to, one or more times during the 12 months before the survey, among students who dated or went out with someone during the 12 months before the survey

school (aPR 3.46, 95% CI 2.86–4.19), not attending school because of safety concerns (aPR 2.67, 95% CI 2.26–3.17), experiencing physical dating violence (aPR 3.40, 95% CI 2.77–4.17), and experiencing sexual dating violence (aPR 3.28, 95% CI 2.60–4.15). Students experiencing homelessness in local school districts were also more likely than stably housed students to have attempted suicide (aPR 3.14, 95% CI 2.55–3.86) and more likely to have been injured in a suicide attempt (aPR 5.10, 95% CI 3.59–7.26) (Table 5).

Discussion

This study provides robust evidence that youth experiencing homelessness are a vulnerable population. Compared to stably housed youth, they are more likely to use alcohol and other substances, more likely to engage in sexual risk behaviors, and more likely to experience violence. These results are consistent with what previous studies have shown [2–6].

Between 10–27% of youth experiencing homelessness have traded sex to survive and meet their needs while on the streets, usually for money (82%), a place to stay (48%), or substances (22%) [8]. Alcohol and misuse of prescription pain medication among youth experiencing homelessness is associated with use of other substances, condomless sex, and suicidality, putting these youth at increased risk for a number of adverse physical and mental health consequences, including overdose and HIV/STI acquisition [9, 12, 19]. These youth face the risk of victimization each time they lose stable housing [20]. Similarly, these youth also face a higher risk of suicidality than their stably housed peers [2, 18, 21–23].

Being transient, youth experiencing homelessness are difficult to access, leading to health differences between them and stably housed youth. To prevent these differences, adolescent health practitioners, policy makers, and other stakeholders must (1) prevent homelessness and (2) provide care for youth experiencing homelessness through both health care and school-based services. While ending homelessness will aid in reducing those risks, a more practical strategy involves school-based interventions.

Through the McKinney–Vento homeless assistance act (MVA), schools support the rights of youth experiencing homelessness through the appointment of a homeless educational liaison, providing proper access and representation. With assistance from MVA-appointed educational liaisons, youth experiencing homelessness are better equipped to adequately address school enrollment obstacles (e.g., guardianship or proof of previous enrollment), as state and local educational agencies must develop and revise policies to remove barriers to identify, enroll, and retain students experiencing homelessness, including barriers due to fees, fines, and absences. Under the MVA,

schools ensure basic needs and community resources for families and students experiencing homelessness. This means making sure that youth experiencing homelessness are enrolled in free and reduced-price lunch programs; are appropriately tested for ESL, special education, or gifted and talented programs; have access to vocational studies; and are provided pre/post school childcare [24]. Schools can also appoint “well-connected” peers to create a network for students experiencing homelessness and become points of contact when they miss class or fall behind [25]. Schools can provide on-site services to youth experiencing homelessness, including tutoring, mental and dental services, hygiene resources (e.g., places to shower), and counseling or other confidential services. The MVA works with schools to ensure that academic barriers to success are resolved as efficiently and effectively as possible, and provides support mechanisms to ensure that, while in school, youth experiencing homelessness have access to basic care, including education, food, shelter [24].

In addition to schools working under government-funded assistance acts, several multi-HHS agency initiatives have identified persons with unstable housing as a key population to target for increased risk behavior prevention, including ending the HIV epidemic and strategies for screening, integrated care and prevention services, special populations, and anti-stigma for the interagency mental health and substance abuse work group. Technical packages on youth violence [26], sexual violence [27], and suicide [28] have been created as resources to highlight the best available evidence on strategies to prevent violence among youth. Federal programs providing emergency housing, clothing, medical and mental health care to youth experiencing homelessness include the basic center program, and longer-term assistance through the transitional living program. Street outreach programs reach out directly to youth to help prevent sexual exploitation and abuse of youth living on the streets. Additionally, federal agencies are funding research on programs to prevent youth homelessness [29, 30]. Stable, adequate housing is key to achieving the goals of our national and local strategies, namely decreasing substance use and other risk behaviors, improving access to mental health care and, thus, improving health outcomes for youth.

Findings of this study highlight the extent to which YRBS reaches students who are not living in traditional households. This is especially relevant when YRBS results are compared to those from surveys that employ household sampling, such as the national health interview survey or the national survey on drug use and health. Household sampling does not include homeless populations and may lead to an underestimation of students experiencing homelessness and risk behaviors, and comparisons with YRBS may be problematic if youth experiencing homelessness are not accounted for.

Limitations

The findings of this study and its interpretations should be considered with several limitations. First, these results reflect data from 23 states and 11 local school districts; findings are not necessarily representative of all students across the United States. Also, data represented in this study were collected from youth who attended school on the day YRBS was administered. Many youth experiencing homelessness often struggle with absenteeism [31]. Although students who are absent on the original day of data collection are asked to complete the survey when they return to school, the YRBS is less likely to obtain completed surveys from students who are chronically absent [32]. In addition to absenteeism, YRBS data apply only to youths who attend school and therefore are not representative of youths who do not attend school. In 2019, approximately 5% of high school-aged youths (ages 14–17 years) were not enrolled in school [33]. Specific to youth experiencing homelessness, 87% enroll in school, with just 77% attending school regularly [34]. Other limitations pertain to how YRBS is designed, including possible misinterpretation of adverse experiences and misreporting of sexual behaviors [32].

Conclusion

This study's results emphasize the continued need for policies and practices within school environments that prevent homelessness and better support youth experiencing homelessness. Considerable evidence supports the need for programs aimed at enhancing school support of and accessibility for youth experiencing homelessness. Together with on-site programs and MVA-supported policies, schools might also connect with community-based organizations to implement strategies and practices that meet the specific needs of this population, including food, clothing, and shelter, and address the differences between them and their stably housed peers, as it relates to risk behaviors and experiences.

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Code Availability N/A.

Declarations

Conflict of interest The authors have no relevant financial or non-financial conflict of interest to disclose.

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Consent to Participate This study utilized publicly available data.

Consent for Publication N/A.

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