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.
Adolescents between the ages of 10-24 are said to comprise up to 30% of the population\(^1\).

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 celebrated\(^4\), Grenadian teens are particularly susceptible to health-compromising behavior engagement.
Llyod et al. found that youth who carried a weapon were more likely, than their non-weapon carrying peers, to engage in cigarette, alcohol and elicit drug use.

Flisher et al. reported that binge drinking, marijuana use and exposure to late-night danger foreshadowed sexual activity.

Regression analysis by Ohene et al. 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 GSHS$^8$
  - 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 rate\textsuperscript{8}
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

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>Age ≤ 11</th>
<th>12-13</th>
<th>14-15</th>
<th>16 ≥</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Cigarette Smoking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>2 (100.0)</td>
<td>40 (11.9)</td>
<td>43 (23.6)</td>
</tr>
<tr>
<td>Alcohol Consumption</td>
<td>3 (50.0)</td>
<td>3 (42.9)</td>
<td>160 (47.1)</td>
<td>125 (65.1)</td>
</tr>
<tr>
<td>Drug Use</td>
<td>3 (33.3)</td>
<td>--</td>
<td>9 (56.3)</td>
<td>25 (73.5)</td>
</tr>
<tr>
<td>Sexual Intercourse</td>
<td></td>
<td>4 (57.1)</td>
<td>20 (6.0)</td>
<td>51 (30.9)</td>
</tr>
<tr>
<td></td>
<td>1 (12.5)</td>
<td>4 (57.1)</td>
<td>22 (6.3)</td>
<td>30 (15.7)</td>
</tr>
</tbody>
</table>

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.

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

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

<table>
<thead>
<tr>
<th></th>
<th>Cigarette Smoking</th>
<th>Alcohol Consumption</th>
<th>Drug Use</th>
<th>Sexual Intercourse</th>
<th>Gang Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol Consumption</td>
<td>5.86 (3.56-9.65)</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug Use</td>
<td>6.37 (3.73-10.89)</td>
<td>2.65 (1.49-4.71)</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Intercourse</td>
<td>4.04 (2.61-6.24)</td>
<td>5.27 (3.12-8.90)</td>
<td>5.14 (2.92-9.02)</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Gang Involvement</td>
<td>2.86 (1.65-4.97)</td>
<td>1.47 (0.873-2.47)</td>
<td>4.52 (2.50-8.16)</td>
<td>1.98 (1.08-3.64)</td>
<td>--</td>
</tr>
</tbody>
</table>
### 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.

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

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

- The strongest relationship: sexual intercourse and drug use.
- The weakest relationship: sexual intercourse and alcohol consumption.
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 regionally\(^7\) 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
Special Thanks…

Special thanks to Dr. Hegamin-Younger, and Brian Shayota for your ongoing assistance and advisement through this process.

I would also like to thank the faculty & staff of the DPHPM for which I had the personal and professional pleasure of interacting with over the past year.


11. Smart RG. (1990). Comparison of alcohol, tobacco and illicit drug use among students and...