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Childhood and adolescent sexual abuse, victim profile and its impacts on mental health

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Abstract *This work aims to analyze the impact of childhood and adolescent sexual abuse on variables related to mental health and to identify the characteristics of the victims. To achieve this objective, microdata of the National School Health Survey 2015 was used, applying the methodology of Propensity Score Matching. The results show that the abused youth has a unique behavioral, familiar and socioeconomic profile and that they are more likely to use alcohol and drugs, be victim of bullying, to be in age-grade lag, to be employed and not to intend to continue studying. From a familiar point of view, they have low parental monitoring and lower probability of living with their mother. Estimates show that teenage sexual abuse can increase the youth's chance of reporting a constant feeling of loneliness by 13.3 percent, a 7.5 percent higher chance of having few or none friends, and a 9.5 percent higher chance of reporting frequent insomnia. Significant differences in effects on men and women were also observed, with impacts on loneliness feelings and insomnia greater for the first group and greater on the number of friends for the second.*

Key words *Sexual abuse, Mental health, Propensity Score Matching, National School Health Survey*

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Introduction

Sexual violence against children and teenagers is a problem that affects many countries. According to Stoltenborgh et al.[1] one out of every eight young people around the world said they had been abused. In Brazil, sexual violence is the main type of violence among individuals in the 10-14 age group, second only to physical violence[2]. This is a form of violence that is not usually recognized as a public health problem and requires governments to develop strategies. Teenagers who have been abused are at high risk of developing several biopsychosocial disorders, with repercussions on the physical, behavioral, and cognitive spheres.

It must be considered that the effects are felt not only by the victim but also by society. The main concerns are costs of medical assistance, the criminal and legal system, and the drop in productivity and future earnings of young people[3-5]. According to Saied-Tessier[6], the annual cost of teenager sexual abuse in the UK amounts to 3.2 billion euros, most of which is due to a decline in productivity for society as a whole.

Despite the importance of this matter, most of the research found in the national and international literature uses data from small samples, derived from case studies, which compromises the generality of its results. This is an extremely important fact that may be associated with the increasing recognition of this problem as a matter of public relevance. As a UN report[7] indicates, violence against children and teenagers is often silenced and there is a paucity of statistical data on the subject. In this sense, learning about the impact of abuse and the profile of victims is essential to reduce the number of cases.

Given this scenario, this paper seeks to identify the profile of the abused youth and the impacts of abuse on his/her mental health. To do so, we use the microdata of a national school health survey, from which IBGE (The Brazilian Institute of Geography and Statistics - *Instituto Brasileiro de Geografia e Estatística*)[8] defines the concept of mental health based on three variables related to the feeling of loneliness, insomnia and number of friends. Some authors suggest that mental health appears to be the main variable affected by sexual violence for this part of the population, leaving marks in the development of children and teenagers, with damages that can persist throughout life[9-13]. Therefore, the sooner some type of abuse is disclosed, the greater the probability of providing effective treatment and solving or remedying damages[14].

To our knowledge, this the first research to use a quasi-experimental methodology, which makes it possible to isolate the effects of abuse from other confounding effects, so this is a first contribution. The second is the use of a national database with a representativeness equivalent to more than 2.5 million schoolchildren, thus differing from case studies for ensuring external validity of the results.

Data and methodology

This paper draws on data from the 2015 PeNSE (National School Health Survey -*Pesquisa Nacional de Saúde do Escolar*). Carried out for the first time in 2009, the research aims to understand and measure the several risk factors and protection of the teenage population health. This is a three-year survey carried out with 9th graders regularly attending public and private schools located in urban and rural areas throughout Brazil.

The choice of 2015 is justified by the inclusion of a variable that allows us to identify whether the student reported having been a victim of sexual violence. Formally, the question is, "Have you ever been forced to have sexual intercourse?". The 2015 PeNSE included questions about socioeconomic aspects, such as family background, eating habits, physical activity, use of alcohol and other drugs, sexual health, violence, among others. The results variables were turned into dummies: in the case of *Loneliness*, it equals 1 if the student always feels or almost always feels alone and equals 0 if he/she never, rarely or sometimes feels alone. For the *Friends* variable, the dummy equals 1 if the student has up to two friends or no friends and 0 if otherwise. Finally, the *Insomnia* variable equals 1 if the student always has or almost always has trouble sleeping because something worries him/her and 0 if he/she never, rarely or sometimes has trouble sleeping.

Given that the aim of this study is to estimate the causal impact of sexual abuse on the mental health of students, it is necessary to find the counterfactual of the abused youngsters group. In order to do this, we used the Propensity Score Matching (PSM) method, which estimates the average treatment effect on treated (ATT), seeking in the control group (non-abused youngsters) the individuals who are most similar to the group of treated (abused youngsters) in terms of observable features. This is done in two steps, the first is the estimation of the probability of individuals receiving the treatment, in case they have been abused. To do so, we use the logit model.

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The second step consists of a matching which associates each individual in the treatment group with an individual in the control group according to the probability of being a victim of sexual violence.

The $\hat{\delta}_{tt}$ ATT estimation by the Propensity Score Matching is then obtained according to the following estimator:

$$\delta_{tt,n} = \frac{1}{n}\Sigma_{i=1}^{n}\left(Y_i - \frac{1}{n}\Sigma_{j\in C} w_{i,j} Y_j\right)$$

where n is the number of treated, i is the subscript for treated, j is the subscript for control, m is the number of matches, C indicates common support, $w_{i,j}$ is the weight used for matching the individual j to the i and Y is the result variable. In this paper we used the nearest-neighbor matching, where $w_{i,j}$ takes value 1 for treated and their matched controls and 0 for other controls.

Results

Table 1 presents an overview of the sample in relation to sexual violence for 9th graders, stratified by gender. As you can see, teenagers who were abused represent about 4% of the total PeNSE participants, whose sampling representativeness is equivalent to 101,901 abused youngsters. Note that the percentage of victims is higher among females (4.32%). The microdata also presents the distribution of sexually abused youngsters by type of perpetrator. It should be noted that most of the acts are committed by people known to the victim: (ex)boyfriend (25.6%), family members (19.3%), friends (19.2%) and parents (10.5%). This is an extremely disturbing result, given that the victim may have been abused by someone he/she loves or trusts.

When considering the proposed result variables, Table 2 shows the existence of a singular profile of the abused teenager with regard to solitude, number of friends and insomnia problems. Among non-abused students, 16% reported feeling always alone or very alone, 22.7% said they had no friends or up to two friends, and 10.9% reported problems with frequent insomnia caused by their concerns. The numbers differ greatly among those who were abused, in 35.6%, 33.7% and 26.4%, respectively. The different dynamics observed for females' mental health, as usually indicated in the literature, can be confirmed by the results in Table 2. In all variables there is a higher predominance of symptoms related to mental health among females, both between abused and non-abused females.

Table 1. Number of abused students by gender.

	Total	Abused
Total	2.575.269	101.901
(%)	-	3,96%
Female	1.326.688	57.328
(%)	-	4,32%
Male	1.248.581	44.573
(%)	-	3,57%

Source: 2015 PeNSE microdata. Note: The results were expanded from the survey's sample weights.

Table 2. Percentage of students per abuse condition and variables associated with mental health.

	Loneliness	Friends	Insomnia
Non-abused			
Total	16,00%	22,70%	10,89%
Male	9,97%	20,21%	6,70%
Female	21,66%	25,04%	14,82%
Abused			
Total	35,58%	33,69%	26,40%
Male	20,01%	32,26%	16,60%
Female	46,53%	34,69%	33,28%

Source: 2015 PeNSE microdata.

Table 3 shows the results of the first stage of Propensity Score Matching, which is the estimation of the logit model for the determinants of sexual abuse among students. Results point to a framework that characterizes the victims of sexual abuse as a very particular group in behavioral, family and socioeconomic terms. Abused youngsters are more likely to have used illicit drugs (OR = 2.15), alcohol (OR = 1.80) and have friends who have already done the same (OR = 1.02). In addition, they are twice more likely to have been bullied (OR = 2.09) and more likely to have an age-grade gap (OR = 1.20). Even more serious is the fact that these students report having less intention to go further than elementary school and are more likely to be working, which is indicated by the coefficients of 'Future in school' and 'Employment' (OR = 1.54) variables.

As for the family environment, Table 3 also reveals that the variables of parental monitoring, both the one that determines whether they knew what the scholar did in their free time and the one that indicates the frequency with which the

Table 3. Logit model - probability of the student having been sexually abused.

Variables	*Odds ratio* (OR)	Variables	*Odds ratio* (OR)
White	0.9544	Ownership index†	0.9886
	(0.0394)		(0.0142)
Male	0.695***	*Parental monitoring (free time)*	
	(0.0363)	Rarely	0.7728***
Age	0.7889		(0.0591)
	(0.273)	Sometimes	0.6579***
Physical activities outside of school	1.0734*		(0.0560)
	(0.0365)	Most times	0.5183***
Bullying	2.0933***		(0.0556)
	(0.0366)	Always	0.5018***
Age-grade gap	1.2020***		(0.0521)
	(0.0499)	*Parental monitoring (homework)*	
Job	1.5405***	Rarely	0.7377***
	(0.0430)		(0.0479)
Alcohol	1.8023***	Sometimes	0.6540***
	(0.0413)		(0.0496)
Drugs	2.1563***	Most times	0.6943***
	(0.0436)		(0.0649)
Friends drink alcohol	1.0205***	Always	0.7671***
	(0.00462)		(0.0532)
Habit of eating fruit	0.9615	Mother smokes	1.2594***
	(0.0403)		(0.0462)
Hunger		Father smokes	0.9830
Rarely	1.3555***		(0.0431)
	(0.0510)	Lives with mother	0.8633**
Sometimes	1.5299***		(0.0596)
	(0.0498)	Lives with father	0.9155
Most times	2.4276***		(0.0848)
	(0.0837)	Separated parents	1.0750
Always	2.8677***		(0.0930)
	(0.105)	Mother is college educated	1.0660
School future			(0.0482)
High school	0.6707***	People living in the house	1.0172*
	(0.0717)		(0.0100)
Vocational-technical school	0.7784***	Public school	1.2405***
	(0.0884)		(0.0592)
Undergraduate school	0.6300***	Capital city	1.3913**
	(0.0722)		(0.145)
Graduate school	0.7236***		
	(0.0614)		
Pseudo R^2		0.11	
Observations		98,115	

Note: Significant at 1% (***), 5% (**) e 10% (*). Standard errors in parentheses. Dummies for federation units (†) were included. Index obtained through the multiple correspondence analysis, considering the existence of the following indicators at the household: housekeeper; car; motorcycle; landline; cell phone; computer; and internet.

parents checked the homework, are very relevant predictors of sexual violence. The results are very significant for children whose parents always know or usually know what they do in their free time, a fact that is associated with a 50% lesser chance of reporting abuse. According to the results we found, the variable for the number of people at home (OR = 1.01) and the dummy

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that indicates whether the mother smokes (OR = 1.25) are also significant, as well as whether the abused person practiced physical activities outside of school (OR = 1,07), whether he/she lives with his/her mother (OR = 0,86), and whether he/she has already felt hunger at home, this last effect increasing according to how often it happened. Finally, teenagers from public schools (OR = 1,24) and living in capital cities (OR = 1,39) are more likely to be abused.

The next step in the method consisted of matching abused and non-abused students based on the attributes considered in the logit model. Figure 1 shows the probability of suffering sexual violence for youngsters in the group of abused and non-abused before and after the matching. Note that initially the groups were very different in observable features, with a strong concentration of non-abused on the left of the distribution and abused on the right. After the matching, the estimated probability distribution became very similar between the groups, demonstrating the model's suitability.

Table 4 presents the main result of this study, which relates to the estimation of sexual violence impacts on the mental health of students. First, it is clear that the adverse effects of this event are manifested in all variables. The estimated average effect of abuse on youngsters shows that they are 13.3% more likely to feel always alone or almost always alone, 7.5% more likely to have no friends or up to two friends and 9.5% more likely to report frequent insomnia due to their concerns.

As already seen in the previous descriptive analysis, the results of Table 4 confirm that there is a great difference between genders in the mental health question. For females, the impact is greater on loneliness (16%) and insomnia (10.7%), being significantly different from that observed for males – 6.4% and 5.7% respectively. In turn, the impact of sexual abuse on the number of friends is higher for males (8.6%) than for females (5%).

Table 4. Impact of sexual abuse on the mental health of students.

	Loneliness	Friends	Insomnia
Total	0.1338***	0.0752***	0.0959***
	(0.010)	(0.011)	(0.009)
Female	0.1600***	0.0500***	0.1070***
	(0.015)	(0.014)	(0.014)
Male	0.0644***	0.0869***	0.0578***
	(0.013)	(0.016)	(0.012)

Note: Significant at 1% (***). Standard errors in parentheses.

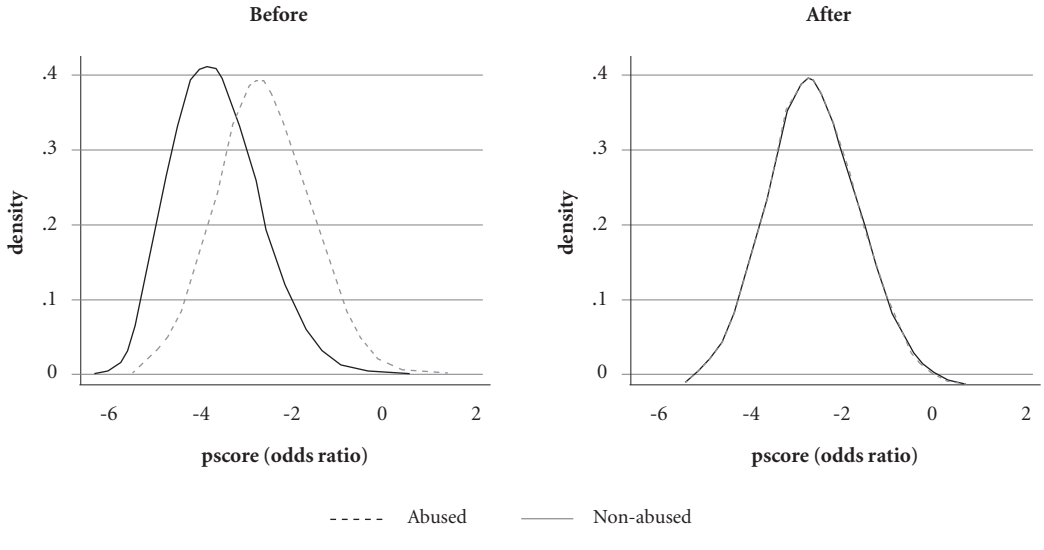

Figure 1. Distribution of the probability of sexual abuse, before and after the matching.

Discussion and conclusion

The present study presents a significant sample of the Brazilian young population, where 4% of them suffered sexual abuse. Meta-analysis[15,16] estimate that 10-20% of girls, and 5-10% of boys, have already suffered sexual abuse before the age of 18. Predominance varies according to the type of sexual abuse, being higher for sexual abuse without physical contact and lower for abuse with physical contact. The lower predominance found in our study can be explained by the nature of the question used to identify cases of sexual abuse, which is more likely to bring back a memory of physical sexual abuse, underestimating the real predominance from a broader concept of sexual abuse that does not include physical contact. It should also be considered that the problem of measuring predominance may be greater since, according to London[17], about two-thirds of the victims never reveal the fact and most cases are not reported to the authorities[18]. All this contributes to the development of psychological and social problems, making room for discussions of preventive and therapeutic measures for sexual abuse.

As for the profile of the abused person, we noticed that the youngsters who were abused were more likely to have used illicit drugs, alcohol and to have friends who had already done the same. According to the literature[19,20] on the subject, addiction to drugs and alcohol is common among victims of sexual violence, a problem that may persist for a long time. In addition, we observed that there is a greater possibility of there being age-grade gap among abused students, as documented in several studies[21-23]. Our findings also show that sexually abused students seem to be less likely to continue their studies in high school and undergraduate school and are more likely to be already working. Frothingham et al.[24] found that individuals who were abused have more trouble learning and Fergusson et al.[12] pointed out that they will rely on social welfare programs in the future. All of this shows a greater difficulty of adaptation of the abused person in the school/university and professional environment.

Socioeconomic factors such as low income and having an uneducated mother have been associated with sexual abuse in the literature[12,25]. In the present study, however, the variables that represent the socioeconomic level, such as 'Ownership index' and 'Educated Mother', were not significant, unlike the coefficients related to the variable that determines whether the student has ever been hungry due to lack of food at home. This suggests that family income is not as strongly associated with sexual abuse as is the degree of parental monitoring and the functionality of the family environment[26]. Another trait of the victim's profile that reinforces this idea, already pointed out by Bezerra and Beltrão[27], is that the victim of sexual violence avoids staying home and tries to spend as much time as possible outside the home environment, in order to feel safer. These data are pointed out by the variables that evaluate the greater chance that the individual will practice physical activities (aside from physical education) and not live with his/her mother.

The mental health variables used in the study (insomnia, friends, and solitude) do not involve mental disorders *per se*, but have a power to suggest psychic suffering. Kendall-Tackett et al.[28] observed that abused children displayed more psychological symptoms than non-abused children, with the most common symptoms being nightmares, depression, withdrawal behavior, aggression, regressive behavior and neurotic disorder. Other common symptoms include fear, anxiety and low self-esteem[29,30]. These findings support the mental health variables used in the present study. Insomnia can be explained by the presence of nightmares, fears and mood disorders such as depression. The lack of friends and loneliness may be linked to aggressive behavior or withdrawal from the creation of new social bonds, as well as being due to characteristics of low self-esteem and bullying.

The impacts found when studying these variables are extremely significant. Descriptive analysis of the data revealed that, on average, abused youngsters frequently report having few friends, insomnia, and feeling lonely. Estimates from a causal impact methodology confirmed how harmful the effects of sexual violence on the mental health of victims are. The fact that the score used in the variables is divided between always/almost always gives an even stronger impression of the intensity of these results, suggesting the suffering and marked presence of psychological stressors in the youngsters, as well as the possibility of developing and maintaining other mental disorders in this study population.

Considering gender differences, the impact of sexual abuse on loneliness and insomnia is greater for females, and the impact on the number of friends is greater for males. Such a result is consistent with the literature that says men have less emotional regulation and therefore cannot cope with the abuse situation without external-

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izing the trauma. This leads to less empathy and less involvement with others in such a way that the result for the 'Friends' variable is larger for this group. Since women have greater emotional regulation, they are able to cope with the problem before people, however, they end up running greater risks of internalizing the adverse effects of trauma, which is portrayed by the results for solitude and insomnia[31-34].

It should be emphasized that the impacts already commented on may be even more serious if we consider the fact that psychological disorders can last a lifetime. Fergusson et al.[12] found adverse effects on the mental health of individuals between the ages of 18 and 30 who were sexually abused in childhood/adolescence. They have scored higher for depression, anxiety, suicidal ideation, suicide attempts and substance abuse/dependence. In addition, they reported more problems regarding psychological well-being, risky sexual behaviors, and increased need for medical support throughout life. The consequences of these findings are comprehensive within the family and social context, with significant costs for health institutions, social assistance, and the legal system[5]. Thus, the development of preventive as well as therapeutic approaches that provide the psychological rehabilitation and integration of the individual in society becomes of extreme relevance.

International studies show that cognitive-behavioral therapies offer the best evidence of negative impacts on the psychosocial function of abused individuals. Macdonald et al.[35] and Arellano et al.[36] show through meta-analysis that the main variables affected by this form of treatment seem to be post-traumatic stress disorder and feeling anxiety. Furthermore, there is evidence that treatment may also reduce symptoms of depression, behavioral and sexual problems, and embarrassment[37,38]. Some studies, however, cast doubt on the validity of the effects of cognitive-behavioral therapy on this broad set of mental health indicators, especially in relation to the last four. On the other hand, no reports of adverse effects of treatment were found in the analyzed studies[35].

Prevention programs are another means of intervention against sexual abuse. The literature indicates that the most widely used method for the prevention of sexual violence consists of school programs that cover primary and secondary school students. Such programs gain relevance if we consider the findings of this article, that the abused youngster lacks family support. In this sense, the school may end up being the only source of care and protection of students who are at risk. There is a wide variety of international program models, ranging from passive styles (films, presentations, readings) to active styles (active participation, protective behaviors, etc)[39]. Studies show that these programs provide the grasping of concepts of sexual abuse prevention and protective abilities in situations of risk[40-43]. Other impacts include increased encouragement of case disclosure and less guilt and victimization[43,44].

Adult-oriented prevention programs are another way of fighting sexual abuse. Most of these programs are aimed at caregivers who can gain knowledge and skills to deal with possible situations of sexual abuse with their children and thus hold dialogues on the subject between the parties[45,46]. Because child care providers are often involved in sexual abuse, other non-caregiver adult education programs, including teachers[47], child care workers[48], and adults in general[49], have been developed. Although studies lack evidence of a decreasing predominance of sexual abuse[42,43], spreading knowledge on the subject and developing the ability to deal with it may be a first step towards fighting abuse.

In Brazil, there are few studies that evaluate practices and types of treatments specific to abuse situations. The work of Habigzang et al.[50] followed a cohort of forty abused children and adolescents during sixteen group therapy sessions. The results point to a significant drop in the symptoms of depression, anxiety, childhood stress and post-traumatic stress disorder. In this context, the concern of the Ministry of Health with the theme has been translated into two booklets about sexual abuse in childhood and adolescence, which give recommendations to health professionals on the need for support and care for the victim's mental health[51,52]. However, as shown in Von Hohendorff et al.[53], children and teenagers who have been abused but whose psychopathological symptoms are not regarded as severe or persistent do not have access to any mental health service. Thus, there seems to be a gap between existing scientific knowledge on the consequences of sexual violence and national public policies, which do not clearly provide the access of this population to psychotherapy[53]. With regard to prevention policies, Brazil is even further behind. There are initiatives of different government agencies, but they lack synergy and initiative. It follows that there is currently no concrete guideline for prevention.

The results found in this study indicate that the sexual abuse of children in Brazil, in addition to being related to several socioeconomic factors (drug involvement, early work, etc.), result in significant impacts on the victims' mental health indicators. Thus, it is recommended that practices evaluated in international studies be internally recognized in order to guide the development of future public policies. Finally, new research also needs to be done to evaluate measures already adopted to expand the horizons for new therapy models, monitoring and prevention.

Collaborations

LFC Fontes, OC Conceição and S Machado participated in the elaboration of the entire article.

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