

The Associated Risk Factors and Psychosocial Adjustments among the Peer Victimized Adolescents in Malaysia: A Population-based Nationwide Study

pei pei heng (✉ hengpeipei@moh.gov.my)

Institute for Medical Research

Kuang Hock Lim

Institute for Medical Research

Chien Huey Teh

Institute for Medical Research

Balvinder Singh Gill PS

Institute for Medical Research

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Abstract

Background

Bullying and victimization among secondary school – going adolescents is a severe social issue which demands concerted attention from the policy-makers, health-care providers and community. The victimized children, in the long term might develop the deleterious consequences on mental health. This study aimed to determine the prevalence of victimization among Malaysian school-attending adolescents, the associated risk factors and its psychosocial impacts among victims.

Methods

Data was derived from the Global School Health Survey Malaysia (GSHS-M). A total of 25,461 students aged 13–18 years from 234 randomly selected schools were recruited utilizing a two-state cluster sampling design. The study tool employed standardized self-administered questionnaire. Data was analyzed descriptively and multivariable logistic regression using SPSS version 20.0.

Results

About one fifth (17.9%, 95%CI 16.8–19.0) of the respondents reported being victimized at least once in the past 30-days. Made fun of gender and body image was the most prevalent type of bullying (41.0%, 95%CI 38.3–43.8). Multivariable logistic regression analysis further substantiated that likelihood of victimization was higher among the boys (aOR 1.30, 95%CI 1.17–1.44), students of lower secondary form (aOR 1.87, 95%CI 1.64–2.13), those without close friend (aOR 2.09, 95%CI 1.66–2.64) as well as the obese respondents (aOR 1.29, 95%CI 1.13–1.47). Victims without parental support were more likely to missed school (aOR 0.81, 95%CI 0.59–1.13), considered suicide (aOR 1.60, 95%CI 1.18–2.18), made suicide plan (aOR 1.45, 95%CI 2.01–1.08), as well as attempted suicide at least once in the past 12 months (aOR 0.48, 95%CI 0.33–0.69).

Conclusion

School bullying among secondary school-going adolescents warranted specially tailored intervention strategies, particularly to minimize the physical as well as psychosocial impact among the victims.

Background

School bullying and peer victimization among the adolescents has emerged an international concern and received increased attention in past two decades (1, 2). It has been recognized by the worldwide research as a leading adolescent health issue (3). A plethora of studies reported an association of adverse impacts on the physical, emotional (4), behavioral and psychosocial health among the victims and might chronically persist into adulthood. On the other hand, peer victimization was widely reported as a precursor for a later development of violent behavior (5), substance abuse, unsafe sexual behavior and even suicidal ideation (6) or behavior (7, 8). Bullying victimization and the consequences proportionately related to the children's overall wellbeing which had been presented in the UNICEF report addressing global vision of child wellbeing among 21 developed countries in 2007 (9).

Bullying is defined as the aggression and power abuse to intentionally control or cause distress in others (2, 3), which happens repeatedly over time due to power inequality (10). These aggressions can be in direct or indirect forms: direct

bullying including physical (physically hurt such as punching, kicking) or verbal aggressions (made fun, threats, insults and harassment); while indirect bullying involving the social relationship manipulation (gossiping, rumors spreading, left out of activity) (3, 5). The theory behind bullying behavior is best explained by the social exchange framework which proposed the formation of human relationship via utilization of a subjective cost-benefits reasoning and also the resemblance of alternatives (11). In this context, perpetrators obtain the rewarding like power, high-dignity group affiliation and social dominance, via bullying (12).

The aggressive problem of bullying was documented prevalent across countries (13) therefore is of concern to both the health and education system. The prevalence figures were widely recorded across different countries. The school-based survey among high-income countries reported an average prevalence of bullying among school-going adolescents ranging from 2% up to 32% (14). On the other hand, only a handful of similar study had been carried out in the low to middle income countries but documented extremely wide range of prevalence from 12–100% (15–17); while another school-based health survey reported a victimization prevalence of 32% while exploring 19 low-middle income countries (18). These international samples have shown that bullying victimization is a typical yet distressing phenomenon among the adolescents worldwide. In addition, Malaysian Ministry of Education in 2016 released a statistics which reported approximately 14,000 school bullying cases nationwide from 2012 until 2015(19). Malaysian study on school bullying victimization remains scarce and majority of the previous studies only focused on certain locality hence could not be hypothesized to the entire Malaysia population. In the past, several researched had been conducted in order to examine the bullying behavior among Malaysian students. Yahaya reported a peer victimization prevalence of 22.7% in Johor state (20). Meanwhile, Khalid in 2007 found verbal bullying is the most prevalent type of bullying while investigating students of Sarawak Religious school(21). Moreover, Noran-Fauziah demonstrated an appalling high figure of victimization rate (95.8%) via psychological bully while attempted to examine only schools in four selected states in Malaysia (22).

Sustained but disregarded victimization often leave persistent negative sequelae on children's psychosocial functioning (23) and thus they are prone to develop clinical symptoms such as anxiety, depression, sleeping and eating disorders, bed wetting, school phobia, feelings of insecurity, low self-esteem, loneliness (24), somatic symptoms (25), substance abuse, unsafe sex behaviors and even depression later during the adulthood(7, 26–27). It had been documented that adults experienced peer victimization during childhood were two times more likely to attempt suicide (28) or distressed by various psychosocial morbidity in later. The aggression arise from bullying was recognized as the modifiable risk factor for mental illness (29, 30). Therefore, those risky school children being targeted for victimization must be identified early in order to accelerate timely prevention, through the enhanced knowledge on the predictors, determinants and protective factors of bullying victimization which warrants current study. The determination of development and occurrence of bullying in school setting is of fundamental importance as this will be the primary step towards inhibition of further propagation of bullying behavior.

Nevertheless, massive of current literature derived from the western or developed societies. There was only a handful of study being performed among low to middle income countries. The subject of bullying victimization remains poorly understood among the Malaysian population. Furthermore, its correlates and how is peer victimization linked to other factors are depending on country specific cultural variation hence need to be determined in present study in view of inconsistent findings reported worldwide. The present study utilized a widely accepted globally standardized instrument therefore allowed substantial comparison with other international data, besides to design the comprehensive antibullying measures tailored to the associated factors referring to the issue in Malaysian society. This study aimed to examine the prevalence and types of victimization, with its associated risk factors among Malaysian school-going adolescents, as well as identifying the psychosocial adjustments among the victims.

Methods

Sampling

The data was drawn from the Global School Health Survey in Malaysia (GSHS-M). The school-based survey geographically included all the thirteen states and three federal territories in Malaysia. The 7710 government primary and 2112 government secondary schools listed by the Ministry of Education Malaysia was used as sampling frame. The country was stratified based on states and federal territories employing multistage stratified cluster sampling method. The initial stage was schools (primary sampling units) selection with probability proportional to enrolment in forms 1 till form 5. A total of 234 secondary schools were selected. The second stage involved the classes selection (secondary sampling units) from the chosen schools via systematic probability sampling with a random start. All students in all selected classes were included to participate in current study. The description of the sampling protocol was outline in Yusoff et al. (31).

Instruments And Measures

Present study utilized questionnaire adopted from the Youth Risk Behavior Survey. The study instrument was translated into Malay language and then back translated to English in order to establish the overall quality of the study tool. Besides, pretest was performed to ensure face validity before the conduction of actual survey. The objective and scope of the survey as well as details of each item in the questionnaire were entirely explained to all respondents before the data collection initiated. Respondents were given a choice not to answer any item and confidentiality of all information given was maintained. In addition, respondents only allowed participating in the study after obtained written consent from their parents/guardians.

The dependent variable was the experience of being bullied, which was measured by the item: Were you being bullied at least once in the past thirty days (Yes / No). Respondents answered "Yes" were categorized as the victims of the school bullying. The type of bullying was also examined via an item: How have you been bullied in the past thirty days. The choices of answers including physical bullying (kicked, pushed or shoved), verbal bullying (made fun of race, religion, gender and body image), and even indirect bullying (left out of activities or some other way such as cyber bullying). The independent variables included gender (male/ female), the form of study (lowers secondary/ upper secondary), number of close friend (none/ at least one), Obese (Yes/ No), underweight (Yes/ No). Only respondents reported being bullied at least once in the last thirty days were included in the analysis while examining the associated risk factors of being victimized. In order to investigate the psychosocial impact or adjustments among those reported being victimized in past thirty days, the dependent variables were set as missed school at least once in past thirty days; ever considered suicide, ever make suicide plan or attempt suicide at least once in the past twelve months.

Data Analysis

The data were cleaned and weighted according to the study design and response rate utilizing the updated population census. The prevalence of being victimized with its associated factors, and types of bullying were illustrated via descriptive analysis. Univariate analyses with p values equal to or less than 0.25 were included in the multiple logistic regressions in order to determine the association between all independent variables and experience of being victimized, as well as the psychosocial adjustments secondary to victimization, after adjusting for the confounding effects. Two-way interaction analyses were performed among all the independent variables. p- value of 0.05 was set as the significance level in which $p < 0.05$ indicated significant two-way interaction between the independent variables. The statistical analyses were carried out using the complex sample design of SPSS statistical software Version 21 at an alpha level of 5%.

Result

About one fifth (17.9%, 95%CI 16.8–19.0) of the respondents reported being bullied at least once in the past 30-days. The proportion of victimization was significantly higher among boys (19.8%, 95%CI 18.7–21), those of lower secondary form (21.1%, 95%CI 19.7–22.5), adolescents without close friend (31.8%, 95%CI 27.2–36.7) and the obese respondents (21.2%, 95%CI 19.2–23.4) (Table 1). In addition, made fun of gender and body image was the most prevalent type of bullying as reported by the victims (41.0%, 95%CI 38.3–43.8), followed by some other way including cyber bullying (27.4%, 95%CI 25.4–26.9), made fun of race religion (14.3%, 95%CI 12.6–16.3). Direct physical bullying only documented 12.2% (95%CI 10.1–14.7), while left out of activities was the least prevalent type of bullying (5.0%, 95%CI 4.1–6.1) (Table 2).

Table 1
Prevalence of victimization & associated factors

Variables	Being bullied at least once in past 30 days						Chi square value	P value
	Yes			No				
	Estimated population (n)	Sample (n)	(%) 95 CI	Estimated population (n)	Sample (n)	(%) 95 CI		
Overall	378424	4167	(17.9) 16.8– 19.0	1738016	19825	(82.1) 81.0– 83.2		
Gender								
Male	209799	2368	(19.8) 18.7– 21.0	847717	9543	(80.2) 79.0– 81.3	65.02	< 0.001
Female	167214	1787	(15.8) 14.5– 17.3	887823	10257	(84.2) 82.7– 85.5		
Form of study								
Lower secondary	275851	3093	(21.1) 19.7– 22.5	1032665	12218	(78.9) 77.5– 80.3	273.63	< 0.001
Upper secondary	101469	1065	(12.6) 11.4– 13.9	701111	7562	(87.4) 86.1– 88.6		
Number of close friend								
None	20588	233	(31.8) 27.2– 36.7	44187	495	(68.2) 63.3– 72.8	102.19	< 0.001
At least one close friend	352985	3884	(17.3) 16.2– 18.4	1686218	19259	(82.7) 81.6– 83.8		
Obese								
Yes	40026	475	(21.2) 19.2– 23.4	148423	1761	(78.8) 76.6– 80.8	20.96	< 0.001

N- Estimated population 2116440 n- sample 23992

Variables	Being bullied at least once in past 30 days							
	Yes			No				
No	323075	3525	(17.3)	1546955	17551	(82.7)		
			16.2–18.4			81.6–83.8		
Underweight								
Yes	35950	385	(19.8)	145951	1597	(80.2)	7.02	0.026
			17.8–21.9			78.1–82.2		
No	327150	3615	(17.4)	1549427	17715	(82.6)		
			16.3–18.6			81.4–83.7		
N- Estimated population 2116440 n- sample 23992								

Table 2
The types of victimization

Type of bullied	Estimated Population (n)	Sample (n)	(%) 95 CI
Kicked, pushed, or shoved	36911	381	12.2 10.1–14.7
Made fun of race & religion	43277	452	14.3 12.6–16.3
Made fun of about sex and body image	123629	1452	41.0 38.3–43.8
Left out of activities	15073	161	5.0 4.1–6.1
Some other way	82792	942	27.4 25.4–26.9
N- Estimated population 301684 n- sample 3388			

Multivariable logistic regression analysis revealed that the likelihood of victimization was higher among the boys (aOR 1.30, 95%CI 1.17–1.44), students of lower secondary form (aOR 1.87, 95%CI 1.64–2.13), those without close friend (aOR 2.09, 95%CI 1.66–2.64) as well as the obese respondents (aOR 1.29, 95%CI 1.13–1.47) (Table 3).

Table 3
The associated risk factors of being victimized

Variables	Being victimized in past 30 days			
	Adjusted OR	95 CI		P value
		UPPER	LOWER	
Gender				
Male	1.30	1.17	1.44	< 0.001
Female	Ref			
Form of study				
Lower secondary	1.87	1.64	2.13	< 0.001
Upper secondary	Ref			
Number of close friend				
None	2.09	1.66	2.64	< 0.001
At least one close friend	Ref			
Obese				
Yes	1.29	1.13	1.47	< 0.001
No	Ref			
Underweight				
Yes	1.15	1.00	1.33	0.046
No	Ref			

In the aspect of psychological impacts, the prevalence of suicidal ideation, plan and attempt among the victims were observed as 7.9% (95CI 4.5–11.1), 6.4% (95CI 3.8–8.2) and 6.8% (95CI 4.2–9.9) respectively. On the other hand, victimized respondents without a single close friend were more likely to have psychological adjustment which included ever considered suicide in the past 12 months (aOR 2.04, 95%CI 1.28–3.26), ever make suicide plan in the past 12 months (aOR 2.37, 95%CI 1.48–3.81), and attempted suicide at least once in the past 12 months (aOR 0.31, 95%CI 0.20–0.47). Moreover, victims with less or non-supportive parents were reported significantly more likely to have psychosocial adverse impacts. Those with parents who never understand their children’s problem were more likely to missed school in the past 30 days (aOR 0.92, 95%CI 0.68–1.23); while victims of school bullying with parents who never know what children were doing in the past 30 days were more likely to missed school in the past 30 days (aOR 0.81, 95%CI 0.59–1.13), considered suicide in the past 12 months (aOR 1.60, 95%CI 1.18–2.18), made suicide plan in the past 12 months (aOR 1.45, 95%CI 2.01–1.08), as well as attempted suicide at least once in the past 12 months (aOR 0.48, 95%CI 0.33–0.69) (Table 4).

Table 4
Psychosocial adjustments among the victimized adolescents

Variables	Missed school at least once in past 30 days			Ever considered suicide past 12 months			Ever make suicide plan past 12 months			Attempt suicide at least once in past 12 months		
	aOR	95 CI	P value	aOR	95 CI	P value	aOR	95 CI	P value	aOR	95 CI	P value
Gender												
male	0.95	0.77–1.16	0.601	0.62	0.48–0.80	< 0.001	0.70	0.54–0.90	0.006	1.43	1.11–1.85	0.006
female	ref			ref			ref			ref		
Form of study												
Lower secondary	1.35	1.09–1.68	< 0.01	0.96	0.73–1.26	0.773	1.01	0.72–1.40	0.973	0.78	0.58–1.06	0.113
Upper secondary	ref			ref			ref			ref		
Number of close friend												
None	0.78	0.53–1.14	0.192	2.04	1.28–3.26	0.003	2.37	1.48–3.81	< 0.001	0.31	0.20–0.47	< 0.001
At least one	ref			ref			ref			ref		
Obese												
Yes	0.99	0.76–1.29	0.935	1.34	0.96–1.87	0.081	1.22	0.84–1.76	0.303	1.12	0.78–1.63	0.534
No	ref			ref			ref			ref		
Parents check homework past 30 days												
Never	1.17	0.91–1.50	0.166	1.27	0.88–1.83	0.004	0.91	0.64–1.31	0.078	1.13	0.74–0.92	0.043
Seldom	1.29	1.00–1.69		0.88	0.61–1.26		0.70	0.47–1.05		1.47	1.03–2.11	
Frequent	ref			ref			ref			ref		
Parents understand problems past 30 days												
Never	0.92	0.68–1.23	0.004	1.24	0.82–1.87	0.353	1.54	1.04–2.27	0.067	0.66	0.47–0.92	0.048

Variables	Missed school at least once in past 30 days			Ever considered suicide past 12 months			Ever make suicide plan past 12 months			Attempt suicide at least once in past 12 months		
Seldom	0.73	0.59– 0.90		1.01	0.70– 1.46		1.11	0.82– 1.52		0.75	0.53– 1.06	
Frequent	ref			ref			ref			ref		
Parents know what children do past 30 days												
Never	0.81	0.59– 1.13	0.023	1.60	1.18– 2.18	0.010	1.45	1.01– 2.08	0.033	0.48	0.33– 0.69	0.001
Seldom	0.75	0.61– 0.92		1.19	0.90– 1.58		1.27	1.05– 1.70		0.67	0.50– 0.89	
frequent	ref			ref			ref			ref		

Discussion

Bullying victimization had been recognized as the universal public health concern which instigated a huge number of adolescents. Present nationwide study revealed the prevalence of peer victimization among Malaysian school-going adolescents was about one in five (17.9%). Our figure was tiny compared to other low middle-income countries like Thailand (27.8%) (32), Tanzania (25%), Zambia (63%) (33), Arab Countries including Lebanon (33.6%) and Morocco (31.9%) (34); somehow higher than developed Western region such as Sweden (10.6%)(35) and Australia (12%)(36). On the other hand, Malaysian Prevalence of victimization was comparable to some neighboring South East Asia Countries including Indonesia (20.6%), Myanmar (19.4%) and Brunei (21.1%). The discrepancy in the prevalence reported in different countries reflected the socioeconomic and cultural variation. The cultural divergence in the understanding, definition and conceptualization of bullying during the cross-national data collection had been reported (37). Individuals from different socio-cultural background perceived and interpret bullying dissimilarly. Besides, differences in the methodological scale assessing school bullying might also contributed to the large difference in the cross-national prevalence. Moreover, the rate of bullying victimization in fact mirrors the attainment in the implementation of national initiatives such as health policy and preventive program. For example, in Scandinavian the victimization prevalence was low principally due to the national programs in place in addressing the issue whereas in Eastern Europe where the victimization rate was high secondary to lack of country-wide national campaign (38). In addition, the fairly low prevalence of being victimized among Malaysian adolescents might be secondary to some diverse factors such as the tiny size country with culture tolerance and acceptance within the community which yield a long standing social stability and balanced community.

The present study reported made fun of gender and body image as the most prevalent type of bullying, consistent with the report released by the National Human Right Society Malaysia (HAKAM) on bullying issue in Malaysian schools in 2018 (39). Although the most extravagant cases of physical bullying were reported in the media which obtained the greatest public attention, instead the verbal and social bullying is most common among Malaysian schools, including teasing, made fun, name-calling and gossiping. On the other hand, the concern about cyber bullying as another type of social bullying rather than direct physical bullying has been raised by the Cyber Security Malaysia. The cyber bullying among Malaysian students has been reported growing almost daily, with 338 cases reported in 2016 compared to only 291 cases in year 2014 (40). The present study shared homogenous findings with that of reported among Korean adolescents in term of categorization of victimization subtypes, that social and verbal bullying were the more common

subtypes of victimization. On the other hand, physical abuse only documented the least frequent type of victimization (16% in Korean study while 12% in present study)(24). In line with our study, similar study conducted in Chile, Croatia, New Zealand and US similarly reported the predominant types of bullying was made fun of body image or face appearance (41–45). Nevertheless, the types of bullying either direct or indirect bullying was predicted by the socio-cultural environment, although multiple studies consistently reported that the boys were more likely to be involved in physical bullying while the girls were more involved in verbal or indirect bullying (46). The stereotypical participation in bullying victimization among the boys and girls related to the social roots. A more aggressive and violent behavior traditionally reinforced within boys, while the girls were more prone to indirect involvement in homogeneous with the classical stereotypes of femininity. These stereotypes affirm the approach used by different genders to ensure a prominent and outstanding place in peer relations.

The boys were significantly more likely to have been victimized compared to the girls, which conforms to other studies (33, 35, 47, 48). This was supported by the ideology that of the differences exist in between male gender construction from the female gender construction. Boys have higher threshold on the acceptance of power practices (49) as well as they were more willing to report their victimization experience compared to girls (18). Literatures had identified strong evidence that bullying victimization correlates with sexuality and gender, especially in the context of feelings of belonging to a social group and school (50). The cultivation theory proposed that gender construct is influenced by the socialization composed from multiple factors in a child's life, such as play between peers, teacher–child relationships, and media influences (51). Through social learning, boys were portrayed to be aggressive, direct, ingenious and closely linked to power relationships. As a result, the gender considerations and the involvement in victimization situations will allow the formation and conceptions of intervention practices in schools applying the inter-sectorial focus.

The age trend displayed an obvious pattern with bullying victimization. The younger children tend to report higher levels of victimization compared the elder age group, reflecting the power imbalance between students at different age. Multiple School-based surveys worldwide consistently documented reports of being bullied revealed a steady downward trend through ages from eight to sixteen years (48, 52). In addition, victimization was found consistently declined across 11 to 15 years across international comparative cross-sectional study in 28 countries (53). We hypothesized this age-related decline plausibly due to the younger children have more students older than them in school who are in a position to bully them. On the other hand, the younger age group has not acquired the assertiveness skills to handle bullying incidents effectively in order to discourage further bullying. As adolescents grow up, the development changes in term of physical, social and psychological provide the protective factor against victimization, as well as the equalization of physical size which further inhibiting victimization. Besides, young adolescents might report bullying victimization more compared to elder age group in view of the social climate (54). Therefore, systematic assessment of bullying in schools is imperative and should reflect the age group of the adolescents involved. The younger age groups require more intensive prevention efforts and intervention program. They need to be educated on the appropriate handling techniques and social skills while facing victimization.

Our study documented obese children had higher odds of being bullied, which correlated with making fun of body image as the most prevalent type of victimization reported. This finding was identical to multiple worldwide studies that having abnormally high body mass index had been shown to be associated with greater risk of being victimized (55–60). The victims' physical appearance and body image has become one of the commonly targeted aspects in cases of bullying; and high body mass index generally associated with physical inactivity. It had been postulated that physically inactive children were less fit compared to those physically active children, therefore were unable to protect or prevent them from being bullied (61). Furthermore, physically activities are helpful in maintaining psychosocial wellbeing as well as improving social skills (62). On the other hand, obese children are more likely to perceive negative self-image which might further weaken self-esteem and self-confident hence making themselves more vulnerable towards peer bullying. Recognizing the basis of body weight as one of the risk factors of victimization, specific and focused intervention must

consider physical activity in order to improve overall health and against obesity. In addition, recommendation of cultural and psychosocial intervention is another important measure to reduce victimization secondary to basis of body image or negative self-image. The school authority and teachers have greatest responsibility in counteracting school bullying by providing adequate concern and support besides developing positive classroom climate to inhibit bullying culture towards students with imperfections.

The present study observed suicidal tendencies among more than one in twenty of the victims (6%-8%). The victimized children are highly distressed and traumatized individuals due to the aversive experience in peer abuse. Therefore they might reinforce negative self-concept, display internalizing problems, exhibit social withdrawal and even suffered from depression. Those lack of peer and parental support were reported more prone to develop psychological distress including truancy as well as suicidal behaviors (7). Sustained victimization will mark significant and persistent health impacts especially on the socioemotional functioning (23). This is because the adolescence is the transitional period from childhood into adulthood hence the developmental phase will be marked by overall changes in physical, mental and social. Peer victimization had been reported to have association with several adjustment difficulties including depression and self-harm (63), school-related fear, anxiety and avoidance (64), low self-esteem and negative self-evaluations (65). In addition, the poor self-esteem was reported to mediate the relationship between victimization and suicidality. Numerous longitudinal studies in past two decades evidently documented the psychosocial maladjustment which significantly increased over time and even poor mental health outcomes which extended into the later adulthood, have been linked with the experience of being involved in interpersonal violent (66–68). The experience of being bullied may cause poor emotional adjustment secondary to the negative self-concept among the youth, reflecting that stress of being victimized repeatedly. The victims of school bullying may intentionally skip class or miss school to avoid peer victimization in conjunction with studies reported in Zambia and China (33, 69). This vulnerable group would be absent from school as they were likely to feel lonely, nervous, anxious and fear of attending school as a result of previous experience. As a result, bullying victimization may post severe impacts on students' academic achievements.

The connectedness and bonding arise from peer support and parental supervision has been recognized as the protective factors against victimization (70). Excellent parental practice as well as acquiring more close friends was found to be less socially isolated therefore were negatively associated with victimization (71). The positive parent-child bonding, including parental emotional support and family warmth enabled both behavioral and emotional pliancy in response to victimization (72). The developmental and attachment theory proposed that the early caregivers' experiences were essential in which they deeply influenced children's behaviors in peer interactions or relationship in later life (73). Children who were dissatisfied with their family function and parental care were found more likely to involve in bullying or even be a victim of bullying. On the other hand, the "friendship protection hypothesis" suggested the quality of support in friendships helps protect against bullying. In other words, acquiring more close friends, adolescents will be less socially isolated hence negatively related to peer victimization. The effective socialization among peers results in an effective response to victimization therefore less vulnerable to aggressive peers. Study reported that when adolescents encountered peer abuse, they mostly seek for help from their parents or peers rather than school teachers, which strongly suggested that emotional support from both social influencers, the parents and peers was of paramount importance (74). In contrast, students with lack of family support and aberrant peer relationship were consistently correlated with the exposure of victimization and even significantly related to suicidal behaviors (75). As the step forward to strengthen these two protective factors in bullying victimization among the youth, the school-based intervention program must be designed involving parents or guardians for better engagements among students in school. It is worth nothing that the "Check and connect" model can be one of the highly recommended measures to be employed. The "Check" model is monitor risk factors of bullying victimization while the "Connect" model includes the effective communication between students, school and parent, so that students may seek better ways in handling victimization issue. In addition, a one-to-one mentor-mentee system is needed to establish a long-term relationship among school staffs, students and parents.

On the other hand, the peer group based intervention is necessary to educate adolescents about negative peer pressures. Children will be able to engage in the interactive group sessions which are useful in addressing useful topics of moral values and peer communication.

This study had a few limitations. Firstly, the data was collected in a cross-sectional survey hence unable to generate causality to those associated factors revealed in the study. Secondly, the self-administered questionnaire might allow misreported from some participants either intentionally or unintentionally. Recall bias may limit its validity. The respondents might have different interpretation of the abusive interactions and variation in the willingness to report such a humiliating yet painful experience. This current GSHS only recruited adolescents who attended school and may not represent all adolescents nationwide as the bullying behavior may varies between the two groups. Nevertheless, the sample size included in this study represented Malaysian adult population, therefore allowed for nationally representative estimates. Bullying and peer victimization constitute more than correlates of suicidality. Future research with long-term follow-up is therefore highly recommended to identify specific causal pathways between bullying and suicidality.

Conclusion

Bullying victimization is a global public health and social problem. The study had identified the vulnerable group and the psychological consequences following bullying victimization among Malaysian school-going adolescents. Hence, the vulnerable groups warrant focus prioritization. A more specially tailored and targeted intervention on moderating the outcomes of bullying is imperative, in order to minimize the physical as well as psychosocial impact among the victims. The establishment of bullying prevention policy is of paramount importance in order to reduce expenditure on bullying-related injuries and ill health problems: and the schools should provide all fundamental resources to address the matter. The preventive program and intervention must be initiated early before bullying rates continue to raise, to ensure that aggressive synergy patterns are addressed before they become rooted.

Declarations

Ethics approval and consent to participate

The Ministry of Education and the respective state's Department of Education have approved the study, while the Ethical Committee of the Ministry of Education and the Medical Research & Ethical Committee, Ministry of Health, Malaysia have granted ethical approval for the study. The Global School Health Survey Malaysia (GSHS-M) was not carried out by the authors, however full datasets are publicly assessable and were extracted online. The written consent was obtained from all the respondents before they were allowed to participate in the study. Parental consent in written form was also obtained for participants below 18 years old.

Consent for publication

The consent for publication had been obtained from all respondents, as for adolescents below 18 years old, written consent was also obtained from their parent or legal guardian.

Availability of data and materials

The Global School Health Survey Malaysia (GSHS-M) datasets has been deposited online and readily assessable on the link of :

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Heng PP analysed and interpreted the data and was the major contributor in manuscript write up.

Teh CH involved in acquisition and management of data.

Lim KH supervised the data analysis and substantively revised the draft of manuscript.

Balvinder Singh Gill reviewed and approved the final manuscript.

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