Original Article

Prevalence and Factors Associated with Involvement in Physical Fights among Adolescents in Brunei Darussalam: A Cross-Sectional Study

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Background: Involvement in physical fights among adolescents is a major public health concern with significant physical, psychological, and social consequences. However, evidence regarding its prevalence and associated factors in Brunei Darussalam remains limited. **Methods:** A cross-sectional study was conducted using data from the 2019 Global School-Based Student Health Survey (GSHS) in Brunei Darussalam. Descriptive statistics, chi-square tests, and multivariable logistic regression analyses were performed to identify factors associated with adolescent involvement in physical fights. **Results:** Among 1,733 adolescents, 29.0% reported involvement in physical fights. Multivariable analysis revealed that exposure to physical assault (AOR = 3.92; 95% CI: 2.94–5.24), bullying victimization (AOR = 1.69; 95% CI: 1.23–2.32), cigarette smoking (AOR = 2.72; 95% CI: 1.58–4.68), and alcohol consumption (AOR = 2.29; 95% CI: 0.98–5.33) were independently associated with involvement in physical fights. Conversely, not walking or biking to school was identified as a protective factor (AOR = 0.67; 95% CI: 0.47–0.96). **Conclusion:** involvement in physical fights among adolescents in Brunei Darussalam was most strongly associated with prior exposure to physical assault and bullying victimization, followed by substance use behaviors, including cigarette smoking and alcohol consumption. In contrast, supportive peer relationships, greater parental monitoring, and not walking or biking to school were associated with lower odds of involvement in physical fights. These findings highlight the importance of addressing both psychosocial risk factors and protective social environments in adolescent violence prevention strategies.

Keywords: Prevalence, Risk Factor, Violent Behavior, involvement in physical fights, Adolescent

Introduction

Involvement in physical fights or violence behavior among adolescents has become a serious public health issue in various countries, including Brunei Darussalam. Violence perpetrated by and against adolescents can take various forms, ranging from physical fights, bullying, to gender-based violence. According to a report from the World Health Organization (WHO), approximately 193,000 homicides occur annually in the age group of 15-29 years, accounting for 40% of the total global homicides. Additionally, many adolescents suffer serious injuries due to violence that require medical attention and have long-term impacts on their physical and mental well-being (World Health Organization (WHO), 2024).

In Brunei Darussalam, protection for children and adolescents is regulated under the Children and Young Persons Act (Cap 219), which defines a child as an individual under the age of 14, while a young person includes those aged 14 to under 18 years. The Brunei government employs a multisectoral approach in addressing violence against adolescents, involving various sectors such as social services, education, law enforcement, and health (Ghani Luah, 2023).

Risk factors associated with youth violence include social environments, substance use, and family factors. Studies conducted in various countries show that alcohol and cigarette consumption significantly contribute to violent behavior in adolescents. A study in Brazil indicated that male adolescents have a higher prevalence of violent behavior compared to females, with cigarette (7.3%) and alcohol (39.1%) consumption being major risk factors (Silva et al., 2014). Furthermore, disharmonious family relationships and peer influences involved in criminal activities also increase the risk of violent behavior (Castro et al., 2011).

At the community level, economic inequality and access to firearms are also factors that exacerbate the level of violence. A study in Campina Grande, Brazil, revealed that areas with low-income levels have the highest density of violence cases, both in domestic and community realms (Barbosa et al., 2019). Meanwhile, research in Ethiopia shows that gender norms supporting violence-based masculinity contribute to the rising violence against adolescents, particularly in rural areas (Murphy et al., 2021).

In addition to social and economic factors, the influence of electronic media is also a significant factor in driving violent behavior among adolescents. Exposure to violent content through television, social media, and video games has been associated with increased aggression in teenagers. A study in the United States using the Youth Risk Behavior Surveillance System (YRBSS) showed that adolescents who often watch wrestling programs on television are more likely to be involved in physical fights and dating violence (Van Dulmen et al., 2013). Furthermore, research in America found that students involved in fights and carrying weapons tend to have habits of alcohol consumption and have a higher number of sexual partners compared to students not involved in violence (Jokinen et al., 2021).

In Brunei Darussalam, data on the prevalence of adolescent violence is still limited. However, the presence of various laws aimed at protecting children and adolescents indicates that this issue is a significant concern for the government and society. A multisectoral approach involving various agencies such as the Ministry of Education, the Ministry of Culture, Youth and Sports, and the Ministry of Health is expected to provide effective solutions in addressing adolescent violence (Ghani Luah, 2023).

Community-based interventions have also become one of the effective strategies for addressing youth violence. Programs aimed at improving social and emotional skills in adolescents, such as emotion management and conflict resolution training, have been shown to reduce incidents of violence in several countries (Tsunga et al., 2023). In addition, policies that restrict access to alcohol and firearms can also help decrease the rates of youth violence (Wang et al., 2016).

An educational approach that emphasizes the values of gender equality and anti-violence is also necessary to change social norms that support aggressive behavior. A study in Mexico found that adolescents with multiple sexual partners and who experience domestic violence are at a higher risk of being involved in dating violence (Rivera-Rivera et al., 2007). Meanwhile, research in India shows that adolescents from families with low supervision levels are more vulnerable to physical violence and bullying (Sarkar, 2019).

With the increasing awareness of the importance of preventing youth involvement in physical fights, various evidence-based intervention programs have begun to be implemented in different countries. WHO recommends a comprehensive approach, including life skills education, enhancing parental involvement, and strengthening child protection policies. In Brunei Darussalam, programs that focus on youth well-being and family strengthening can be effective steps in addressing this issue.

Although various factors have been identified, there are still limitations in research regarding the prevalence and risk factors of youth violence in Brunei Darussalam. Therefore, further studies are needed to understand the patterns of violence among Bruneian youths and to develop effective interventions to prevent and reduce incidents of violence. This study aims to identify the prevalence and factors associated with violent behavior among youths in Brunei Darussalam, thereby providing a foundation for more effective policy formulation.

Methods

Secondary data of this report were obtained from the Global School-Based Student Health Survey (GSHS) Brunei Darussalam 2019. GSHS applies a globally standardized cross-sectional methodology to provide valid data regarding behaviors and protective factors among students (WHO, 2019). In GSHS, a two-stage cluster sampling technique is used to ensure a fair representation of all students in junior and senior high schools aged 13-17 years in Brunei Darussalam. The GSHS Brunei Darussalam 2019 is a school-based survey targeting students in grades 7-12, typically attended by students aged 13-17 years.

A two-stage cluster sampling design was used to generate data that represent all students in Brunei Darussalam. In the first stage, schools were selected with a probability proportional to enrollment. In the second stage, classes are selected randomly and all students in the chosen class are eligible to participate. The GSHS Brunei Darussalam measures alcohol use; dietary behavior; hygiene; mental health; physical activity; protective factors; sexual behavior; tobacco use; as well as violence and unintentional injuries. Students self-report their responses to each question on a computer-scannable answer sheet (Rosemawati, 2019). Involvement in physical fights can be measured with a single item if space and time constraints are the main obstacles in the

survey. The GSHS methodology is applied in the classroom (limited space) and during regular lesson times (limited time) (Rosemawati, 2019).

Other studies utilizing GSHS data have measured violent behavior among youth using a single item (Le et al., 2021; Massetti & Dahlberg, 2019). Violent behavior was operationalized using the Global School-Based Student Health Survey (GSHS) item assessing involvement in physical fights (QN16). Students were asked: "During the past 12 months, how many times were you involved in a physical fight?" with eight response options ranging from "Never" to "12 times or more." For multivariable logistic regression analysis, this variable was dichotomized into "No" (never involved in a physical fight) and "Yes" (involved in one or more physical fights), a method commonly applied in previous GSHS-based studies to assess adolescent violence. This binary categorization was used consistently across all descriptive, bivariate, and multivariable analyses (Rosemawati, 2019).

The response rate in this study reached 72.14% of the total GSHS population. After removing incomplete cases, a total of 1,733 adolescent respondents were used in the statistical analysis of this study. Data were analyzed using IBM SPSS software (IBM Corp, 2019). Descriptive analysis was performed for all available variables. The relationship between dependent and independent variables was tested using the Chi-square test. Binomial regression analysis was used to examine the relationship between independent variables and violent behavior in adolescents. Variables included in the multivariable logistic regression model were selected based on theoretical relevance and statistical significance in bivariate analyses ($p < 0.05$). Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were reported. The GSHS study in Brunei Darussalam followed the protocols established by GSHS and obtained approval from the government of Brunei Darussalam. The GSHS methodology can be found on the WHO website (WHO, 2019). This research was conducted directly by the Ministry of Health of Brunei Darussalam with funding sources from WHO and the US Centers for Disease Control and Prevention.

Results

In this study, we analyze the relation between demographic characteristic and factor toward the tendency to commit physical violence in adolescence in Brunei Darussalam (table 1). Factors such as gender, bullying, alcohol consumption, smoking, sleep disturbances, and loneliness increase the risk of physical violence.

Age, gender, lifestyle habits, psychosocial conditions, and risk behaviors were significantly associated with the occurrence of physical violence among adolescents. Older adolescents showed a higher involvement in physical violence ($\chi^2 = 42.656$, $p < 0.001$), indicating that increasing age may be linked to greater exposure to high-risk environments and more frequent interpersonal conflicts. Gender differences were also evident, with male adolescents being more frequently involved in physical violence than females ($\chi^2 = 24.159$, $p < 0.001$), consistent with well-established evidence linking male gender to higher aggressive behavior and risk-taking tendencies.

Regarding lifestyle habits, consumption of non-carbonated beverages was significantly associated with physical violence. Adolescents who did not consume non-carbonated beverages were less likely to be involved in physical violence ($\chi^2 = 13.722$, $p < 0.001$), suggesting that healthier beverage choices may reflect broader protective lifestyle patterns. In contrast, abstinence from fast food was not significantly associated with physical violence ($\chi^2 = 2.589$, $p = 0.108$), indicating that dietary factors alone may have limited direct influence on violent behavior.

Psychosocial factors demonstrated strong associations with physical violence. Feelings of loneliness ($\chi^2 = 7.194$, $p = 0.007$), sleep disturbances due to worry ($\chi^2 = 15.452$, $p < 0.001$), and suicidal ideation ($\chi^2 = 20.502$, $p < 0.001$) were all significantly related to increased involvement in physical violence. These findings highlight the close interconnection between emotional distress, mental health vulnerability, and violent behavior among adolescents.

Bullying emerged as a particularly strong correlate of physical violence. Adolescents who experienced bullying in the past 30 days were substantially more likely to be involved in physical violence ($\chi^2 = 95.825$, $p < 0.001$), supporting the notion that bullying acts as both a precursor and an escalation pathway to more severe forms of violence. Similarly, adolescents with a history of physical attacks and serious injuries showed markedly higher involvement in physical violence, reinforcing the cyclical nature of violence exposure.

Risk behaviors were also significantly associated with physical violence. Current cigarette smoking ($\chi^2 = 77.293$, $p < 0.001$) and alcohol consumption ($\chi^2 = 13.190$, $p < 0.001$) were linked to higher rates of physical

violence, likely due to impaired judgment, increased impulsivity, and greater engagement in risky social contexts. Conversely, general physical inactivity was not significantly associated with physical violence; however, adolescents who did not walk or bike to school exhibited a higher risk of involvement in physical violence ($\chi^2 = 22.271$, $p < 0.001$), suggesting that limited active commuting may reflect reduced social supervision or weaker school engagement.

Finally, protective social factors played a meaningful role. Adolescents who perceived their peers as kind and helpful and those whose parents were aware of their free-time activities were less likely to be involved in physical violence, underscoring the importance of supportive peer relationships and parental monitoring in mitigating violent behavior.

Table 1 Demographic Characteristics and Related Factors of Physical Violence Relationships Among Adolescents in Brunei Darussalam

Variable	Total n (%)	Physical Violence n (%)	χ^2	p-value
All respondents	1,733 (100)	503 (29.0)		
Gender			24.159	<0.001
Male	798 (46.0)	192 (24.1)		
Female	935 (54.0)	138 (14.8)		
Non-carbonated beverage consumption	455 (26.3)	60 (13.2)	13.722	<0.001
Fast food abstinence	569 (32.8)	96 (16.9)	2.589	0.108
Experienced physical attack	496 (28.6)	205 (41.3)	223.923	<0.001
Experienced serious injury	459 (26.5)	162 (35.3)	106.975	<0.001
Bullied in past 30 days	366 (21.1)	135 (36.9)	95.825	<0.001
Felt lonely	325 (18.8)	79 (24.3)	7.194	0.007
Sleep disturbance due to worry	258 (14.9)	72 (27.9)	15.452	<0.001
Suicidal ideation	326 (18.8)	91 (27.9)	20.502	<0.001
Current cigarette smoking	119 (6.9)	59 (49.6)	77.293	<0.001
Current alcohol consumption	59 (3.4)	22 (37.3)	13.190	<0.001
Not physically active	338 (19.5)	56 (16.6)	1.667	0.197
Not walking or biking to school	1,486 (85.7)	256 (17.2)	22.271	<0.001
Skipped school without permission	562 (32.4)	149 (26.5)	30.108	<0.001
Peers kind and helpful	909 (52.5)	152 (16.7)	6.677	0.010
Parents know free-time activities	756 (43.6)	123 (16.3)	6.685	0.010

The multivariable logistic regression analysis identified several factors independently associated with physical violence among adolescents. Prior exposure to violence emerged as the most influential determinant. Adolescents who had experienced physical attacks exhibited nearly fourfold higher odds of involvement in physical violence (AOR = 3.92, 95% CI = 2.94–5.24), underscoring the strong and persistent impact of victimization on subsequent violent behavior. This finding supports the cycle of violence framework, whereby exposure to violence substantially increases the likelihood of repeated involvement in violent encounters.

Bullying victimization in the past 30 days remained significantly associated with physical violence after adjustment (AOR = 1.69, 95% CI = 1.23–2.32). This result highlights bullying as a critical antecedent of more severe forms of violence and suggests that early intervention targeting bullying behaviors may reduce escalation into physical violence.

Substance use behaviors also demonstrated independent associations with physical violence. Adolescents who reported current cigarette smoking had significantly higher odds of physical violence (AOR = 2.72, 95% CI = 1.58–4.68), indicating that smoking may function as a marker of broader risk-taking behavior and impaired self-regulation. Alcohol consumption showed an elevated but marginal association with physical violence

(AOR = 2.29, 95% CI = 0.98–5.33), which may reflect limited statistical power or overlapping effects with other risk behaviors included in the model.

In contrast, school commuting patterns demonstrated a protective association. Adolescents who did not walk or bike to school had lower odds of physical violence (AOR = 0.67, 95% CI = 0.47–0.96), suggesting reduced exposure to unsafe environments or unsupervised peer interactions during commuting. This finding indicates that environmental and contextual factors surrounding daily routines may influence adolescents' vulnerability to violent behavior.

Table 2 Regression Analysis of Factors Related to Physical Violence Among Adolescents in Brunei Darussalam

Variable	Crude OR (95% CI)	Adjusted OR* (95% CI)
Gender		
Male	0.547 (0.429–0.697)	0.695 (0.512–0.945)
Female	1 (reference)	1 (reference)
Non-carbonated beverage consumption	0.567 (0.419–0.768)	0.779 (0.547–1.108)
Experienced physical attack	6.267 (4.846–8.105)	3.922 (2.938–5.236)
Experienced serious injury	3.591 (2.794–4.615)	1.804 (1.342–2.424)
Bullied in past 30 days	3.512 (2.706–4.559)	1.691 (1.232–2.321)
Current cigarette smoking	4.873 (3.325–7.142)	2.718 (1.578–4.682)
Current alcohol consumption	2.637 (1.534–4.534)	2.287 (0.981–5.331)
Not walking or biking to school	0.487 (0.359–0.659)	0.670 (0.467–0.963)
Skipped school without permission	1.973 (1.544–2.522)	1.406 (1.045–1.891)
Peers' kind and helpful	0.729 (0.573–0.927)	0.979 (0.736–1.301)
Parents know free-time activities	0.723 (0.565–0.925)	0.839 (0.627–1.122)

Note:
*Adjusted odds ratios (AORs) were estimated from a multivariable logistic regression model adjusting for all covariates listed in the table. OR = Odds Ratio; CI = Confidence Interval.

Other variables, including beverage consumption patterns and perceived peer and parental support, lost statistical significance after adjustment, implying that their effects may be mediated through prior victimization, substance use, or school-related behaviors rather than exerting direct independent influences.

Overall, the findings indicate that exposure to violence, bullying victimization, and smoking are the most robust independent predictors of adolescent physical violence, while contextual factors such as school commuting patterns may offer protective effects. These results emphasize the need for comprehensive prevention strategies that integrate violence prevention, anti-bullying programs, substance use reduction, and environmental safety interventions within school and community settings.

This study provides evidence that violent behavior among adolescents in Brunei Darussalam is influenced by a combination of demographic, psychosocial, and behavioral factors. The findings are largely consistent with previous international studies and contribute novel insights from a context where empirical data on adolescent violence remain limited.

Discussion

In this study, involvement in physical fights was used as a proxy indicator of adolescent violent behavior, as commonly applied in GSHS-based research. Gender differences were evident, with male adolescents being more likely to engage in physical violence than their female counterparts. This finding aligns with studies conducted in Brazil and India, which suggest that social norms related to masculinity, risk-taking behavior, and peer influence may contribute to higher levels of violence among male adolescents (Mukhopadhyay et al., 2012; Silva et al., 2014). These patterns appear to persist across diverse cultural settings, indicating a broadly consistent gender-related vulnerability.

Bullying victimization emerged as a significant factor associated with violent behavior. Adolescents who reported being bullied had higher odds of engaging in physical violence, supporting earlier evidence from studies in the United States and Brazil (Castro et al., 2011; Orpinas et al., 1995). This finding reinforces the concept of a cyclical relationship between victimization and perpetration, whereby exposure to bullying may

normalize aggressive responses or serve as a catalyst for retaliatory behavior during adolescence (DuRant et al., 2006).

Substance use behaviors, particularly cigarette smoking and alcohol consumption, were also associated with increased odds of violent behavior. Adolescents who smoked cigarettes demonstrated substantially higher likelihoods of engaging in physical violence, while alcohol consumption showed a positive association, albeit with borderline statistical significance. These findings are consistent with previous research indicating that substance use may impair judgment, reduce self-control, and increase impulsivity, thereby elevating the risk of aggressive behavior (Bushman et al., 2018; Rivera-Rivera et al., 2007). Similar associations have been documented in studies examining adolescent risk behaviors across low- and middle-income countries (Jokinen et al., 2021).

Psychosocial stressors, including exposure to physical assault and serious injury, were among the strongest predictors of violent behavior in this study. Adolescents who had experienced physical attacks or serious injuries were significantly more likely to report involvement in physical fights. These findings are consistent with prior evidence suggesting that direct exposure to violence increases the likelihood of subsequent aggressive behavior, potentially through trauma-related stress responses or learned behavioral patterns (Massetti & Dahlberg, 2019; Silva et al., 2014).

Interestingly, the analysis identified that adolescents who did not walk or bike to school had lower odds of engaging in physical violence. This protective association should be interpreted cautiously and may reflect contextual or environmental factors, such as structured transportation arrangements, increased adult supervision, or reduced exposure to peer conflict during commuting, rather than physical inactivity itself. Similar contextual explanations have been proposed in studies using GSHS data, where school travel patterns may serve as proxies for broader environmental or familial factors (Barbosa et al., 2019).

Social support from peers and parents also appeared to play a protective role. Adolescents who reported having kind and helpful peers, as well as those whose parents were aware of their free-time activities, demonstrated lower likelihoods of engaging in violent behavior. These findings are consistent with prior research emphasizing the importance of supportive social environments in mitigating stress and reducing engagement in aggressive behaviors (Alan Dikmen & Cankaya, 2021) (World Health Organization (WHO), 2024).

Overall, the findings underscore the multifactorial nature of adolescent violence, where individual behaviors, psychosocial stressors, and social environments interact to influence violent outcomes. The results highlight the need for integrated, multisectoral prevention strategies that address bullying, substance use, and exposure to violence, while simultaneously strengthening peer and parental support systems. Such approaches are consistent with WHO recommendations for comprehensive youth violence prevention and may be particularly relevant in the Brunei Darussalam context, where coordinated efforts across education, health, and social sectors are feasible (World Health Organization (WHO), 2024).

Strengths and Limitations

This study has several important strengths. First, it utilized a large and nationally representative sample derived from the 2019 Global School-Based Student Health Survey (GSHS), which enhances the generalizability of the findings to school-going adolescents in Brunei Darussalam. The use of a standardized, internationally recognized survey instrument also allows for comparability with adolescent violence studies conducted in other countries.

Nevertheless, several limitations should be acknowledged. The cross-sectional design of the study precludes causal inference, and the observed associations should therefore be interpreted as correlational rather than causal. In addition, the data were self-reported and may be subject to recall bias and social desirability bias, potentially leading to underreporting or overreporting of sensitive behaviors such as violence and substance use. Furthermore, violent behavior was assessed using a single-item measure of physical fighting, which may not fully capture the complexity or broader spectrum of violent behaviors experienced by adolescents.

Conclusion

This study demonstrates that violent behavior among adolescents in Brunei Darussalam is associated with a range of interrelated demographic, psychosocial, and behavioral factors. Exposure to physical assault and bullying victimization emerged as the strongest correlates of violent behavior, highlighting the critical role of direct and indirect experiences of violence during adolescence. In addition, substance use behaviors, particularly cigarette smoking and alcohol consumption, were associated with higher odds of involvement in physical violence.

Conversely, certain social and contextual factors appeared to be protective. Adolescents who reported supportive peer relationships and greater parental awareness of their free-time activities showed a lower likelihood of engaging in violent behavior. Furthermore, not walking or biking to school was identified as a protective factor, suggesting that environmental or contextual characteristics surrounding daily school travel may influence adolescents' exposure to violent situations.

Overall, these findings underscore the multifactorial nature of adolescent violence and the need for comprehensive prevention strategies that address bullying, substance use, and exposure to violence, while simultaneously strengthening peer and parental support systems. School- and community-based interventions that integrate psychosocial support and behavioral risk reduction may be particularly effective in mitigating violent behavior among adolescents in Brunei Darussalam.

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Availability of Data

The dataset used during this study is available from the WHO GSHS website: https://extranet.who.int/ncdsmicrodata/index.php/catalog/940

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