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Violence behavior and factors associated among students of Central-West Brazil

ABSTRACT

OBJECTIVE: To estimate the prevalence of violence among adolescents and young adults and to identify associated factors.

METHODS: Cross-sectional study carried out in 2008 with systematic random sampling of 699 elementary and high school students enrolled in urban state schools of Barra do Garças, Central-Western Brazil. A self-administered questionnaire was applied in the classrooms without the presence of the teacher. The outcome "violent behavior" was defined as (1) use of firearm or sharp instrument, and/or (2) aggressions against oneself and/or others, and/or (3) suicide attempt. The analyzed independent variables were age, gender, socioeconomic status, use of alcohol, use of psychoactive drugs, sexual activity, and relationship between parents. Univariate analysis was conducted, as well as multiple regression adjusted for cluster effect.

RESULTS: Violence prevalence was of 18.6%, varying with age: 10.1% in the group aged 10 and 11 years; 20.2% for those aged 12-19 years; and 4.5% in the group aged 20-21 years. The factors associated with violent behavior were use of alcohol (RP = 2.51, 95%CI 1.22;5.15), use of psychoactive drugs (RP = 2.10, 95%CI 1.61;2.75), male gender (RP = 1.63, 95%CI 1.13;2.35) and unsatisfactory relationship between parents (RP = 1.64, 95%CI 1.25;2.15).

CONCLUSIONS: Results indicate high prevalence of violence among adolescents in the age group 12-19 years, mainly among users of alcohol and drugs, of the male sex, from families whose parents do not have satisfactory relationships. Although without statistical significance in the final regression model, school result discrepancy and socioeconomic level should be considered in educational actions for prevention of violence behavior among students.

DESCRIPTORS: Adolescent. Young Adult. Violence. Risk Factors. Cross-Sectional Studies.

INTRODUCTION

Violence is not restricted to aggressions; it includes any act against the lives of people and coexistence rules. It interferes in society, negatively affects the quality of social relations, wears people's quality of life out, and culminates in suffering. It has become a social and public health issue, due to the social consequences and also to the health sector's expenditures on the assistance provided for the victims, with a negative impact on years of potential life lost.[3,a,b]

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[b] Ministério da Saúde. Temático Prevenção de Violência e Cultura da Paz II. Brasília (DF): Organização Pan-Americana da Saúde; 2008. (Painel de Indicadores do SUS, n. 5).

The World Health Organization (WHO), in 2002, defined violence as "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".[a] Youth violence is considered the most visible violence, having adolescent individuals as the main aggressors and victims, with the highest occurrence of violence episodes (fatal and non-fatal).[b] Thus, the WHO has also elaborated recommendations of actions for violence contention, mainly in the population aged between 15 and 44 years.

Violence is materialized in diverse social spaces and has been more frequent, in the past years, in the school environment. This fact contradicts the conception of school as a space of socialization of knowledge, education and, above all, protection.[5,8,15,23,c,d]

In Brazil, school violence has been the object of scientific investigations. From depredations, invasions of school spaces and fights between groups, violence has changed to students' aggressions against teachers. Violence behavior is manifested in aggressions with the use of sharp instruments, firearms, drug consumption, prejudice, bullying. The area where the school is located, when dominated by organized crime, also makes the student's route unsafe. Thus, the school has ceased to be a protected place, as it has incorporated the daily violence of the urban space. [5,8,15,16,d]

Data on violence among students from all the Brazilian capital cities show episodes of drunkenness (22.1%), use of illicit drugs (8.7%), insecurity in the home-school route (6.4%), insecurity at school (5.5%), fight with physical aggression (12.9%), physical aggression committed by an adult in the family (9.5%), involvement in fights in which a sharp instrument was used (6.1%) and a firearm was used (4.0%). Frequently, students mention humiliations deriving from provocations of school colleagues (5.4%), which reflects exposure to risk of violence and contributes to morbidities deriving from non-fatal and disabling aggressions.[15,16,d]

Suicide[21] also affects the young population and also other people when it occurs at schools or at the workplace. Suicide is conceived as self-inflicted violence and a component of "external causes", and it has been increasing in the young population of the Brazilian cities, impacting on public health. The proportion of deaths by suicides in 2006 was 79% for the male sex (outset in the group of 15-19 years and peak in the group of 20-29 years) and 21% to the female sex (outset in adolescence, between 10 and 14 years of age).[b,e]

Although in the Brazilian context there is a significant scientific production and official data on violent acts among adolescents and young adults,[5,8,15,16,21,23] the exposure factors of this population to violence acts as victims or aggressors are not well known. Therefore, this study aimed to estimate the prevalence of violence behavior among young and adolescent students and to identify associated factors.

METHODS

We used data from a cross-sectional study that was originally carried out to investigate behaviors related to drug use in students aged 10 to 21 years. Elementary and High School students of public schools in the urban zone of Barra do Garças, Central-Western Brazil, were studied in the second semester of 2008. The studied population was classified as adolescent according to the Child and Adolescent Statute,[f] and as youths by the Pan-American Health Organization.[g]

To calculate the sample of the original study, a proportion of 22.2% of use of drugs in life was considered, as well as standard error of 3.0% and a 95% confidence interval.[14] The minimum sample that was calculated was of 767 students; this initial value was increased taking into account a possible effect of clustering of 1.5 and approximately 11% of losses (absences in classes, refusals to participate in the study and non-authorization of the parents). The sample was estimated at 1,265 students in 41 classes, considering the estimation of 30.85 students per class.

One-stage cluster sampling[11] was adopted by means of lists provided by the Municipal and State Education Departments. Thus, 277 classes were numerically sorted, beginning with the fifth year of the morning period and ending with the third year of the evening period. The random draw of number "2" identified the first class of the list. To select the second class, "7" was added (277/41), obtaining class number 9. The same procedure was followed to the other classes. In the

[c] Abramovay M, coordenadora, Valverde DO, Barbosa DT, AvancinI MMP, Castro MG. Cotidiano das escolas: entre violências. Brasília (DF): UNESCO, Observatório de Violências nas Escolas, Ministério da Educação; 2005 [cited 2006 Dec 15]. Available from: http://unesdoc.unesco.org/images/0014/001452/145265POR.pdf

[d] Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional de Saúde do Escolar (PeNSE) 2009. Rio de Janeiro: IBGE; 2009 [cited 2011 Aug 15]. Available from: http://www.ibge.gov.br/home/estatistica/populacao/pense/default.shtm

[e] Organização Mundial da Saúde. Prevenção do suicídio: manual para professores e educadores. Genebra: 2000 [cited 2011 Aug 15]. Available from: http://www.who.int/mental_health/prevention/suicide/en/suicideprev_educ_port.pdf

[f] Brasil. Lei n. 8.069, de 13 de julho de 1990. Dispõe sobre o Estatuto da Criança e do Adolescente e dá outras providências. *Lex:* Estatuto da Criança e do Adolescente. [cited 2011 Aug 22] Available from: <http://www.planalto.gov.br/ccivil_03/Leis/L8069.htm>

[g] Organización Panamericana de la Salud. Salud de los adolescentes: Plan de Acción 1998-2001 sobre la salud y desarrollo del adolescente en las Américas.. Washington (DC); 1995. (CD40/21 Esp)

field, the instrument was administered to 36 classes of 1,076 students, with the participation of 788 students (73.2%). Four classes were excluded from the sample, due to the fact that students were older than 21 years. Among the students who participated in the study about drugs, all those who answered one of the three questions that originated the outcome variable violence behavior were selected to the present study, totaling 699 students, which represents 8.2% of the total number of students enrolled (8,546) in the public Elementary and High Schools of Barra do Garças. This sample was considered sufficient to detect a prevalence of violence behavior of 15.2% referring to involvement in fights and aggressions, the highest percentage observed in a study with students, followed by suicide attempt (8.6%) and carrying guns (7.9%).[5]

The main outcome was defined as "violence behavior" and was presented as a dichotomous variable (yes/no), constructed from the adolescent's affirmative answer to one of the three questions: (1) "In the past year, did you carry with you firearms or sharp instruments?"; (2) In the past year, were you involved in fights and physical aggressions?"; (3) "In the past year, did you attempt suicide?". All the questions, formulated based on research with students in the Brazilian context,[5,9] fall under the concept of violence of the WHO[a] in the category External Causes (codes: E-800 to E-999 in the 9th Revision and V01 to Y98 in the 10th Revision) and of the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10), due to their consequences, which comprehends a list of events that can be summarized as aggressions, homicides, suicides and accidents in general. Although this classification is not able to encompass the complexity of violence, it provides indicators that can subsidize prevention and assistance actions.

The independent variables are: (1) sex; (2) age; (3) socioeconomic level of the adolescent's family (*Associação Brasileira dos Institutos de Pesquisa de Mercado* – Abipeme – Brazilian Association of Market Research Institutes),[h] in which the sum of the goods results in one of five socioeconomic categories, grouped for this study into: better economic situation (A+B) and worse economic situation (C+D+E); (4) school result discrepancy: it refers to the student whose age is above the school grade, according to the Law of Guidelines and Bases for Brazilian Education, categorized as yes and no; (5) relationship between parents, categorized as "satisfactory" for "good" or "unsatisfactory" for "regular", "poor" and "parents do not live together"; (6) sexual relation with penetration; (7) use of alcohol (yes/no; comprehending the consumption of beer, draft beer, wine, whisky, *cachaça* [rum], champagne);[9] use in life of psychoactive drugs (yes/no; comprehending the use of tobacco, cocaine, crack, marijuana, solvents, amphetamines, barbiturates, tranquilizers, opiates, anticholinergics, syrups, hallucinogens, appetite stimulants and anabolic steroids). The term "use in life" refers to the person who has used some psychoactive drug at least once in his/her life.[7]

The reliability of the questions of the instrument was evaluated by the kappa coefficient[6] with 81 students in three schools that were not drawn to compose the sample. Interpretation by Landis & Koch[12] was utilized upon the application of a test-retest, with an interval of seven days between the applications. Satisfactory coefficients were obtained to the set of variables of the instrument, among them, an almost perfect agreement for use of weapons (k = 0.85, 95%CI 0.56;1.00), aggression (k = 0.88, 95%CI 0.65;1.00) and use of alcohol (k = 0.92, 95%CI 0.84;1.00),, substantial kappa for (k = 0.79, 95%CI 0.30;1.00), and moderate kappa for use of condoms (k=0.52, 95%CI 0.33;0.71).

The data were collected from October to December 2008 by students from the Pharmacy undergraduate course, Campus Portal do Araguaia of Universidade Federal de Mato Grosso, trained for this purpose.

A database was created in the EpiInfo Program, version 6.0. The analysis was performed in the Stata program, version 9, performed in three stages. First, an exploratory analysis of the data was conducted to define the final presentation of the variables. In the second stage, bivariate was performed, associating each independent variable with the main outcome. Age was initially represented in two variables (used separately) with discrete data (age in years) and in three categories (10-14, 15-17, 18-21). In the bivariate analysis, it was observed that the students were distributed in two distinct groups: those aged 12-19 years who had similar proportions of violent behavior, above 14%, and those aged 10 and 11, and 20 and 21, with a much lower proportion. Third, in the multiple regression analysis, a model was constructed with all the variables and then one variable was removed at a time, beginning with the least significant, until only the statistically significant ones remained, except for age and sex, which were maintained for biological reasons.

As the age variable was represented in three ways, this procedure was carried out three times. However, only the results with two categories are presented, due to the fact that they presented a lower number of parameters, when the model had greater "goodness-of-fit" (evaluated in the logistic regression without cluster adjustment). The presence of effect heterogeneity in the multiple regression model was also evaluated, incorporating an interaction term between the age

[h] Associação Brasileira de Institutos de Pesquisa de Mercado. Classificação socioeconômica critério Abipeme. [cited 2011 Aug 22] Available from: <http:www.ufrn.br/sites/fonaprace/perfil_anexo3.doc>

variable (with discrete data and in two categories) and each independent variable. The association measure that was used was prevalence ratio (PR) by means of the Stata's command "svy: poisson", with the school representing the cluster.

The study was approved by the Research Ethics Committee of Hospital Universitário Julio Müller of Universidade Federal de Mato Grosso (Procedure no. 469/CEP/HUJM/2008). The participants or their guardians signed a consent document.

RESULTS

The sample was majorly composed of male adolescents aged 12-19 years, from families with the level of worse economic situation, with age-grade discrepancy (51.6%) and who reported use of alcohol (74.4%), 35.9% reported use of other drugs. In relation to sexual life, 38.4% of the total had sexual relation with penetration, and among those with an active sexual life, 78.7% reported use of condoms.

The prevalence of violence behavior among all the adolescent students was 18.6% (130/699), varying with age: 10.1% in the group aged 10 and 11 years; 20.2% for those aged 12-19 years; and 4.5% in the group aged 20-21 years.

The Table presents the results of the association between the independent variables and violence behavior among the 699 students, separately for bivariable analysis and the final multiple regression model. Association with age-grade discrepancy was analyzed separately (554 students), due to the fact that no student aged between 10 and 11 years had age-grade discrepancy, while all students between 18 and 21 years of age had this discrepancy. Therefore, the analysis with this variable was restricted to those aged 12-17 years. All the studied variables presented a statistically significant positive association with violence behavior, even after cluster adjustment, except for age-grade discrepancy.

The lowest PR was 1.60 (adjusted 95%CI: 1.06;2.39) for socioeconomic level, that is, the prevalence was

Table. Factors associated with violence behavior among adolescent students of public schools. Barra do Garças, Central-West Brazil, 2008.

Variable	n	Violence n (%)	Bivariate analysis[a] PR (95%CI)	Multiple model[a] PR (95%CI)
Use of drugs				
No	448	51 (11.4)	1	1
Yes	251	79 (31.4)	2.76 (1.91;4.00)	2.10 (1.61;2.75)
Use of alcohol				
No	179	10 (5.6)	1	1
Yes	520	120 (23.1)	4.13 (2.00;8.53)	2.51 (1.22;5.15)
Gender				
Female	347	48 (13.8)	1	1
Male	352	82 (23.3)	1.68 (1.19;2.37)	1.63 (1.13;2.35)
Socioeconomic situation				
Worse	450	69 (15.3)	1	
Better	249	61 (24.5)	1.60 (1.06;2.39)	
Sexual relation				
Never	431	57 (13.2)	1	
Yes, with condom	211	51 (24.1)	1.83 (1.22;2.74)	
Yes, without condom	57	22 (38.6)	2.92 (1.83;4.66)	
Parents' relationship				
Satisfactory	443	64 (14.4)	1	1
Unsatisfactory	256	66 (25.7)	1.78 (1.34;2.38)	1.64 (1.25;2.15)
Age (years)				
10-11/20-21	101	9 (8.9)	1	1
12-19	598	121 (20.2)	2.27 (1.24;4.17)	1.53 (0.85;2.75)
Age-grade discrepancy[b]				
No	268	44 (16.4)	1	
Yes	286	68 (23.8)	1.45 (0.91;2.31)	

[a] Adjusted by effect of clustering
[b] Analysis restricted to data on 554 students

60% higher in the students with better economic situation compared to those with worse situation. The highest PR was 4.13(adjusted 95%CI: 2.00;8.53) for use of alcohol. The age variable did not present a statistically significant association when presented as a discrete variable (PR = 1.04, crude 95%CI: 0.97;1.13), but it was statistically significant when presented as a dichotomous variable: those aged between 12 and 19 years had a prevalence that was higher than that of the students younger than 12 years or older than 19 years (PR = 2.27, adjusted 95%CI: 1.24;4.17).

Other variables that presented positive and statistically significant association were: sex (higher for males), parents not having a satisfactory relationship, use of other psychoactive drugs and active sexual life (higher without the use of condoms, but dose-response effect was not statistically significant). Those aged between 12 and 17 who presented age-grade discrepancy had higher prevalence of violence behavior, but without statistical significance (PR = 1.45; adjusted 95%CI: 0.91;2.31), compared to those with no age-grade discrepancy in the same age group.

In the multiple regression model, the association with violent behavior was not statistically significant for socioeconomic level, age and having had sexual relation. In the final model, the highest PR values were for: use of alcohol (PR = 2,51; 95%CI: 1.22;5.15), use of drugs (PR = 2.10; 95%CI: 1.61;2.75), male sex (PR = 1.63; 95%CI: 1.13;2.35); and unsatisfactory relationship between parents (PR = 1.64; 95%CI: 1.25;2.15).

DISCUSSION

Epidemiological studies in Brazilian schools allow knowing the magnitude of violence, its prevalence and associated factors, subsidizing the public policies of prevention and treatment.

In the analyzed sample of 699 students, 18.6% presented violence behavior, which is a serious problem for society and public health, due to its possible consequences, immediate or future, to the health services.

Among the observed violence behaviors, the students' assertion about suicide attempt is worrisome. Classified as "external causes", suicide among young adolescents has been little investigated. The etiology of suicide is complex, involves biological and psychological factors (life history, emotions) and the socioeconomic context.[21,e]

The violence behavior observed among the analyzed students is associated with abusive alcohol consumption (PR= 2.51). Studies have shown that youths who abuse alcohol are more likely to commit or suffer violent offenses compared to those who do not drink excessively.[2,19,20] This strengthens the need to better direct the public policies to the prevention of alcohol use among adolescent students. For example, the inclusion of the theme in the contents of the undergraduate courses' curriculum, so that the future teachers are able to give classes in an integrated way with the theme, according to the curriculum for the elementary and high schools of Brazil's Law of Guidelines and Bases.

Another factor associated with violence behavior among the studied adolescents was the consumption of illegal psychoactive drugs (cocaine and marijuana) and psychotropic drugs without medical prescription. Many studies have already shown the association between violence and psychoactive drugs and its complexity, due to factors which, in many cases, may precede the consumption of alcohol and drugs. This situation is one of the limitations of the adopted cross-sectional study design, which does not allow for analysis of causality.[17,19,24]

Higher proportion of violent behavior was observed among students whose parents have unsatisfactory relationships, which suggests that the environment of interaction among family members may be a risk factor, depending on the dysfunction of the family dynamics. Studies have shown the importance of family relations for the student's psychological development and the influence on the emotional functioning and on the interpersonal relations inside and outside the family. There is greater risk of violence behaviors in families in which the parents do not know the adolescent's friends.[10,13,25]

Higher proportion of male students reported violence behavior, even in the adjusted analysis. This finding is similar to the national context, in which, in the period from 1991 to 2000, men were the biggest victims of violence: the mortality of male youths aged 15-19 years was 6.3 times higher than that of women; in the group 20-24 years this rate was 10.1 times higher than in women.[22] There are several explanations for this association. Bourdieu,[4] when approaching the domination of the male over the female, shows that this relation is present in the historical evolutionary process of the human being. When discussing symbolic violence, the author describes it as a subtle act that hides power relations that reach not only the relations between genders, but the entire social structure.

Among the students who had an active sexual life, 78.7% (211/268) reported having used condoms in the last sexual relation, a result that is superior to the one found by Paiva et al (2008).[18] However, a higher proportion of non-use of condoms was observed among students with violent behaviors. This risk behavior can cause damages to the young adolescents' reproductive life as, besides the acquisition of sexually transmitted diseases, it can leave physical, psychological and social sequels, which suggests that sexual violence in the adult phase have a connection with the adolescence period.[2,b]

The age-grade discrepancy variable was not associated with violence among students, but this result should be analyzed with caution, because it does not eliminate the possibility of violent behavior. When the adolescent fails, he may not adapt to the new colleagues, develop a feeling of lack of success and become vulnerable to isolation and other factors that trigger aggressions.

Adolescents from families of better socioeconomic situation and with age-grade discrepancy present higher probability of violence behaviors. This finding is no different from a survey on drugs carried out in the national[9] and regional[20] context that found that the adolescents from social classes of better economic situation were more likely to present behavior problems.

Students in the age group 12-19 years were the ones who more referred violence behaviors. This age group is characterized by biological, sociocultural and psychical modifications in which the human being tries to overcome anti-social behaviors whose effects are losses and frustrations that are not understood by the adult world. Aberastury & Knobel[1] state that these attitudes are part of a phase in the life of every human being and adolescence should be viewed as a normal period, even though full of conflicts that deserve constant respect and support, so that the adolescent is able to become an adult who is secure about his/her choices and decisions in life.

Although the design of the study about violence behavior and associated factors among students has limitations for analyses of causality, it shows the complexity of violent behavior[15,17] among young adolescents. At the moment, bullying[16,d] is a serious problem in the school environment; in the future, it may be another problem, requiring the attention of policymakers in the planning of continuous and integrated actions to guarantee that the school fulfills its mission in the socialization of knowledge and in the exercise of citizenship.

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