

ASSESSMENT OF HEALTH-COMPROMISING BEHAVIOR PREVALENCE & CLUSTERING AMONG GRENADIAN ADOLESCENTS: FINDINGS FROM THE 2008 GLOBAL SCHOOL-BASED STUDENT HEALTH SURVEY

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Study Aims & Objectives

- The aim of this study was to assess health-compromising behaviors among Grenadian youth, utilizing the 2008 GSHS.
- I sought to achieve this aim through the following objectives.
 - Evaluation of both the prevalence and clustering of health-compromising behaviors among Grenadian secondary school aged students.
 - Also examined were the role of alcohol consumption and sexual intercourse involvement as precipitating factors to engagement in additional health-risk behaviors.

Background & PH Significance

- Adolescents between the ages of 10-24 are said to comprise up to 30% of the population¹.
- Adolescent morbidity and mortality are most frequently the result of preventable behavioral, environmental and social factors, as opposed to disease^{2,3}.
- Amidst a culture where sexual activity and the use of tobacco, alcohol and marijuana are often celebrated⁴, Grenadian teens are particularly susceptible to health-compromising behavior engagement.

Background & PH Significance

- Llyod et al.⁵ found that youth who carried a weapon were more likely, than their non-weapon carrying peers, to engage in cigarette, alcohol and illicit drug use.
- Flisher et al.⁶ reported that binge drinking, marijuana use and exposure to late-night danger foreshadowed sexual activity.
- Regression analysis by Ohene et al.⁷ demonstrated that initiation of sexual activity was a predictor of the commencement of other health-compromising behavior engagement.



Methods

Study Design

- Secondary data analysis based on information obtained from the 2008 GSHS⁸
 - GSHS was developed by the World Health Organization (WHO) in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF), and the Joint United Nations Program on HIV/AIDS (UNAIDS) with technical support provided by the Centers for Disease Control and Prevention (CDC).
- Study population included Grenadian secondary school students, ages 11-16
- A 2-stage cluster sample design was employed
 - Stage I: Schools were chosen with probability proportional to enrollment size.
 - Stage II: Individual classes were randomly selected with all students enrolled in the class being eligible to participate

Methods

Data Collection

- The 85-item, self-administered, multiple-choice survey
- Administered during a single classroom period
- A total of 1,542 Grenadian secondary-school students completed the survey.
 - ▣ 1,521 included in the present analysis
 - 681 males
 - 840 females
- Yielded a 95% school response rate, 82% student response rate and 78% overall response rate⁸

Methods

Measures

- The following five health-compromising behaviors were included in analysis: sexual intercourse activity, cigarette smoking, alcohol consumption, drug use and gang involvement.

Table I. Survey questions measuring health-compromising behavior

Health-compromising Behavior	Survey Question
Sexual intercourse activity	Have you ever had sexual intercourse?
Gang Involvement	Do you currently belong to a gang or violent group?
Cigarette Smoking	During the past 30 days, on how many days did you smoke cigarettes?
Alcohol Consumption	During the past 30 days, on how many days did you have at least one drink containing alcohol?
Drug Use	During your life, how many times have you used drugs, such as marijuana?

Methods

Data Analysis

- The prevalence of each health compromising behavior was calculated,
 - ▣ stratified by gender and age category
- To assess the health-compromising behavior clustering, odds ratios & 95% CI were calculated
 - ▣ stratified by gender
- To address whether alcohol consumption and engagement in sexual intercourse were precipitating factors for initiation of additional health-compromising behaviors, relative risks & 95% CI were calculated
 - ▣ Stratified by gender

Results

Table 2. Prevalence of female and male involvement in health-compromising behaviors by age group.

Prevalence of Involvement [n, (%)]								
Age	≤ 11		12-13		14-15		16 ≥	
Variable	Female	Male	Female	Male	Female	Male	Female	Male
Cigarette Smoking	--	2 (100.0)	40 (11.9)	43 (23.6)	78 (22.0)	97 (30.7)	32 (38.6)	50 (50.0)
Alcohol Consumption	3 (50.0)	3 (42.9)	160 (47.1)	125 (65.1)	242 (65.9)	250 (72.5)	71 (80.7)	104 (92.0)
Drug Use	3 (33.3)	--	9 (56.3)	25 (73.5)	42 (11.4)	90 (26.1)	20 (22.0)	50 (45.5)
Sexual Intercourse	--	4 (57.1)	20 (6.0)	51 (30.9)	67 (19.6)	141 (48.5)	40 (49.4)	59 (66.3)
Gang Involvement	1 (12.5)	4 (57.1)	22 (6.3)	30 (15.7)	37 (9.8)	61 (17.7)	13 (14.1)	37 (33.9)

Overall prevalence rates for all individuals surveyed:

- Alcohol consumption: 62.4%, Sexual intercourse: 25.1%, Cigarette smoking: 22.5%, Drug use: 15.7%, Gang involvement: 13.5%

Results

Table III. Association, reported as odds ratio (95% CI), of health-compromising behavior involvement among Grenadian males attending secondary school.

	Cigarette Smoking	Alcohol Consumption	Drug Use	Sexual Intercourse	Gang Involvement
Alcohol Consumption	5.85 (3.42-10.02)	--			
Drug Use	7.90 (5.21-12.00)	5.70 (3.14-10.36)	--		
Sexual Intercourse	2.81 (1.90-4.14)	2.57 (1.70-3.90)	3.49 (2.28-5.34)	--	
Gang Involvement	2.57 (1.69-3.91)	2.82 (1.64-4.86)	3.49 (2.31-5.27)	2.16 (1.40-3.32)	--

Table IV. Association, reported as odds ratio (95% CI), of health-compromising behavior involvement among Grenadian females attending secondary school.

	Cigarette Smoking	Alcohol Consumption	Drug Use	Sexual Intercourse	Gang Involvement
Alcohol Consumption	5.86 (3.56-9.65)	--			
Drug Use	6.37 (3.73-10.89)	2.65 (1.49-4.71)	--		
Sexual Intercourse	4.04 (2.61-6.24)	5.27 (3.12-8.90)	5.14 (2.92-9.02)	--	
Gang Involvement	2.86 (1.65-4.97)	1.47 ^{ns} (0.873-2.47)	4.52 (2.50-8.16)	1.98 (1.08-3.64)	--

Results

Table V. Association between engaging in alcohol consumption and additional health-compromising behaviors, reported as relative risk (95% CI), among both female and male adolescents.

Variable	≤ 11		12-13		14-15		16 ≥		Total	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Cigarette Smoking	--	--	2.76 (1.45-5.23)	5.19 (1.94-13.91)	5.34 (2.53-11.26)	3.95 (2.08-7.49)	6.13 ^{ns} (0.91-41.32)	1.15 ^{ns} (0.54-2.45)	4.46 (2.84-6.99)	3.90 (2.45-6.21)
Sexual Intercourse	--	1.33 ^{ns} (0.38-4.72)	2.66 (1.05-6.75)	1.77 ^{ns} (0.99-3.17)	3.39 (1.74-6.60)	1.65 (1.17-2.33)	2.71 ^{ns} (0.97-7.55)	1.10 ^{ns} (0.53-2.28)	4.19 (2.60-6.75)	1.75 (1.34-2.31)
Drug Use	1.00 (0.10-9.61)	--	1.40 ^{ns} (0.38-5.12)	2.84 (1.02-7.93)	2.23 (1.06-4.68)	4.37 (2.10-9.10)	1.30 ^{ns} (0.43-3.94)	1.92 ^{ns} (0.57-6.49)	2.40 (1.40-4.11)	4.18 (2.44-7.17)
Gang Involvement	0.44 ^{ns} (0.02-7.52)	1.33 ^{ns} (0.38-4.72)	1.82 ^{ns} (0.77-4.27)	3.52 (1.28-9.65)	0.86 ^{ns} (0.44-1.65)	2.72 (1.28-5.78)	2.96 ^{ns} (0.41-21.20)	0.75 ^{ns} (0.34-1.64)	1.39^{ns} (0.86-2.24)	2.39 (1.45-3.86)

- The strongest relationship: alcohol consumption and cigarette smoking.
- The weakest relationship, females: alcohol consumption & gang involvement
Males: alcohol consumption and sexual intercourse.

Results

Table VI. Association between engaging in sexual intercourse and additional health-compromising behaviors, reported as relative risk (95% CI), among both female and male adolescents.

Variable	≤ 11		12-13		14-15		16 ≥		Total	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Cigarette Smoking	--	--	2.33 (1.02-5.32)	3.03 (1.74-5.26)	2.46 (1.65-3.66)	1.80 (1.22-2.64)	1.58 ^{ns} (0.88-2.84)	0.94 ^{ns} (0.59-1.50)	2.79 (2.08-3.73)	2.00 (1.53-2.62)
Alcohol Consumption	--	1.50 ^{ns} (0.23-9.80)	1.55 (1.13-2.12)	1.27 (1.03-1.56)	1.45 (1.26-1.66)	1.26 (1.09-1.45)	1.31 (1.05-1.65)	1.02 ^{ns} (0.91-1.14)	1.61 (1.45-1.79)	1.26 (1.14-1.39)
Drug Use	--	--	2.22 ^{ns} (0.29-17.19)	2.78 (1.17-6.61)	2.80 (1.42-5.52)	2.06 (1.33-3.17)	3.25 (1.16-9.09)	2.18 (1.09-4.34)	4.25 (2.62-6.91)	2.59 (1.85-3.63)
Gang Involvement	--	--	0.82 ^{ns} (0.12-5.81)	1.66 ^{ns} (0.82-3.35)	1.72 ^{ns} (0.79-3.76)	1.72 (1.02-2.89)	1.79 ^{ns} (0.57-5.66)	1.31 ^{ns} (0.66-2.59)	1.85 (1.08-3.18)	1.85 (1.31-2.61)

- The strongest relationship: sexual intercourse and drug use.
- The weakest relationship: sexual intercourse and alcohol consumption.

Discussion

- The prevalence rates of individual health-compromising behaviors are reflective of other studies completed within the region^{7, 9}.
- Significant relationships were evident between nearly all pairs of health-compromising behaviors among Grenadian youth, which is consistent with previous studies carried out both regionally⁷ and globally^{1, 5, 10, 11}.
- Moreover, significant relative risks were observed upon comparison of both alcohol consumption and sexual activity, as compared with the 4 remaining health-compromising behaviors, showcasing the significance of these behaviors in initiating additional risky behaviors
- The implications of health-compromising behavior initiation, and their clustering should be cause for serious concern among Grenadian where alcohol consumption and early sexual intercourse debut are the prevailing norm.



Future Recommendations

- Information generated from this study should be applied to the development of Grenadian adolescent public health prevention and intervention programs, which seek to address concurrent involvement in multiple health-compromising behaviors.
- Moreover, additional studies should be carried out to investigate the underlying variables posited for the clustering of such behaviors.

Study Strengths & Limitations

□ **Strengths:**

- First study to date, to examine the clustering of health risk behaviors among Grenadian youth
- Findings will advance the current understanding of health-risk behavior trends and adolescent behavioral development.

□ **Limitations:**

- Assessment was limited to data obtained by the original study
- Use of a self-administered questionnaire allows for reporter bias.
- Findings may not be generalizable to all Grenadian youth
- As a cross-sectional analysis, neither causality or

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References

1. Halcón L, Blum RW, Beuhring T, Campbell-Forrester S, & Venema A. (2004). Adolescent Health in the Caribbean: A regional portrait. *Am J Public Health, 93*:1851–1857.
2. Irwin CE & Millstein SG. (1986). Biopsychosocial correlates of risk-taking behaviors during adolescence: can the physician intervene? *Journal of Adolescent Health Care, 7*:82S–96S.
3. Millstein SG. (1989). Adolescent health: challenges for behavioral scientists. *American Psychologist, 44*:837–842.
4. Farrell AD, Danish SJ, & Howard CW. (1992). Relationship between drug use and other problem behaviors in urban adolescents. *J Consult Clin Psychol, 60*:705–712.
5. Lloyd JJ, Delva J, & Arria AM. (2000). Recent Weapon carrying and substance use among United States Virgin Islands youth. *Subst Use Misuse, 35*:1207–1225.
6. Flisher AJ, Ziervogel CF, Chalton DO, Leger PH, & Robertson BA. (1996a). Risk-taking behavior of Cape Peninsula high school students. Part IX. Evidence for a syndrome of adolescent risk behavior. *S Afr Med J 86*:1090–1093.
7. Ohene SA, Ireland M, & Blum RW. (2005). The Clustering of Risk Behaviors Among Caribbean Youth. *Maternal and Child Health Journal, 9*(1):91-99.
8. Centers for Disease Control. (2008). *School-based Student Health Survey (GSHS)*. Atlanta, Georgia. Retrieved from <http://www.cdc.gov/gshs/countries/americas/grenada.htm>
9. Blum R & Ireland M. (2004). Reducing Risk, Increasing Protective Factors: Findings from the Caribbean Youth Health Survey. *J Adolesc Health, 35*:493-500.
10. Singh HN & Maharajh H. (1991). Alcohol and drug abuse among secondary school children in Trinidad and Tobago. *West Indian Med J, 40*:25–26.
11. Smart RG. (1990). Comparison of alcohol, tobacco and illicit drug use among students and