

The social capital among adolescent students of a Brazilian municipality

Stela Drumond de Menezes Rajão (<https://orcid.org/0000-0002-3737-7835>)¹

Patricia Maria Zarzar (<http://orcid.org/0000-0002-6952-5767>)¹

Raquel Conceição Ferreira (<https://orcid.org/0000-0001-8897-9345>)¹

Efigenia Ferreira e Ferreira (<http://orcid.org/0000-0002-0665-211X>)¹

Abstract *The article aimed to verify the association of adolescent social capital with living conditions factors and participation in collective activities. In the cross-sectional study, a validated questionnaire (SCQ-AS) was used to measure the social capital of seventh grade students from public and private schools in a Brazilian city. The parents answered a questionnaire on living conditions and children's participation in collective activities. After chi-square test, multiple logistic regression was performed with social capital domains, dependent variables and independent variables ($p \leq 0.20$). There was higher frequency of social cohesion at school in adolescents from private schools (OR=4.08, 95% CI 1.39-11.96) and who have a family income of 1 to 3 minimum wages, a larger network of friends among those with parents living together OR = 2.21, 95% CI 1.28 - 3.78) and higher school/neighborhood confidence in private school students (OR=2.71, 95% CI 1.16 - 6.32). There was no association with neighborhood social cohesion. Studying in private school and having a family income of 1 to 3 minimum wages can boost social cohesion in school, as well as practice sports. Parents living together can favor larger network of friends.*

Keywords *Social Capital. Adolescent. Social networking. Social conditions.*

¹Odontologia Social e Preventiva, Universidade Federal de Minas Gerais (UFMG). Av. Presidente Antônio Carlos 6627, Pampulha. Belo Horizonte MG Brasil. steladrum@yahoo.com.br

Introduction

Social capital has been part of contemporary research since 1985, when it was defined by Pierre Bourdieu as “the sum of real or potential resources that stems from durable networks of more or less institutionalized relationships of knowledge or mutual recognition”¹. According to the French sociologist, the social network provides its members with a “credential” to access opportunities that are impossible or difficult to obtain individually.

In the field of health, interest in social capital research was sparked by political scientist Robert Putnam’s study in the 1990s, which drew attention to the declining social capital in the United States and its negative impact on the general well-being of society. His theory advocated that “characteristics of social organization such as trust, norms and social networks can improve society’s efficiency by facilitating coordinated actions”².

These studies ensued a progressive growth of social capital research in health, but there is still a wide discussion about its concept and lack of a consensual definition for the term persists to this day. However, it can be understood as a resource related to networks of relationships, trust, solidarity, reciprocity and standards. The term “social capital” shows a broad and diffuse concept because networks of trust and solidarity can refer to a dense network of civil organizations and associations (such as NGOs, professional, class, religious, neighborhoods and philanthropic entities associations, cooperatives of production and groups in general) and more informal social connections, such as friendship relationships³.

Faced with the possibilities provided by social capital, through social networks, the search for a deeper knowledge of this resource in adolescence is relevant, since the literature on this subject in this stage of life is still scarce⁴. In addition, adolescence deserves special attention because it is a period of change, deeply influenced by relationships. A study conducted in Croatia has noted that reduced social capital during this vulnerable period may be a risk factor for mental health in adulthood⁴. The impact of low social capital can accumulate throughout life and it is important to recognize these effects, especially for adolescents⁵.

Research with Brazilian adolescents revealed that socioeconomic conditions are risk factors for oral health. It was also observed that adolescents who were always poor and with more experience of lifetime poverty have a higher risk in relation

to health conditions. However, participation in groups proved to be a protective factor⁶. A study developed in Iceland noted that adolescents are influenced by the context in which they live. Neighborhood’s income inequality contributes to individual emotional distress of adolescents, interfering in their family and social network⁷.

The importance of further studies on the social capital of adolescents, specifically on the association of their indicators such as social cohesion, network of friends and trust, with socioeconomic factors and participation in group activities boosted the development of this research. This study aims to evaluate the social capital among adolescent students and their association with the living conditions and level of participation in group activities.

Methods

The context of research

The municipality of the study was emancipated in 1891 and was named Nova Lima in 1923, which remains to this day. It was strongly influenced by British colonization motivated by the exploitation of gold, which was strengthened at the beginning of the 20th century. Nevertheless, today, its main resource comes from iron ore exploitation. It belongs to the Metropolitan Region of Belo Horizonte and, in 2016, had an estimated population of 91,069 inhabitants, a Human Development Index (HDI) of 0.813, an average per capita income of 2.3 minimum wages and a Gini coefficient of 0.4. With a total area of about 430 km², its population is concentrated in the central part of the city (origin of the municipality).

The region is home to 11 environmental preservation units, more than 800 springs and some lakes, and this was the reason for a major real estate expansion since the 1980s. It has become a quiet refuge for Belo Horizonte’s working and living citizens, which led to the emergence of condominiums, mostly outside the central area, inhabited by residents who do not live in the municipality’s core (the central area). Thus, this study focuses on this central area, a core where it is possible to observe relationships between adolescents actually living in Nova Lima.

The region favors the practice of physical activities and adolescents have the opportunity to participate in groups, such as in the “*Proteger é Preciso*” (“We Must Protect”) Project, in partnership with a mining company or in the “*Coletivo*

Mega-Foco) (“Mega-Focus Community”), as well as other groups of sports, artistic and cultural activities. These actions seem to favor the construction of social relationships and enable a higher quality of life.

The research

This is a cross-sectional study and data was collected by the Social Capital Questionnaire for Adolescent Students (SCQ-AS) constructed and validated for Brazil for 12-year-old students⁸.

It has good applicability and is easy to understand, it shows twelve questions divided into four domains: 1. Social Cohesion at School (*students of my school stay together, I feel that I belong to this school as if it were mine, I feel safe in this school, my parents get along with my teachers*); 2. Network of Friends at School (*students at my school have fun with each other, I trust my friends at school, I can ask my school friends for help*); 3. Social Cohesion in the Neighborhood (*I trust my neighbors, I can count on the help of my neighbors*); 4. Trust in School and Neighborhood (*teachers of my school are supportive and provide assistance, my neighbors would try to take advantage of me, my friends at school would try to take advantage of me*). There were three possible answers for all the questions: “I agree”; “I have no opinion / I don’t know” and “I disagree”⁸.

We chose to apply the questionnaire in the school’s own classroom to facilitate data collection. Seventh grade was chosen because it gathered students in the study’s age group of interest (12 years). All schools with seventh grade in the municipality, located in distinct districts were included, where five were state and four private. Five private schools not included in the central area were excluded from the study because they had students living in condominiums, who did not live in the municipality. The total number of students enrolled in the seventh grade of the schools included in the study was 1,001 students, according to enrollment information for the year 2017 provided by the schools.

The parents of these students also participated in the research through the completion of a self-administered questionnaire, which sought to verify household’s income, parents’ marital status, maternal age and work, as well as data on their children’s participation in group sports, religious and artistic activities.

Sample calculation was done to estimate the proportion, considering the significance of 95%, error of 5% and expected frequency pattern of

50%, obtaining a total of 384 adolescents. With a possible loss of 10% and deff 1.2, an “n” of 510 adolescents was found. This value was adjusted because it was a finite universe (N=1,001), reaching a final “n” of 337 adolescents.

Inclusion criteria for students were to be regularly enrolled in public and private schools in the central area of the municipality, to attend 7th grade and with no apparent cognitive limitations (teacher’s information). Exclusion criteria were not to reside in the municipality and study in schools not belonging to the central region of the municipality.

A pilot study was developed with 40 school adolescents, regularly enrolled in 7th grade of a state public school in a municipality close to the study, with similar social characteristics, with inclusion criteria being enrolled in 7th grade and showing no cognitive impairments.

At first, the main investigator visited the school and, with the permission of the school’s administration and the teacher, explained the research to students in the classroom. Two copies of the Informed Consent Form (ICF) were sent to the parents with explanations about the research, requesting permission for their children’s participation and their signature. At the second meeting, the signed terms were collected and students signed the ICF as well, agreeing to respond to the social capital questionnaire.

At the time, students were divided into two groups of 20 school adolescents in separate rooms in order to define the best way of applying the tool. The first group was instructed to read and respond to the questionnaire in silence and raise their hand in case of doubt, which would be promptly clarified by the researcher. The second group was instructed to wait for the researcher to read aloud, and then mark the desired options. She would also immediately resolve any issues. The evaluation of the two methods allowed choosing the reading of questions aloud by the researcher as the best way of applying the questionnaire, since it enabled a greater understanding by students, who in this case had no issues, besides entailing a shorter application time.

After the pilot study, data was collected from February to March 2017 with the authorization of the Minas Gerais Education Secretariat and consent of the administration and teachers of the nine participating schools. The procedures for first contact and sending of the ICF to the parents, now along with the questionnaire to be completed by them were carried out as in the pilot study. Two ICFs were sent: one for their participation in

the study and the other to consent to the participation of their children in the research, each in two copies (one for the parents and another for the researchers).

The completed questionnaire and a copy of each signed term were collected in a second meeting with the students, usually one day after delivery, to avoid losses. In this second meeting, the ICFs were distributed to all adolescents who were authorized to participate in the research and signed the agreement to contribute to the study. Finally, the social capital questionnaires were applied to these students, also in the classroom. The researcher read all questions aloud and some time was granted so that all participants would answer each question to minimize understanding bias and facilitate understanding. The researcher promptly clarified the few issues that arose.

The analysis of social capital, which was a dependent variable, was performed by realm, seeking to verify its association with independent variables: school type, age, gender, household income, maternal work and age, parents' marital status and participation of adolescents in group activities. Scores 3, 2 or 1 were assigned to answers "I agree", "I have no opinion/I don't know", "I disagree", respectively, in questions 1 to 10 of the questionnaire. Only questions 11 and 12 had their scores reversed (negative questions).

The sum of the scores could range from 4 to 12, from 3 to 9, from 2 to 6 and from 3 to 9 in domains 1, 2, 3 and 4, respectively. From the sum, each realm was categorized by the quartile and classified in lowest, when the value of the sum of the scores was less or equal to the value of the first quartile, and highest, when this value was higher than the value of the first quartile⁸.

After the descriptive analysis of the distribution of the sample according to all variables, the chi-square test was performed to verify the association between each realm and the independent variables of interest. From these results, those with a $p \leq 0.20$ value were selected and multiple logistic regression was performed.

The Research Ethics Committee of the Federal University of Minas Gerais – COEP approved this study on February 8, 2017.

Results

In total, 335 adolescents selected by convenience participated in the study by submitting the ICF signed by the parents and the ICF signed by them. Among the participating parents, 326 delivered

the completed questionnaires, with some unanswered questions, and variable maternal work (6.5%) and household income (3.1%) were the ones with the highest losses.

While not the subject of this study, total social capital was calculated and was *highest* in most adolescents (72.7%), with a difference between public (64.34%) and private (95.24%) schools' students. The mean social capital score (1 to 36 points) in public schools was 26.73 ± 4.02 , and 31.1 ± 2.26 in private schools. The maximum score (36) was observed in both school types, but the minimum score was 15 and 25, in public and private schools, respectively.

Table 1 shows the distribution of students according to the variables of living conditions and participation in group activities. More than two thirds of adolescents in the sample studied in public schools. The most frequent household income in students' families was one to three minimum wages (from R\$ 880 to R\$ 2,640) and most parents lived together. Most adolescents, more than two-thirds, participated in some group activity, with emphasis on sports activities in relation to other activities.

Table 2 shows the sample distribution of students according to the domains of social capital. Most adolescents were considered to have greater social capital in all domains: social cohesion at school, network of friends at school, social cohesion in the neighborhood and trust in school and neighborhood.

We selected the independent variables that showed a p -value ≤ 0.20 from the results of the binary analysis. Regarding social cohesion at school, the following variables were selected: school type ($p=0.000$), gender ($p=0.149$), parents' marital status ($p=0.077$), maternal work ($p=0.000$), participation in sports activities ($p=0.122$), participation in artistic activities ($p=0.042$), total activities reported ($p=0.003$) and participation in group activities ($p=0.121$). In relation to the network of friends at school, variables school type ($p=0.001$), marital status of parents ($p=0.037$), maternal work ($p=0.200$) and household income ($p=0.009$) were selected. Social cohesion at school/neighborhood was not associated with any of the variables analyzed in the chi-square test. Fourth and last realm, trust in school and the neighborhood showed relationship with school type ($p=0.000$), age ($p=0.069$), parents' marital status ($p=0.104$), maternal work ($p=0.050$), household income ($p=0.019$), participation in sports activities ($p=0.076$), habit of going out with friends ($p=0.015$), total activities

Table 1. Distribution of the sample of adolescent students according to living conditions and participation in-group activities (n=335), 2017.

Variable	n (%)	CI 95%
School	n = 335	
Public	272 (81.2)	76.6 – 85.0
Private	63 (18.8)	14.9 – 23.4
Age	n = 335	
11 or 12 years	255 (76.1)	71.2 – 80.4
13 to 16 years	80 (23.9)	19.6 – 28.8
Gender	n = 335	
Female	191 (57.1)	51.8 – 62.4
Male	144 (42.9)	37.6 – 48.2
Situation of parents	n = 326	
Living together	175 (53.7)	48.2 – 59.1
Not living together	151 (46.3)	40.9 – 51.8
Mother age	n = 316	
Under 37 years	162 (51.1)	45.6 – 56.6
38 years and over	154 (48.9)	43.4 – 54.4
Mother work	n = 305	
Housewife/Unemployed/Not working/Domestic Help	56 (18.4)	14.4 – 23.1
House Cleaning/Diarist/Nanny	59 (19.3)	15.3 – 24.2
Elementary/Secondary level profession	112 (36.7)	31.5 – 42.3
Civil servant/Self-employed/Higher Education	49 (16.1)	12.3 – 20.7
Other	29 (9.5)	6.7 – 13.4
Household income	n = 318	
No income up to 1 minimum wage (under R\$ 880)	106 (33.3)	28.3 – 38.7
1-3 minimum wages (under R\$ 2,640)	149 (46.9)	41.4 – 52.4
3 minimum wages and over (R\$ 2,640.01 and over)	63 (19.8)	15.8 – 24.6
Participation in group activities	n = 320	
Yes	240 (74.8)	69.3 – 78.9
No	80 (25.2)	21.1 – 30.7
Participation in sports activities	n = 320	
Yes	159 (49.7)	44.2 – 55.2
No	161 (50.3)	44.8 – 55.8
Participation in artistic activities	n = 320	
Yes	33 (10.3)	7.4 – 14.2
No	287 (89.7)	85.8 – 92.6
Participation in religious activities	n = 320	
Yes	93 (29.1)	24.3 – 34.3
No	227 (70.9)	65.7 – 75.7
Habit of going out with friends	n = 320	
Yes	67 (20.9)	16.8 – 25.8
No	253 (79.1)	74.2 – 83.2
Total reported activities	n = 318	
0	80 (25.2)	20.7 – 30.2
1	140 (44.0)	38.6 – 49.6
>1	98 (30.8)	25.9 – 36.1

reported ($p=0.148$) and participation in group activities ($p=0.086$). Multiple regression data are described in Table 3.

Figure 1 shows the representative figure of an explanatory model for this study through a synthesis of the relationships established among the variables.

Table 2. Distribution of the sample of adolescent students according to social capital domains (n=335), 2017.

Social capital domains	n (%)	CI 95%
Realm 1 – Social cohesion at school		
Lowest	101 (30.5)	25.8 – 35.7
Highest	230 (69.5)	64.3 – 74.2
Realm 2 – Network of friends at school		
Lowest	94 (28.2)	23.6 – 33.3
Highest	239 (71.8)	66.7 – 76.4
Realm 3 – Social cohesion in the neighborhood		
Lowest	120 (36.3)	31.2 – 41.6
Highest	211 (63.7)	58.4 – 68.8
Realm 4 – Trust in school/neighborhood		
Lowest	129 (39.7)	34.5 – 45.1
Highest	196 (60.3)	54.9 – 65.5

Discussion

Considering the domains of social capital, as measured by the Social Capital Questionnaire for Adolescent Students (SCQ-AS), this study evidenced the presence of high social capital among adolescents, considering both the overall total (72.7%) and by domains, namely, network of friends at school (71.8%), social cohesion at school (69.5%), social cohesion in the neighborhood (63.7%) and trust in school/neighborhood (60.3%).

Larger social capital is generally associated with better socioeconomic and health conditions⁹⁻¹². Since our study was carried out in a municipality with a high HDI, that is, with good indicators of income, education and longevity, the context may have contributed to the higher level of total social capital and its domains. However, the best results were observed in private schools, where these indicators are more frequent.

The first realm of social capital analyzed, namely, social cohesion at school, refers to close relationships with classmates, between family (parents) and school and the level of belonging to that space. This was shown to be associated with adolescents living in middle-income households (OR 2.45; 1.39-11.96), studying in a private school (OR 4.08; 1.39-11.96), and among women and among participants in sports activities.

In general, private school students belong to households with higher incomes. Generally, these adolescents with better socioeconomic conditions have a higher frequency of social cohesion, while those with lower family income report not feeling safe in the school environment and poorer connections with their schools, factors that indicate lower social cohesion. Gaps in socioeconomic patterns also influence parental support for schooling and adolescents' perception of their relationships with school in terms of institutional rules and bullying¹³.

The income category that showed an association with social cohesion at school was intermediate (one to three minimum wages), which suggests the possible influence of other factors on the levels of social cohesion at school, for example the importance of family cohesion and relationships with close friends, who are also associated with a higher perception of safety at school by adolescents¹⁴.

The lower frequency of social cohesion at school was found among male adolescents who did not practice sports activities. These associations are in agreement with studies that indicate a greater tendency of female adolescents to report higher levels of social capital in relation to males⁴. In addition, other data on social cohesion are available, which specifically suggest strong associations of gender in the way adolescents relate to their parents in terms of school and show a greater concern of girls with this relationship¹³.

In this group of students, among group activities, only sports influenced social capital, in the social cohesion at school realm. Recent research on social cohesion and physical activity in schools has also shown that team sports seem to be more advantageous for the development of fun and cohesion, factors that positively influence health outcomes¹⁵. These data corroborate the findings of our study.

The analysis of the network of friends at school showed that most adolescents in this study had a greater network of friends (71.8%) and their higher frequency was found among adolescents who belonged to households in which parents lived together (OR 2.21; 1.28-3.78).

This was the only association found with regard to the network of friends at school and suggests the influence of family ties on adolescents' relationships with friends, especially regarding trust and solidarity, addressed in the issues of this realm. For young people, family is important for being there when they need it the most and family members are always a crucial resource of

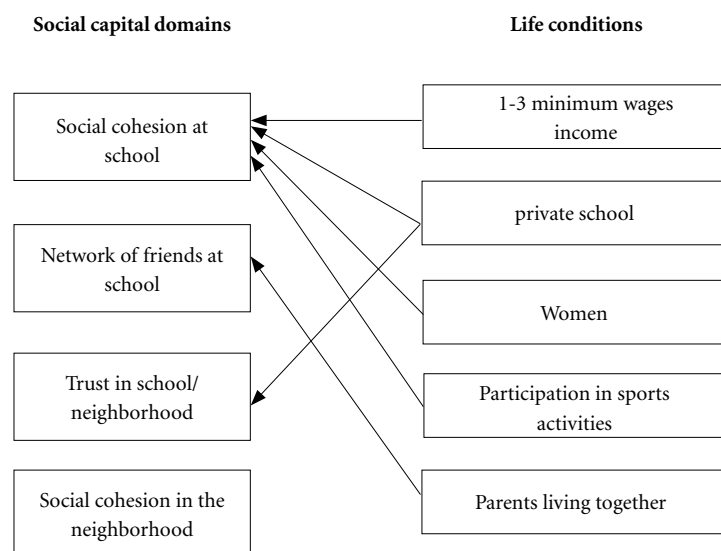
Table 3. Multiple logistic regression of the factors associated with the domains of social capital of adolescent students, 2017.

Independent variables	Odds Ratio	p	CI 95%
Social cohesion at school **			
School			
Public	1		
Private	4.08	0.010*	1.39 – 11.96
Household income			
No income up to 1 minimum wage (under \$ 252,00)	1		
1-3 minimum wages (under \$ 755,00)	2.45	0.002*	1.39 – 4.28
3 minimum wages and over (\$ 755,01 and over)	1.74	0.252	0.67 – 4.46
Gender			
Female	1		
Male	0.41	0.028*	0.18 – 0.90
Participation in sports activities			
Yes	1		
No	0.43	0.035*	0.20 – 0.94
Network of friends at school***			
Situation of parents			
Not living together	1		
Living together	2.21	0.004*	1.28 – 3.78
Trust in school / neighborhood****			
School			
Public	1		
Private	2.71	0.021*	1.16 – 6.32

** Model adjusted for interaction between gender and participation in sports activities.

*** Model adjusted for school type.

**** Model adjusted for income and age.

**Figure 1.** Explanatory model of the association between the domains of social capital and living conditions of adolescent students, 2017.

support⁴. Research has shown that not living with both biological parents increases the probability of affective disorder in adolescents¹⁶ and this may reflect a difficulty in relating and interfere negatively in the construction of a network of friendships by adolescents. Coleman's studies already provided evidence of the positive impact of single-parent families on school dropout, which may also be a factor that hinders the establishment of bonds of friendship among students¹⁷.

Another realm of social capital, adolescents' trust in school and neighborhood was measured in our study through questions about solidarity, teachers' support and adolescent trust in their schoolmates and neighbors, and was found to be highest in most of adolescents (60.3%). Analysis of these data showed a higher frequency of trust in school and neighborhood among adolescents from private schools (OR 2.71; 1.16-6.32).

Considering the better socioeconomic conditions of adolescents of private schools in relation to those of public schools, in general, it is admitted that the former tend to live in more favored districts. Thus, this result is based on Leventhal and Brooks-Gunn's *norms and collective effectiveness model*, in which the structural disadvantages of the district negatively influence the social norms of the neighborhood. On the other hand, more favored districts tend to have greater willingness of the neighborhood to intervene for the common good and this has a positive impact on the results for children and adolescents¹⁸. This model may explain our results as the best levels of solidarity between neighbors and schoolmates and, thus, greater trust in the school and the neighborhood were found in adolescents from private schools, who tend to live in more favored districts.

While high in most adolescents (63.7%), social cohesion in the neighborhood was not associated with any of the independent variables analyzed. This result can be explained by the particularities of the social capital of adolescents in relation to adult social capital, since "communities of young people are more often a virtual community of friends around the school, city center and streets, houses of friends and relatives, rather than strongly linked to an easily identifiable geographical location"¹⁹.

Another possibility for the outcome of social cohesion in the neighborhood in our study finds support in another model of Leventhal and Brooks-Gunn called the *institutional resources model*, where quality, accessibility and availability of institutional resources may explain the rela-

tionship between the characteristics of neighborhood and outcomes in children and adolescents. This model suggests that quantity and quality of resources that influence young people's lives (e.g. leisure, education, health activities and care facilities) tend to be lower in disadvantaged neighborhoods (low socioeconomic status, high ethnic diversity and high residential instability)¹⁸.

According to Kawachi²⁰, studies that attempted to relate health and social capital showed that these associations are easily observed in countries with significant levels of inequality. The same phenomenon is noted regarding the association between health and income. Lower social capital and lower levels of income lead to inadequate safety networks and scarce cooperative behaviors, a setting also observed in this study.

In this case, the importance of accumulated social capital increases, since the group should be able to access resources outside of its social environment to achieve certain objectives, such as health promotion practice. Reinforcing social capital, especially among students in the public network, would facilitate "access to opportunities that are impossible or difficult to obtain individually"²¹, attracting credibility, which may result in legitimacy and a stronger social contract²¹.

Considering that, among the associated factors studied, physical activity is the only one that can be used immediately, and considering its association with cohesion at school, this seems to be a good avenue for a first step. It is an empowerment exercise among students.

We recognize that the study has limitations, initially because it is cross-sectional, which weakens associations and does not allow inferring determination. In addition, the smaller sample of students from private schools compared to public schools may also have been a constraint. However, the distribution of students enrolled in public and private schools in the study municipality (about 20% in private schools and 80% in public schools) represents the national framework in primary and secondary schools in Brazil.

Final considerations

Observing the constructed model (Figure 1), it can be observed that, although the municipality has the best HDI of the state, we observed inequality among students with prejudice to public school enrollees. Private schools are associated with greater social cohesion at school and greater trust at school/neighborhood.

Public schools are most often not a choice, unlike private schools. The household's income is the determinant of this option and, observing household's income of the adolescents of this study, the lower income was associated with lower social cohesion at school as well. Thus, inequality and social capital are complementary and non-competing²⁰, even in the case of empirical issues.

Income inequality in a community can generate emotional distress in its adolescents, interfering in their family networks and social relationships⁷. The establishment of social relationships are the source of social capital and the smallest social capital, especially considering the vulnerable period of adolescence may contribute

to a life pathway ridden with risks to physical and mental health⁵.

This is the work that lies ahead. Social capital is understood as a resource to improve the living conditions of adolescents, especially those who do not yet receive the necessary attention from public policies. Results suggest that one must look beyond individual problems of adolescents and see their relationships and the context in which they live as a way to turn their vulnerability into benefits. The municipality of the study has great potential to explore the social capital of adolescents, which is the *highest* in approximately two-thirds of the sample. We suggest further studies be conducted for a better understanding of our findings.

Collaborations

All authors participated in the conception of the study, method construction, data analysis and elaboration of the article. Data collection was performed exclusively by SD Menezes

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