ORIGINAL ARTICLE

Bullying and self-esteem in adolescents from public schools

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KEYWORDS
Prevalence; Adolescents; Violence; School Health

Abstract

Objectives: To perform a situational analysis of bullying and self-esteem in municipal school units, by estimating the prevalence of bullying, according to gender, age, and role in bullying situations; and to identify the level of self-esteem of students by gender and role in bullying situations and correlate with the involvement in bullying situations.

Methods: This was a cross-sectional study with 237 students in the ninth grade of middle school from public schools participating in the School Health Program in the city of Olinda (PE). The questionnaire used in the study was divided into three blocks: a sociodemographic block; a block on bullying, validated by Freire, Simão, and Ferreira (2006); and a block to assess self-esteem, by Rosenberg (1989).

Results: The prevalence of bullying was 67.5%. The study population consisted of adolescents, mostly female (56.4%), aged 15-19 years (51.3%), of black ethnicity (69.1%). Most students lived with four or more people (79.7%) in their family-owned homes (83.8%), which had five or more rooms (79.1%). Observing bullying or being bullied were the most often reported situations (59.9% and 48.9%, respectively); when the roles of bullying are associated with self-esteem in relation to gender, it was observed that in the group of victims/aggressors and aggressors (p = 0.006 and 0.044, respectively), males had higher statistically significant self-esteem scores when compared to females.

Conclusion: The findings indicate a large number of students involved in the several roles of bullying, identifying an association between these characteristics and sex/gender and self-esteem of those involved. The present study has identified the need for further studies on the nature of the event.

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**PALAVRAS-CHAVE**
- Prevalência;
- Adolescentes;
- Violência;
- Saúde Escolar

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**Bullying e autoestima em adolescentes de escolas públicas**

**Resumo**

**Objetivos:** Realizar diagnóstico situacional do bullying e autoestima em unidades municipais de ensino, por meio de estimativa da prevalência do bullying, segundo o sexo, faixa etária e situação do ator; identificar o nível de autoestima dos escolares segundo sexo e situação do ator e correlacionar com o envolvimento em situações de bullying.

**Métodos:** Estudo transversal, realizado com 237 alunos, do 9º ano do ensino fundamental, em escolas públicas municipais do Programa Saúde na Escola de Olinda (PE). Foi utilizado um questionário dividido em três blocos, um sociodemográfico, outro sobre bullying, validado por Freire, Veiga e Ferreira, e um para avaliar a autoestima, de Rosenberg.

**Resultados:** A prevalência de bullying foi de 67,5%. A população do estudo foi composta por adolescentes do sexo feminino (56,4%), na faixa etária de 15-19 anos (51,3%), de raça/cor preta (69,1%). Grande parte mora com quatro ou mais pessoas (79,7%), em casa própria (83,8%) e com cinco ou mais cômodos na residência (79,1%). Presenciar ou sofrer bullying foram às situações mais registradas (59,9% e 48,9%, respectivamente); Quando se associou os papéis de bullying e autoestima em relação ao sexo verificou-se que no grupo de vítimas/agressores e agressores (p = 0,006 e 0,044; respectivamente), o sexo masculino apresentou escores de autoestima superiores estatisticamente significativos em relação aos do sexo feminino.

**Conclusão:** Os achados apontam para um número grande de alunos envolvidos nos diversos papéis do bullying, identificando-se associação entre estas características e o sexo/gênero e autoestima dos envolvidos. Identifica-se a necessidade de estudos adicionais sobre a natureza do evento.

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The absence of information on bullying and self-esteem in the schools of Olinda/PE indicates the need for studies aimed at understanding this phenomenon, in order to establish a baseline that will allow for a longitudinal follow-up of the problem and aid the planning of health surveillance actions, including the implementation of an information system for school violence.

This study aimed to perform a situational analysis of bullying in municipal schools in the city of Olinda, state of Pernambuco, Brazil that participated in the PSE, correlating bullying to the sociodemographic situation of those involved and the self-esteem level of students.

**Methods**

This study was performed in public schools participating in the PSE in the city of Olinda, state of Pernambuco, from June to November of 2012. Olinda is located in the Metropolitan Region of Recife, 6 km from the capital, and has a population of 377,779 inhabitants (16.41% adolescents), occupying an area of 41.66 km². There are 46 Elementary and Middle public schools, and 17,875 students are enrolled; the illiteracy rate in individuals older than 15 years is 9.3%.[17]

There are currently 43 schools participating in the PSE, introduced in 2009, distributed among the ten political and administrative regions (regiões politico-administrativas - RPAs) of the city, establishing communication channels to ensure the development of actions and expand its outreach to students and families.

This was a cross-sectional study, a design recommended for estimates of event frequencies and associated factors in specific populations, which is low cost, can be quickly performed, and is objective in data collection.[18]

The study population consisted of 8th graders (equivalent last year of Middle School in Brazil is the ninth), enrolled in schools participating in the PSE, identified in the list of schools and regular students in the databases of the Municipal Education Secretariat. The choice of school year was based on the influence of more years of schooling on the understanding of the assessed issues.

The participants were selected by multistage probability sample. In the first stage, clusters of schools were selected by spatial distribution (RPA). In the second stage, simple random sampling was performed to select a class from each school, according to the relative weight of the school in the universe of eligible students.

Sample size was calculated using Statacalc of Epinfo for Windows, release 3.5.2, with the following parameters: prevalence of bullying of 17% (lowest number in Brazilian studies as reported by Moura, Cruz, and Quevedo[19]); candidate population of 17,875 students;[17] power of study of 20%; and $p < 0.05$.

A semi-structured questionnaire was used, consisting of tools previously applied in studies with adolescent students similar to the target population of this survey and organized in three thematic blocks.

For the first thematic block - socio-demographic profile - the demographic questionnaire of the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatistica -IBGE), applied to the National Schoolchildren Health Survey (Pesquisa Nacional de Saúde do Escolar – PeNSE)[20] with variables categorized as: gender (male/female), age group (13-14/15 or more years); ethnicity (black/non-black); housing (owned/rented); number of rooms (2-4/5 or more); and number of people living at home (2-3/4 or more).

To investigate the experience of violence at school (block 2), a tool validated by Freire, Simão and Ferreira[21] was used with adaptations to the regional language (e.g., to the term “humiliated”, the expressions “made fun of”, “beat up”, and “knocked down”, were added). The use of this tool allows for the identification and characterization of students’ participation in bullying situations in the previous two weeks: a) role played: not involved, aggressors, victims, victims/aggressors, or observers; b) types of aggression/victimization c) environment where it occurred: in the classroom, outside the classroom, around the school. A positive response to at least one of the questions of the tool regarding the different manifestations of bullying was used for case definition.

The third block included the Rosenberg Self-Esteem Scale,[22] validated for Brazilian students,[23] consisting of ten closed questions with Likert response options, where each item response ranges from 1 to 4 points. The higher the score, the higher the level of self-esteem; and 30 was the cutoff for high self-esteem.

Data collection, which was completed by the students themselves, was performed by the main author of the study, processed with double entry in the Enter module of Epilinfo, release 3.5.2, and the resulting database was verified by the Validate module.

Regarding the analytical aspects,[18] descriptive statistics of sociodemographic variables, bullying roles, and self-esteem (means and percentages of occurrence) were processed using Epinfo. For analysis of confounding factors, the interaction between variables was evaluated using the Mantel-Haenszel chi-squared test ($MH \chi^2$). Then, the analysis of possible associations between bullying and the variables of interest was performed. The main measure of association was the odds ratio, used to measure the association between probable risk situations/exposure and the investigated event, with their respective confidence intervals at 95% (95% CI). The measure of statistical significance for differences in proportions was $MH \chi^2$, which was chosen as it is more conservative, considering a p-value < 0.05.

The project was approved by the Ethics and Research Committee of Plataforma Brazil and followed Resolution 196/1997 of the National Health Council,[24] and the material used in the present study resulted from an original research. The questionnaires were applied after obtaining consent from the school principals, previously scheduling, explaining the research, raising awareness among the students on the subject, and clarifying all doubts to prevent refusals and improve the quality of the collected data. Participation in the study was ratified by informed consent signed by students and their parents/guardians. The respondents’ names were excluded from the questionnaires for confidentiality purposes.

**Results**

A total of 237 students from municipal schools in Olinda, Pernambuco, participated in the study. There were no
When assessing self-esteem (Table 2), the total number of adolescents was equally distributed between the two extremes of classification (high and low), with a mean score of 29.97 points and a standard deviation of 4.99 (29.97 ± 4.99). The same behavior was observed intragroup for the female (29.92 ± 5.53) and male (30.03 ± 4.20) genders.

When analyzing the association between the bullying role and the gender and age group of the adolescent involved in the event (Table 2), there was a slight predominance of females and the age range of 13-14 years in all categories. Regarding self-esteem, females comprised slightly over 50% of the high self-esteem category (score > 30), and at an older age group (58.2% and 52.4%, respectively). These associations were not statistically significant.

When assessing the interaction between bullying and self-esteem, 53.7% of the adolescents presented low self-esteem scores, and there was a concentration of prevalence of cases among actors, with a mean score < 30 for all roles of bullying (victim, aggressor, victim/aggressor, and observer), corresponding to the category of low self-esteem, in contrast with those who did not participate in bullying events, who had higher scores (high self-esteem), although the mean values found in the two categories were similar (Fig. 1). The behavior of this interaction by gender showed that males surpass the threshold of high self-esteem when they assume the dual role of victim/aggressor, whereas females remain classified as low self-esteem in all situations of bullying, compared with those who reported not being involved in the event.

When the bullying roles were associated to gender, controlled by the level of self-esteem, it was observed that in the group of victims/aggressors and aggressors (p = 0.006 and 0.044, respectively), males had statistically significant higher self-esteem scores when compared to females (Table 3).

**Discussion**

The results of this study showed that a high number of students declared they had been involved in bullying, which is in agreement with the results found by Bandeira and Hutz,24 with similar levels of victimization for both males and females; however, this last statement was not supported by the findings of Liang, Flisher, and Lombard,25 who reported that aggression and victimization occurred more commonly in boys.

The role most often reported in the study was observing bullying (59.7% of the participants), followed by being a victim (48.9%) and being an aggressor (32.1%). These results are in agreement with a study by Silva et al.,26 although the percentages found by these authors are higher (82% as observers, 56.9% as victims, and 38.5% as aggressors). A similar situation occurs for the concomitant condition of victim/aggressor described by Moura Cruz and Quevedo,19 who found higher percentages compared with the present study (47.1% versus 27.4%).

These differences in results are explained in the literature28 that evidences a great variation in the frequency and type of bullying among different countries, regions within the same country, and schools. Bullying is a multi-causal phenomenon and several factors may contribute to

**Table 1** Sociodemographic distribution (n, %) of adolescents from municipal schools participating in the School Health Program, 2012.

<table>
<thead>
<tr>
<th>Variable^a</th>
<th>n</th>
<th>%</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>103</td>
<td>43.6</td>
<td>37.2–50.2</td>
</tr>
<tr>
<td>Female</td>
<td>133</td>
<td>56.4</td>
<td>49.8–62.8</td>
</tr>
<tr>
<td><strong>Age range</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-14</td>
<td>109</td>
<td>48.7</td>
<td>41.9–55.4</td>
</tr>
<tr>
<td>15-19</td>
<td>115</td>
<td>51.3</td>
<td>44.6–58.1</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>159</td>
<td>69.1</td>
<td>62.7–75.0</td>
</tr>
<tr>
<td>Non-black</td>
<td>71</td>
<td>30.9</td>
<td>25.5–37.3</td>
</tr>
<tr>
<td><strong>Number of residents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 to 3</td>
<td>48</td>
<td>20.3</td>
<td>15.3–25.9</td>
</tr>
<tr>
<td>4 or more</td>
<td>189</td>
<td>79.7</td>
<td>74.1–84.7</td>
</tr>
<tr>
<td><strong>Home</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Owned</td>
<td>191</td>
<td>83.8</td>
<td>78.3–88.3</td>
</tr>
<tr>
<td>Rented</td>
<td>37</td>
<td>16.2</td>
<td>11.7–21.7</td>
</tr>
<tr>
<td><strong>Number of rooms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two to four</td>
<td>48</td>
<td>20.9</td>
<td>15.8–26.7</td>
</tr>
<tr>
<td>Five or more</td>
<td>182</td>
<td>79.1</td>
<td>73.3–84.2</td>
</tr>
</tbody>
</table>

CI, confidence interval.

^a To calculate the % (n = 237), those with ignored variables were excluded from the total: gender (one; n = 236); age range (13; n = 224); ethnicity (seven; n = 230); home (ten; n = 227); number of rooms (seven; n = 230); self-esteem (18; n = 219).
### Table 2

Distribution of bullying, number of events per role, and self-esteem; gender and age range in adolescents from public schools participating in the School Health Program, 2012.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Gender</th>
<th>Age range (years)</th>
<th>p-value (MH)</th>
<th>Odds (CI)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>Odds (CI)</th>
<th>p-value (MH)</th>
<th>Odds (CI)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>n (%)</th>
<th>Odds (CI)</th>
<th>p-value (MH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bullying—yes</td>
<td>M</td>
<td>F</td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>n (%)</td>
<td></td>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vicim</td>
<td>48 (41.7)</td>
<td>67 (58.3)</td>
<td>115</td>
<td>48.5</td>
<td>0.86 (0.50 &lt; OR &lt; 1.49)</td>
<td>0.565</td>
<td>80 (52.6)</td>
<td>72 (47.4)</td>
<td>152</td>
<td>67.8</td>
<td>1.65 (0.90 &lt; OR &lt; 3.03)</td>
<td>0.084</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressor</td>
<td>35 (46.7)</td>
<td>40 (53.3)</td>
<td>75</td>
<td>31.6</td>
<td>1.20 (0.66 &lt; OR &lt; 2.15)</td>
<td>0.523</td>
<td>41 (57.7)</td>
<td>30 (42.3)</td>
<td>71</td>
<td>31.7</td>
<td>1.71 (0.93 &lt; OR &lt; 3.14)</td>
<td>0.064</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victim/aggressor</td>
<td>27 (42.2)</td>
<td>37 (57.8)</td>
<td>64</td>
<td>27.0</td>
<td>0.92 (0.50 &lt; OR &lt; 1.71)</td>
<td>0.783</td>
<td>33 (55.0)</td>
<td>27 (45.0)</td>
<td>58</td>
<td>25.9</td>
<td>1.42 (0.75 &lt; OR &lt; 2.68)</td>
<td>0.251</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observer</td>
<td>65 (46.1)</td>
<td>76 (53.9)</td>
<td>141</td>
<td>59.5</td>
<td>1.28 (0.73 &lt; OR &lt; 2.25)</td>
<td>0.355</td>
<td>72 (53.3)</td>
<td>63 (46.7)</td>
<td>135</td>
<td>60.3</td>
<td>1.61 (0.90 &lt; OR &lt; 2.86)</td>
<td>0.084</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bullying — no</td>
<td>M</td>
<td>F</td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>n (%)</td>
<td></td>
<td>n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vicim</td>
<td>48 (41.7)</td>
<td>67 (58.3)</td>
<td>115</td>
<td>58.2</td>
<td>1.01 (0.57 &lt; OR &lt; 1.79)</td>
<td>0.981</td>
<td>49 (47.6)</td>
<td>54 (52.4)</td>
<td>103</td>
<td>47.0</td>
<td>0.89 (0.50 &lt; OR &lt; 1.60)</td>
<td>0.676</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressor</td>
<td>35 (46.7)</td>
<td>40 (53.3)</td>
<td>75</td>
<td>50.5</td>
<td>0.99 (0.56 &lt; OR &lt; 1.76)</td>
<td>0.981</td>
<td>53 (50.5)</td>
<td>51 (49.5)</td>
<td>104</td>
<td>48.9</td>
<td>1.12 (0.63 &lt; OR &lt; 2.01)</td>
<td>0.676</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem</td>
<td>High (score &gt; 30)</td>
<td>46 (41.8)</td>
<td>64 (58.2)</td>
<td>110</td>
<td>50.5</td>
<td>1.01 (0.57 &lt; OR &lt; 1.79)</td>
<td>0.981</td>
<td>49 (47.6)</td>
<td>54 (52.4)</td>
<td>103</td>
<td>47.0</td>
<td>0.89 (0.50 &lt; OR &lt; 1.60)</td>
<td>0.676</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (score ≤ 30)</td>
<td>45 (41.7)</td>
<td>63 (58.3)</td>
<td>108</td>
<td>49.5</td>
<td>0.99 (0.56 &lt; OR &lt; 1.76)</td>
<td>0.981</td>
<td>53 (50.5)</td>
<td>51 (49.5)</td>
<td>104</td>
<td>48.9</td>
<td>1.12 (0.63 &lt; OR &lt; 2.01)</td>
<td>0.676</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CI, Confidence interval.

The Mantel-Haenszel (MH) chi-squared test was used for p-values.

The % in brackets refers to the variable distribution between the categories of gender and age group, and those with ignored variables (n = 237) were excluded from the total: bullying by gender (one; n = 236) and age range (13; n = 224); bullying role by gender (four; n = 233) and age range (26; n = 211); self-esteem by gender (19; n = 218) and age range (30; n = 207).

The overall % for each role (victim, aggressor, victim/aggressor, and observer) were calculated in relation to the total respondents with information for gender and age.
these differences, such as the methodology used in data collection, differences between the studied schools, the culture of each location, social class, ethnicity, age, and gender of the participants.\textsuperscript{26}

The type of bullying most frequently used by adolescents was verbal aggression, especially name-calling and spreading rumors. These findings have also been described in other studies,\textsuperscript{19,24} which have confirmed the verbal type as the most often used in bullying at this stage of life. Cruel, derogatory nicknames may explain the prevalence of this type of bullying.\textsuperscript{19}

The schoolyard, stairs, cafeteria, or restrooms were the places where bullying most frequently occurred, which is corroborated by the findings of Moura Cruz and Quevedo,\textsuperscript{19} and Silva et al.,\textsuperscript{2} who found that most aggressions occurred outside the classroom environment.

There were no statistically significant results for the variables bullying and self-esteem when they were analyzed individually in relation to gender, which may be due both to the relatively small sample size and due to the tool used in the study. The tool, by incorporating the different manifestations of bullying with the same weight, improves the sensitivity to the phenomenon, constituting an important screening test for the event, but has little discriminatory power (low specificity). In the study of Bandeira and Hutz,\textsuperscript{24} no difference was found regarding bullying victimization in relation to gender. In the study by Silva et al.,\textsuperscript{2} there was no statistical significance between gender and being a victim or aggressor, similarly to the findings from Moura Cruz and Quevedo,\textsuperscript{19} who found a prevalence of bullying among male adolescents.

Regarding the interaction between bullying roles and self-esteem in relation to gender, statistically significant results were found, as victims/aggressors and male aggressors have high self-esteem, while the female gender shows scores that are predominantly < 30 (low self-esteem); these findings are similar to those described in the study by Bandeira.\textsuperscript{27} One possible explanation is related to the different factors that influence self-esteem in the identity formation of males, focused on being successful towards their objectives, whereas females are controlled by feelings.\textsuperscript{28}

Regarding the male gender, it was observed that the victims have mean low self-esteem, which was not observed in the roles of aggressor, victim/aggressor, and observer, who presented higher means. The fact that the victims are unable to defend themselves or react to bullying can impact their self-esteem; these findings were also observed by Bandeira.\textsuperscript{26}

This study aimed to investigate bullying, self-esteem, and frequencies by gender and role. It was observed that this phenomenon is a common occurrence, representing a universal fact, observable in all schools.

The results showed a large number of students involved in the different roles of bullying, identifying associations between these characteristics and sex/gender and self-esteem of those involved, which may serve as useful information for the development of local intervention policies and inspiration for future research.

It must be emphasized that this study does not exhaust the discussion on this phenomenon, but helps to give visibility to the bullying event and to develop projects and actions that can be taken, involving the entire school community and its specificities.

Among the recommendations for a greater understanding of bullying and its interaction with self-esteem, the need for additional studies on the nature of this event, including family dynamics and other situations of vulnerability, as well as qualitative strategies to investigate the phenomenon are highlighted.

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline
Bullying role & Females & & & & & & \\
\hline & High SE & Low SE & & High SE & Low SE & & \\
\hline & n & \% & n & \% & n & \% & n & \% \\
\hline Victim & 25 & 40.3 & 37 & 59.7 & 24 & 55.8 & 19 & 44.2 \\
\hline Aggressor & 14 & 38.6 & 24 & 61.4 & 19 & 61.3 & 12 & 38.7 \\
\hline Victim/aggressor & 12 & 34.3 & 23 & 65.7 & 17 & 73.9 & 7 & 26.1 \\
\hline
\end{tabular}
\caption{Distribution of bullying role by gender and self-esteem status in adolescents from public schools participating in the School Health Program, 2012.}
\end{table}

CI, Confidence interval; SE, self-esteem.
\footnote{The Mantel-Haenszel (MH) chi-squared test was used for p values.}
\footnote{The \% refers to the distribution of the variable between the categories bullying status and gender.}
Conflicts of interest

The authors declare no conflicts of interest.

References