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Correlations between childhood maltreatment and anxiety and depressive symptoms and risk behaviors in school adolescents

Heading title: Childhood maltreatment predicts anxiety and depressive symptoms

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ABSTRACT

INTRODUCTION: Childhood maltreatment is extremely harmful to health, especially regarding the development of psychiatric disorders throughout life. The objective of this study was to describe the prevalence and types of maltreatment and investigate the association between maltreatment and anxiety and depressive symptoms, sociodemographic variables, and risk behaviors in a sample of school adolescents. The study also identified which variables were

the greatest predictors of anxiety and depressive symptoms. **METHOD:** We conducted a cross-sectional study with a sample of 654 students aged 11 to 17 years. We collected sociodemographic data and applied the Revised Child Anxiety and Depression Scale (RCADS-47) to measure anxiety and depressive symptoms, and the Childhood Trauma Questionnaire (CTQ) to evaluate maltreatment and adverse experiences in childhood and adolescence, like abuse and negligence. Statistical analyses were made to obtain correlations between sociodemographic data, anxiety, depression, and types of maltreatment. Also, a regression analysis was made to identify the maltreatment types that predict psychological symptoms. **RESULTS:** Emotional abuse and emotional neglect are the most prevalent types of maltreatment. Statistically, emotional abuse was the maltreatment most correlated with depression and anxiety and tended to co-occur simultaneously with other types of maltreatment. Also, emotional and sexual abuse were the greatest predictors of anxiety and depression in adolescence. **Conclusion:** The above results reinforce the findings of previous studies in terms of understanding the effects of maltreatment. They point to emotional abuse as the main predictor of depressive and anxiety symptoms.

Keywords: *Maltreatment, depression, anxiety, mental health, adolescence.*

INTRODUCTION

Maltreatment encompasses actions, omissions, and threats usually made by those directly responsible for the child, causing them physical, psychological, and sexual damage and impairing their development.[1] The most common types of maltreatment found in the literature are emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Interpersonal maltreatment experiences involve offensive, critical, and invalidating attitudes, communicating unlove and non-belonging, physical punishments, sexual coercion, and denial of the child's affective and physiological needs.[2–5]

Children exposed to maltreatment are subject to neurobiological, social, emotional, cognitive, and behavioral changes, which makes them vulnerable to the onset of physical diseases (such as cancer, autoimmune diseases, asthma, type 2 diabetes, metabolic changes, and cardiovascular diseases)[6] and especially mental disorders – of which, anxiety, depression, and borderline personality disorder are the most documented in the literature.[7,8] This population frequently has emotional regulation difficulties and functional loss in interpersonal, family, and school relationships.[9,10]

Maltreatment occurring in childhood and youth produces effects throughout development, leading to anxiety and depression symptoms and, specifically, impairing the formation of identity and personality. The effects can impair the role transition that occurs throughout development and adulthood, as they grow into socio-functional life.[10,11]

In 2015, approximately 1.7 billion children worldwide suffered interpersonal violence. In Brazil, 17,900 cases of violence against children were identified, most of them committed by their parents,[12] although violence is also committed by other family members and at school, in virtual media, and on the street.[13]

Family and social bonds in the context to which adolescents belong importantly contribute to development.[14] John Bowlby[15] suggests that the construction of healthy relationships with the world is mediated by attachment figures. Therefore, responsive parents – i.e., healthy attachment figures – promote the development of self-assurance and more adaptive relationships in the developing youth. On the other hand, those young people who have been mistreated by attachment figures are more vulnerable to mental health problems.[16] There is a growing rate of psychiatric disorders in adolescence, with anxiety and depression being the most prevalent.[17] Research also indicates that mental disorders arise from the interaction between biological and environmental factors.[18,19] In this sense, data show several correlations between maltreatment in childhood and psychiatric disorders developed in adolescence and adulthood.[20,21]

Studies indicate that anxiety disorders and depressive disorders (internalizing disorders), substance use disorders and antisocial behavior (externalizing disorders); as well as suicidal behaviors are the ones most associated and predicted in cases of abuse and neglect.[14–17] Being exposed to these harmful acts at an early age generates greater symptom chronicity and duration.[18,19]

The symptoms that appear due to abuse and neglect are heterogeneous. They vary in types of symptoms, the form of clinical presentation, severity, and evolution. Hence, correlating maltreatment to various anxiety and depressive symptoms poses a challenge to research, while developing strategies for more effective treatment poses a challenge to clinical practice.[20] The relationship between abuse and symptoms seems to be mediated by other risk or protection factors, such as genetic characteristics, life history, attachment, and cultural characteristics.[21–23] Thus, the literature also points out cases of resilience to maltreatment, though in a smaller proportion than the negative impacts.

Maltreatment exposure is manifold, influencing symptom heterogeneity and creating an encompassing field of research.[6] This is due to the still inconsistent data to explain which is more harmful: suffering only one specific type of maltreatment (e.g., emotional abuse or sexual abuse alone), being subject to several simultaneous types of maltreatment (e.g., concomitant physical and sexual abuse), or having their effects depending on the several types of maltreatment they suffered.[6] There is yet no consensus on whether the different types of maltreatment produce externalizing or internalizing disorders.[6,24] For instance, physical abuse has been associated with the development of externalizing symptoms and disorders, namely: conduct disorders, impulsivity, anger, aggressiveness, disruptive behavior, and criminal behavior.[25,26] Other pieces of research indicate that emotional abuse more often produces mood disorders, such as major depressive disorder and bipolar disorder, whereas sexual abuse predicts the occurrence of borderline personality disorder.[26]

A study conducted by Cecil et al.,[6] fitting all types of maltreatment as covariables, described their specific, cumulative, and shared effects on the occurrence of psychiatric symptoms. The sample comprised 204 adolescents and young adults at high risk of exposure to violence, poverty, and drugs in the United Kingdom. Firstly, the results indicated that all types of maltreatment were mutually correlated, and they were more commonly simultaneous. Secondly, the more abuse and neglect they suffered, the more severe the symptoms were. Thirdly, shared effects indicated that all types of maltreatment were associated with psychological symptoms, though emotional abuse was the harm most predictive of symptoms and was mediated by violence exposure in the form of bullying victimization. The study suggested replications be made with other populations to reinforce the findings.

In this sense, a study by our group using the same methodology[24] analyzed 347 school-age high-risk adolescents, exposed to violence, poverty, drugs, and drug traffic. Agreeing with the previous study, the results indicate that the different types of maltreatment frequently occur together, that there is a direct relationship between the several types of maltreatment and the severity of the symptoms, and that emotional abuse was the main indicator of anxiety and depression symptoms. The authors discuss limitations associated with the specificity of emotional abuse and sample biases.

Based on the need for studies in a population vulnerable to frequent maltreatment, which is associated with anxiety and depressive symptoms, this study replicated part of the methodology of the two abovementioned studies and sought to I) identify the prevalence of the types of maltreatment in a sample of low-risk school adolescents; II) describe the main

correlations between different types of maltreatment and psychological symptoms; III) identify which types of maltreatment increase the probability of occurrence of anxiety and depressive symptoms.

METHODS

Study design and participants

This cross-sectional study collected data on demographic variables, anxiety and depressive symptoms, and frequency and types of childhood maltreatment. The sample comprised students from a public school in Salvador, the fourth largest city in Brazil.

Participants were adolescents aged 11–17 years old, who completed data on childhood maltreatment. Students in this study comprised grades 6 through 12 (middle and high school).

Procedures

We replicated the methods used in two previous studies,[6,24] which investigated the presence of maltreatment and psychological symptoms in Brazilian and British adolescents. In the present study, we investigated a sample of students from a Brazilian public school. Here, we studied a sample of school adolescents, differing from the samples in the replicated studies in that adolescents were at a lower risk of violence.[27]

We collected the data in the first and second semesters of 2017. After approval by the school principal, the project was introduced to parents and teachers. The parents read and signed an informed consent form. The project was then introduced to the students, answering their questions, and inviting them to sign an assent form. Lastly, the students filled out, in the classroom, the questionnaires and inventories.

Assessment instruments

Sociodemographic variables

A questionnaire addressing sex, color or race, and risk behaviors (self-cutting, drug use, and bullying) was used.

Risk behaviors

The frequency of self-reported bullying victimization and perpetration over the past term was assessed by means of the two global items of the Olweus Bully/Victim Questionnaire:[24,28,29,32] ("How often have you been bullied?" and "How often have you taken part in bullying other students?"). The items were coded as: 0=Never; 1=Once or twice; 2=Two

or three times per month; 3=About once per week; 4=Several times per week. Students were also asked to report on their drinking of alcohol, use of cannabis, and use of other street drugs over the past 6 months, as well as self-cutting or hurting behaviors. Risk behaviors were classified as categorical variables in the data analysis (no/never = 0; yes = 1).

Anxiety and depressive symptoms

Assessed with the Revised Child Anxiety and Depression Scale (RCADS-47).[30,31] This self-administered scale has 47 questions on the presence of anxiety and depressive symptoms, scoring from 0 (never) to 3 (always). It is subdivided into six subscales: social phobia, separation anxiety, obsessive-compulsive disorder, panic disorder, generalized anxiety disorder (whose sum defines the total anxiety score), and major depressive disorder. Its total raw score (the sum of anxiety and depressive symptoms or internalizing symptoms) is converted into a T score, whose values, when above 65, indicate threshold symptoms, and when above 70, indicate clinical symptoms (https://www.childfirst.ucla.edu/resources/).

Maltreatment

We used the Childhood Trauma Questionnaire (CTQ),[32] which has been translated into Portuguese and adapted to the Brazilian population.[33] It is a scale with 28 questions, whose items range from 1 to 5 points. The 28 questions are subdivided into five types of maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Each occurrence of maltreatment is classified according to the score and severity: none or minimal, low or moderate, moderate to severe, and severe to extreme. [22,32]

Statistical analysis

We made clinical and demographic descriptive statistics of the sample (n, percentage, mean, and standard deviation). We also made bivariate correlations between the types of maltreatment and the clinical (anxiety and depressive symptoms) and demographic variables (age, sex, and color/race).

We described the prevalence, in absolute numbers and percentages, of each type of maltreatment reported by the sample (emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect). We also assessed the severity of each type of abuse and neglect as categorical variables (minimal, moderate, severe, or extreme) and quantified the adolescents who suffered one or more types of abuse simultaneously.

To tests correlations between categorical variables, like types of maltreatment and sociodemographic variables, we conducted Spearman's correlation (ρ or Rho). Sex and color/race were categorized as dichotomous variables to assess the frequencies and make the correlation. In sex, females were coded as 0 and males as 1. In color/race, white was categorized as 1 and non-white as 0. The same procedure was used for the other categories (black, East Asian, indigenous, and multiracial).

With multiple linear regression, we analyzed the interactions between all types of maltreatment (predictor variables) and each anxiety and depression symptom (criterion variables). As in the studies we replicated,[6,24] these analyses first considered each type of maltreatment alone as a predictor. The analyses included all types of maltreatment as covariables to increase the identification power of the most strongly predictive types of maltreatment. We made binary logistic regression analyses with all types of maltreatment, age, sex, and ethnic group as covariables to assess the types of maltreatment as predictors of using cannabis, alcohol, and other substances, bullying others and self-harming behavior (dichotomous variables). All regression analyses included sex, age, and ethnic groups as covariables. The statistical significance level was set at 0.05, with 95% confidence intervals. All the analyses were made with SPSS, v. 24.[34]

Ethical aspects

This study integrates a larger research project, which compared the efficacy of group trial-based cognitive training (G-TBCT) in reducing anxiety and depressive symptoms in school adolescents. The study was approved by Maternidade Climério de Oliveira Institutional Review Board of the Federal University of Bahia (evaluation report no. 3.024.360).

RESULTS

Sample characteristics

A total of 684 students signed the assent and consent forms; however, 30 of them (4.3%) did not attend the procedures or refused to fill in the questionnaires. The sample comprised 654 students, of which, 52.9% (n = 346) were females; their mean age was 14.3 years. The demographic and clinical sample characteristics are shown in Table 1.

Table 1: Clinical and sociodemographic sample characteristics

Age: (M/SD)	14.34 (1.89)
Sex: n (% females)	346 (52.9%)

Ethnicity: n (%)	
Multiracial	290 (44.4%)
Black	194 (29.7%)
White	95 (14.5%)
East Asian	43 (6.6%)
Indigenous	30 (4.6%)
Has considered self-cutting:	
Never	468 (71.7%)
Once or twice	122 (18.7%)
Three times or more	62 (9.5%)
Have intentionally cut themselves:	
Never	549 (84.2%)
Once	60 (9.2%)
Twice or more	43 (6.6%)
Alcohol use:	
Never used	362 (55.4%)
Used Once or twice	234 (35.8%)
Used 2 to 4 times in the last month	49 (7.5%)
Used more than once a week	9 (1.4%)
Cannabis use:	
Never used	643 (98.5%)
Used once or twice	10 (1.5%)
Has been bullied:	
Never	443 (67.7%)
Once or twice	160 (24.5%)
2 to 3 times in the last month	24 (3.7%)
Once a week	6 (0.9%)
Has bullied others:	
Never	495 (75.7%)
Once or twice	100 (15.3%)
Two or three times	21 (3.2%)
Once a week	17 (2.6%)
Many times a week	21 (3.2%)

M: mean; SD: standard deviation

Main results: maltreatment prevalence

The prevalence of abuse and neglect suffered by students is shown in Table 2. It also presents the number of types of abuse suffered concomitantly. We found that emotional abuse was the most frequent type of severe maltreatment (8.9%). Less than half of the sample (35.9%) had not suffered any type of maltreatment.

Table 2: Prevalence of maltreatment in the sample

Types of maltreatment	Prevalence in the sample	CTQ score classification			
		None or minimal % (n)	Low to moderate % (n)	Moderate to severe % (n)	Severe to extreme % (n)
Emotional abuse	42.4%	57.6% (376)	24.2% (158)	9.3% (61)	8.9% (58)
Physical abuse	14.8%	85.2% (554)	7.8% (51)	4.3% (28)	2.6% (17)
Sexual abuse	10.2%	89.8% (583)	6.9% (45)	2.8% (18)	0.5% (3)
Emotional neglect	39%	61% (399)	27.4% (179)	7% (46)	4.6% (30)
Physical neglect	14.5%	85.5% (553)	10% (65)	4% (26)	0.5% (3)
Number of types of maltreatment suffered					Number of adolescents % (n)
0					35.9% (225)
1					26% (170)
2					22.3% (146)
3					10.9% (71)
4					4.6% (30)
5					0.3% (2)

CTQ: Childhood Trauma Questionnaire

Secondary results: Correlations between maltreatment and clinical and sociodemographic characteristics

Bivariate statistical correlations between the types of maltreatment and bivariate correlations with the clinical and sociodemographic variables are described in Table 3. Most types of maltreatment are significantly mutually correlated, except for sexual abuse with emotional and physical neglect. The data indicate that the highest positive correlations are between emotional abuse and emotional neglect (Spearman's $\rho = 0.489$, $p < 0.01$); emotional abuse and physical abuse (Spearman's $\rho = 0.377$, $p < 0.01$); and emotional neglect and physical neglect (Spearman's $\rho = 0.322$, $p < 0.01$). These correlations show that such types of maltreatment varied together and in the same direction. On the other hand, these correlations are moderate, as Spearman's rho is distant from the absolute value ($\rho = 1$).

Table 3: Bivariate Spearman's rho (ρ) correlations between the types of maltreatment

Types of maltreatment	M (SD)	1. Emotional abuse	2. Physical abuse	3. Sexual abuse	4. Emotional neglect	5. Physical neglect
1. Emotional abuse	9.00 (4.22)	-	0.377**	0.167**	0.489**	0.227**
2. Physical abuse	6.25 (2.01)	0.377**	-	0.077*	0.264**	0.168**
3. Sexual abuse	5.25 (1.04)	0.167**	0.077*	-	0.067	0.075
4. Emotional neglect	9.18 (4.05)	0.489**	0.264**	0.067	-	0.322**

5. Physical neglect	5.90 (1.60)	0.227**	0.186**	0.075	0.322**	-

M: Maltreatment mean scores; SD: standard deviation.
** Correlation is significant at the 0.01 level (2-tailed)*
*** Correlation is significant at the 0.05 level (2-tailed)*

Table 4 shows the bivariate Spearman's correlations between types of maltreatment and clinical variables. There were no significant correlations between most of the colors/races and the types of maltreatment. The only correlation, though weak, was between those who declared themselves East Asian and sexual abuse (Spearman's $\rho = 0.13$, $p < 0.05$). The increase in age was subtly correlated with increase in exposure to emotional neglect (Spearman's $\rho = 0.08$, $p < 0.05$), while females were correlated with emotional abuse (Spearman's $\rho = 0.21$, $p < 0.0005$), sexual abuse (Spearman's $\rho = 0.08$, $p < 0.05$), and emotional neglect (Spearman's $\rho = 0.07$, $p < 0.05$).

Table 4: Descriptive variables and Spearman's correlations with the types of maltreatment

Variables	Prevalence (%) or M(SD) of scores	Types of maltreatment				
		Emotional abuse	Physical abuse	Sexual abuse	Emotional neglect	Physical neglect
Color or race[1]						
White	14.5%	-0.01	-0.08*	0.003	0.003	-0.01
Black	29.7%	-0.02	0.06	0.01	-0.01	-0.06
Multiracial	44.3%	0.04	0.02	-0.07	0.04	0.03
East Asian	6.6%	-0.01	0.07	0.13**	-0.02	0.02
Indigenous	4.6%	-0.007	-0.04	0.02	-0.04	0.02
Sex (females)[1]	52.2%	0.224**	0.028	-0.095*	-0.068	0.050
Age	14.3 (1.8)	0.104*	0.115**	0.011	0.066	-0.044
Internalizing symptoms	48.8 (22.0)	0.509**	0.234**	0.153**	0.223***	0.129**
Depressive symptoms	9.0 (5.4)	0.549**	0.268**	0.153**	0.329**	0.188**
Anxiety symptoms	39.8 (17.9)	0.460**	0.205**	0.142**	0.173**	0.097*
Intentional self-harm[1]	16.1%	0.292**	0.191**	0.080*	0.201***	0.107**
Was bullies[2]	32.3%	0.268**	0.161**	0.085*	0.163**	0.099*
Bullied others[1,3]	24.3%	0.118**	0.112**	0.061	0.114**	-0.020

**p < 0.05; **p < 0.01;* M: Mean; SD: standard deviation
[1]Variables transformed into dichotomous ones. Color/race (withe = 1; non-white = 0 and so on); Sex (0 = female; 1 = male); self-harm (yes = 1; no = 0); was bullied and bullied others (yes = 1; no = 0).
[2]Was bullied at least once a week.
[3]Bullied others at least once a week.

All types of maltreatment were statistically correlated with depressive and anxiety symptoms (internalizing symptoms). The highest correlations were found between depressive

symptoms and emotional abuse (Spearman's ρ = 0.549, p < 0.01), between internalizing symptoms and emotional abuse (Spearman's ρ = 0.509, p < 0.01), and between anxiety symptoms and emotional abuse (Spearman's ρ = 0.460, p < 0.01). Chart 1 illustrates correlations between amounts of maltreatment, showing the cumulative effect of abuse and neglect on the intensity of depression and anxiety symptoms. Total scores above 60 for anxiety and above 58 for depression suggest clinical symptoms. Accumulated maltreatments increased these symptoms, but not to the point of being clinical according to the scores.

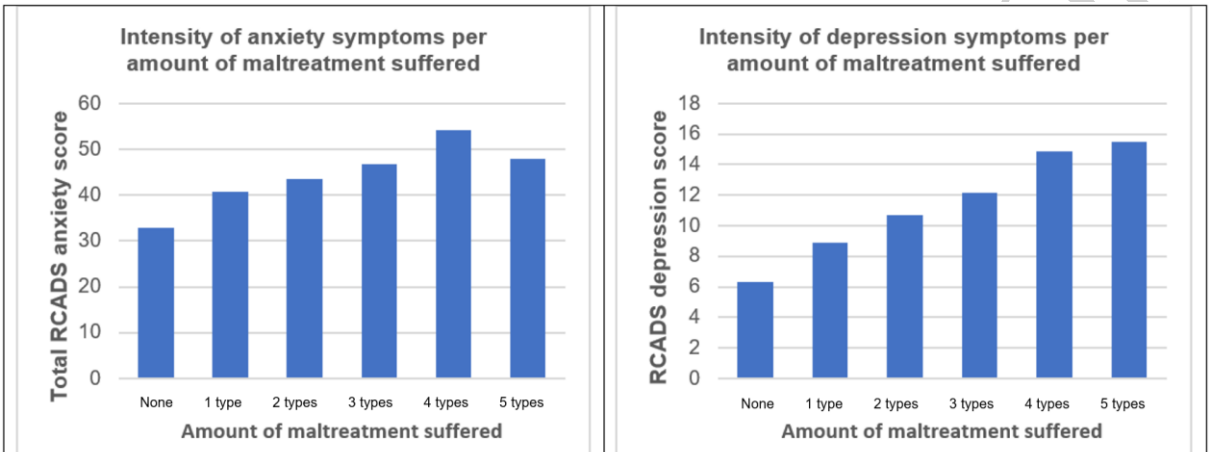

Chart 1: Intensity of anxiety and depression symptoms according to RCADS per amount of maltreatment suffered.

Intentional self-harm was correlated with all types of maltreatment, especially emotional abuse (Spearman's ρ = 0.292, p < 0.01). Being bullied was positively correlated with emotional abuse (Spearman's ρ = 0.268, p < 0.01), and bullying others was correlated with emotional abuse (Spearman's ρ = = 0.118, p < 0.01). Moreover, emotional neglect and physical abuse were strongly correlated with psychological and sociodemographic variables, which are shown in Table 4.

The results of the multiple linear regression analyses are shown in Tables 5 and 5.1. In them, each type of maltreatment was analyzed alone (i.e., with no covariables) as a predictor of anxiety and depressive symptoms in RCADS-47. Then, all types of maltreatment were simultaneously assumed as predictors of the symptoms to identify the strongest predictors. Both analyses included sex and age as covariables.

Table 5: Association between the types of maltreatment and the anxiety and depressive symptoms

Psychological symptoms	Regression models							
	Only one type of maltreatment as a predictor				All types of maltreatment as predictors			
	β	Standardized β	95% CI		β	Standardized β	95% CI	
			LL	UL			LL	UL
Social Anxiety								
Emotional abuse	0.37**	0.28	0.28	0.47	0.338***	0.25	0.21	0.45
Physical abuse	0.57***	0.20	0.36	0.77	0.301**	0.10	0.07	0.52
Sexual abuse	0.51*	0.09	0.11	0.91	0.23	0.04	-0.16	0.62
Emotional neglect	0.16**	0.12	0.06	0.27	-0.03	-0.02	-0.15	0.08
Physical neglect	0.22**	0.06	-0.04	0.48	-0.06	-0.01	-0.34	0.20
Panic								
Emotional abuse	0.46***	0.38	0.38	0.54	0.45***	0.38	0.35	0.55
Physical abuse	0.39***	0.15	0.21	0.57	-0.02	-0.008	-0.20	0.16
Sexual abuse	0.64***	0.13	0.29	0.98	0.39*	0.08	0.07	0.72
Emotional neglect	0.25***	0.18	0.13	0.31	-0.02	-0.01	-0.12	0.08
Physical neglect	0.37**	0.11	0.14	0.60	0.05	0.01	-0.16	0.28
Separation Anxiety								
Emotional abuse	0.16***	0.21	0.10	0.21	0.15***	0.20	0.08	0.21
Physical abuse	0.17**	0.11	0.06	0.28	0.02	0.01	-0.09	0.14
Sexual abuse	0.34**	0.11	0.12	0.56	0.24*	0.08	0.02	0.46
Emotional neglect	0.06*	0.08	0.006	0.12	-0.03	-0.04	-0.10	0.03
Physical neglect	0.20**	0.10	0.06	0.34	0.11	0.05	-0.03	0.26
Generalized Anxiety								
Emotional abuse	0.32***	0.33	0.25	0.39	0.34***	0.35	0.25	0.43
Physical abuse	0.33***	0.16	0.18	0.48	0.06	0.03	-0.09	0.22
Sexual abuse	0.51**	0.13	0.22	0.80	0.29*	0.07	0.01	0.57
Emotional neglect	0.10**	0.10	0.02	0.17	-0.08*	-0.08	-0.17	-0.003
Physical neglect	0.22*	0.08	0.02	0.41	0.02*	0.01	-0.16	0.22
Obsessive-Compulsive								
Emotional abuse	0.33***	0.36	0.27	0.40	0.34***	0.36	0.26	0.43
Physical abuse	0.29***	0.15	0.14	0.44	0.002	0.001	-0.15	0.15
Sexual abuse	0.50***	0.13	0.22	0.79	0.31*	0.08	0.04	0.58
Emotional neglect	0.13***	0.14	0.06	0.21	-0.05	-0.05	-0.13	0.03
Physical neglect	0.26**	0.10	0.07	0.45	0.05	0.02	-0.13	0.24

* $p < 0.05$; ** $p < 0.001$; *** $p < 0.0005$; CI: confidence interval; LL: lower limit; UL: upper limit

Table 5.1: Association between the types of maltreatment and the anxiety and depressive symptoms

Psychological symptoms	Regression models							
	Only one type of maltreatment as a predictor				All types of maltreatment as predictors			
	β	Standardized β	95% CI		β	Standardized β	95% CI	
			LL	UL			LL	UL
Depression								
Emotional abuse	0.67***	0.52	0.59	0.75	0.56***	0.43	0.46	0.66
Physical abuse	0.74***	0.27	0.55	0.94	0.185	0.06	-0.001	0.37
Sexual abuse	0.71***	0.13	0.33	1.09	0.334*	0.167	0.006	0.66
Emotional neglect	0.43***	0.32	0.34	0.52	0.09	0.05	-0.005	0.19
Physical neglect	0.69***	0.20	0.44	0.93	0.151	0.04	-0.07	0.37
Total Anxiety								
Emotional abuse	10.66***	0.39	1.37	1.95	1.63***	0.38	1.28	1.99
Physical abuse	0.76***	0.19	1.12	2.41	0.37	0.04	-0.28	1.03
Sexual abuse	20.51***	0.14	1.27	3.76	1.44*	0.08	0.027	2.62
Emotional neglect	0.70***	0.15	0.38	1.02	-0.22	-0.05	-0.58	0.12
Physical neglect	10.29**	0.11	0.46	2.11	0.16	0.01	-0.64	0.98
Internalizing symptoms								
Emotional abuse	20.33***	0.44	1.99	2.68	2.19***	0.42	1.77	2.62
Physical abuse	20.51***	0.22	1.73	3.28	0.55	0.05	-0.22	1.37
Sexual abuse	30.23***	0.15	1.72	4.74	1.82*	0.08	0.44	3.20
Emotional neglect	10.13***	0.20	0.74	1.52	-0.13	0.215	-0.56	0.28
Physical neglect	1.98***	0.14	0.98	2.97	0.33	0.02	-0.61	1.29

* $p < 0.05$; ** $p < 0.001$; *** $p < 0.0005$; CI: confidence interval; LL: lower limit; UL: upper limit

In the models with all types of maltreatment as covariables, emotional abuse was the greatest predictor of anxiety and depressive symptoms: depression (β = 0.56, $p < 0.0005$); total anxiety (β = 1.63, $p < 0.0005$). Particularly in the anxiety symptoms, a 1-unit increase in the emotional abuse scale (CTQ) predicts a 1.63-point increase in the total RCADS-47 anxiety score. Sexual abuse also stands out as a predictor, though weaker, of total anxiety (β = 1.44, $p < 0.05$) and depressive symptoms (β = 0.334, $p < 0.05$).

Table 6 presents the results of the binary logistic regression analysis, which assessed the predictive power of maltreatment on drug use, bullying others, and self-harming behavior.

Table 6: Binary logistic regression of the prediction of the probability of risk behaviors based on maltreatment

Risk behaviors	B	Odds Ratio	Odds Ratio (95% CI)	
			Lower limit	Upper limit
Alcohol use				
Sex (males)	0.11	1.12	0.79	1.57
Age	0.43***	1.53	1.39	1.7
Emotional abuse	0.05*	1.05	1.00	1.11
Physical abuse	0.11*	1.12	1.02	1.24
Sexual abuse	0.10	1.10	0.92	1.32
Emotional neglect	0.007	1.00	0.95	1.05
Physical neglect	-0.08	0.91	0.81	1.03
Cannabis use				
Sex (males)	0.58	1.79	0.7	4.5
Age	0.13	1.14	0.82	1.59
Emotional abuse	0.03	1.04	0.88	1.22
Physical abuse	-0.20	0.81	0.53	1.24
Sexual abuse	0.22	1.24	0.82	1.89
Emotional neglect	0.09	1.09	0.93	1.29
Physical neglect	-0.08	0.92	0.60	1.41
Other substance use				
Sex (females)	0.53	0.58	0.05	5.9
Age	-0.06	0.93	0.54	1.6
Emotional abuse	0.18	1.20	0.94	1.52
Physical abuse	-0.12	0.88	0.49	1.59
Sexual abuse	0.09	1.10	0.57	2.1
Emotional neglect	0.03	1.03	0.77	1.38
Physical neglect	-0.28	0.75	0.33	1.67
Intentional self-harm				
Sex (females)	0.71**	0.49	0.3	0.8
Age	-0.12*	0.88	0.77	0.99
Emotional abuse	0.12***	1.13	1.06	1.2
Physical abuse	0.10	1.1	0.99	1.23
Sexual abuse	0.08	1.09	0.91	1.3
Emotional neglect	0.05	1.05	0.99	1.12
Physical neglect	-0.05	0.95	0.82	1.09
Bullying others				
Sex (males)	0.80***	2.24	1.53	3.27
Age	0.05	1.05	0.95	1.16
Emotional abuse	0.07***	1.07	1.02	1.13
Physical abuse	0.008	1	0.91	1.1
Sexual abuse	-0.00	0.99	0.83	1.19
Emotional neglect	0.02	1.02	0.97	1.08
Physical neglect	-0.10	0.9	0.79	1.02

* $p < 0.05$; ** $p < 0.01$; $p < 0.0005$; CI: confidence interval.

The binominal logistic regression indicated that some variables have a predictive power of adolescent alcohol use, self-cutting, and bullying others, especially when they have suffered emotional abuse. The risk of adolescents using alcohol increased 1.53 times with an increase in age, and 1.05 to 1.12 times if they have suffered emotional or physical abuse, respectively.

The risk of adolescents cutting themselves intentionally increased 1.13 times if they have suffered emotional abuse, 0.88 times if they were younger, and 0.49 times if they were females. The risk of bullying others increased 2.24 times if they were male adolescents, and 1.07 times if they have suffered emotional abuse.

DISCUSSION

This study showed that emotional abuse and emotional neglect are the most frequent types of maltreatment in the population we studied, respectively with a 42.4% and 39% prevalence. This study replicated the methods used by Cecil et al. (2017)[6] and Oliveira et al. (2018).[24] The study by Cecil et al. (2017) assessed 16-to-24-year-old people in social vulnerability. The most prevalent maltreatments were emotional neglect (49.5%) and emotional abuse (48%).

A previous study by our group[24] approached a sample with a similar age range (11 to 18 years old) but socially more vulnerable, given that the school was located in a violent neighborhood; the most common maltreatments were emotional neglect (45.2%) and physical neglect (41.7%). Data in both studies are close to those found in the present one. The sample in the study had a lower frequency of maltreatment related to physical neglect, which may be due to this population being less exposed to poverty and violence. On the other hand, emotional abuse was high in the three studies.

These data are interesting in that they agree with other studies[25,35] that indicate a high frequency of emotional abuse and neglect.[36] Therefore, these types of maltreatment should be addressed with prevention and intervention strategies for the affected population. The high frequency of abuse and neglect may be explained by offensive language and criticism, and abusive caregivers who can maintain harmful patterns, unaware of their deleterious effects. Furthermore, such deleterious effects are not immediately perceivable, as in the case of physical abuse and neglect.[36] Some cultures and societies may even facilitate emotional abuse in minorities, such as young people who are exposed to criticism due to their physical vulnerability.[37]

Confirming the damage of these types of maltreatment, our data agree with the current literature regarding the deleterious effects caused by these types of childhood maltreatment.[38,39]

Emotional abuse was the variable most correlated with, and predictive of anxiety and depressive symptoms and risk behaviors, such as self-cutting and psychoactive substance use.[40]

Our findings also pointed out that emotional abuse co-occurs with other types of maltreatment. Hence, it can be considered a nonspecific marker and should, therefore, be emphasized when studying other forms of abuse, such as sexual and physical abuse.[41] On the other hand, other studies[42,43] highlight the specific role of emotional abuse in the development of psychological changes – which reinforces the data described here. Moreover, various studies in different cultures and populations[44,45] point out that this category makes people vulnerable to the development of mental disorders.

Our data indicate that the higher the level of emotional abuse, the more severe the anxiety and depressive symptoms and behaviors, such as bullying others and self-harming – which had the highest correlations in the collected data. Besides emotional abuse, there is evidence that emotional neglect and physical abuse influence the occurrence of depressive symptoms. Other studies[46,47] identified an association between these three types of abuse with depression and anxiety disorders in adulthood.

Bullying others occurred together with emotional abuse and emotional neglect, which indicates that people (especially men) who perpetrate bully may need more psychological attention. Data in this study indicate that having suffered emotional abuse increased more than one time the chance of men perpetrating bullying. Likewise, it has been observed that people who committed violence had also suffered all types of maltreatment.[24,48]

The types of maltreatment and social variables were included as covariables in the analysis to assess which was the preponderant factor in predicting the variables of interest. We found that emotional abuse and sexual abuse were the greatest predictors of RCADS-47 total anxiety and depression scores. The data also indicated that female gender was positively correlated with emotional abuse, sexual abuse, and neglect. Data from other studies emphasize the occurrence of such abuse in women, particularly in Brazil and other Latin American countries.[36,49] Additionally, our study indicates that being female increases the risk of self-mutilation. In this sample, whose ages ranged from 11 to 17 years, the youngest ones were more likely to harm themselves. These data are compatible with other pieces of research which indicate that females are more prone to self-harm, as well as the early age when these risk behaviors begin.[38,50]

Some of the limitations described in our previous article (de Oliveira et al) are also observed in the present study. First, the main instrument used to measure maltreatment (CTQ) was a self-report measure, known as susceptible to retrospective memory bias. Also, self-report

measures do not inform about experiences of child maltreatment that occurred in early stages of the development. However, findings in the present study were consistent with both the UK (Cecil et al) study and our study replicating it (de Oliveira et al.), which made the observed associations more reliable. A second limitation was that the measure we used to assess maltreatment prevented us from knowing which specific aspects of emotional abuse produced psychiatric symptomatology, suggesting more specific measures of maltreatment in the future. A third limitation was that the results were based on cross-sectional and associational data. Finally, because parents were also invited to participate to provide information, it is possible that the participants were reluctant to disclose drug use, which might justify the low rate of reported drug use.

In conclusion, emotional abuse was the most prevalent, the most correlated, and the greatest predictor of anxiety, depression, and risk behaviors. Moreover, emotional neglect and sexual abuse stand out as noteworthy risk factors that make them vulnerable. This study indicated that adolescents are more exposed to maltreatment, especially emotional abuse. This emphasizes the need for public health promotion and care policies aimed at preventive intervention programs at both home and school. Our data also confirmed that different forms of abuse tend to co-occur and correlate with each other, which increases the probability of developing anxiety and depressive symptoms, regardless of the type.

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