Youth Risk Behavior Survey: A Breakdown of Adolescent Risk Behaviors

Shannon Williams
University of Northern Colorado

Barrett Dunn
Boulder County Health Department

Daniel J. Mundfrom
University of Northern Colorado

Cindy Kronauge
University of Northern Colorado

The purpose of this study was to examine the relationship between students with high risk behavior activity and the behaviors in which they participate. The Youth Risk Behavior Survey (YRBS) was developed to monitor significant adolescent risk behaviors. The YRBS was administered to a sample of 9th through 12th grade students in two school districts in northern Colorado. A logistic regression model was used to compare students with high risk behavior to their peers with low risk behavior activity. The aim of the study was to assist in the identification of significant risk behaviors that may expand the corresponding knowledge base by which new community and school-based programs could be developed to address these risk behaviors.

Adolescence is a very impressionable time. Beliefs and values are formed, parental influence diminishes, and peer pressure increases (Gunbaum, Basen-Engquist, 1993). As a result of this suggestible time, many health related behaviors develop. These behaviors include those that affect health during adolescence and later in life. In the United States, homicide, suicide, motor vehicle crashes, and other unintentional injuries account for almost three-quarters of all deaths among youth 10-24 years of age (Grunbaum, Kann, Kinchen, Ross, Gowda, Collins, & Kolbe, 2000). For adults greater than 24 years, nearly two-thirds of deaths result from cardiovascular disease and cancer often from causes initiated during adolescence (Grunbaum et al., 2000). Adolescents may or may not be aware of the repercussions of their behaviors. Jessor (1998) describes risk behaviors as "risk factors for personally or socially or developmentally undesirable outcomes." Subsequently, it is important to detect, monitor, and ultimately, intervene in these behaviors.

In response to this need, in 1988, the Centers for Disease Control and Prevention developed the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS was developed with three main goals: 1) to focus on specific behaviors among youth that cause important health problems; 2) determine whether those behaviors increase, decrease, or remain the same over time; and 3) provide comparable data among national, state, and local samples of youth (Brener, Collins, Kann, Warren, & Williams, 1995). The YRBSS identifies and measures behavior and activity in the following categories: (1) tobacco use; (2) alcohol and other drug use; (3) unhealthy dietary behaviors; (4) physical activity; (5) sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases; and (6) behaviors that contribute to unintentional and intentional injuries (Brener et al., 1995). By examining these categories, the YRBSS is able to determine the prevalence of health risk behaviors, compare this data on the national, state, and local levels, and assess whether risk behaviors increase or decrease over time (CDC, 2003). Every two years, the YRBSS conducts the Youth Risk Behavior Survey (YRBS). By utilizing the results of this survey, dominant risk behaviors are detected and school-based educational and prevention programs are developed.

Past analyses of the YRBS have focused on entire group analyses along with the comparison of subgroups within the student population. Analyses comparing male and female students have shown males and females differ significantly on risk behaviors (Grunbaum et al. 2000). Comparisons have also been made between racial groups, for example, Grunbaum et al. (2000) reported differences in harassment, drug use, and suicide, among other behaviors that have been explored across White, Black, and Hispanic subgroups. Also, Garofalo, Wolf, Kessel, Palfrey, & DuRant (1998) found associations between sexual orientation and risk behaviors. Specifically, they found gay, lesbian, and bisexual youth were more likely to be threatened, have suicidal ideation and attempts, and be engaged in substance use than were students with other sexual orientations.

The present study was designed to compare students with low risk behavior to their peers with high risk behavior. More specifically, differences in prevalence and likelihood of variables associated with gender, race, sexuality, alcohol and drug use, sexual activity, weight loss, fighting, and suicide were examined.

Method

The data used in this study were collected by a county health department in the western United States in collaboration with two local school districts. A two-stage cluster sample design was utilized. From within the school districts, alternative and private schools were excluded from the sample. All other schools were selected and within those schools, classrooms were randomly chosen to participate. Every student enrolled in the classes selected was eligible for inclusion in the study. An informational packet regarding the survey with an option to exclude their student was sent to the parents of all students selected to participate. Students were granted anonymity and voluntary participation.

Upon completion, the health department received 1,957 completed surveys. To reduce sample selection bias, a weighting factor was applied. The weighting factor caused the distribution of the sample to match the distribution of males and females by school grade. This allowed inferences to be generalizable to all 9-12th grade students at participating schools.

All analyses were conducted using SUDAAN (Research Triangle Institute, Research Triangle Park, NC). As a result of using a clustered sampling method, there is a lack of independence in the error terms when aggregate-level data are used. SUDAAN accounts for the clustered sample design of the YRBS and the lack of independence in the error terms (LeClere, Soobader, 2000). SUDAAN produces robust variance estimates which account for the intra-cluster correlation, weighting, and without-replacement sampling used in the YRBS.

Variables for Study

A list of health risk behaviors common to adolescents was compiled. These were: (1) alcohol consumption and driving; (2) carrying a weapon; (3) physical fighting; (4) attempted suicide; (5) current tobacco use; (6) binge drinking; (7) current marijuana use; (8) current cocaine use; (9) current inhalant use; (10) sexual activity; (11) failure to use a condom; (12) alcohol and drug use at last intercourse; and (13) using an unhealthy weight loss method. Each risk behavior was weighted equally and combined into a score. This score consisted of a count of affirmative responses to questions about these risk behaviors. Individual scores ranged from 0 (no risk behaviors present) to 13 (all thirteen risk behaviors reported). Based on the number of risk behaviors exhibited, each student was classified as having a high level of risk behavior (4 or more risk behaviors) or a low level of risk behavior (fewer than 4 risk behaviors).

A major purpose of this study was to identify significant risk behaviors and to expand the knowledge base by which new community and school-based programs could be developed. To facilitate this, the thirteen risk behaviors were grouped according to content and consolidated into a new variable or content area. Merging similar behaviors will allow school districts and communities to focus on a topic area rather than a specific action. The thirteen risk behaviors were consolidated as follows. Using an unhealthy weight loss method consisted of using at least one of the following methods: fasting, unprescribed diet pills, or a laxative or vomiting. Binge drinking and driving or riding with someone while under the influence of alcohol were combined into a measure of alcohol behavior. Weapon carrying and fighting were combined together and finally, marijuana, inhalant, and cocaine use were combined into one common drug use category. All other risk behaviors were unchanged. The resulting content areas included in the study were: (1) use of an unhealthy weight loss method; (2) alcohol related behaviors; (3) behaviors involving fighting and weapons (4) current drug use; (5) current tobacco use; (6) attempted suicide; and (7) current sexual activity.

A cross-tabs analysis was used to identify the prevalence of each of the seven risk behaviors identified. A logistic regression was then used to examine the seven major content areas and frequently studied demographics including sexual identity, gender, and race. This procedure helped to determine which behaviors are more common among high-risk behavior students. Odds ratios (OR) and associated 95% confidence limits (95% CI) are presented for each content area and demographic.

Results

1,957 completed surveys were returned. Table 1 provides a description of the study population according to the seven areas of study and two demographics, sexuality and race. Gender was not included because the logistic regression model found no significant differences between males and females. All other variables were significant and remained in the model. For each of the seven areas of interest, the proportion of students in each group who participate in each risk is higher for the group classified as high-risk. Not all students responded to each question. As a result, each sample size may not be equivalent.

For the low-risk group, only two risk behaviors were prevalent: alcohol related behaviors and behaviors involving fighting and weapons. For the low-risk group 23.4% of students participated in alcohol related behavior and 18.9% of students carried a weapon or have been in a physical fight. These numbers are compared to 91.5% and 64.9%, respectively for the high-risk group of students. For the low-risk behavior group, all other risk behaviors were relatively low.

A logistic regression model yielded large odds ratios. These odds ratios are shown in Table 1. The largest odds ratios are for students who exhibit alcohol related behavior and those who are sexually active. These students are 292.89 and 232.58 times more likely to be a part of the high-risk behavior group. Not quite as large, but of definite importance are students who fight or carry a weapon. Those students are 139.76 times more likely to be in the high-risk group. As demonstrated by all the large odds ratios, students who exhibit any of the behaviors in the seven risk areas are much more likely to be classified into the high-risk group.

Table 1. Distribution of risk behaviors for high and low levels of risk behavior.

Risk Behavior	High-level of risk behavior		Low-level of risk behavior			
	N	%	*N*	%	OR	(95% CI)
Unhealthy weight loss method						
Yes	147	28.3	100	7.4	98.53	(48.37, 200.73)
No	370	71.7	1298	92.6	1.00	
Alcohol related behaviors						
Yes	473	91.5	333	23.8	292.89	(150.22, 571.04)
No	39	8.5	1058	76.2	1.00	
Fighting and weapons						
Yes	327	64.9	269	18.9	139.76	(80.88, 241.53)
No	188	35.1	1121	81.1	1.00	
Current drug use						
Yes	375	72.8	134	9.1	44.16	(27.13, 71.89)
No	141	27.2	1270	90.1	1.00	
Current tobacco use						
Yes	422	81.3	180	13.0	43.61	(26.16, 72.70)
No	99	18.7	1219	87.0	1.00	
Attempted Suicide						
Yes	173	36	126	8.9	32.99	(18.59, 58.55)
No	343	64	1267	91.1	1.00	
Currently sexually active						
Yes	347	68.4	157	10.8	232.58	(135.01, 400.64)
No	160	31.6	1244	89.2	1.00	
Sexuality						
Not Heterosexual	59	12.5	45	3.4	6.71	(2.53, 17.78)
Heterosexual	446	87.5	1338	96.6	1.00	
Race						
White	367	69.5	1094	77.1	3.76	(1.86, 7.60)
Hispanic	106	21.7	192	14.1	3.99	(1.75, 9.13)
Asian	17	3.1	40	3.4	2.39	*(0.64, 9.00)
Other	28	5.7	75	5.4	1.00	

*not statistically significant at $\alpha = .05$

Conclusions

There were three major findings from this study. First, the majority of students exhibit a low level of risk behavior. Of the students who responded, 74.8% or 1410 reported fewer than four risk behaviors and 25.2% or 521 reported four or more risk behaviors. This shows that although the risk behaviors used in the study are important, the majority of students do not participate in most of them. Thus, education promoting positive and safe decision making from parents, teachers, the school district, and the community should be maintained and promoted.

Second, for those students who do exhibit a high level of risk behavior, risk behaviors were consistent across each of the seven areas of interest. High-risk behavior students consistently acted out in their use of unhealthy weight loss methods, alcohol, fighting and weapon carrying, drugs and tobacco, involvement in sexual activity, and attempted suicide. Likelihood ratios showed that sexual activity, alcohol use, and fighting and weapon carrying are of highest concern. The majority of students with a high level of risk behavior exhibit these behaviors. Although students who participate in any of the seven risk behavior areas are more likely to be classified in the high level risk behavior group, these three areas, sexual activity, alcohol related behaviors, and fighting and weapon carrying, are much more prominent. As a result, programming, although touching on each of the seven risk behavior areas, should focus on these three particular areas. These three areas are the most abused behaviors and should be emphasized.

Third, in contrast to prior studies, this study found no significant difference between males and females across level of risk behavior activity. Both groups were equally likely to exhibit a high level of risk behavior. However, as in past studies, this study did find differences amongst sexuality and race. Students who identify themselves as something other than heterosexual were significantly more likely to be in the high risk behavior group. Also, there is a difference in the likelihood of being in the high risk group across Whites and Hispanics. There was no significance difference among Asians and all others.

The results of this study have implications for the content of prevention and education programs. Such programs need to address multiple-risk behaviors among all adolescents. Adolescents that exhibit risk behaviors do not do so in an exclusive manner. Most students classified into the high-risk group exhibited multiple risk behaviors. Thus, education and prevention needs to incorporate a multiple-risk behavior approach. Programs need to focus on why some risk behaviors may inherently lead to others. Students exhibiting a high level of risk behavior, although much more likely to carry a weapon or fight, use alcohol, and be sexually active, were much more likely to exhibit behaviors present in the other risk behavior categories as well. This high occurrence of all risk behaviors shows the need for prevention and education programs to incorporate a multiple-risk behaviors philosophy.

The results of this study emphasize the need for young adult health risk behaviors to be monitored. These behaviors need to be monitored for prevalence, comparison, and trend. With this knowledge, new programs designed to intervene, educate, and deter risk behaviors can be developed that utilize school, parent, and community resources. In conjunction, new methods of detection need to be found that do not focus solely on easily observed behaviors. By monitoring changes over time, school districts can evaluate the progress and effectiveness of these new programs, which are ultimately developed to reduce unhealthy risk behaviors. Monitoring behaviors over time will enable effective programs to flourish, less effective programs to be modified and some programs to even be eliminated. Ultimately, monitoring these programs and their impact on student behavior will result in effective school programming which will involve not only students, but teachers, parents, and other community members and resources.

References

Brener, N.D., Collins, J.L., Kann, L., Warren, C.W., & Williams, B.I. (1995). Reliability of the Youth Risk Behavior Survey Questionnaire. *American Journal of Epidemiology*, *141*, 575-580.

Center for Disease Control and Prevention (2003). 2003 *National School-Based Youth Risk Behavior Survey* Data Documentation Manual. Available online at http://www.cdc.gov/nccdphp/dash/yrbs/data/index.htm

Garofalo, R., Wolf, RC., Kessel, S., Palfrey, SJ., & DuRant, RH. (1998). The association between health risk behaviors and sexual orientation among a school-based sample of adolescents. *Pediatrics*, *101*, 895-902.

Grunbaum, J., & Basen-Engquist, K. (1993). Comparison of health risk behaviors between students in a regular high school and students in an alternative high school. *Journal of School Health*, *63*, 421-426.

Grunbaum, J., Kann, L., Kinchen, S.A, Ross, J.G, Gowda, V.R, Collins, J.L., & Kolbe, L.J. (2000). Youth Risk Behavior Surveillance National Alternative High School Youth Risk Behavior Survey, United States, 1998. *Journal of School Health*, *70*, 5.

Jessor, Richard. (Ed.). (1998). *New perspectives on adolescence risk behavior*. New York: Cambridge Press.

LeClere, F. B., Soobader, M. (2000). The effects of income inequality on the health of selected US demographic groups. *American Journal of Public Health*, *90*, 1892-1897.

Send correspondence to: Daniel J. Mundfrom
University of Northern Colorado
Email: daniel.mundfrom@unco.edu