





# In-school adolescents' sociodemographic correlates of serious unintentional injuries in Saint Vincent and the Grenadines: A cross-sectional study

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## Abstract

**Background:** As a public health concern, serious adolescent injuries constitute considerable global morbidity and mortality. Despite the proliferation of literature on this problem, the evidence on the determinants of injuries among in-school adolescents in Saint Vincent and the Grenadines (SVG) is insufficient.

**Method:** The study analyzed data from the 2018 Global School-based Student Health Survey to examine the prevalence and determinants of serious injuries in a nationwide adolescent sample in SVG.  $\chi^2$  And binomial logistic regression analyses were carried out, along with an adjusted odds ratio and a 95% confidence interval.

**Results:** Serious injuries among this population were estimated at 50.5%. Student grades, gender, truancy, amphetamine or methamphetamine use, marijuana or alcohol use, cigarette smoking, physical assault, physical fight, cyberbullying, suicidal behavior (ideation, plan, and attempt), parental or guardian tobacco use, and multiple sexual partners were significantly associated with serious injuries. After adjusting for other variables, being a male, having experienced a physical attack, fighting physically, attempting suicide, and having multiple sexual partners predicted serious injuries among in-school adolescents in SVG.

**Conclusion:** The use of integrative health promotion and injury prevention programmes (e.g., antiviolence campaigns) and educational measures could help minimize or eradicate this menace in SVG.

## KEYWORDS

adolescents, correlates, prevalence, Saint Vincent and the Grenadines, serious injuries

## 1 | INTRODUCTION

Adolescence, a unique episode of life that lasts from ages 10–19 years, is characterized by a series of developmental changes that impact the health and well-being of this population.<sup>1</sup> However, despite being considered a significantly healthy phase of life, adolescents experience illnesses, injuries and deaths, many of which are preventable.<sup>1</sup> Also, injuries are poorly appreciated, yet they are one of the pervasive problems of public health concern and the major contributor to global morbidity and mortality. The global burden of diseases and injuries ranked serious injuries (intentional or unintentional) among the leading 10 factors that affect “disability-adjusted life-years” (DALYs) of populations between ages 10–24 years in 2019.<sup>2</sup> Besides, road injuries, self-harm, and interpersonal violence were listed first, second, and fifth in the report's list of injuries (Abbafati et al., 2020). With 61 per 100,000 teenagers between the ages of 10 and 19 in SVG, injuries are the top cause of DALYs.<sup>3</sup> Moreover, the prevalence of injuries among these adolescents varies across the globe.

Previous epidemiological studies on injuries among adolescents worldwide have reported varying prevalence. For instance, data from seven different European locations showed that adolescent injuries were common, ranging from 13.1% to 30.4%.<sup>4</sup> Besides that, the prevalence of injury in Canada was 24%,<sup>5</sup> while China recorded 38%.<sup>6</sup> In Africa, a recent study reported an average of 45% injury prevalence in the sub-Saharan African region.<sup>7</sup> Moreover, data from a few African nations using the Global School-based Student Health Survey showed that injuries among teenagers were highly prevalent, with Liberia having the greatest occurrence at 71.6%.<sup>8</sup> Additionally, Djibouti recorded 61.1% of serious injuries,<sup>9</sup> 66% in Ghana,<sup>10</sup> 43.4% in Zambia,<sup>11</sup> and 39% in Mauritius.<sup>12</sup> In a 2014 study among eight Caribbean countries, 54.3% injury prevalence was found among adolescents.<sup>13</sup> These reported prevalence rates point to the growing threat of serious injuries as a major problem of public health concern for adolescents worldwide. Several factors predict serious unintentional injuries among adolescents.

A number of studies have found adolescent sociodemographic characteristics and risky behaviors to be primary correlates.<sup>8,11–13</sup> Similarly, several risk factors such as being male, hunger, substance use, worrying, suicidal behavior, bullying, truancy, and parental neglect have been found to be associated with serious injuries among teenagers.<sup>8,11</sup> In sub-Saharan Africa, however, parental respect for adolescents' privacy has been identified as a protective factor against serious injuries.<sup>7</sup> Clearly, the evidence on determinants of injuries among in-school adolescents in SVG is inadequate.

### 1.1 | Theoretical framework: The socioecological model (SEM)

The etiology of adolescents' injuries is multifactorial and driven by a complex interplay between multifaceted and interactive effects of personal and environmental factors.<sup>14,15</sup> The SEM as a framework has been developed by the National Center for Injury Prevention and

Control of the Centers for Disease Control and Prevention (CDC) and applied to understand the prevention of injuries and violence among young people CDC.<sup>16</sup> The SEM integrates multiple levels of factors that influence mortality and morbidity rates from unintentional injuries. This model provides an understanding of the variances in injuries in any population. Numerous factors may account for adolescents' susceptibility to injuries. Drawn from the SEM, risk factors linked with adolescent injuries can be clustered into four domains: (1) socio-demographic (e.g., age, gender, grade level, socioeconomic status); (2) personal (alcohol use, peer influence, psychological distress, tobacco use, truancy); (3) parental factors (parental/guardian supervision or monitoring); and (4) environment (bullying victimization, physical activity engagement, physical fighting).<sup>17</sup>

### 1.2 | Study rationale

Given the burden of unintentional injuries among adolescents, understanding the country-specific prevalence and patterns of unintentional injuries through additional research to guide appropriate evidence-based prevention and control interventions is warranted.<sup>18,19</sup> Besides, inadequate data and subsequent measures to lessen such injuries among in-school adolescents have created concerns that SVG will fall short of fulfilling particular Sustainable Development Goals targets. The SDGs 3 and 4 are critical in promoting healthy lifestyles and quality education for teenagers globally by 2030.<sup>20</sup> Furthermore, target 3.6 aims to reduce traffic-related fatalities and injuries.<sup>20</sup> Thus, the findings of the study will inform policy decisions and pragmatic school health promotion programs to help prevent injuries in Saint Vincent and the Grenadines's (SVG) in-school adolescents. Therefore, this study investigated the prevalence and factors associated with serious unintentional injuries among adolescents using SVG 2018 nationally representative data. Based on the SEM framework, it was hypothesized that “sociodemographic factors (gender, age, and grade), personal characteristics (missed school without permission), drug and alcohol use (amphetamine use), and psychosocial factors (physical assaults, suicidal ideation, planning, and attempt, bullying, and cyberbullying)” would increase the odds of serious unintentional injuries among in-school teenagers in SVG.

## 2 | MATERIALS AND METHODS

### 2.1 | Data source and study design

The study used the 2018 Global School Health Survey (GSHS) data for SVG. The GSHS is a global cross-sectional investigation of in-school adolescents conducted by the World Health Organization (WHO) in collaboration with the Centers for Disease Control and Prevention (CDC) and the SVG's Ministry of Health. Data from the 2018 GSHS on injuries and their contributing variables among SVG's in-school teenagers were examined.<sup>21</sup> Students at SVG schools filled out the self-administered survey to provide cross-sectional data. The GSHS gathered information on teenagers' health conditions,

behaviors, and risk factors for major fatalities and injuries, loneliness, friendliness, bullying behaviors, eating habits, hygienic circumstances, human mental health difficulties, adolescent physical activities, juvenile substance use, and youth sexual behaviors.

## 2.2 | Ethical concerns

The SVG's Ministries of Education and Health, Wellness, and Environment provided ethical approval for the study. They also advised the researchers to adhere rigorously to certain ethical standards. To acquire consent from SVG's Ministry of Education and school principals, protocols for entry clearance were followed. Informed consent was requested of adolescents 18 years of age and older, while parental consent and child assent were obtained for younger children. The validity and reliability of the instrument have been confirmed since this is the second GSHS that WHO and CDC have undertaken in SVG. On the WHO website, the statistics are accessible. See the link: "<https://extranet.who.int/ncdsmicrodata/index.php/catalog/878/study-description#metadata-identification>."

## 2.3 | Sampling method and sample size

A cluster sample design with two stages was used to obtain data representative of all students at SVG community colleges.<sup>22</sup> First, schools were chosen through probability proportionate sampling that was inversely connected with the number of students enrolled. Classes were chosen at random using a basic random approach during the second stage. Furthermore, using a census sample methodology, all students in chosen classrooms were permitted to participate. The total students and school response rates were 78%, 78%, and 100%, respectively. Out of a suggested sample size of 2407 students, 1877 pupils took the survey between January to December 2018. In-school adolescent students between ages 11 and 18 who were present at school on the day of the survey and with signed parental or guardian agreement form or a child assent form for students below age 18 were involved in the data collection.

## 2.4 | Study variables

This study's primary outcome variable was serious unintentional injuries among the pupils. The outcome variable was defined as "whether or not the student was seriously injured one or more times throughout 12 months before the survey," which is similar to Mireku et al.,<sup>12</sup> who researched major injuries among teenagers in Mauritius using GSHS data. A total of 0–12 or more possible responses were characterized into two categories. Zero injuries were classified as "no injuries" and assigned a code of 0. Those who sustained at least 1 or more injuries in the 12 months preceding the survey were classified as having "severe injuries" and were assigned a code of 1. The "sociodemographic factors (gender, age, and grade), personal characteristics (missed school without

permission), drug and alcohol use (amphetamine use), and psychosocial factors (physical assaults, suicidal ideation, planning, and attempt, bullying, and cyberbullying)" were all grouped as independent variables.

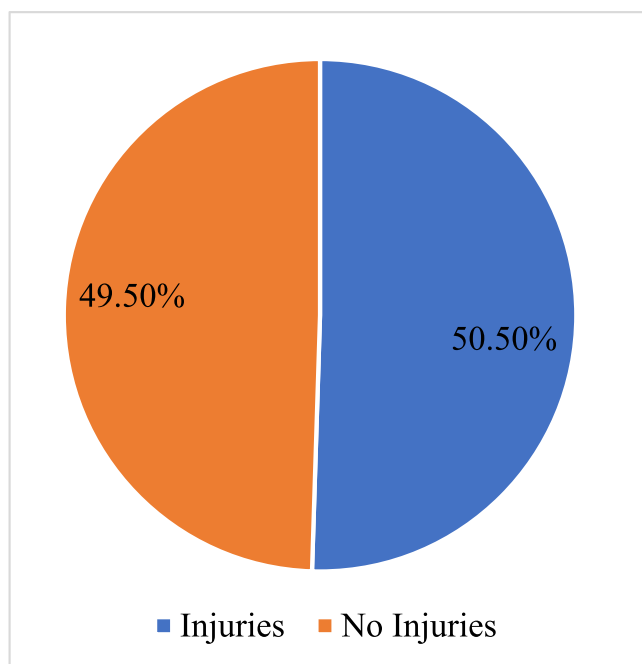
## 2.5 | Data analysis

The analysis followed the approaches used by previous authors who have used similar secondary data.<sup>7,10,12,23</sup> A sample weighting approach at the levels such as school, student, and gender within grades was applied to make the sample representative of teens in SVG. The normality of the data was checked and found the data to be normally distributed. For missing responses, the multiple imputations (MI) method was employed. We applied the MI technique in cases where the percentage of missing values exceeded 1%—randomly chosen missing data comprised 1%–10% of the total data. The automatic imputation method was used to perform five MIs to preserve the data quality regarding missing values. Simulated and actual values and results were fairly compared using the full case analysis. We did not observe any evidence of a lack of fit with the study's model, with the final goodness-of-fit examined. We recoded and labeled the age (1 =  $\leq 15$ , 2 =  $\geq 16$ ) and grade (1 = Form 1–3, 2 = Form 4–5) variables into two categories. The association between serious unintentional injuries and the explanatory variables (age, gender, grade, personal, truancy, drugs and substance use; amphetamine, marijuana, alcohol, currently smoke cigarettes, physically attacked, physical fight, bullied off campus, bullied on school property, cyberbullied, suicidal ideation, suicidal plan, suicidal attempt, parents/guardians' use of tobacco, and ever had sex with two or more sexual partners) were examined using the Pearson  $\chi^2$  test. This analysis was done to determine the association between unintentional injuries and the explanatory variables. Significant variables ( $p < 0.05$ ) were then additionally incorporated into a binomial logistic regression model to determine the level at which the explanatory variables influence unintentional injuries among participants.<sup>10</sup> The variables included in the binomial logistic regression model were: gender, grade, truancy, marijuana smoking, current smoking of cigarettes, amphetamine use, alcohol, physical attacks, physical fight, bullied on-school property, bullied off-school, cyberbullied, suicidal ideation, suicidal plan, suicidal attempt, parental use of tobacco, and sex with multiple partners. We used an adjusted odds ratio (aOR) with a 95% confidence interval (CI) to report the analyses. We used the Statistical Package for the Social Sciences Software version 21 to conduct all our both  $\chi^2$  and logistic regression analyses.

## 3 | RESULTS

### 3.1 | Characteristics of SVG participants

Approximately 947(50.5%) prevalence of serious injuries was estimated among SVG's teenagers (see Figure 1). Among the significant injuries sustained by participants in the past 12 months were broken bones/dislocated joints (7.5%), cut or knife wounds (9.1%), concussion/head



**FIGURE 1** Adolescent injuries in Saint Vincent and the Grenadines schools.

injuries (2.7%), gunshot wounds (0.2%), bad burns (2.3%), poisoned (0.7%), and others (18.2%). More adolescents aged 15 years or below significantly experienced serious injuries (28.0%). Additionally, a more significant percentage of serious injuries occurred among males (26.0%), adolescents in Grades 1–3 (34.4%), and those who missed school without permission (16.6%). Furthermore, a more significant percentage of serious injuries occurred among adolescents who smoke marijuana (10.9%), drink alcohol (26.2%), and smoke cigarettes (5.4%). Significantly, those who were physically attacked (18.1%), engaged in physical fights (21.4%), were bullied off-school property (10.2%), bullied on-school property (13.5%), had suicide ideation (15.8%), suicide plan (14.7%), suicide attempt (12.2%) experienced injuries. Also, the prevalence of serious injuries was observed among adolescents whose parents/guardians use tobacco (9.1%) and those with multiple partners (20.6%) (see Table 1).

### 3.2 | $\chi^2$ Analysis of serious injuries across correlates

The results of the  $\chi^2$  test indicated that students' grade ( $\chi^2 = 7.87$ ,  $p < 0.006$ ), gender ( $\chi^2 = 14.38$ ,  $p < 0.001$ ), truancy ( $\chi^2 = 9.50$ ,  $p < 0.01$ ), amphetamine or methamphetamine use ( $\chi^2 = 10.15$ ,  $p < 0.01$ ), marijuana use ( $\chi^2 = 30.24$ ,  $p < 0.001$ ), alcohol use ( $\chi^2 = 20.15$ ,  $p < 0.001$ ), cigarettes smoking ( $\chi^2 = 15.93$ ,  $p < 0.001$ ), physical attack ( $\chi^2 = 77.88$ ,  $p < 0.001$ ), physical fight ( $\chi^2 = 95.72$ ,  $p < 0.001$ ), bullying off school property ( $\chi^2 = 14.36$ ,  $p < 0.001$ ), bullying on school property

**TABLE 1** Bivariate analysis of adolescent injuries in SVG ( $n = 1877$ ).

	Serious injury ( $n = 1877$ )		$\chi^2$	$\phi$
	Injury (%)	No injury (%)		
<i>Demographic</i>				
Age (years)				
≤15	526 (28.0%)	511 (27.2%)	0.07	0.006
≥16	421 (22.4%)	419 (22.3%)		
Gender				
Male	488 (26.0%)	398 (21.2%)	14.38***	0.087
Female	459 (24.5%)	532 (28.3%)		
Grade				
Form 1–3	645 (34.4%)	576 (30.7%)	7.87**	0.065
Form 4–5	302 (16.1%)	354 (18.9%)		
<i>Personal</i>				
Truancy				
Yes	311 (16.6%)	245 (13.1%)	9.50**	0.071
No	636 (33.9%)	685 (36.5%)		
<i>Drugs and substance use</i>				
Amphetamine use				
Yes	74 (3.9%)	40 (2.1%)	10.15**	0.074
No	873 (46.5%)	890 (47.4%)		
Marijuana use				
Yes	204 (10.9%)	112 (6.0%)	30.24***	0.127
No	743 (39.6%)	818 (43.6%)		
Alcohol				
Yes	492 (26.2%)	387 (20.6%)	20.15***	0.104
No	455 (24.2%)	543 (28.9%)		
Smoke cigarettes				
Yes	102 (5.4%)	53 (2.8%)	15.93***	0.092
No	845 (45.0%)	877 (46.7%)		
<i>Psychosocial</i>				
Physically attacked				
Yes	339 (18.1%)	165 (8.8%)	77.88***	0.204
No	608 (32.4%)	765 (40.8%)		
Physical fight				
Yes	401 (21.4%)	198 (10.5%)	95.72***	0.226
No	546 (29.1%)	732 (39.0%)		
Bullied off campus				
Yes	186 (10.2%)	128 (7.0%)	14.36***	0.089
No	718 (39.3%)	794 (43.5%)		

TABLE 1 (Continued)

	Serious injury (n = 1877)		$\chi^2$	$\phi$
	Injury (%)	No injury (%)		
Bullied on school property				
Yes	253 (13.5%)	203 (10.8%)	6.10**	0.057
No	694 (37.0%)	727 (38.7%)		
Cyberbullied				
Yes	190 (10.1%)	129 (6.9%)	12.75***	0.082
No	757 (40.3%)	801 (42.7%)		
Suicidal ideation				
Yes	297(15.8%)	228 (12.1%)	10.92**	0.076
No	650(34.6%)	702(37.4%)		
Suicide plan				
Yes	275 (14.7%)	204 (10.9%)	12.46***	0.081
No	672 (35.8%)	726 (38.7%)		
Suicide attempt				
Yes	229 (12.2%)	132 (7.0%)	30.13***	.127
No	718 (38.3%)	798 (42.5%)		
Parents/guardians' use of tobacco				
Yes	171 (9.1%)	125 (6.7%)	7.53**	0.063
No	776 (41.3%)	805 (42.9%)		
Multiple sexual partners				
Yes	387 (20.6%)	255 (13.6%)	37.70***	0.142
No	560 (29.8%)	675 (36.0%)		

Abbreviation: SVG, Saint Vincent and the Grenadines.

\*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

( $\chi^2 = 6.10$ ,  $p < 0.015$ ), cyberbullying ( $\chi^2 = 12.75$ ,  $p < 0.001$ ), suicide ideation ( $\chi^2 = 10.92$ ,  $p < 0.001$ ), suicide plan ( $\chi^2 = 12.46$ ,  $p < 0.001$ ), suicide attempt ( $\chi^2 = 30.13$ ,  $p < 0.001$ ), parental/guardian's tobacco use ( $\chi^2 = 106.44$ ,  $p < 0.001$ ) and having multiple sexual partners ( $\chi^2 = 37.70$ ,  $p < 0.001$ ) were strongly linked to major injuries.

### 3.3 | Logistic regression analysis of correlates with adolescent injuries in SVG

The results from binomial logistic regression on the variables linked to major injuries among this study population are presented in Table 2. The results further showed that adolescents who were males (aOR = 1.245, 95% CI = 1.011–1.533), attacked physically (aOR = 1.721, 95% CI = 1.355–2.184), engaged in a physical fight (aOR = 1.838, 95% CI = 1.468–2.302), attempted suicide (aOR = 1.518, 95% CI = 1.135–2.030), and had multiple sexual partners (aOR = 1.449, 95% CI = 1.164–1.805) contributed significantly to the model of the occurrence of serious unintentional injuries in SVG.

TABLE 2 Logistic regression analysis of correlates with adolescent injuries in SVG (n = 1877).

	B	Wald test (z-ratio)	Adjusted odds ratio	95% Confidence interval for odds ratio	
				Lower	Upper
Demographic					
Gender (male)	0.219	4.260	1.245*	1.011	1.533
Grade	0.172	2.612	1.188	0.964	1.463
Personal					
Truancy	0.030	0.073	1.031	0.828	1.283
Substance use					
Marijuana smoking	0.192	1.647	1.211	0.904	1.624
Current smoking of cigarettes	0.158	0.676	1.172	0.803	1.710
Amphetamine use	0.108	0.229	1.114	0.715	1.737
Alcohol	0.146	2.007	1.158	0.945	1.417
Psychosocial					
Physical attacks	0.543	19.881	1.721***	1.355	2.184
Physical fight	0.609	28.186	1.838***	1.468	2.302
Bullied on-school property	0.096	0.618	1.100	0.867	1.396
Bullied off-school	0.254	2.933	1.289	0.964	1.725
Cyberbullied	0.114	0.661	1.121	0.851	1.476
Suicidal ideation	0.095	0.457	1.100	0.835	1.448
Suicidal plan	0.049	0.126	1.050	0.802	1.375
Suicidal attempt	0.417	7.921	1.518**	1.135	2.030
Parental use of tobacco	0.164	1.424	1.179	0.900	1.544
Sex with multiple partners	0.371	10.978	1.449**	1.164	1.805
(Constant)	-5.919***	76.516	0.003		

Note: Hosmer and Lemeshow test (goodness-of-fit),  $\chi^2 (8) = 1068.207$ ,  $p = 0.424$ .

Abbreviation: SVG, Saint Vincent and the Grenadines.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

## 4 | DISCUSSION

Using information from the 2018 GSHS, the study examined the prevalence of serious unintentional injuries and their correlates among a nationwide sample of SVG's in-school adolescents. The prevalence of serious unintentional injuries among the study's population was estimated to be 50.5%. The reported prevalence in this study is higher than the prevalence of 24% and 38% found in Canada<sup>5</sup> and China,<sup>6</sup> respectively. Also, in-school adolescents in SVG had a higher

prevalence of serious unintentional injuries compared to African countries, such as Mauritius (39%)<sup>12</sup> and Zambia (43.4%).<sup>11</sup> Conversely, the prevalence of serious unintentional injuries in SVG was lower than in other developing countries like Ghana—66%,<sup>10</sup> Djibouti—61.1%,<sup>9</sup> and Liberia (71.6%).<sup>8</sup> Nonetheless, there is no vast difference between the prevalence reported in the current study and the 54.3% injury prevalence found among adolescents in eight Caribbean countries.<sup>13</sup> This prevalence suggests that about half of in-school adolescents in SVG have a serious unintentional injury history, which could pose a serious risk to their health and education.

Drawn from the SEM, the findings suggest that some personal and psychosocial factors emerged as significant predictors with increased odds of serious unintentional injuries among in-school adolescents in SVG. Specifically, corroborating earlier investigations,<sup>6,12,13,24</sup> the current analysis found higher odds (1.245) of severe injuries among males than females, after adjusting for other factors. Varying empirical perspectives exist concerning the role of gender in the occurrence of injuries. Adolescent boys in most studies were more susceptible to serious unintentional injuries because of their higher likelihood of risk-taking behaviors, were physically more active, and were often noted for competitive sports.<sup>25,26</sup> This perspective could, in part, serve as a plausible explanation for this identified outcome of why adolescent males in SVG had a higher risk of serious injuries than females.

The current study further showed that adolescents' engagement in violent physical behaviors significantly increased their risk of injury. Adolescents who experienced physical attacks were at higher risk (1.721) of being seriously injured than those who were not physically attacked. Moreover, in-school adolescents who reported being involved in physical fighting had 1.838 times more odds of being seriously injured, perhaps through falls and physical knocks. Supporting previous findings,<sup>7-9,12</sup> physically violent behaviors (physical attacks and physical fights) were found to be significant predictors of serious injuries among adolescents. Consequently, adolescents getting injured due to physical attacks could have resulted from a context of unbalanced strength and power,<sup>13</sup> where the victim of a physical attack is usually disadvantaged. Adolescents who were physically attacked may retaliate through physical fights, predisposing them to injuries.<sup>27</sup> Besides physical attacks leading to physical fights, adolescents' engagement in physical fights may be influenced by a host of factors. Scholars have suggested that adolescents' engagement in one form of aggressive behavior could be in response to other violent behaviors against them. For example, Jansen et al.<sup>28</sup> noted that being a victim or a bullying offender is related to a higher inclination to engage in physical fights, which could lead to injuries requiring medical attention. Other antecedents, like profighting attitudes, may trigger physical fighting and eventually cause severe injuries.<sup>27</sup> Practically, school-based interventions that build adolescents' resilience towards anger management through nonviolent means should be effectively implemented to prevent physical attacks and fights among in-school adolescents in SVG. These findings warrant reinforcement of anti-violence policies in schools.

Akin to previous studies,<sup>7,10,29,30</sup> the study found teenagers who attempted suicide were 1.5 times more likely to be seriously injured

than peers who did not attempt suicide. Some studies also established the predictive effect of suicidal ideation on the occurrence of injuries,<sup>6,10,12,13</sup> which was not found in the current study even after adjusting for other variables. Nonetheless, Smith et al.<sup>31</sup> ascribed a failed suicidal attempt to the occurrence of serious injuries. Also, we speculate a bilateral relationship between suicidal attempts and the occurrence of serious injuries. Adolescents with severe injuries, such as injuries resulting in the loss of a body part, may likely experience disturbed body image. The psychological torture of perpetually living without a body part could trigger suicidal ideation and subsequently attempted behaviors among them.

Unlike previous studies,<sup>6,7,10,13</sup> the present study found higher injury odds among in-school adolescents with multiple sexual partners. There is a paucity of empirical evidence to support this finding. Nonetheless, literature has shown that 31.9% of adolescents in the Caribbean region had engaged in multiple sexual risk behaviors associated with several risk factors, such as substance use and physical fighting.<sup>32</sup> It is more likely that adolescents whose partners may suspect them of cheating with other sexual partners could trigger physical fights or confrontations, leading to serious injuries. Hence, relationship issues such as insecurity and infidelity among in-school adolescents with multiple sexual partners might be predictive of physical attacks and physical fights, which could cause serious injuries among in-school adolescents.

## 4.1 | Strengths and limitations

The study uses a big dataset to examine serious injuries among adolescents in SVG. Due to the sample's representativeness, the research findings could be useful towards designing appropriate interventions to manage unintended injuries among in-school adolescents in SVG and broadening understanding of the risk factors for unintentional injuries. However, the study has some limitations. Given the cross-sectional design of the GSHS, we only investigated the associations between several risk factors and adolescent injuries, devoid of any causal inferences. Further, employing a single item to evaluate mental health issues, such as worrying and suicidal behaviors, poses some limitations in adequately capturing all clinical symptoms required for diagnostics. The self-reported nature of the study raises social desirability concerns, including nonresponse biases. The survey included only in-school adolescents. Consequently, observed outcomes cannot be generalized to the country's out-of-school adolescent population. Notwithstanding these drawbacks, the study's results are a foundation for future studies and health promotion interventions for SVG's young people.

## 4.2 | Practical implications

In-school adolescents' serious unintentional injuries relate to several sociodemographic and psychosocial factors. Therefore, schools in SVG should offer children support networks and mental health

assistance through behavioral supervision and how to respond to all forms of bullying behaviors.<sup>33,34</sup> School management in SVG could appoint staff as school psychosocial health focal points to spot in-school adolescents at risk of serious harm.<sup>23</sup> The SVG educational system could embrace a comprehensive and all-encompassing approach using a digitized online tool for assessing the risk of serious injuries. Such interventions could help students respond to standardized inquiries concerning significant injuries at predetermined intervals. This approach would help identify each student's potential risks for serious harm and provide appropriate therapy and referrals in view of those risks.<sup>35</sup>

Schools in SVG could provide opportunities for skills acquisition through sports, music, as well as other activities that stimulate in-school adolescents' enthusiasm and offer healthier social activities. Coordinated efforts by school administrators, parents, civil society organizations, and other key stakeholders will significantly minimize serious injuries, improve mental health, and help improve academic outcomes.

## 5 | CONCLUSION

Among the national sample of in-school adolescents in SVG, a moderately high injury prevalence was observed among in-school adolescents in SVG. Many explanatory factors (demographic, substance use and abuse, and psychological) were discovered to be related to serious injury among in-school adolescents in SVG, in addition to the moderately high frequency of serious injury. If the current injury rate persists, SVG will not meet their targets for good health and quality education for in-school adolescents. Hence, the government, stakeholders in education, communities, and families must reinforce policies and interventions through collaborative initiatives to affect in-school adolescents' aggression and self-harm behaviors. The use of integrative health promotion and antiviolence campaigns, and educational measures could help minimize or eradicate this menace.

### AUTHOR CONTRIBUTIONS

**Jacob O. Sarfo:** Conceptualization; data curation; formal analysis; investigation; methodology; software; supervision; validation; visualization; writing—original draft; writing—review and editing. **Paul Obeng:** Conceptualization; data curation; formal analysis; investigation; methodology; software; validation; visualization; writing—original draft; writing—review and editing. **Newton I. Gbordzoe:** Conceptualization; data curation; formal analysis; investigation; methodology; software; validation; visualization; writing—original draft; writing—review and editing. **Timothy P. Debrah:** Investigation; methodology; validation; visualization; writing—original draft; writing—review and editing. **Crescens O. B. Ofori:** Investigation; methodology; validation; visualization; writing—original draft; writing—review and editing. **John E. Hagan:** Funding acquisition; investigation; methodology; supervision; validation; visualization; writing—original draft; writing—review and editing.

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### CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

### DATA AVAILABILITY STATEMENT

The authors used data from the GSHS in this study which is freely available and funded by the US CDC and WHO. The WHO repository has this data set available for free download at the Non-Communicable Disease Microdata Repository: "<https://extranet.who.int/ncdsmicrodata/index.php/catalog/878/study-description#metadata-identification>."

### ETHICS STATEMENT

The authors declare that all methods used in this project complied with the sixth edition of Helsinki Declaration. The Institutional Review Boards of the WHO, CDC, and Ministry of Health, Wellness, and Environment of Saint Vincent and the Grenadines provided their approval for the study's ethical standards. All individuals who took part in the study gave their express, written consent. Trail Registration: "Global School-Based Student Health Survey 2018 (VCT\_2018\_GSHS\_v01) Registered August 20, 2021, <https://extranet.who.int/ncdsmicrodata/index.php/catalog/878>."

### TRANSPARENCY STATEMENT

The lead author John E. Hagan affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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