

Prevalence and correlates of physical fighting among school-going adolescents in Santiago, Chile

Prevalencia e correlaciones de la lucha física entre adolescentes escolares en Santiago de Chile, Chile

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Abstract

Objective: There is a growing interest in injury as a public health issue across the world. There is paucity of data on the prevalence and social correlates of non-fatal interpersonal violence in low- and middle-income nations. The objective of this study was to estimate the prevalence of, and associated factor for physical fighting among school-going adolescents in Santiago, Chile. **Method:** We conducted a secondary analysis of the Chilean Global School-Based Health Survey conducted in 2004 in Santiago. We aimed to assess the prevalence and social correlates of having been involved in a physical fight in the prior 12 months. **Results:** Of the 2111 respondents, 40.7% (54.3% males and 26.6% females) reported having been in a physical fight in the prior 12 months. Males were more likely to have been in a physical fight than females [OR = 3.89, 95% CI (3.11, 4.85)]. Substance use (cigarette smoking, drinking alcohol, and using drugs) and bullying victimization were positively associated with fighting [OR = 3.05, 95% CI (2.40, 3.87)]. Parental supervision was negatively associated with physical fighting [OR = 0.62, 95% CI (0.50, 0.78)]. **Conclusion:** We have estimated the prevalence of having engaged in a physical fight among in-school adolescents in Santiago, Chile. We have found that the prevalence is similar to what has been reported in diverse settings in Africa, Europe and North America.

Descriptors: Chile; Adolescent behavior; Mental health; Violence; School health

Resumen

Objetivo: Existe un creciente interés en el daño como un asunto de salud pública a través del mundo. Hay escasez de datos en la prevalencia y correlaciones sociales de violencia interpersonal no fatal, en naciones con bajos y medianos ingresos. El objetivo de este estudio fue estimar la prevalencia y el factor asociado a lucha física entre estudiantes adolescentes en Santiago, Chile. **Método:** Hemos conducido un análisis secundario de la Encuesta Global Chilena de Salud Basada en Escuelas, realizada en el 2004 en Santiago. Nuestro objetivo fue determinar la prevalencia y correlaciones sociales de haber estado involucrado en agresión física en los pasados 12 meses. **Resultados:** De los 2111 respondedores, 40.7% (54.3% masculinos y 26.6% femeninos) reportaron haber estado en una agresión física en los pasados 12 meses. Los varones tuvieron más probabilidad de haber estado en una agresión física que las mujeres [OR = 3.89, 95% CI (3.11, 4.85)]. El uso de sustancias (fumar cigarrillos, beber alcohol y usar drogas) e intimidaciones violentas estuvieron positivamente asociados con agresión [OR = 3.05, 95% CI (2.40, 3.87)] La supervisión parental estuvo asociada negativamente con agresión física [OR = 0.62, 95% CI (0.50, 0.78)]. **Conclusión:** Hemos estimado la prevalencia de haber estado involucrado en una agresión física entre adolescentes escolares en Santiago, Chile. Encontramos que la prevalencia es similar a la que ha sido reportada en diversos lugares en África, Europa y Norteamérica.

Descriptor: Chile; Conducta del adolescente; Salud mental; Violencia; Salud escolar

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Introduction

Interpersonal violence is an important global public health problem. In the United States, interpersonal violence against adolescents has been a leading cause of death among and emergency hospital attendance this age group.^{1,2} Violence-related injuries are defined as those that result from the intentional use of physical force or power against oneself, another person, or a group or community.³ Rachuba et al. and Zohoori et al. have reported that in Kingston, Jamaica, violence-related injuries were responsible for 11.5% of all recorded hospital visits in the public health system.^{4,5} Data from the Scottish Information and Statistics Division, Common Services Agency of the Scottish Health Service published by MacCallum et al.⁶ report that assault was the commonest cause of head injury among hospitalized male patients in Scotland. Assault was the leading cause of head injury among females aged 20 years or more.

Much of the research and reports on violence in Chile have been directed towards intimate partner violence against women.⁷⁻⁹ This is clearly an important public health issue in the country as some 41% of women reported having been physically abused by intimate partner in the prior 12 months.^{7,8}

While the concern on adolescent physical fighting largely concern physical injury and deaths, physical fighting in itself is also a marker of other unhealthy lifestyles. Kuzman¹⁰ have reported that early sexual experience among Croatian adolescents was associated with history of physical fighting. Valois et al.¹¹ have also reported that adolescents who had experienced physical fighting were also likely to have engaged in sexual intercourse. This association may not result from cause-effect relationship, but rather a clustering of unhealthy lifestyles in adolescents i.e. an adolescent who is exposed to one unhealthy lifestyle is more likely to be also exposed to other behaviors.

However, there has been limited research interest in middle- and low-income countries. In order to contribute to the literature on inter-personal violence in low- and middle income settings, we carried out a secondary analysis of the Chilean Metropolitan Region (Santiago) Global School-Based Health Survey (GSHS) conducted in 2004 to estimate the prevalence of physical fighting and identify its social correlates.

Method

1. The Global School Based Health Survey

The standard methodology of the Global School-Based Health Survey has been described elsewhere.¹² The present study is based on a secondary analysis of the Chilean Global School-Based Health Survey (GSHS) conducted in 2004 in Santiago. A comprehensive description of the GSHS, with regard to its purpose, sampling strategy, study participant selection has been reported elsewhere.¹³ In brief, however, the GSHS is a cross sectional survey which uses a two-stage sampling technique. The survey has three main aims which are 1) to assist countries develop priorities, establish programmes, and advocate for resources for school health and youth health programmes and policies; 2) to allow various agencies, countries, and others stakeholders make comparisons across countries regarding the prevalence of health-related behaviours; and 3) to establish trends in the prevalence of behaviors that are relevant to health and associated that may be used in the evaluation of interventions to promote school and youth health.

2. Sampling of study participants

The aim of the GSHS is to collect data from 13-to-15 year olds in-school adolescents. In the case of Chile, age range was covered by

grades 7 and 8 of primary school as well as first grade of secondary school. The survey used a cross-sectional two-stage survey sampling design. Eligible public and state-sponsored private schools comprised the sampling frame in the first stage of sampling. The probability of a school being selected was proportional to the enrolment size of the school in the selected grades. In the second stage of sampling, classrooms within the selected schools were randomly selected. All students present in the classrooms that had been selected were eligible to participate in the survey regardless of their actual ages. Only public schools and state-sponsored private schools were eligible for participation. All schools that were eligible participated, while 85% of the eligible students participated in the study. The Ministry of Health was in charge of the survey in Chile, with the technical assistance of CDC (Atlanta, Georgia, United States).

3. Ethical considerations and questionnaire administration

Survey questionnaires were anonymously completed by all students who volunteered to be included in the survey. A self-completed, computer scannable questionnaire was used for data collection. We mean a questionnaire was self completed by the students and the questionnaire had already been prepared that it could be scanned thereafter.

4. Questionnaire administration

Students were asked many questions but for the purposes of the current study, the following variables were of interest: whether they had engaged in a physical fight in the prior 12 months; how many times in the prior 30 days they had been bullied; alcohol, cigarette and illicit drug use; and other socio-demographic variables.

5. Choice of variables

We were interested in the prevalence and social correlates of having engaged in physical fighting in the prior 12 months. The Chilean GSHS also collected data from other areas but the data from those areas were not the focus in the current study. Identification of the relevant explanatory variables was largely based on review of the literature which showed that the following variables had been identified to be associated with physical fighting or other unhealthy behaviors: cigarette smoking;^{12,14} male gender;^{15,16} alcohol use;^{12,17,18} bullying victimization¹⁹ and illicit drugs.^{20,21} Parental supervision and support of the adolescent have been reported as protective^{22,23}

Previous research has suggested that traditional masculine gender socialization and social norms models seem to encourage men to engage in behaviours that put their health at risk.^{10,24} Males may be more likely to engage in fighting because society may be more likely to be tolerant towards male fighting than fighting in which females are involved. Individuals who use substances such as alcohol or illicit drugs may be involved in fights due to several reasons. Some substances such as alcohol may have a disinhibiting effect when used. Previous research has reported that the disinhibiting effect of alcohol may be associated with violence, unsafe sexual practices and unsafe driving.²⁵⁻²⁹ Furthermore, individuals who engage in alcohol use and illicit drugs may also be exposed to environments where anti-social behaviours such as fighting are likely to occur.

Individuals who are victimized through bullying may be more likely to be engaged in physical fighting should they attempt to defend themselves.³⁰ Previous researches from the United States have also reported that among adolescents who have previously been victimized, these are likely to carry weapons to schools.^{31,32}

Adolescents who are not regularly supervised by parents may be

exposed to environments that may be more conducive to fighting. It is less likely that adolescents would engage in physical fighting in the presence of their parents.

6. Data analysis

Data were analyzed using SUDAAN software version 9 (Research Triangle Institute, Durham, North Carolina, United States of America). A weighting factor was used in the analysis to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of non response.³³

We assessed the prevalence of various relevant socio-demographic variables stratified by age. These are reported in Table 1. We also conducted logistic regression analysis to assess the relationship between the outcome variable (having engaged in a physical fight) and predictor variables. In bivariate logistic regression analysis, adjusted odds ratios were obtained and these are reported in Table 2. Furthermore, multivariable analyses were conducted with each of the predictor variables reported in Table 2 as the main exposure while controlling for the rest of the predictor variables as co-variables. The results of the multivariable analyses are reported as adjusted odds ratios in Table 3.

Results

Table 1 presents selected characteristics of the study population of 2111 school-going adolescents in Santiago, Chile (median age 14 years old, Q3: 11-13 years, Q1: 15 years). Most of the sample was male (51.1%), 14 years old (31.5%), non-smokers (70.2%), non-alcohol drinkers (67.0%) and with parental supervision (55.6). Overall, 40.7% (54.3% males and 26.6% females) reported having been in a physical fight in the prior 12 months.

Table 2 indicates that male subjects were more likely to be in a physical fight than females [OR = 3.28, 95% CI (2.71, 3.96)]. Subjects who reported substance use (cigarette smoking, alcohol or drug use) were more likely to be in a physical fight than non-substance users [OR = 2.41, 95% CI (1.81, 3.20) for males and OR = 4.12,

Table 1 - Socio-demographic characteristics among adolescents in Santiago, Chile, 2004

	Total 100% (n = 2105)	Males 51.1% (n = 979)	Females 48.9% (n = 1126)
Age (years)			
≤13	18.7 (431)	17.9 (182)	19.6 (249)
14	31.5 (724)	31.7 (338)	31.2 (386)
15	18.7 (431)	17.9 (182)	19.6 (249)
≥16	6.5 (131)	8.1 (75)	4.9 (56)
Smoking cigarettes			
No	70.2 (1358)	73.3 (660)	67.0 (698)
Yes	29.8 (605)	26.7 (245)	33.0 (360)
Drinking alcohol			
No	67.0 (1301)	68.4 (616)	66.4 (685)
Yes	33.1 (686)	31.6 (296)	34.6 (390)
Drug use			
No	88.9 (1849)	87.7 (843)	90.2 (1006)
Yes	11.1 (231)	12.4 (121)	9.8 (110)
Parental supervision			
No	44.4 (926)	45.7 (440)	43.1 (486)
Yes	55.6 (1179)	54.4 (539)	56.9 (640)
Bullied			
No	54.7 (1076)	52.1 (465)	57.3 (611)
Yes	45.3 (870)	48.0 (422)	42.7 (448)
Fighting			
No	59.3 (1270)	45.7 (439)	73.4 (831)
Yes	40.7 (812)	54.3 (526)	26.6 (286)

Table 2 - Fighting by age, gender, substance use (smoking cigarettes, drinking alcohol, or drug use), parental supervision, and bullying victimization among student adolescents in Santiago, Chile, 2004

Variables	Unadjusted odds ratios with 95% CI		
	Total	Males	Females
Age (years)			
≤13	1.00	1.00	1.00
14	0.95 [0.77, 1.17]	0.89 [0.65, 1.20]	0.98 [0.71, 1.35]
15	0.72 [0.56, 0.92]	0.65 [0.45, 0.94]	0.78 [0.54, 1.14]
≥16	1.03 [0.71, 1.52]	0.65 [0.39, 1.08]	1.49 [0.82, 2.72]
Gender			
Female	1.00	-	-
Male	3.28 [2.71, 3.96]	-	-
Smoking cigarettes			
No	1.00	1.00	1.00
Yes	2.13 [1.74, 2.61]	1.78 [1.31, 2.44]	3.81 [2.82, 5.16]
Drinking alcohol			
No	1.00	1.00	1.00
Yes	2.32 [1.91, 2.82]	2.37 [1.76, 3.19]	3.05 [2.27, 4.09]
Drug use			
No	1.00	1.00	1.00
Yes	2.45 [1.83, 3.29]	1.80 [1.17, 2.75]	3.39 [2.24, 5.14]
Substance use (smoking cigarettes, drinking alcohol or drug use)			
No	1.00	1.00	1.00
Yes	2.61 [2.15, 3.17]	2.41 [1.81, 3.20]	4.12 [2.99, 5.68]
Parental supervision			
No	1.00	1.00	1.00
Yes	0.54 [0.45, 0.65]	0.63 [0.48, 0.82]	0.41 [0.31, 0.55]
Bullying			
No	1.00	1.00	1.00
Yes	1.84 [1.52, 2.23]	1.73 [1.32, 2.29]	1.93 [1.44, 2.57]

95% CI (2.99, 5.68) for females]. Compared to nonsmokers, subjects who smoked cigarettes were more likely to be in a physical fighting [OR = 1.78, 95% CI (1.31, 2.44) for males and OR = 3.81, 95% CI (2.82, 5.16) for females]. Those who reported drinking alcohol were more likely to engage in physical fighting than those who did not [OR = 2.37, 95% CI (1.76, 3.19) for males and OR = 3.05, 95% CI (2.27, 4.09) for females]. Bullying victimization was positively associated with physical fighting for both males and females [OR = 1.73, 95% CI (1.32, 2.29) for males and OR = 1.93, 95% CI (1.44, 2.57) for females]. Subjects who had parental supervision were less likely to be in a physical fight than those who had no parental supervision [OR = 0.63, 95% CI (0.48, 0.82) for males and OR = 0.41, 95% (0.31, 0.55) for females].

Table 3 presents results from multivariate analysis. Male gender, substance use (cigarette smoking, drinking alcohol, and drug use) and bullying victimization remained positively associated with physical fighting. Likewise, parental supervision remained negatively associated with physical fighting. In the factor analysis, the final communality estimate for cigarette smoking, alcohol and drug use was 1.35, which is an indication of high inter-correlation between the three variables.

Discussion

We estimated the overall prevalence of having engaged in a physical fight in the last 12 months among in-school adolescents in Santiago at 40.7%. Girls were less likely to have been involved in a fight than males by about 50% (26.6% versus 54.3%). The prevalence estimate obtained from this study is closer to the

Table 3 - Association between bullying victimization and fighting among student adolescents in Santiago, Chile, 2004

Variable	*Adjusted odds ratios with 95% CI
Age (years)	
≤13	1.00
14	0.69 [0.54, 0.90]
15	0.49 [0.36, 0.67]
≥16	0.58 [0.35, 0.95]
Gender	
Females	1.00
Males	3.89 [3.11, 4.85]
Substance use (tobacco, alcohol, drugs)	
No	1.00
Yes	3.05 [2.40, 3.87]
Parental supervision	
No	1.00
Yes	0.64 [0.51, 0.68]
Bullying	
No	1.00
Yes	1.65 [1.32, 2.05]

*Adjustments made for age, gender, substance use (smoking cigarettes, drinking alcohol, and drugs) and parental supervision

50.6% reported by Rudatsikira et al.¹² among a similar age-group in Namibia. In the Namibian study, although males were also more likely to have engaged in fights than females, the gender gap was smaller (55.2% and 46.2% among boys and girls respectively). In a study involving 37,571 11-15-years-old in-school adolescents conducted in 2001/2002 in 9 different countries, Pickett reported that the prevalence of boys involved in physical fighting during the previous year ranged from 37% in Finland to 69% in the Czech Republic.³⁴ The overall average prevalence was 58%. Among girls, the prevalence of physical fighting was much lower ranging from 13% in Finland to 32% in Hungary and an overall average of 24%. The majority of countries reporting the highest prevalence of physical fighting by boys were from Eastern or Central Europe.³⁴ Our estimates from Chile appear to be within the usual range of prevalence that has been reported elsewhere.

The male predominance in prevalence of physical fighting may be explained by the normative belief of masculinity among males.^{16,35} Society may be more permissive towards male than female fighting behavior. Evidence from the literature suggests that in general males are more likely to lead unhealthy lifestyles in diverse areas such as tobacco smoking³⁶ and alcohol use.³⁷

We found that history of having engaged in a fight was associated with substance use (alcohol, illicit drugs and cigarette smoking) as have been previously reported elsewhere.¹² This clustering of unhealthy behaviors is important to recognize if holistic intervention programs aimed at adolescents' unhealthy lifestyles are to be effectively reduced. Springer et al.³⁸ have reported that students with low levels of parental support were more likely to engage in unhealthy behaviors. Adolescents' unsupervised time has been described as an important determinant of adolescents engaging in unhealthy, including antisocial behaviors while adult supervision is protective.³⁹⁻⁴⁰ It is important also to recognize that as a study based on cross-sectionally collected data, it is not possible to ascribe causation to any of the associated factors.⁴¹ For instance, it is possible that unsupervised time may enable adolescents to start experimenting with drugs. Alternatively, adolescents who are already substance users may actively seek unsupervised time in order to perform their behaviors.

The findings from this study suggest that efforts to reduce

adolescent substance use (illicit drugs, alcohol and cigarette smoking) may also reduce adolescents' exposure to physical fighting. This may be due to the fact that situations where substance use is likely to occur may also exist where fighting occurs. Parents should be encouraged to supervise their children because, doing that seems to prevent them from engaging in a host of antisocial behaviours.^{42,43} Furthermore, there is need to make schools and neighborhoods safer for adolescents not to be involved in fighting and bullying. School regulations, staff supervision and a supportive environment have all been reported to discourage adolescent victimization.^{44,45}

Limitations of the study

Our study had several limitations. Firstly this study recruited adolescents from school, and out-of-school adolescents were excluded. Therefore, the findings from the study while aimed to be representative of the in-school adolescents within the selected age groups may not be readily applicable to out-of school. It is possible out-of school adolescents may have different behavioral patterns when compared to their in-school adolescents. However, in Chile the coverage of primary education reaches 99.1%, being 92.6% in the case of secondary education. This means that there are only few school-age adolescents who do not attend school. Also, the Global School-Health Survey relies on self-reported behaviors. Adolescent may intentionally report or may have forgotten that they engaged in a particular behavior in the stated time period. Of note also, the study used data collected from Santiago which may not be representative of the rest of the country.

The questions seeking information on physical fighting and substance use may be perceived as sensitive by some study participants. The GSHS attempts to minimize intentional misreporting by requiring anonymous completion of the questionnaire. To what extent such provision allowed adolescents to accurately report their behaviors is not known. Brener et al.,^{46,47} however, has reported that among United States adolescents, the reliability of a questionnaire aimed at collecting data similar to the GSHS was high. Again, it is not known how reliable such a survey instrument would be in the Chilean setting.

Conclusion

We have estimated the prevalence of having engaged in a physical fight among in-school adolescents in Santiago, Chile. We have found that the prevalence is similar to what has been reported in diverse settings in Africa, Europe and North America. There is need to explore the effectiveness of school-based intervention programs.⁴⁸ Efforts to prevent adolescent unhealthy behaviors may be more effective if the clustering of behaviors among adolescents is considered.

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* Modest

** Significant

*** Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

For more information, see Instructions for authors.

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