

Violence-Related Behaviours among Malaysian Adolescents: A Cross Sectional Survey among Secondary School Students in Negeri Sembilan

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Abstract

Introduction: The aim of this study was to determine the prevalence of violence-related behaviours among adolescents and the factors associated with it. **Material and Methods:** This was a cross-sectional school survey conducted on 4500 adolescent students, using a structured questionnaire. Data were collected using the supervised self-administered questionnaire [a modified version of the Youth Risk Behavior Surveillance in the Malaysian National Language (Bahasa Malaysia)]. **Results:** Our study showed that 27.9% of students had been involved in a physical fight, 6.6% had been injured in a fight, 5.9% had carried a weapon, 7.2% had felt unsafe, 18.5% had had their money stolen and 55.0% had had their property stolen. Adolescents who carried weapons to school, smoked, used drugs, felt sad or hopeless and played truant were more likely to be involved in physical fights after adjusting for age, sex, and ethnicity. **Conclusion:** Violence-related behaviours among adolescents, especially involvement in physical fights, are common and are positively associated with certain factors such as smoking, taking drugs, playing truant, feeling sad or hopeless. Interventions designed at targeting adolescent violence should also address these factors and target the high-risk groups. There may be a need to identify and provide services for adolescents who exhibit these factors.

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Key words: Adolescents, Malaysia, Violence, Violence-related behaviour

Introduction

Adolescent violence is a serious social issue globally. Adolescent violence is also making its presence felt in Malaysia, as evidenced by newspaper reports. Violence can be defined in many ways and is a subset of aggressive behaviour. Some have suggested that aggression in childhood leads to violence in adolescent and adulthood.¹ The World Health Organization (WHO) promotes a broad definition of violence:² “*The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation*”.

Violence-related behaviours such as fighting and weapon carrying may lead to serious physical and psychosocial consequences for adolescents. This is indeed a major concern in the nation and has prompted the interest in

violence among adolescents and the risk factors associated with violence and violence-related behaviours. Many studies have tried to shed light on the development of violence among youths.³⁻⁵ Poor parental supervision, family dissolution, negative peer influence, and poverty have all been shown to be associated with violence.³⁻⁵ A greater understanding of the risk factors of violence-related behaviours could offer possible targets for successful intervention.

Materials and Methods

This cross-sectional descriptive study was carried out from June 2001 to August 2001. The questionnaire was established with reference to the Youth Risk Behavior Surveillance (YRBS) survey conducted in the United States of America,⁶ modified to suit the local context (items on sexual behaviours were omitted). The YRBS measures behaviours related to intentional and unintentional injury, tobacco use, alcohol and other drug

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use, sexual activity, diet and physical activity. Based on a series of psychometric tests conducted in America to better understand the quality of the questionnaire and the data collected, YRBS data appear to be generally reliable and valid.⁷ However, validity for use within Malaysia was not studied.

The study was conducted in 7 districts (Seremban, Port Dickson, Kuala Pilah, Jempol, Jelebu, Tampin and Rembau) in Negeri Sembilan (one of the states in Malaysia). Sampling of schools was done using stratified random sampling. Schools were divided, based on their districts and locality, into urban and rural categories. Six schools were chosen randomly from the urban areas and 8 schools from the rural areas.

The study population comprised students (age, 12 to 19 years) from Form 1 to Form 6 ("form" here refers to the grades of school). Two classes were randomly chosen from each form to become the study sample and all the students in the class were chosen as samples. Response rate was calculated based on the number of questionnaires distributed and the number of questionnaires collected at the end of the session.

Response rate was 100% as all the 4500 questionnaires distributed were returned. The 4500 adolescents in this study were fairly evenly distributed by gender (2089 males/46.4% versus 2411 females/53.6%). The mean age was 15.3 years (median, 15). In terms of ethnic group distribution, there were 2335 (51.0%) Malays, 1312 (29.2%) Chinese, 771 (17.1%) Indians and 82 (1.8%) from other ethnic groups (mainly indigenous people), which reflects the ethnic breakdown of the population in Malaysia. More of the adolescents (2325/51.7%) were from the urban areas as compared to the rural areas (2175/48.3%), which is in proportion to the urban/rural population in Negeri Sembilan.

Data were collected using a supervised self-administered questionnaire in the Malaysian national language (Bahasa Malaysia). The questionnaires were pretested before they were used in the field. The pretest was carried out in one of the schools in Negeri Sembilan. Written consent was sought from the State Education Department, school management and verbal consent from all study participants. To ensure maximal response, students were assured that the information gathered would be treated confidentially by strongly emphasising the anonymity of questionnaire responses. To maximise the confidentiality of answers, teachers were not present during the survey and no discussions were permitted throughout the survey. Because of the anonymous nature of the survey, it was not possible to offer direct help to students who had difficulties completing the questionnaire. However, students were told of where to seek help if needed.

Background information about the respondents included

age, gender, education level, ethnicity and religion. Questions related to violent behaviour included (a) "During the past 12 months, how many times has your money been stolen at school or on your way to or from school?"; (b) "During the past 12 months, how many times has your property (e.g., books, pens, erasers etc.) been stolen at school or on your way to or from school?"; (c) "During the past 12 months, how many times have you been in a physical fight?"; (d) "During the past 12 months, how many times have you been in a physical fight in which you were injured and had to be treated by a doctor or nurse?"; (e) "During the past 30 days, on how many days did you carry a weapon such as a knife, club or heavy chain on school property?"; (f) "During the past 30 days, on how many days did you not go to school because you felt you would be unsafe at school or on your way to or from school?"

The statistical significance of differences between groups was tested using the χ^2 test. Factors related to the adolescents' violence-related behaviour were analysed using multiple logistic regression. The statistical analysis was performed using SPSS statistical software package (version 11.5). However, owing to some missing answers to certain survey questions, the denominator used in percentage computation varies according to the responses obtained.

Results

Factors Related to Violence-related Behaviours

Table 1 shows the prevalence of violence-related behaviours among adolescents. Table 2 shows the relationship between violence-related behaviours and demographic factors. Male students were significantly more likely than female students to engage in each of the behaviours we examined, except having their money stolen. There was a significant decline in the frequency of violence-related behaviours after the age of 17. Form 6 students also had less frequency of violence-related behaviours compared to students in the other forms. There was no difference in

Table 1. Prevalence of Adolescent Students Engaging in or Exposed to Violence-related Behaviours by Gender, Negeri Sembilan, Malaysia, 2001

Violence-related behaviours	Male n (%)	Female n (%)	Total n (%)
In a physical fight	824 (39.6)	428 (17.8)	1252 (27.9)
Injured in a physical fight	229 (11.0)	67 (2.8)	296 (6.6)
Carried a weapon	194 (9.3)	70 (2.9)	264 (5.9)
Felt it was unsafe to go to school	180 (8.6)	142 (5.9)	322 (7.2)
Money stolen	383 (18.4)	447 (18.5)	830 (18.5)
Property stolen	1250 (60.0)	1223 (50.7)	2473 (55.0)

the risk of violence-related behaviour between urban and rural areas.

Table 2 shows the relationship between violence-related behaviours and other factors. Adolescents who played truant were also more likely to be involved in violence-related behaviours. Risk-taking behaviours such as smoking, alcohol drinking and other drug use were associated with an increased risk of violence-related behaviours. Personal factors such as suicidal behaviours, including feeling sad or hopeless, suicidal ideation, having suicidal plans and suicide attempts, were also associated with an increased risk of violence-related behaviours. The risk-taking behaviours and the suicidal behaviour of the secondary school students were analysed and elaborated on in other papers.^{8,9}

Physical Fights

Overall, 27.9% of the students had been involved in a physical fight more than once during the past 12 months (Table 1). Table 2 shows the factors associated with adolescents who had been involved in a physical fight. Males (39.6%) were significantly more likely than females (17.8%) to have been involved in a physical fight. There was a significant decline in the frequency of physical aggression with increase in age. Most adolescents (33.0%) had first got involved in physical fights at the age of 13. Students in Form 1 (32.4%) were significantly more likely to have been in a physical fight than those in Form 6 (11.4%). Overall, Malay students (33.1%) were significantly more likely than other ethnic groups (Chinese 21.0%, Indian 24.6%, Others 22.9% respectively) to have been in a physical fight. More adolescents in rural areas had been involved in physical fights (29.7%) as compared to those in urban areas (26.2%) ($P = 0.009$). Adolescents staying with a single parent (36%) were significantly more likely to have been involved in a physical fight as compared to those who stayed with both parents (27.1%).

Injuries and Weapons

About 7% had been injured in physical fights in the past 12 months (Table 1). Table 2 shows the factors associated with adolescents who had been injured in fights. Male students (11%) were significantly more likely than female students (2.8%) to have been injured in a fight. Most of the variables assessed (except age, locality and family structure) were significant predictors of a fight-related injury in bivariate analyses.

About 6% had carried a weapon on school property on more than one of the 30 days preceding the survey (Table 1). Table 2 shows the factors associated with adolescents who had carried a weapon. Male students were more likely than female students to carry weapons and to feel unsafe at school.

About 7.2% had felt unsafe at school or on the way to or from school on more than one of the 30 days preceding the survey (Table 1). Table 2 shows the factors associated with feeling unsafe among students. Male students were more likely than female students to feel unsafe at school.

Theft of Cash or Property

Among all the students, 18.5% of students had had their money stolen at least once in school in the past 12 months. Another 55.0% had had their property stolen at least once in school in the past 12 months (Table 1). Table 2 shows the factors related to adolescent students whose money or property had been stolen.

The results of multiple logistic regressions are shown in Table 3.

Discussion

This study illustrates the high prevalence of violence-related behaviours among secondary school adolescents. Involvement in physical fighting is very common among school-age children in many parts of the world.¹⁰⁻¹² In a study among students in the upper sixth form in Selangor, Malaysia, 10.7% of the respondents had been involved in a physical fight with other people, theft (4.3%), vandalism (2.7%) and had carried a weapon (2.4%).¹³ All these behaviours can lead to more serious forms of violence.

In this study, gender emerged as an important influence on delinquent behavioural patterns. Physical fighting and carrying of weapons were predominantly male activities among secondary school adolescents. Males were 3 times more likely than females to have fought or carried weapons. These findings are consistent with past research.³

This study also showed a significant decline in the frequency of violence-related behaviours after the age of 17. Form 6 students also had less frequency of violence-related behaviours compared to students in the other forms. An earlier study also found that students in lower grades at school participate in and are victims of violence more often than older students.¹⁴ This may be due to the fact that few students progress beyond Form 5 and hence Form 6 students are a highly selected group of “achievers”.

Family factor i.e., single-parent status was also found to be associated with physical fighting among the adolescents in this study. The lack of parental control is said to be the main contributing factor. This finding emphasises the importance of parental monitoring. The current trend in Malaysia is for both parents to work, leaving children to care for themselves or in the care of maids. Consequently, interventions should not only target the problem adolescent but also the family to increase the level of parental monitoring.

Truancy, as represented by how often the respondent

Table 2. Factors Related to Adolescent Students Whose Money/Property was Stolen, Who Had Been Involved in Fights or Injured in Fights, Who Carried a Weapon, Who Felt Unsafe in or Going to School, Negeri Sembilan, Malaysia, 2001

Factors	Involved in fights OR (95% CI)	Injured in fights OR (95% CI)	Carried weapon OR (95% CI)	Felt unsafe OR (95% CI)	Money stolen OR (95% CI)	Property stolen OR (95% CI)
Age (y)						
12-13	2.8 (2.1-3.7)	1.6 (0.9-2.6)	2.1 (1.1-3.9)	2.2 (1.3-3.7)	3.4 (2.4-4.8)	5.5 (4.4-6.9)
14-15	2.6 (2.0-3.4)	1.8 (1.1-3.0)	1.5 (0.8-2.8)	3.0 (1.8-4.9)	2.9 (2.0-4.0)	4.7 (3.8-5.7)
16-17	2.2 (1.7-2.9)	1.8 (1.1-2.9)	2.4 (1.4-4.4)	1.7 (1.0-2.9)	2.1 (1.4-2.9)	4.1 (3.4-5.1)
18-19	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Sex						
Male	3.0 (2.6-3.5)	4.3 (3.3-5.7)	3.4 (2.6-4.5)	1.5 (1.2-1.9)	1.0 (0.9-1.2)	1.4 (1.3-1.6)
Female	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Ethnic group						
Malay	1.7 (1.0-2.8)	0.6 (0.3-1.4)	1.3 (0.5-3.6)	0.6 (0.3-1.4)	1.8 (0.9-3.3)	1.9 (1.2-2.9)
Chinese	0.9 (0.5-1.5)	0.5 (0.2-1.1)	1.2 (0.4-3.4)	0.5 (0.2-1.1)	1.1 (0.6-2.1)	1.3 (0.8-2.0)
Indian	1.1 (0.6-1.9)	0.9 (0.4-1.9)	1.1 (0.4-3.2)	0.9 (0.4-1.9)	1.4 (0.7-2.7)	1.1 (0.7-1.8)
Others	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Malay	1.7 (1.5-2.0)	1.0 (0.8-1.2)	1.1 (0.9-1.4)	0.7 (0.6-0.9)	1.5 (1.3-1.7)	1.5 (1.4-1.7)
Non-Malay	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Religion						
Islam	1.9 (1.6-2.6)	1.2 (0.9-1.7)	1.2 (0.9-1.6)	1.7 (1.3-2.3)	1.9 (1.3-2.0)	1.4 (1.2-1.6)
Christian	1.2 (0.8-1.6)	0.8 (0.4-1.6)	1.4 (0.8-2.5)	1.3 (0.7-2.4)	1.3 (0.8-1.9)	1.0 (0.7-1.3)
Hindu	1.2 (1.0-1.5)	1.7 (1.2-2.5)	1.0 (0.7-1.5)	1.5 (1.0-2.5)	1.3 (1.0-1.7)	0.9 (0.7-1.1)
Buddhist	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Location						
Urban	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Rural	1.2 (1.0-1.3)	1.2 (1.0-1.5)	1.1 (0.9-1.4)	1.0 (0.8-1.3)	1.1 (1.0-1.3)	1.2 (0.8-1.0)
Form						
Form 1	3.7 (2.7-5.2)	3.1 (1.6-6.0)	2.7 (1.4-5.4)	3.0 (1.6-5.8)	3.7 (2.5-5.5)	4.0 (3.1-5.1)
Form 2	3.3 (2.3-4.6)	3.0 (1.5-5.7)	2.6 (1.3-5.3)	5.4 (2.6-9.4)	3.5 (2.3-5.2)	3.7 (2.9-4.7)
Form 3	3.8 (2.7-5.3)	2.7 (1.4-5.2)	3.4 (1.7-6.8)	3.3 (1.7-6.4)	2.9 (2.0-4.4)	3.7 (2.8-4.7)
Form 4	2.8 (2.0-3.9)	2.9 (1.5-5.6)	2.8 (1.4-5.6)	2.1 (1.1-4.2)	2.5 (1.6-3.7)	2.9 (2.2-3.7)
Form 5	2.7 (1.9-3.8)	2.7 (1.4-5.2)	2.4 (1.2-4.8)	2.3 (1.2-4.5)	2.5 (1.7-3.7)	3.3 (2.5-4.2)
Form 6	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Truancy						
Yes	2.2 (1.9-2.6)	2.6 (2.0-3.3)	2.4 (1.9-3.2)	3.2 (2.6-4.1)	1.4 (1.2-1.6)	1.2 (1.1-1.4)
No	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Smoking						
Yes	5.3 (4.4-6.3)	5.9 (4.6-7.6)	5.6 (4.3-7.2)	4.1 (3.2-5.2)	1.6 (1.3-1.9)	2.1 (1.7-2.5)
No	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Alcohol						
Yes	1.4 (1.2-1.7)	2.3 (1.7-3.1)	2.7 (2.1-3.7)	1.2 (0.9-1.7)	1.0 (0.8-1.3)	1.1 (0.9-1.3)
No	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)

Table 2. Contd.

Factors	Involved in fights OR (95% CI)	Injured in fights OR (95% CI)	Carried weapon OR (95% CI)	Felt unsafe OR (95% CI)	Money stolen OR (95% CI)	Property stolen OR (95% CI)
Drugs						
Yes	5.0 (3.8-6.7)	6.7 (4.8-9.3)	8.7 (6.3-12.1)	3.6 (2.5-5.2)	2.6 (2.0-3.5)	2.3 (1.7-3.1)
No	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Marijuana	4.4 (3.0-6.5)	7.8 (5.1-11.7)	7.1 (4.6-11.0)	3.4 (2.1-5.4)	2.3 (1.5-3.4)	1.8 (1.2-2.8)
Ecstasy pills	3.7 (2.1-6.3)	7.3 (4.1-13.0)	9.8 (5.6-17.2)	4.6 (2.4-8.5)	2.6 (1.5-4.4)	1.3 (0.8-2.3)
Sniffed glue	6.3 (4.2-9.4)	6.9 (4.5-10.3)	9.8 (6.5-14.7)	4.7 (3.0-7.2)	3.1 (2.1-4.6)	3.2 (2.1-5.1)
Heroin	7.0 (31.2-15.1)	20.5 (10.2-41.3)	40.3 (19.0-85.7)	14.5 (7.2-28.9)	7.9 (3.9-16.1)	4.6 (1.8-12.0)
Intravenous drug use	8.2 (3.7-18.3)	23.4 (11.5-45.6)	26.7 (13.1-54.2)	14.5 (7.2-29.0)	4.2 (2.1-8.4)	2.6 (1.2-5.7)
Family structure						
Single parents	1.5 (1.1-2.1)	1.6 (0.9-2.8)	1.2 (0.6-2.4)	1.3 (0.7-2.4)	1.2 (0.8-1.9)	1.5 (1.1-2.1)
Both parents	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)	1.0 (NA)
Suicidal behaviours						
Felt sad or hopeless	2.0 (1.7-2.3)	2.3 (1.8-2.9)	2.5 (1.9-3.3)	2.5 (1.9-3.2)	2.1 (1.8-2.6)	1.8 (1.5-2.1)
Seriously considered attempting suicide	2.6 (2.0-3.2)	3.9 (2.8-5.3)	2.9 (2.0-4.1)	3.7 (2.8-5.1)	2.0 (1.6-2.6)	2.0 (1.5-2.5)
Made suicide plan	1.9 (1.6-2.4)	3.3 (2.5-4.4)	3.0 (2.2-4.1)	3.3 (2.5-4.4)	1.9 (1.5-2.4)	1.9 (1.5-2.3)
Attempted suicide	2.9 (2.2-3.9)	4.7 (3.2-6.7)	3.1 (2.0-4.6)	3.8 (2.6-5.4)	2.7 (2.0-3.6)	1.9 (1.4-2.6)

NA: not applicable; OR: odds ratio

Table 3. Results of Multiple Logistic Regression for the Students' Involvement in Physical Fights

Factors	OR	P	95% confidence interval (OR)
Carried a weapon	2.5	0.000	1.8 to 3.4
Smoked	2.3	0.000	1.9 to 2.9
Felt sad or hopeless for 2 weeks or more	2.1	0.000	1.8 to 2.5
Substance abuse	2.0	0.000	1.4 to 2.9
Number of days absent from school in the last 30 days	1.9	0.000	1.5 to 2.2

OR: odds ratio

skipped classes, was related to the prevalence of violence-related behaviours. Respondents who stated that they often skipped classes were also more likely to report that they had engaged in at least one form of violence-related behaviour over the past year as compared to those who had never been truant. Truancy is often a child's way of dealing with school-related failures and may be an indicator of low school bonding. Developing ways of recognising and responding to students who are often absent may help to reduce violence.

There was no difference in the risk of violence-related behaviours in urban areas and rural areas. However, one

study in Canada showed that figures in urban areas were higher than those in the rural areas.¹⁵

Substance use was also common among the adolescents studied.^{8,9} In this study, adolescents who used drugs, smoked or drank alcohol demonstrated more frequent violence-related behaviours. This has also been shown in a study done among adolescents in Scotland, which found that drug use was associated with increased violent behaviour in adolescents.¹⁶ In another study in Colombia, 2 major reasons for adolescent violence appeared to be having been victimised by violence oneself and illicit drug use.¹⁷

In this study, personal factors such as suicidal behaviours, including feeling sad or hopeless, suicidal ideation, having suicidal plans and suicide attempts were also associated with an increased risk of violence-related behaviours. In a study among Finnish adolescents, there was an increased prevalence of depression and severe suicidal ideation among the victim or perpetrator of bullying, the most common type of school violence.¹⁸ The study in Finland showed that depression was equally likely to occur among those who had been bullied and those who were bullies. When symptoms of depression were controlled for, suicidal ideation occurred most often among adolescents who were bullies. This showed that the need for psychiatric intervention should be considered not only for victims of violence but also for perpetrators of violence.

For an intervention to be effective, the targeted risk

factors must be amenable to change. The strongest predictors of subsequent violence were the carrying of weapons, smoking, feeling sad or hopeless, substance abuse and truancy. Because many of the strongest predictors of subsequent violence can be changed, they offer possible targets for successful intervention. This suggests that disrupting early patterns of antisocial behaviour is a promising strategy for the prevention of violence and serious delinquency.

This study is subject to a few limitations. These data on violence-related behaviours in adolescents are based on self-reporting and thus there may be underreporting or overreporting. The data apply only to adolescents who attend school and, therefore, are not representative of all adolescents. A large number of adolescents stop schooling after Form 5. Adolescents who have left or dropped out of schools differ considerably from school-going adolescents. Consequently, the applicability of the results of this study to youths who are no longer attending school is likely to be limited.

A final limitation of the present study is the cross-sectional nature of the survey. Because the instrument was administered to respondents only once at a single moment in time, it is difficult to make statements about cause-and-effect relationships between psychosocial characteristics and behaviours. This type of research design, while allowing us to examine relationships and associations among variables, does not afford the opportunity to conclude with certainty that changes in one characteristic cause changes in another. Longitudinal studies are needed to clarify whether causal relationships exist between certain characteristics and violence-related behaviours.

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REFERENCES

- Loeber R, Hay D. Key issues in the development of aggression and violence from childhood to early adulthood. *Annu Rev Psychol* 1997;48:371-410.
- World Health Organization. Violence: a public health priority. WHO global consultation on violence and health. Geneva: World Health Organization, 1996. WHO Document WHO/EHA/SPI.POA.2.
- Hawkins JD, Herrenkohl TI, Farrington DP, Brewer D, Catalano RF, Harachi TW, et al. Predictors of youth violence. *Juvenile Justice Bulletin* 2000. Available at: http://www.ncjrs.org/html/ojjdp/jjbul2000_04_5/contents.html. Accessed 5 January 2006.
- Singer MI, Miller DB, Guo S, Flannery DJ, Frierson T, Slovak K. Contributors to violent behavior among elementary and middle school children. *Pediatrics* 1999;104:878-84. Available at: <http://pediatrics.aappublications.org/cgi/content/full/104/4/878>. Accessed 5 January 2006.
- Borowsky IW, Ireland M. Predictors of future fight-related injury among adolescents. *Pediatrics* 2004;113(3 Pt 1):530-6. Available at: <http://pediatrics.aappublications.org/cgi/content/full/113/3/530>. Accessed 5 January 2006.
- Center of Disease Control (CDC): Mortality and Morbidity Weekly Report (MMWR), Surveillance Summaries June 09 2000; 49 (SS05):1-96. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5312a1.htm>. Accessed 22 June 2006.
- Brener ND, Kann L, McManus T, Kinchen SA, Sundberg EC, Ross JG. Reliability of the 1999 Youth Risk Behavior Survey Questionnaire. *J Adolesc Health* 2002;31:336-42.
- Chen CY, Lee LK, Wong KC, Jagmohni K. Factors relating to adolescents suicidal behaviour: a cross-sectional Malaysian school survey. *J Adolesc Health* 2005;37:337.e11-337.e16.
- Lee LK, Paul CY, Kam CW, Jagmohni K. Smoking among secondary school students in Negeri Sembilan, Malaysia. *Asia Pacific J Public Health* 2005;17:130-6.
- Brener ND, Simon TR, Krug EG, Lowry R. Recent trends in violence-related behaviors among high school students in the United States. *JAMA* 1999; 281:440-6.
- Pickett W, Craig W, Harel Y, Cunningham J, Simpson K, Molcho M, et al. Cross-national study of fighting and weapon carrying as determinants of adolescent injury. Available at: <http://pediatrics.aappublications.org/cgi/reprint/116/6/e855>. Accessed 5 January 2006.
- Smith-Khuri E, Iachan R, Scheidt PC, Overpeck MD, Gabhainn SN, Pickett W, et al. A cross-national study of violence-related behaviors in adolescents. *Arch Pediatr Adolesc Med* 2004;158:539-44.
- Nor Afiah MZ, Hejar AR, Kulanthayan S, Law TH. Cigarette smoking: characters and activities of adolescents in Selangor, Malaysia. *Int Med J* 2005;4(1). Available at: <http://www.e-imj.com/Vol4-No1/Vol4-No1-B11.htm>. Accessed 5 January 2006.
- Grunbaum JA, Kann L, Kinchen SA, Williams B, Ross JG, Lowry R, et al. CDC Surveillance Summaries. Youth risk behavior surveillance – United States, 2001. Morbidity and Mortality Weekly Report 2002;51(SS04):1-64. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5104a1.htm>. Accessed 5 January 2006.
- Elgar FJ, Knight J, Worrall GJ, Sherman G. Behavioural and substance use problems in rural and urban delinquent youths. *Can J Psychiatry* 2003;48:633-6. Available at: <http://www.cpa-apc.org/Publications/Archives/CJP/2003/october/elgar.asp>. Accessed 5 January 2006.
- Mc Keganey N, Norrie J. Association between illegal drugs and weapon carrying in young people in Scotland: schools' survey. *BMJ* 2000;320:982-4.
- Brook DW, Brook JS, Rosen Z, De la Rosa M, Montoya ID, Whiteman M. Early risk factors for violence in Colombian adolescents. *Am J Psychiatry* 2003;160:1470-8. Available at: <http://ajp.psychiatryonline.org/cgi/content/full/160/8/1470?ikey=0fe47d8fdd836b9b99440d574a89c0ec33cc29c2>. Accessed 5 January 2006.
- Kaltiala-Heino R, Rimpelä M, Marttunen M, Rimpelä A, Rantanen P. Bullying, depression, and suicidal ideation in Finnish adolescents: school survey. *BMJ* 1999;319:348-51. Available at: <http://bmj.bmjournals.com/cgi/content/full/319/7206/348>. Accessed 11 January 2006.