



## Article

# Prevalence and Factors Associated with Interpersonal Violence among In-School Adolescents in Ghana: Analysis of the Global School-Based Health Survey Data

Richard Gyan Aboagye <sup>1</sup>, Abdul-Aziz Seidu <sup>2,3</sup>, Francis Arthur-Holmes <sup>4</sup>, James Boadu Frimpong <sup>5</sup>, John Elvis Hagan, Jr. <sup>5,6,\*</sup>, Hubert Amu <sup>7</sup> and Bright Opoku Ahinkorah <sup>8</sup>

<sup>1</sup> Department of Family and Community Health, School of Public Health, University of Health and Allied Sciences, Hohoe PMB 31, Ghana; raboagye18@sph.uhas.edu.gh

<sup>2</sup> Department of Population and Health, University of Cape Coast, Cape Coast PMB TF0494, Ghana; abdul-aziz.seidu@stu.ucc.edu.gh

<sup>3</sup> College of Public Health, Medical and Veterinary Services, James Cook University, Townsville, QLD 4811, Australia

<sup>4</sup> Department of Sociology and Social Policy, Lingnan University, Tuen Mun, 8 Castle Peak Road, Hong Kong, China; frarthur88@gmail.com

<sup>5</sup> Department of Health, Physical Education, and Recreation, University of Cape Coast, Cape Coast PMB T40494, Ghana; frimpongboadujames@gmail.com

<sup>6</sup> Neurocognition and Action-Biomechanics-Research Group, Faculty of Psychology and Sport Sciences, Bielefeld University, Postfach 10 01 31, 33501 Bielefeld, Germany

<sup>7</sup> Department of Population and Behavioural Sciences, School of Public Health, University of Health and Allied Sciences, Hohoe PMB 31, Ghana; hamu@uhas.edu.gh

<sup>8</sup> School of Public Health, Faculty of Health, University of Technology Sydney, Sydney, NSW 2007, Australia; brightahinkorah@gmail.com

\* Correspondence: elvis.hagan@ucc.edu.gh



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**Abstract:** Interpersonal violence is a critical public health concern that is linked with many negative consequences, including mortality. It is the second most predominant cause of death among male adolescents aged 15–19. This study used a nationally representative data from the recent Ghana Global School-based Health Survey to examine the prevalence and factors associated with interpersonal violence among Ghanaian in-school adolescents. A total of 2214 in-school adolescents were included in the final analysis. Multivariable binomial logistic regression analysis was performed to determine the factors associated with interpersonal violence. The results of the regression analysis were presented as adjusted odds ratios (aOR) with 95% confidence level (CI) in all the analyses. Statistical significance was set at  $p < 0.05$ . The overall prevalence of interpersonal violence was 55.7%, of which the prevalences of physical fighting and attack were 38.2% and 41.5%, respectively. In-school adolescents who had an injury were more likely to experience interpersonal violence (aOR = 2.29, 95% CI = 1.71–3.06) compared with those who did not have an injury. The odds of interpersonal violence were higher among in-school adolescents who were bullied (aOR = 2.48, 95% CI = 1.84–3.34) compared with those who were not bullied. In addition, in-school adolescents who attempted suicide (aOR = 1.56, 95% CI = 1.22–2.47), consumed alcohol at the time of the survey (aOR = 1.88, 95% CI = 1.15–3.06), and were truant (aOR = 1.58, 95% CI = 1.29–1.99) had higher odds of experiencing interpersonal violence. These factors provide education directors and school heads/teachers with the relevant information to guide them in designing specific interventions to prevent interpersonal violence, particularly physical fights and attacks in the school settings. School authorities should organize parent–teacher meetings or programs to help parents improve their relationships with in-school adolescents to prevent or minimize their risky behaviors, including physical fights.

**Keywords:** bullying victimization; Ghana; in-school adolescents; interpersonal violence; suicide attempt

## 1. Introduction

Interpersonal violence is a critical public health concern that is linked with many negative consequences, including mortality [1–3]. Interpersonal violence is the act of engaging in physically dehumanizing activities that negatively affect the health and wellness of individuals [1–3]. Interpersonal violence may take the form of physical attack and or physical fighting perpetrated against adolescents [1,4]. Adolescence (10–19 years age group) is characterized by composite physiological, social, and psychological transformations [5,6]. These changes predispose an adolescent to either commit violence or be a victim of violence [7,8]. Over the years, violence directed at adolescents has developed into a global health problem [1,2]. For instance, in 2015, 51,000 deaths of adolescents were attributed to interpersonal violence globally. It is the second most predominant cause of death among male adolescents aged 15–19 [9]. It negatively affects the victims' physical and psychological well-being, including academic performance [1,10,11].

Globally, studies have shown that approximately one-third of in-school adolescents aged 13–15 have ever experienced physical violence in one form or the other [12,13]. For example, a study in Ghana revealed that bullying among adolescents is high, and 15% of them reported been kicked [14]. Another study in Ghana also found that 32% of in-school adolescents have been engaged in at least two physical fights [15]. This trend indicates the existence of interpersonal violence in the Ghanaian context that requires urgent research attention.

Studies in sub-Saharan Africa have identified male sex, younger age, lack of parent or guardian supervision, lower socioeconomic status, and hunger experience as sociodemographic factors associated with interpersonal violence among in-school adolescents [1,15–17]. Psychosocial factors, including smoking, alcohol use, suicide attempt, truancy, tobacco use, psychological distress, bullying victimization, sedentary behavior, and injury, also trigger interpersonal violence among in-school adolescents [1,16].

Despite the detrimental effects of interpersonal violence among in-school adolescents, there is dearth of research on the prevalence and factors associated with interpersonal violence among Ghanaian in-school adolescents. This research gap makes it difficult to develop evidence-based policies and up-to-date interventions to mitigate interpersonal violence among in-school adolescents. We used data from the 2012 Ghana's Global School-based Health Survey (GSHS), to examine the prevalence and factors associated with interpersonal violence among Ghanaian in-school adolescents. The findings of the study could provide relevant information to direct policies and interventions that seek to prevent or address school-based violence in Ghana.

The study hinges on the co-occurrence model of interpersonal violence [18,19]. The theory posits that individuals who experience at least one form of violence are more likely to experience interpersonal violence [18]. Moreover, the theory proposes that an individual's exposure to violence may increase their likelihood of being physically victimized or abused [19]. Few studies on interpersonal violence among adolescents have employed theoretical frameworks in examining the relationships and factors associated with interpersonal violence [18,19]. In line with this theory and the findings of previous studies, we hypothesized that socio-demographic and psychosocial environmental factors are associated with interpersonal violence among in-school adolescents in Ghana.

## 2. Materials and Methods

### 2.1. Data Source

This study used data from the 2012 GSHS of Ghana. The GSHS is a study conducted among in-school adolescents using World Health Organization (WHO) countries with partnership with the WHO, Centers for Disease Control and Prevention (CDC), and Middle Tennessee State University (MTSU). In Ghana, the survey was conducted in collaboration with the Ministry of Health (MoH) and Ghana Education Service (GES). The GSHS used a self-administered questionnaire to collect data from the adolescents on health behavioral risk and protective factors including alcohol and drug use, dietary behaviors, hygiene,

mental health, physical activity, sexual behavior, tobacco use, violence, and unintentional injury. The dataset is available freely at <https://www.who.int/ncds/surveillance/gshs/ghanadataset/en/> (accessed on 26 March 2020).

## 2.2. Study Design and Sampling Method

The GSHS employed a cross-sectional study design using a two-stage cluster sampling. At the initial stage, the random sampling technique was employed to select junior and senior high schools from all the (then) 10 geographical regions in Ghana. The schools were selected with probability proportional to the schools' enrolment size. At the school level, classes were randomly selected. All the classes in each of the selected schools were included in the sampling frame. All the students aged 10–19 (period of adolescence) were eligible to participate in the survey. This sampling method guaranteed that each identified student had the same chance of being selected for inclusion in the study. Self-reported responses were given to each question on a computer scannable answer sheet by the students. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) protocol for writing the manuscript was adhered to [20]. Specifically, we wrote up the entire manuscript (abstract, introduction, methods, results, discussion, and conclusion) by following the STROBE protocol. The STROBE protocol developed recommendations on what should be included in an accurate and complete report of an observational study [20]. More details about the STROBE protocol are found here: <https://www.equator-network.org/reporting-guidelines/strobe/> (accessed on 26 March 2021).

## 2.3. Study Participants

The GSHS involved 3632 adolescents from the junior high school (JHS) and senior high school (SHS). Out of this, 1648 of the adolescents were from JHS with a response rate of 82%. SHS adolescents constituted 1984 with a response rate of 74%. In this study, 2214 in-school adolescents with full information on all the variables of interest were used for subsequent analysis.

## 2.4. Study Variables

### 2.4.1. Outcome Variable

Interpersonal violence was the outcome variable in this study. It was created as an index from two (2) variables. These variables consist of physical fighting (During the past 12 months, how many times were you in a physical fight?) and physical attack (During the past 12 months, how many times were you physically attacked?). The two variables had the same response options, which include 1 = 0 times; 2 = 1 time; 3 = 2 or 3 times; 4 = 4 or 5 times; 5 = 6 or 7 times; 6 = 8 or 9 times; 7 = 10 or 11 times; and 8 = 12 or more times. The responses were further categorized into “No” for those who responded “0 times” with the remaining responses as “Yes” in both variables. The third variable called interpersonal violence was created using the categorized responses from the two variables (physical attack and physical fight). The adolescent was said to have experienced interpersonal violence if he/she had a “Yes” in at least one of the two variables (physical attack and physical fight). Those who responded “No” after categorization were considered to have no interpersonal violence. The selection and inclusion of the outcome variable were informed by previous studies using the GSHS [1,16].

### 2.4.2. Explanatory Variables

Twenty-two (22) explanatory variables were used. The variables were considered based on their significant association with adolescent interpersonal violence [1,16,21–23] and obtainability in the GSHS dataset. The studied explanatory variables consist of age, grade, sex, hunger, anxiety, loneliness, injury, bullying, current alcohol consumption, current tobacco use, current cigarette smoking, current marijuana use, suicidal ideation, suicidal plan, suicidal attempt, peer support, close friends, truancy, parental/guardian supervi-

sion, parental/guardian connectedness, parental/guardian bonding, and parental/guardian respect for privacy. A detailed description of the variables, including the questions, response options, and coding can be found in the Supplementary Materials Table S1.

### 2.5. Ethical Consideration

Ethical authorization for the GSHS was sought from the WHO, CDC, and MTSU. In addition, institutional permission was obtained from the MoH and GES in Ghana. The GES ensured that all the ethical guidelines involving students in the survey were adhered to. Informed consent was obtained from the head teachers and teachers in all the participating schools. Written informed consent was obtained from the students aged 18 and beyond. For individuals below the age of 18, parental/guardian consent and child assent forms were acquired before their participation in the study.

### 2.6. Statistical Analyses

The data were analyzed using Stata software version 16.0 (Stata Corporation, College Station, TX, USA). At the initial stage, the proportion of physical fighting, physical attack, and interpersonal violence were determined using percentages (see Table 1). A Pearson chi-square test was later performed to ascertain the association between interpersonal violence and the explanatory variables. All the variables that indicated a significant relationship in any of the three variables (physical fighting, physical attack, and interpersonal violence) were included in the regression model. Subsequently, multivariable binomial logistic regression analysis was performed to determine the strength of the association between explanatory variables and interpersonal violence (Table 2). The outcomes of the regression analyses were illustrated as adjusted odds ratio (aOR). Statistical significance was set at 95% confidence interval in all analyses. A multicollinearity check using Variance Inflation Factor (VIF) was conducted among the studied variables, with results showing no evidence of multicollinearity. The lowest, highest, and mean VIFs were 1.02, 1.73, and 1.28 respectively. Hence, there was no evidence of multicollinearity among the studied variables. All frequency distributions were weighted while the survey command (svy) in Stata was used to adjust for the complex sampling design of the data.

**Table 1.** Bivariable analysis of proportions of physical fighting, physical attack, and interpersonal violence among in-school adolescents in Ghana (N = 2214).

Variable	Weighted %	Physical Fighting		Physical Attack		Interpersonal Violence	
		Yes (38.2%)	p-Value	Yes (41.5%)	p-Value	Yes (55.7%)	p-Value
<b>Age</b>			0.001		0.080		0.004
14 years or younger	29.2	50.3		46.8		64.9	
15 years or older	70.8	33.2		39.3		51.9	
<b>Sex</b>			0.909		0.185		0.166
Female	46.2	38.3		42.7		56.9	
Male	53.8	38.0		40.5		54.6	
<b>Grade</b>			<0.001		0.004		<0.001
JHS	56.5	46.1		45.7		61.7	
SHS	43.5	27.9		36.1		47.8	
<b>Felt hungry</b>			0.538		0.152		0.316
No	87.1	37.8		40.6		55.0	
Yes	12.9	41.1		47.6		60.3	

Table 1. Cont.

Variable	Weighted %	Physical Fighting		Physical Attack		Interpersonal Violence	
		Yes (38.2%)	<i>p</i> -Value	Yes (41.5%)	<i>p</i> -Value	Yes (55.7%)	<i>p</i> -Value
<b>Injury</b>			<0.001		<0.001		<0.001
No	38.7	22.4		23.7		36.7	
Yes	61.3	48.2		52.8		67.7	
<b>Bullied</b>			<0.001		<0.001		<0.001
No	50.2	24.4		27.9		40.4	
Yes	49.8	52.1		55.3		71.1	
<b>Anxiety</b>			0.006		<0.001		0.002
No	87.0	36.7		39.1		53.7	
Yes	13.0	48.3		57.7		68.9	
<b>Felt lonely</b>			0.054		0.002		0.020
No	85.5	37.3		40.0		54.7	
Yes	14.5	43.3		50.4		61.4	
<b>Suicide ideation</b>			0.001		0.002		0.004
No	83.7	35.8		38.6		53.2	
Yes	16.3	50.5		56.3		68.7	
<b>Suicide plan</b>			<0.001		0.001		0.001
No	81.1	36.0		38.8		53.2	
Yes	18.9	47.7		53.4		66.2	
<b>Suicide attempt</b>			<0.001		<0.001		<0.001
No	78.9	34.2		36.7		51.4	
Yes	21.1	53.1		59.7		71.7	
<b>Current alcohol use</b>			<0.001		<0.001		<0.001
No	87.8	35.1		38.9		52.9	
Yes	12.2	60.5		60.2		76.0	
<b>Current cigarette smoking</b>			<0.001		<0.001		<0.001
No	95.4	36.3		40.1		54.3	
Yes	4.6	77.2		72.1		83.9	
<b>Current marijuana use</b>			<0.001		<0.001		<0.001
No	96.7	37.0		40.4		54.5	
Yes	3.3	73.6		74.0		89.9	
<b>Current tobacco use</b>			<0.001		<0.001		<0.001

Table 1. Cont.

Variable	Weighted %	Physical Fighting		Physical Attack		Interpersonal Violence	
		Yes (38.2%)	<i>p</i> -Value	Yes (41.5%)	<i>p</i> -Value	Yes (55.7%)	<i>p</i> -Value
No	92.5	35.7		39.1		53.7	
Yes	7.5	69.4		71.1		80.5	
<b>Close friends</b>			0.001		0.020		0.045
No	11.3	27.6		33.0		48.7	
Yes	88.7	39.5		42.6		56.6	
<b>Tuancy</b>			<0.001		<0.001		<0.001
No	64.7	31.8		35.3		49.2	
Yes	35.3	49.9		52.8		67.5	
<b>Peer support</b>			<0.001		0.908		0.002
No	68.6	41.4		41.6		57.7	
Yes	31.4	31.2		41.3		51.4	
<b>Parent or guardian supervision</b>			0.320		0.335		0.525
No	58.6	36.7		40.4		55.1	
Yes	41.4	40.2		43.2		56.6	
<b>Parent or guardian connectedness</b>			0.073		0.053		0.043
No	62.3	39.6		43.1		57.2	
Yes	37.7	35.9		38.9		53.2	
<b>Parent or guardian bonding</b>			0.103		0.159		0.009
No	62.1	39.6		42.3		57.1	
Yes	37.9	35.8		40.3		53.4	
<b>Parent or guardian respect for privacy</b>			0.008		0.003		0.009
No	41.8	42.8		46.2		60.4	
Yes	58.2	34.9		38.2		52.3	

Note: *p*-values were generated from the chi-square test.

**Table 2.** Multivariable regression analysis of physical fighting, physically attacked, and interpersonal violence among in-school adolescents in Ghana.

Variable	Physical Fighting	Physical Attack	Interpersonal Violence
	aOR [95% CI]	aOR [95% CI]	aOR [95% CI]
<b>Age</b>			
14 years or younger	1.0	1.0	1.0
15 years or older	0.63 [0.39, 1.03]	0.85 [0.56, 1.29]	0.89 [0.42, 1.12]
<b>Grade</b>			
JHS	1.0	1.0	1.0
SHS	0.67 * [0.46, 0.99]	0.93 [0.66, 1.30]	0.85 [0.61, 1.17]

Table 2. Cont.

Variable	Physical Fighting	Physical Attack	Interpersonal Violence
	aOR [95% CI]	aOR [95% CI]	aOR [95% CI]
<b>Injury</b>			
No	1.0	1.0	1.0
Yes	1.95 ** [1.40, 2.73]	2.33 *** [1.91, 2.73]	2.29 *** [1.71, 3.06]
<b>Bullied</b>			
No	1.0	1.0	1.0
Yes	2.25 *** [1.58, 3.21]	2.17 *** [1.73, 2.72]	2.48 *** [1.84, 3.34]
<b>Anxiety</b>			
No	1.0	1.0	1.0
Yes	1.17 [0.77, 1.76]	1.49 * [1.08, 2.05]	1.38 [0.91, 2.12]
<b>Felt lonely</b>			
No	1.0	1.0	1.0
Yes	1.01 [0.76, 1.35]	1.08 [0.81, 1.43]	0.93 [0.69, 1.25]
<b>Suicide ideation</b>			
No	1.0	1.0	1.0
Yes	1.06 [0.71, 1.56]	1.05 [0.78, 1.42]	0.99 [0.66, 1.48]
<b>Suicide plan</b>			
No	1.0	1.0	1.0
Yes	1.11 [0.80, 1.53]	1.09 [0.75, 1.60]	1.10 [0.75, 1.60]
<b>Suicide attempt</b>			
No	1.0	1.0	1.0
Yes	1.39 [0.87, 2.21]	1.64 ** [1.18, 2.28]	1.58 * [1.01, 2.47]
<b>Current alcohol use</b>			
No	1.0	1.0	1.0
Yes	1.85 ** [1.37, 2.50]	1.43 [0.90, 2.27]	1.88 * [1.15, 3.06]
<b>Current cigarette smoking</b>			
No	1.0	1.0	1.0
Yes	1.56 [0.89, 2.74]	0.93 [0.59, 1.48]	0.94 [0.59, 1.49]
<b>Current marijuana use</b>			
No	1.0	1.0	1.0
Yes	1.13 [0.47, 2.74]	1.11 [0.52, 2.37]	2.22 [0.89, 5.51]
<b>Current tobacco use</b>			
No	1.0	1.0	1.0
Yes	1.62 [0.88, 2.98]	1.87 * [1.08, 3.23]	1.39 [0.84, 2.31]
<b>Close friends</b>			
No	1.0	1.0	1.0
Yes	1.61 ** [1.17, 2.20]	1.41 [0.98, 2.04]	1.25 [0.83, 1.88]
<b>Truancy</b>			
No	1.0	1.0	1.0

Table 2. Cont.

Variable	Physical Fighting	Physical Attack	Interpersonal Violence
Yes	1.51 *** [1.26, 1.82]	1.51 *** [1.26, 1.82]	1.56 ** [1.22, 1.99]
<b>Peer support</b>			
No	1.0	1.0	1.0
Yes	0.67 *** [0.58, 0.78]	1.17 [0.96, 1.42]	0.87 [0.75, 1.01]
<b>Parent or guardian connectedness</b>			
No	1.0	1.0	1.0
Yes	1.13 [0.92, 1.40]	0.96 [0.75, 1.22]	1.08 [0.90, 1.30]
<b>Parent or guardian connectedness</b>			
No	1.0	1.0	1.0
Yes	0.95 [0.74, 1.22]	0.95 [0.80, 1.14]	0.92 [0.78, 1.10]
<b>Parent or guardian respect for privacy</b>			
No	1.0	1.0	1.0
Yes	0.80 [0.61, 1.05]	0.86 [0.68, 1.09]	0.84 [0.64, 1.11]
Pseudo R <sup>2</sup>	0.1500	0.1250	0.1409
N	2214	2214	2214

N = Sample size; aOR = Adjusted Odds Ratio; CI = Confidence Interval; 1.0 = reference category; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

### 3. Results

#### 3.1. Prevalence of Physical Fighting, Physical Attack, and Interpersonal Violence

The overall prevalence of interpersonal violence was 55.7% of which the prevalences of physical fighting and physical attack were 38.2% and 41.5% respectively (Table 1).

#### 3.2. Bivariate Analysis of Interpersonal Violence across the Explanatory Variables among In-School Adolescents

Table 1 presents the results of the bivariable analysis of interpersonal violence and the explanatory variables. The prevalence of interpersonal violence was higher (64.9%) among adolescents aged 14 years or younger compared with those aged 15 + (51.9%). Female adolescents recorded higher proportion of interpersonal violence compared to their male counterparts. In terms of school grade, adolescents who were in JHS (61.7%) had higher proportion of interpersonal violence compared to those in the SHS. In addition, there were higher proportions of interpersonal violence among in-school adolescents who felt hungry (55.0%), had injury (67.7%), were bullied (71.1%), experienced anxiety (68.9%), had suicide ideation (68.7%), had suicide plans (66.2%), attempted suicide (71.7%), had close friends (56.6%), were truant (67.5%), and had no peer support (57.7%) compared to those who did not. The results also showed a higher proportion of interpersonal violence among in-school adolescents who currently consumed alcohol (76.0%), smoked cigarette (83.9%), and used marijuana (89.9%), and current tobacco use (80.5%). In-school adolescents with parent or guardian supervision had higher proportion of interpersonal violence compared to those who did not have parent or guardian supervision. Furthermore, in-school adolescents who had no connectedness (57.2%), no bonding (57.1%), and respect for privacy (52.3%) from parent or guardian had higher proportion of interpersonal violence compared to their other counterparts. The Pearson chi-square test results revealed that with the exception of age, felt hungry, and parental/guardian supervision, the remaining explanatory variables showed significant relationship with interpersonal violence.



### 3.3. Multivariable Regression Analysis of Predictors of Interpersonal Violence among In-School Adolescents in Ghana

Table 2 presents the results on the multivariable regression analysis of physical fighting, physically attacked, and interpersonal violence among in-school adolescents in Ghana. After adjusting for all the explanatory variables, sustained injury, being bullied, suicide attempt, current alcohol use, and truancy were significantly associated with interpersonal violence among in-school adolescents. In-school adolescents who had an injury were 2.29 times more likely to experience interpersonal violence (aOR = 2.29, 95% CI = 1.71–3.06) compared to those who did not have an injury. The odds of interpersonal violence were higher among adolescents who were bullied (aOR = 2.48, 95% CI = 1.84–3.34) compared to those who were not bullied. Also, in-school adolescents who attempted suicide (aOR = 1.56, 95% CI = 1.22–2.47), currently consumed alcohol (aOR = 1.88, 95% CI = 1.15–3.06), and played truant (aOR = 1.58, 95% CI = 1.29–1.99) had higher odds of experiencing interpersonal violence.

## 4. Discussion

This study examined the prevalence and factors associated with interpersonal violence among in-school adolescents in Ghana. We found a 55.7% prevalence of interpersonal violence among in-school adolescents. The current prevalence rate is relatively higher than previous studies in Ghana [15,24]. Studies conducted elsewhere also revealed higher prevalence rate of interpersonal violence [1,16,23], although there were differences in the prevalence rates. For example, Senanayake et al. [1] found that 44.2% of in-school adolescents experienced interpersonal violence (physical fight) in Sri Lanka based on the 2016 GSHS. In a study conducted in Tanzania, Pengpid and Peltzer [16] found that 53.1% of in-school adolescents interviewed engaged in physical attacks, whereas 29.9% engaged in a physical fight in the last 12 months prior to the survey. In this study, female adolescents (56.9%) recorded a higher proportion of interpersonal violence compared to their male counterparts (54.6%). However, there was no significant difference in their reporting of interpersonal violence, a finding that supports a previous study [25]. The variations in the prevalence or inconsistencies in studies may be due to socio-cultural norms (e.g., cultural permissiveness), social disruption differences, and methodological tools used to measure physical violence.

Similar to a previous study [16], we found that current alcohol use was significantly associated with interpersonal violence. In-school adolescents who consumed alcohol during the survey were significantly more likely to experience interpersonal violence compared to those who did not consume alcohol. Considering that adolescents who consume alcohol may engage in delinquent behaviors, they are also likely to trigger a fight or become involved in an altercation in which they do not know the cause. In-school adolescents who consume alcohol are at risk of engaging in multiple risk behaviors, including interpersonal violence, because it distorts cognition by impairing one's sense of judgement and decision making, which usually lead to negative action tendencies [26–28]. These negative tendencies have massive impacts on their health and development as adolescents. Studies have already shown that substance use, particularly alcohol and other substance such as illicit drug use, are responsible for irresponsible behaviors in schools and the society [21,29]. There is the need for monitoring and behavior modification interventions (e.g., alcohol cessation therapy, counseling) for in-school adolescents to prevent such unhealthy risky behavior at their age.

Adolescents who had injury were also significantly more likely to experience interpersonal violence. This result is also consistent with other studies conducted in Tanzania [16] and Southeast Asia [22]. Acquah, Wilson, and Doku [14] admitted that being injured was associated with higher probability of youth violence (e.g., being physically attacked). Possibly, injured adolescents who may experience taunts, scorns, and mockeries from peers may retaliate in the form of physical fights or attacks [30].

Bullying victimization was significantly associated with interpersonal violence. The study found that in-school adolescents who were bullied were significantly more likely to experience interpersonal violence. This result is congruent with previous studies conducted elsewhere [16,26,31]. These studies have shown that bullying victimization was associated with increased violent behavior in adolescents. Adolescents who are victims of bullying are more likely to use the same violent behavior to defend themselves and cope with conflict. This finding supports the co-occurrence model of interpersonal violence, which posits that individuals who experience at least one form of violence are more likely to experience interpersonal violence [18]. However, finding ways of knowing students who are often bullied by classmates or colleagues may help to reduce incidence of violence at school. Therefore, anti-bullying school interventions are required in schools.

Suicide attempt was a significant factor associated with interpersonal violence among in-school adolescents. Unsurprisingly, this study found that in-school adolescents who attempted suicide were significantly more likely to engage in physical fight and attacks. Previous studies have shown the linkage between maladaptive behaviors (e.g., suicidal ideations and attempts, drug use) and physical violence via negative feelings of unwantedness and diminished self-worth [32–36]. Therefore, adolescents who have been physically attacked or engaged in serious fights may experience low self-esteem and/or develop negative thoughts about their personality, thus exhibit dysfunctional behaviors such as suicide attempts [37–40]. Alternatively, those who attempt suicide are likely to be provoked by their colleagues who may make a mockery of them and as a consequence, are likely to exchange provocative words or show retaliatory attitudes that may lead to physical fights [41]. Additionally, internalizing and externalizing problems are likely to cause adolescents to make suicide attempts [42,43]. To deal with suicide attempts and interpersonal violence, it is important that school authorities develop interventions for prevention, early identification, and effective management parents. As Pengpid and Peltzer [36] noted, “suicide prevention strategies with school students should prioritize their experience of bullying and substance use” (p. 130).

Truancy was significantly associated with interpersonal violence among in-school adolescents. Truant adolescents were more likely to experience interpersonal violence, a finding that corroborates with results from previous studies [1,16,37]. It is worth noting that adolescents who skip classes or miss school have a higher likelihood to find themselves in violent confrontations with other students. Adolescents who are ridiculed for not attending school regularly usually have adjustment problems and may respond by engaging in either physical attack or fight [39,40]. Moreover, in-school adolescents involved in violence, particularly fights and attacks, are likely to drop out or to be expelled [39,41]. Extant literature has proven that truant students are capable of demonstrating different kinds of risky and violent behaviors [1,42–45].

#### *Strengths and Limitations*

This study has several strengths and limitations. To the best of our knowledge, it is the first study to examine the factors associated with interpersonal violence among in-school adolescents in Ghana. Additionally, using data from a large nationally representative survey with a relatively large sample size allows the generalizability of current findings. Despite these strengths, there also some limitations that need to be mentioned. Due to the cross-sectional nature of the data, this study could only show factors associated with interpersonal violence among in-school adolescents in Ghana rather than to establish causal relationships. Since the in-school adolescents filled out the survey questionnaire themselves, it might have led to incorrect responses. In-school adolescents who were absent on the day of data collection were not included. The study might have encountered issues of recall bias, leading to under- and over-reporting of interpersonal violence and other variables. The dataset is also relatively old; nonetheless, that is the most recent version of the GSHS in Ghana.

## 5. Conclusions

This study has offered insights into interpersonal violence among in-school adolescents in Ghana. More than half (55.7%) of in-school adolescents included in this study experienced interpersonal violence. Current alcohol use, injury, bullying victimization, suicide attempt, and truancy were found to be the factors associated with interpersonal violence among in-school adolescents in Ghana. These factors provide education directors and school heads/teachers with relevant information to guide the design of specific interventions to prevent interpersonal violence, particularly physical fights and attacks in the school settings. Also, school authorities must organize parent–teacher meetings or programs to help parents improve their relationships with in-school children in order to prevent them from engaging in risky behaviors, including physical fights.

**Supplementary Materials:** The following are available online at <https://www.mdpi.com/article/10.3390/adolescents1020015/s1>, Table S1: Study variables.

**Author Contributions:** Conception and design of study: R.G.A., B.O.A. and A.-A.S.; analysis and/or interpretation of data; R.G.A., A.-A.S., F.A.-H., J.B.F., J.E.H.J., H.A. and B.O.A. Authors drafted the original manuscript and revised it for important intellectual content. All authors have read and agreed to the published version of the manuscript.

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**Institutional Review Board Statement:** Ethical approval for the GSHS was obtained from the WHO, CDC, and MTSU. In addition, institutional permission was obtained from the MoH and GES in Ghana. The GES ensured that all the ethical guidelines involving students in the survey were adhered to. Informed consent was obtained from the head teachers and teachers in all the participating schools. Written informed consent was obtained from the students aged 18 years and above. For those below 18 years, parental/guardian consent and child assent forms were sought before their inclusion in the study.

**Informed Consent Statement:** Not Applicable.

**Data Availability Statement:** The dataset is available freely at <https://www.who.int/ncds/surveillance/gshs/ghanadataset/en/> (accessed on 26 March 2020).

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