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RESEARCH

The impact of maltreatment on symptom severity in patients with attention deficit hyperactivity disorder

Dikkat eksikliği hiperaktivite bozukluğu olgularında kötü muamelenin belirti düzeyine etkisi

İpek Süzer Gamlı[1], Ayşegül Yolga Tahiroğlu[2]

[1]Istanbul Erenköy Mental and Nervous Diseases Training and Research Hospital Child and Adolescent Mental Health and Diseases Clinic, İstanbul, Turkey
[2]Çukurova University Faculty of Medicine Balcalı Hospital Health Application and Research Center Department of Child and Adolescent Mental Health Diseases. Adana, Turkey

Abstract

Purpose This study aimed to compare the impact of maltreatment on the subtype, comorbidity, sociodemographic characteristics, and psychometric characteristics of attention deficit hyperactivity disorder (ADHD).
Materials and Methods: The study participants included 150 treatment-naïve children with ADHD with (n=75) and without (n=75) a history of maltreatment by parents. A sociodemographic form, the Conners Parent Rating Scale (CPRS), the Conners Teacher Rating Scale (CTRS), the Family Assessment Device (FAD), and the Stroop Form were applied.
Results: Earlier referral, peer discord, and lower parental age were frequent in the maltreated group, while the maternal employment rates were significantly lower. ADHD-combined type and comorbid oppositional defiant disorder were significantly higher in the maltreated group. The CPRS and FAD scores were also significantly higher).
Conclusion: A higher incidence of destructive behavioral patterns may increase the risk of maltreatment. Families of children with hyperactivity and defiant characteristics may have difficulties in managing behavioral problems and may exhibit domestic violence, with the Multidisciplinary approaches, including parental education programs and social investigation, should be considered.

Keywords:. ADHD, ODD, childhood, maltreatment, psychosocial

Öz

Amaç: Bu çalışmada, bu etmenlerden ev içi kötü muamele öyküsünün Dikkat Eksikliği Hiperaktivite Bozukluğu'nda (DEHB) alt tip, komorbidite, sosyodemografik ve psikometrik özellikler ile karşılaştırılması amaçlanmıştır.
Gereç ve Yöntem: Çalışmaya, ev içi kötü muamele bildiren (n=75) ve bildirmeyen (n=75) ve yeni tanı almış 150 DEHB tanılı çocuk dahil edilmiştir. Olgulara, Sosyodemografik form, Conners Ana Baba Derecelendirme Ölçeği (CADÖ), Conners Öğretmen Derecelendirme Ölçeği (CÖDÖ), Aile Değerlendirme Ölçeği (ADÖ) ve Stroop Formu uygulanmıştır.
Bulgular: Ev içi kötü muamele öyküsünde daha erken yaş, akran geçimsizliği, düşük anne baba yaşı saptanmışken, annelerin çalışma oranları ise anlamlı düşüktü. DEHB bileşik tip ve karşıt olma karşı gelme bozukluğu komorbiditesi, ev içi kötü muamele olgularında anlamlı yüksekti. CADÖ ve ADÖ, kötü muamele olmayan gruba kıyasla anlamlı şekilde yüksekti.
Sonuç: Yüksek yıkıcı davranış sorunları ev içi kötü muamele riskini artırabilmektedir. Hiperaktivite, karşı gelme özellikleri baskın olguların ailelerinin, davranışsal güçlüklerin yönetiminde zorlanabildikleri, olası olumsuz algılarının da katkısı ile şiddete daha sık başvurabildikleri düşünülmektedir. Ev içi şiddet varlığında, ebeveyn eğitimi ve sosyal inceleme gibi müdahalelerin de ele alındığı multidisipliner yaklaşımlar gözetilmelidir.

Anahtar kelimeler: DEHB, KOKGB, kötü muamele, çocukluk çağı, psikososyal

Address for Correspondence: İpek Süzer Gamlı, Istanbul Erenköy Mental and Nervous Diseases Training and Research Hospital Child and Adolescent Mental Health and Diseases Clinic, İstanbul, Turkey E-mail: suzeripek@gmail.com
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INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is among the most common childhood neurodevelopmental disorders and is characterized by persistent symptoms of inattention, hyperactivity, and/or impulsivity that are inappropriate for the chronological age and developmental stage of an individual[1]. Despite high heritability rates, some environmental factors, such as disruption in family structure, familial conflict, maltreatment, negative parenting practices, and parental psychopathologies, are also considered to play an important role in the emergence or course of ADHD[2,3,4].

Maltreatment is among the psychosocial factors that contribute to the symptomatology of ADHD. It includes experiences such as physical, sexual, and emotional abuse and neglect. Exposure to abuse may hinder the optimal emotional and psychological development of a child[5]. Maltreated children are associated with a higher incidence of psychiatric diagnoses, particularly for externalizing disorders such as ADHD, oppositional defiant disorder (ODD), conduct disorder, intermittent explosive disorder, and substance use disorders[6]. On the other hand, ADHD is linked to parenting stress. It is stated that living with a child with ADHD may increase the burden, distress, and conflicts in the family. With this, the risk of maltreatment in these children is reported to be higher than those without this diagnosis[7, 8]. Moreover, maltreatment is associated with the persistence of symptoms in children with ADHD[9]. Providing adequate parenting may be challenging when raising children who have difficulty following rules and who are constantly restless and hyperactive[10]. Parents of children with ADHD may have difficulties in tolerating behaviors related to their child and may display more controlling behaviors instead of providing attention and care[11, 12].

The literature reveals that 20–25% of the parents of children with ADHD may have a possible diagnosis of adult ADHD[13]. Possible adult ADHD symptoms may also have an impact on parenting skills. Studies have reported that parents with higher ADHD symptoms have fewer positive parenting skills, more rigid or flexible behaviors, and more negative attitudes when raising children[14].

Consequently, our study aims to compare the sociodemographic characteristics, ADHD subtypes, comorbid conditions, executive function (EF) tests, and scale scores reported by parents and teachers of children diagnosed with ADHD who were admitted to our outpatient clinic with and without a history of maltreatment by parents. Our hypothesis is that parental rating for externalizing symptoms of children who are exposed to maltreatment is higher than nonmaltreated children, and there is a difference between subtypes between these two groups.

MATERIALS AND METHODS

Sample

According to a power analysis, a sample size of 65 was sufficient for all estimated parameters if normally distributed with type I error of 95% and type II error of 80%. Considering that most values are nonparametric, we included a 15% error rate to this calculated number and set the sample size of the groups to 75. A total of 150 children and adolescents aged 7–18 years who applied between June 2014 and December 2015 to the Cukurova University Faculty of Medicine Child and Adolescent Psychiatry Department were enrolled in the study. The university hospital is the largest hospital in Adana and serves as a tertiary healthcare institution. Our department caters to every patient referred in the field of child and adolescent mental health, and an average of 150 children and adolescents are examined daily.

Procedure

The inclusion criteria for the study were as follows: (1) being diagnosed with ADHD in accordance with the Diagnostic and Statistical Manual of Mental Disorders-5th Edition (DSM-5) criteria, (2) being treatment-naïve, and (3) not having any organic pathology based on medical records. Patients' files were filled rigorously by child and adolescent psychiatry specialists and stored safely in the archive section. All comorbid conditions were diagnosed via DSM-5 criteria. Of the 187 files screened, 37 files were excluded based on the exclusion criteria of having a diagnosis of intellectual disability and/or autism spectrum disorder and due to missing data. The study was terminated when the desired number of subjects from both groups was reached.

Ethical approval for the study was provided by the Cukurova University Faculty of Medicine Non-Invasive Clinical Research Ethics Committee (05.05.2023/Reference number:133). This was designed as a retrospective study. The study was

conducted in accordance with the Declaration of Helsinki's ethical principles. The scales and measures described below are part of the routine examinations for this department.

Measures

Sociodemographic form

This form was filled out by the physician asking the parents for each patient applying to our outpatient clinic. Demographic data include information regarding the patient's age, birth history, developmental stages, medical history, sleep patterns, academic characteristics, peer relationships, and psychosocial factors, separation from mother and presence of maltreatment. Additionally, this form also comprises questions about the parents including parental education, employment status, parental psychopathology by asking the parents. Patients were selected randomly if they were in line with the inclusion criteria according to the presence of a history of maltreatment, which is noted on the first page of the patient file. In this study, the sociodemographic form is mainly filled by mothers. Seventy-five patients with a history of reported maltreatment as assessed by parents and those without a history of maltreatment (n=75) were set into two groups.

Conners' Parent Rating Scale (CPRS)

The CPRS is filled out by the parents of children and adolescents aged between 3–17 years and used widely to detect childhood disruptive behavioral problems and to determine the severity and follow-up. The scale consists of 80 multiple-choice items. Every item is scored from 0–3, with "0" referring to "Not true at all," and "3" referring to "Very much true." The subscales of the measure are oppositional, cognitive problems/inattention, hyperactivity, anxious/shy, perfectionism, social problems, psychosomatic, ADHD index, and global index[15]. It is a valid tool for assessing behavioral problems in children and adolescents. The Turkish validity and reliability study was conducted by Kaner et al. and has been shown to have good internal consistency in the Turkish population[16].

Conners' Teacher Rating Scale (CTRS)

The CTRS was developed by Conners to evaluate behavioral problems and treatment courses for children and adolescents and is filled out by classroom teachers. It is a common tool for measuring the problems associated with ADHD. Consisting of 59 items, this scale has subscales of oppositional, cognitive problems/inattention, hyperactivity, anxious/shy, perfectionism, and social problems. The scores ranged from 0–3, with "0" referring to "Not true at all" and "3' referring to "Very much true." This measure is beneficial in the diagnosis, differential diagnosis, and treatment of disruptive behavioral disorders in particular[17]. The Turkish validity and reliability study was conducted by Kaner et al. with good internal consistency[18].

Family Assessment Device (FAD)

Developed by Epstein in 1983, the FAD is used to evaluate the structural and organizational characteristics of families and the interaction between family members based on the McMaster Model of Family Functioning. The FAD consists of 60 items and seven subscales: problem solving (PS), communication, roles, affective responsiveness, affective involvement, behavioral control, and general family functioning. The FAD has been found to be useful in distinguishing between "healthy" and "unhealthy" areas of family functioning[19]. Bulut et al.[20] demonstrated the validity and reliability of the Turkish version of the FAD.

Stroop Test TBAG Form

Developed by Stroop in 1935, the test is widely used to assess multiple cognitive processes related to attention and EF, such as selective attention, cognitive flexibility, and processing speed. The test consists of four separate cards. After the relevant command is given on each card, the total time, number of corrections, and errors are noted[21]. The test is both useful for evaluating EF at baseline and during follow-up. The Turkish validity and reliability were conducted by Karakaş et al. in 1999 and adapted to Turkish children by Kılıç et al. in 2002[22,23].

Statistical analysis

The Statistical Package for the Social Sciences version 16.00 was used for the statistical analysis of the study. The distribution of numerical variables was investigated using the Shapiro–Wilk test. Since the normal distribution could not be determined, the Mann–Whitney U test was used as a nonparametric analysis. Demographic data was analyzed with chi-square test. The scores of the CPRS, CTRS, FAD and the Stroop TBAG Form were compared using the

Mann–Whitney U test. In all analyses, 0.05 was taken as the level of statistical significance.

RESULTS

Among the 150 children and adolescents, 87 children (n=44 in the maltreated group, n=43 in the control group) were male and 63 children (n=31 in the maltreated group, n=32 in the control group) were female. The mean age of the maltreated group was 12.36±3.01 years, whereas it was 13.76 ± 2.86 years in the control group ($p<0.05$). No statistical significance was found between sociodemographic characteristics such as gender distribution, the developmental stages of children, and academic achievement in both groups ($p>0.05$). A sociodemographic form was filled mainly by mothers in both groups ($p>0.05$). Table 1 shows the demographic data in individuals with a history of maltreatment by parents.

Table 1. Comparison of demographic data on patients with and without a history of maltreatment.

Variable	Maltreatment Present n (%)	Maltreatment Absent n (%)	P
Male	44 (58.7)	43 (57.3)	0.869
Maternal Age	38.4±5.1	40.4±5.1	0.024
Paternal Age	42.6±5.5	45.3±5.9	0.024
Interparental violence	14 (19.2)	5 (6.8)	0.025
Maternal Employment Status	14 (19.2)	25 (33.8)	0.045
Paternal Employment Status	66 (89.2%)	66 (90,4%)	0.413
Maternal Psychopathology	12 (16.4%)	20 (20%)	0.508
Paternal Psychopathology	11 (14.9%)	4 (5,4%)	0.103
Kinship	25 (33.3)	13 (17.3)	0.024
Divorce	17 (22.7)	16 (21.6)	0.878
Peer Discord	30 (42.3)	18 (24.3)	0.022
Sleep Problem	15 (20)	6 (8)	0.034
ADHD Subtype			
ADHD-C	67 (89.3)	54 (72)	0.007
ADHD-I	8 (10.7)	21 (28)	0.007
Comorbidity	39 (52)	25 (33.3)	0.021
ODD	24 (32)	11 (14.7)	0.012
CD	10 (13.3)	6 (8)	0.290

ADHD: Attention Deficit Hyperactivity Disorder, ADHD-C: Attention Deficit Hyperactivity Disorder Combined Type, ADHD-I: Attention Deficit Hyperactivity Disorder- Inattentive Subtype, ODD: Oppositional Defiant Disorder, CD: Conduct Disorder, n=75 for both groups. p values are according to chi-square test.

The mean age of the mothers was 38.4±5.1 in the maltreated group, whereas it was 40.4±5.1 in the control group ($p<0.05$). The mean age of the fathers was 42.6±5.5 in the maltreated group, whereas it was 45.3±5.9 in the control group ($p<0.05$). Significant association, if any, was found between educational statuses of both mothers and fathers ($p>0.05$). Problems in peer relationships and sleep patterns reported by parents were also significantly greater in the maltreated group ($p<0.05$). When ADHD diagnosis was taken into consideration, ADHD-combined (ADHD-C) was significantly greater in the maltreated group (n=67 [89.3%], n=54 [72%], $p<0.05$). Comorbidity was also significantly higher in the maltreated group (n=39 [52%], n=25 [33.3%], $p<0.05$).In total, n=19 (12.6%) of the individuals reported interparental violence. Of those, n=14 (19.2%) were in the maltreated group, whereas n=5 (6.8%) was in the control group ($p<0.05$). Table 2 shows the characteristics of individuals with interparental violence.

Table 2. Comparison of demographic data on patients with and without a history of interparental violence.

Variable	Presence of Interparental Violence		
	Present n (%)	**Absent n (%)**	**P**
Maternal psychopathology	9 (47.4)	18 (14.3)	**0.001**
Paternal alcohol misuse	6 (31.6)	7 (5.6)	**0.000**
Divorce	9 (47.4)	23 (18.1)	**0.004**
Nuclear Family	7 (36.8)	95 (74.2)	**0.001**
Peer Discord	12 (63.2)	36 (29)	**0.003**
Comorbidity	12 (63.2)	51 (39.8)	0.055

n=75 for both groups. p values are according to chi-square test.

In individuals with interparental violence, maternal psychopathology, paternal alcohol use, and divorce rate were significantly higher compared with individuals without a history of interparental violence ($p<0.05$). In addition, nuclear family status was significantly lower ($p<0.05$). In children with a history of interparental violence, peer relationships were significantly worse compared with children without a history of interparental violence ($p<0.05$).

Table 3 provides a comparison of CPRT and CTRS scores of patients with and without a history of violence. Table 4 shows a comparison of FAD scores, and Table 5 shows Stroop TBAG scores.

Table 3. Comparison of CPRS and CTRS of patients with and without a history of maltreatment

	Presence of Maltreatment				**Presence of Maltreatment**		
	Present mean±SD	**Absent mean±SD**	**P**		**Present mean±SD**	**Absent mean±SD**	**P**
CPRS				**CTRS**			
Oppositional	17.8±6.6	13.2±7.5	**0.000**	Oppositional	6.2±5.2	5.3±4.6	0.290
Inattention	20.4±8.8	20.0± 7.6	0.783	Inattention	10.2±5.9	10.2±4.9	0.998
Hyperactivity	11.9±4.6	9.6±5.5	**0.006**	Hyperactivity	7.5±4.5	6.8±4.6	0.376
Anxious/Shy	8.6±5.7	7.2±4.8	0.098	Anxious/Shy	6.7±3.3	6.8±3.4	0.859
Perfectionism	8.1±4.2	5.6±3.8	**0.000**	Perfectionism	4.1±2.8	4.0±3.8	0.881
Social Problems	5.0±3.6	3.3±2.6	**0.001**	Social Problems	5.4±4.3	4.8±4.1	0.412
Psychosomatic	6.2±4.2	6.2±4.2	**0.028**	ADHD-IA	9.8±4.7	11.9±10.1	0.123
ADHD-Index	23.2±7.7	21.2±7.3	0.102	ADHD-CT	5.9±4.6	5.3±4.1	0.440
CGI-Impulsivity	12.2±4.3	9.9±4.2	**0.002**	CGI – Restless	6.8±3.7	6.6±3.1	0.775
CGI –Emotional Lability	4.9±2.2	3.7±2.5	**0.004**	CGI–Emotional Lability	5.9±3.2	5.0±3.0	0.143
CGI – Total	17.3±5.6	13.7±6.2	**0.000**	CGI– Total	12.7±6.3	11.7±5.1	0.330
DSM – Inattention	15.0±6.5	15.0±5.8	0.947	DSM-Inattention	13.6±7.0	14.1±5.9	0.684
DSM - Hyperactivity	14.6±5.5	10.8±6.9	**0.000**	DSM - Hyperactivity	10.6±6.9	9.5±6.0	0.330
DSM – Total	29.6±10.0	25.9±11.4	**0.038**	DSM - Total	23.1±10.9	22.6±9.3	0.800

ADHD: Attention Deficit Hyperactivity Disorder, ADHD-C: Attention Deficit Hyperactivity Disorder Combined Type, ADHD-IA: Attention Deficit Hyperactivity Disorder- Inattentive Subtype, CGI: Clinical Global Index, DSM: Diagnostic and statistical manual of mental disorders, n=75 for both groups. p values are according to Mann–Whitney U test.

Table 4. Comparison of FAD scores of patients with and without a history of maltreatment.

	Maltreatment Present n (%)	Maltreatment Absent n (%)	p
FAD			
Problem Solving	2.1±0.7	1.9±0.6	0.164
Communication	1.9±0.5	1.8±0.4	0.029
Roles	2.2±0.5	2.0±0.5	0.015
Affective Responsiveness	1.9±0.7	1.7±0.6	0.069
Affective Involvement	2.2±0.4	2.0±0.4	0.02
Behavioral Control	1.9±0.4	1.8±0.4	0.187
General Family Functioning	2.0±0.6	1.8±0.5	0.043
Total	2.0±0.4	1.9±0.4	0.009

FAD: Family Assessment Device; n=75 for both groups. p values are according to Mann–Whitney U test.

Table 5. Comparison of Stroop TBAG Form of patients with and without a history of maltreatment.

	Maltreatment Present n (%)	Maltreatment Absent n (%)	p
Stroop TBAG Form			
Total Time	104.0±39.6	93.4±35.5	0.101
Total Errors	0.8±1.6	1.0±2.2	0.544
Total Correction	3.5±2.6	2.9±2.3	0.135
Sum of Error and Correction	4.4±3.5	3.9±3.3	0.469

n=75 for both groups. p values are according to Mann–Whitney U test.

DISCUSSION

In our study, the participants in the maltreated group were significantly younger at the time of referral compared with the control group. The literature presents clear evidence of the association between early maltreatment exposure and ADHD symptoms[9]. Moreover, maltreatment is linked with higher symptom levels[24]. In these children and adolescents, earlier referral to psychiatry may be necessary due to early onset and symptom severity as reported by parents. Possible additional psychosocial factors and deterioration in family functionality may also cause early admission.

In our study, it is noteworthy that the parents were significantly younger in the maltreated group as well. Although studies mainly focus on mothers under a specific age, the results support a relationship between lower maternal age and an independent risk of maltreatment[25]. Younger parents have been shown to be at a higher risk of harsh parenting and externalizing problems in their children[26]. It can be relatively difficult for younger parents to demonstrate effective parenting skills and appropriate disciplinary attitudes toward children with ADHD, and they can easily resort to rigorous methods[27]. Low educational levels and maternal employment status also seem to be independent factors that increase maltreatment as a similar relationship was found in our study[28].

In the presence of maltreatment, the history of interpersonal violence between parents was also found to be significantly higher. Family problems, such as maternal psychopathology, paternal alcohol misuse, and non-nuclear family status, may also have a negative impact on these psychosocial factors, which is in line with the literature[29, 30]. In our study, significant associations, if any, were found between parental psychopathology and the presence of maltreatment. However, it could be interpreted that parental psychopathology rates would be higher if mental status assessments were conducted on families rather than individual reports.

In our study, sleep problems were reported more frequently in maltreated children compared with the control group. Sleep problems are common in ADHD, and it has been stated that these problems may worsen ADHD symptoms[31]. Although not structurally diagnosed, our findings suggest that the presence of additional sleep problems may trigger situations that are difficult to manage and may become a factor in maltreatment. On the other hand, the presence of maltreatment is associated with symptoms of insomnia, shorter sleep duration, and nightmares[32]. Sleep deficits also aggravate ADHD symptoms, which may create a vicious circle.

An important parameter that is impaired in ADHD and well reflected in social functioning is peer relationships. In our study, peer discord was significantly higher in the maltreated group. Supporting our findings, studies state that children with the ADHD-C subtype tend to respond hostilely, present oppositional behavior, and have more social skill problems in general[33]. Moreover, ODD comorbidity and increased aggressive behaviors also seem to affect social functioning because of being disliked or rejected by peer groups. Beyond the psychopathology of the child, as our study suggests, prolonged maltreatment exposure and unsupportive parenting that does not respond to children's needs can also hinder the development of children's social functioning. Consequently, children's ability to recognize, understand, express, and regulate their emotional states can be impaired, leading to problems in peer relationships[34, 35].

In the literature, ADHD-C is associated with more psychosocial risk factors than ADHD-Inttentive subtype (ADHD-I). Parent-rated behavioral symptoms were also linked with adversity scores, whereas oppositional symptoms were related to marital conflict and maternal psychopathology[36]. In line with the literature, ADHD-C and ODD comorbidity were found to be higher in the maltreated group. Consequently, the difference between CPRS and FAD scores in the maltreated group was associated with the clinical presentation of ADHD-C and ODD comorbidity, in which behavioral symptoms such as noncompliance to the rules, constant chattering, restlessness, and defiance are frequently observed. These persistent symptoms may lead to inefficient family communication in the presence of familial crises. Because the FAD roles subscale was detected as a significant unhealthy family condition, it may be interpreted that adequate parenting styles may not be present in these families compared with other families with children with ADHD. In the literature, it has been suggested that factors such as a lack of effective parenting skills, inappropriate parent–child interaction, and common usage of corporal punishment may be associated with both the presence and persistence of cognitive and behavioral problems, especially in the presence of ADHD and comorbid ODD[8, 37, 38]. Therefore, parameters such as the presence of negative family conditions, increased child–family conflict, relatively low social support, and domestic violence may be risk factors for the presence and severity of ADHD-C and oppositional symptoms[10, 38]. As our research shows, the presence of maltreatment and negative family functioning can be both causes and consequences of each other.

Noteworthily, the difference observed in the CPRS and FAD scores in maltreated patients was not detected in the teacher evaluations using the CPRS or EF tests as assessed by the physician. Despite ADHD-C dominance and ODD comorbidity, the similarity in the clinical presentation of these children may be interpreted as the positive effects of the appropriate discipline methods and approaches presented by teachers on externalizing behaviors in a school setting.

Psychosocial factors may need to be questioned when there is inconsistency in the information obtained from different settings in which the child is frequently present. The screening of additional disruptive behavioral disorders and sleep problems is essential. Psychiatric referral for parents may be beneficial when necessary. In the presence of domestic violence, against a child or parent, referring social workers for further social investigation may be required. Preventive interventions, such as parent training programs and social skills training, should be considered and included in the multimodal approach. Structured family education programs have been shown to have positive effects on parental perceptions, leading to more appropriate and effective parenting skills and less harsh and strict discipline methods. It can be concluded that these interventions enhance family functioning in general[39]. Therefore, multidimensional interventions, including a detailed history of psychosocial factors, may be important for a prognosis.

The maltreatment status data in our study were based on parental reports. Therefore, the frequency, type, or intensity of maltreatment may not be known with accuracy as families may hide the presence or severity of violence, which is a major limitation of the study. Hence, the lack of data regarding the victimization of parents can also be considered as a limitation. The groups presenting interparental violence were relatively small, which makes it harder to generalize the data. Since the research was conducted in a child psychiatry clinic, data on parental psychopathology may be insufficient considering that parents may not declare their own illnesses. The exclusion of files with missing data may have affected the representation of the characteristics of families with symptoms of

domestic violence. Lastly, sleep problems were screened via a sociodemographic form and were not matched with a sleep disorder based on DSM-5. However, this study may guide future follow-up studies with larger sample sizes regarding the relationship between ADHD and maltreatment.

In conclusion, the presence of maltreatment in children with ADHD is associated with some psychosocial factors such as domestic violence, peer discord, problematic family communication, and dysfunctional family functioning. Family adversity, parental psychopathology, and negative parental attitudes are associated with ADHD and ODD, for which routine questioning is recommended[40]. In these cases, interventions that will improve family functions should also be considered in the multimodal treatment plan. This study may be a pioneer for further studies that will examine the effects of ADHD treatment and positive parenting practices on family functionality.

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