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Research report

Assessment of emotional eating and self-compassion in mothers of autistic children

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ABSTRACT

This cross-sectional study aimed to evaluate emotional eating in mothers of children with autism spectrum disorder and its association with sociodemographic, clinical, and behavioral variables, mainly self-compassion. A subscale of the Three-Factor Eating Questionnaire – 21 was used to assess emotional eating, and the Self-Compassion Scale was used to assess self-compassion. Negative changes in eating habits and weight gain after the child's diagnosis were predictors of greater emotional eating. Each increase of 0.209 kg/m² in BMI increased this score by one point, and in relation to self-compassion, each increase of 0.280 points on this scale reduced the emotional eating score by one point. Accordingly, several variables were negatively or positively associated with the outcome. The inverse relationship between self-compassion and emotional eating demonstrates that this construct is a protective factor for the physical and psychological well-being of this population.

Keywords: autism spectrum disorder; eating behavior; motherhood.

RESUMO – Avaliação do comer emocional e autocompaixão em mães de crianças autistas

O objetivo deste estudo transversal foi avaliar a alimentação emocional em mães de crianças com Transtorno do Espectro Autista e sua associação com variáveis sociodemográficas, clínicas e comportamentais, principalmente autocompaixão. Uma subescala do Questionário de Alimentação de Três Fatores – 21 foi utilizada para avaliar a alimentação emocional, e a Escala de Autocompaixão foi utilizada para avaliar a autocompaixão. Mudanças negativas nos hábitos alimentares e ganho de peso após o diagnóstico da criança foram preditores de uma maior alimentação emocional. Cada aumento de 0,209 kg/m² no IMC elevou este escore em um ponto, e em relação à autocompaixão, cada aumento de 0,280 pontos nesta escala reduziu em um ponto o escore de alimentação emocional. Portanto, diversas variáveis foram associadas negativa ou positivamente ao desfecho. A relação inversa entre autocompaixão e alimentação emocional demonstra que este construto é um fator de proteção para o bem-estar físico e psicológico desta população.

Palavras-chave: Transtorno do Espectro Autista; comportamento alimentar; maternidade.

RESUMEN – Evaluación de la alimentación emocional y la autocompasión en madres de niños autistas

El objetivo de este estudio transversal fue evaluar la alimentación emocional en madres de niños con Trastorno del Espectro Autista y su asociación con variables sociodemográficas, clínicas y comportamentales, principalmente la autocompasión. Se utilizó una subescala del Cuestionario de Alimentación de Tres Factores – 21 para evaluar la alimentación emocional y la Escala de autocompasión para evaluar la autocompasión. Los cambios negativos en los hábitos alimentarios y el aumento de peso después del diagnóstico del niño fueron predictores de una mayor alimentación emocional. Cada aumento de 0,209 kg/m² en el IMC elevaba en un punto esta puntuación, y en relación con la autocompasión, cada aumento de 0,280 puntos en esta escala reducía en un punto la puntuación de alimentación emocional. Por lo tanto, varias variables se asociaron negativa o positivamente con el resultado. La relación inversa entre la autocompasión y la alimentación emocional demuestra que este constructo es un factor de protección para el bienestar físico y psicológico de esta población.

Palabras clave: Trastorno del Espectro Autista; conducta alimentaria; maternidad.

Autism Spectrum Disorder (ASD) is defined as a set of heterogeneous neurodevelopmental conditions characterized essentially, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), by persistent impairment in reciprocal social communication and social interaction (Criteria A) and restricted and repetitive patterns of behavior, interests or activities (Criteria B). These symptoms have been present since early childhood and limit or impair daily functioning (Criteria C and D) (Diagnostic and Statistical Manual of Mental Disorders (5th ed; DSM-5; American Psychiatric Association, 2013); Lai et al., 2014). In addition, there may be late manifestation of some symptoms, stimulated by the emergence of the need for social demands that exceed the capacity of these individuals, leading to family, educational, social and occupational losses, among other contexts that require communication and intellectual skills (Statistical Classification of Diseases and Related

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Health Problems (11th ed; ICD-11; World Health International Organization, 2022)).

When a diagnosis of ASD is made, the impact on the family context is usually stressful and significant (Carvalho Filha et al., 2018; Efstratopoulou et al., 2022; Faro et al., 2019; Selvakumar & Panicker, 2020). Faced with the incongruity of the expectations that oppose the idealized child and the real child, the ambiguous feelings experienced by family members about the discovery of ASD in their child range from sadness, suffering, denial and the search for justifications, and can generate a process of family imbalance (Pinto et al., 2016).

According to Freitas and collaborators, the assessment of parental stress is important to better understand the adaptation mechanisms and interventions necessary to ensure that they are engaged in treatment without significant harm for the health and development of children and families (Freitas et al., 2021). However, despite the changes and adaptations in family roles in order to divide up activities, the central role of caregiver is usually assigned to the mother (Pinto et al., 2016) who dedicates herself to the intense routine of treating and caring for the child, often neglecting herself (Araujo & Ponte, 2022; Miele & Amato, 2016; Pinto et al., 2016).

There are few national studies on the health condition of mothers of children with special needs. According to Guerra, caregivers of children diagnosed with ASD suffer greater physical and mental health problems as a result of the maladaptive stress resulting from the new demands on their resources, which may be insufficient to cope with the commitment to care for their child. Considering this context, the diet and consequently the health of these mothers may be negatively impacted (Guerra et al., 2015; Park & Walton-Moss, 2012).

Among these impacts is emotional eating, which is characterized as disordered eating behavior, with food intake occurring predominantly in response to emotions, whether positive or negative (Bruch, 1964; Guerra et al., 2015). Thus, food is used as a strategy for emotional self-regulation - a process through which individuals use different strategies to inhibit, control or change their emotions in order to achieve their goals. In this sense, Borges (Borges et al., 2017) showed in his study a greater consumption of hyperpalatable foods in more stressed individuals, with this consumption being prevalent in women and during the night, characterizing a hyperphagic behavior that can contribute to an increase in the rate of overweight and visceral obesity.

In addition to the influence of stress on this condition, significant changes in eating behavior can occur in the presence of depressive symptoms, as observed by Gearhardt and colleagues (Gearhardt et al., 2012). These authors described the relationship between these symptoms and difficulties in emotional regulation and a greater frequency of compulsive eating. In both national and international literature, the prevalence of depression is two to three times more frequent in women than in men (Brito et al., 2022; Fleck et al., 2009; Kelly et al., 2014). In the National Health Survey carried out between 2013 and 2019, a prevalence of 14.7% of women with depression was found, while for men this figure was 5.1%.

It is important to note, therefore, that average levels of stress and anxiety are higher among women, and they are therefore more likely to develop associated depressive disorders when compared to men (Brito et al., 2022; Fleck et al., 2009; Gearhardt et al., 2012; Kelly et al., 2014; Toral & Slater, 2007). As a consequence of the difficulties encountered during the treatment of a child with ASD, and the excessive care and attention required in this context, the primary feeling and attitude is self-criticism, which is associated with symptoms of psychopathologies such as those described above (Kelly et al., 2014; Werner et al., 2019).

In this scenario, the definition of an important psychological construct opposite to self-criticism, known as self-compassion, has emerged in the literature. Neff (2003) describes self-compassion as the movement of compassion towards oneself, understanding that negative experiences are part of the human experience and consisting of three aspects: self-kindness (rather than self-criticism), shared humanity, and mindfulness. An analysis carried out by Oliveira (Oliveira et al., 2020) showed that self-compassion was negatively associated with dysfunctional food addiction behaviors. In addition, a positive association was shown between self-compassion and health-promoting behaviors, attributing it as a valuable and effective approach for promoting mental health in women (Kelly et al., 2014; Oliveira et al., 2020; Sirois et al., 2015).

Considering, therefore, the negative impact of the burden of atypical motherhood on the eating behavior and health status of mothers of children with ASD, the aim of this study was to assess emotional eating in this population, and the association of this outcome with sociodemographic, clinical and behavioral variables, especially the level of self-compassion. The hypothesis of this study is that the demands of caring for autistic children generate overload and stress in mothers, leading to a higher level of emotional eating, and that several variables can be predictors of this change in eating behavior, with self-compassion being protective in this context.

Methods

Participants

The target population was made up of mothers of children aged up to 12 years diagnosed with ASD. The participants were selected using the "snowball" sampling technique throughout the state of Espírito Santo, Brazil. This is a non-probabilistic technique in which the individuals selected for the study invite new participants from their network of friends and acquaintances (Vinuto,

2014). To this end, the project was publicized on the researchers' social networks, in addition to requesting the support of social media profiles related to ASD, and entities and professionals related to the diagnosis and treatment of this disorder.

The women selected to take part in the study had to meet the following inclusion criteria: be aged 18 or over, be the mother (in the role of main caregiver) of children aged up to 12 with a medical diagnosis of ASD, and live in the state of Espírito Santo, Brazil. The study was approved by the local Research Ethics Committee (protocol 6.015.246 and CAAE 68003523.1.0000.5060).

Instruments

Instrument A. Semi-structured questionnaire containing sociodemographic, clinical information, lifestyle habits, sleep quality, self-compassion and emotional eating. Sociodemographic and clinical data were also collected from children with ASD.

Instrument B. Three Factor Eating Questionnaire, reduced version of 21 items (TFEQ-R21): Emotional eating (the dependent variable in this study) was assessed using a sub-scale of the Three Factor Eating Questionnaire, reduced version of 21 items (TFEQ-R21). This is a self-administered instrument for identifying eating behaviors using three subscales, the "Emotional Eating" subscale being used in this study. This subscale consists of six items associated with the predisposition to overeat in response to negative emotions. The score is evaluated from 0 to 100, indicating that the higher the score, the more present the eating behavior evaluated is (Natacci & Ferreira Júnior, 2011). Examples of questions present on this scale are: “I start eating when I feel anxious”; “When I feel sad, I often eat too much”. The scale's response options were: "Totally true"; "True most of the time"; "False most of the time"; "Totally false."

Instrument C. Self-compassion scale: was assessed using the scale developed by Neff (2003) and validated for use in Brazil by Souza and Hutz (2016). This scale consists of 26 items, and the response options cover a five-point Likert scale, ranging from 1 (almost never) to 5 (almost always). The average score is then calculated (after reverse coding negative items) to create a self-compassion score (Neff, 2003). Examples of questions present on this scale are: “I try to be kind to myself when I feel emotionally bad”; “When things are really difficult, I tend to be hard on myself”. The scale's response options were: "Totally true"; "True most of the time"; "False most of the time"; "Totally false".

Procedures

This is an epidemiological, analytical and cross-sectional study carried out using an online form with self-reported data. Initially, the participant ticked "I accept" on the Free and Informed Consent Form, after being informed of the research inclusion criteria. She then answered a semi-structured questionnaire, with information as described below.

Socio-demographic data: age, marital status, race/skin color, schooling, family income, professional activity, number of people living in the household and number of living children.

Clinical data: data was collected on the presence of a medical diagnosis of depression, whether they had gained weight since their child's diagnosis, and whether they were pregnant. Weight in kilograms and height in meters were collected and the body mass index (BMI) was calculated from this data, which was used to classify nutritional status according to the criteria of the World Health Organization (World Health Organization, 2000).

Lifestyle habits: data was collected on alcohol and tobacco consumption and level of physical activity. The participants' alcohol and tobacco consumption was assessed according to the Consensus on the Approach and Treatment of Smokers (Ministério da Saúde & Instituto Nacional de Câncer, 2021). As for their level of physical activity, the participants were asked if they practiced any type of activity. Participants were classified as "physically active" if they reported accumulating at least 30 minutes of physical activity per day, on at least 5 days of the week, of moderate intensity, performed continuously or cumulatively, and "physically inactive" if they did not fit these characteristics (World Health Organization, 2020).

Sleep quality and eating habits: Participants were asked how they considered their sleep quality ("very good/good", "fair/bad"). They also reported whether there had been any negative changes in their eating habits since the diagnosis of their child(ren) with ASD (lower consumption of fruit/vegetables and/or higher consumption of sweets/fried food/snacks).

Self-compassion: was assessed using the Self-compassion Scale, developed by Neff (2003) and validated for use in Brazil (Souza & Hutz, 2016). Emotional eating was assessed using a sub-scale of the Three Factor Eating Questionnaire, reduced version of 21 items (TFEQ-R21) (Natacci & Ferreira Júnior, 2011).

The following sociodemographic and clinical data were also asked of the children diagnosed with ASD: age, sex, time since diagnosis, whether they received support at school, level of support for ASD, presence of eating selectivity, support in care (father, family members, etc) and ASD diagnosis in siblings.

This study was performed in line with the principles of the Declaration of Helsinki and with Resolution CNS 466/12 of the Ministry of Health. Approval was granted by the local Ethics Committee (protocol 6.015.246 and CAAE 68003523.1.0000.5060). Informed consent was obtained from all individual participants included in the study. The estimated time to participate in the study was thirty minutes to answer the entire questionnaire.

Data analysis

The data was analyzed using IBM SPSS Statistics for Windows software, version 22.0 (Armonk, NY: IBM Corp). The normality of the variables was assessed using the Shapiro-Wilk test. Medians (with interquartile range) and absolute and relative frequencies were used to describe the study variables. The Mann-Whitney and Kruskal-Wallis tests were used to analyze the differences between the medians, and Spearman's correlation test was used to test the correlation. To quantify the participation of the independent variables in the outcome of interest, a multivariate analysis was carried out, including in the multiple linear regression model the independent variables that showed a significance level of up to 5% in the bivariate tests.

Results

A total of 147 women took part in the study, with a median age of 36.7 years, predominantly in the 30-39 age group. The majority lived with a partner (n=119; 81%), were of non-white race/color (n=86; 58.5%), had a university degree or post-graduate degree (n=95; 64.6%), a family income of up to 2 minimum wages (n=52; 36.4%) and worked (n=89; 61%). There was a predominance of overweight or obese women in the sample (n=100; 69%), and a diagnosis of depression was reported by 34% of the women (n=50). The majority did not use tobacco or alcohol and did not practice physical activity (n=110; 74.8%). Regular/poor sleep quality was reported by 83% of the women (n=122) and the majority reported negative changes in eating habits (n=86; 58.5%) and weight gain (n=105; 71.4%) after the child's diagnosis (Table 1).

The children had a median age of 4 years, predominantly male (n=123; 84.2%), aged between 0 and 5 years (n=89; 60.5%) and diagnosed between 2 and 5 years (n=48; 32.7%). Most mothers received partial support from schools (n=103; 71%) and their children had level 1 support (n=66; 44.9%). In the sample studied, the majority had food selectivity (n=100; 68%). Most mothers received support in caring for their child (n=130, 88.4%) and did not have another child diagnosed with ASD (n=131; 89.1%) (Table 2).

Table 1
Sociodemographic, Clinical and Lifestyle Data, Sleep Quality and Eating Habits of Mothers of Autistic Children

Variables	N	%
Age (years)*	36.7 ± 6.7	-
Age group		
20-29 years	26	17.8
30-39 years	69	47.3
>40 years	51	34.9
Marital status		
Live maritally	119	81
Do not live maritally	28	19
Race/skin color		
White	61	41.5
Black / Brown	86	58.5
Schooling		
Up to high school	52	35.4
Undergraduate/Postgraduate	95	64.6
Family income		
Up to 2 minimum wages	52	36.4
Between 2 and 5 minimum wages	45	31.5
More than 5 minimum wages	46	32.2
Professional activity		
No	57	39
Yes	89	61
Number of people living in the household	4 ± 1	-
Number of children	2 ± 1	-
Nutritional status		
Underweight/Eutrophic	45	31
Overweight/Obese	100	69
Depression		
No	97	66
Yes	50	34

Table 1 (continuation)
Sociodemographic, Clinical and Lifestyle Data, Sleep Quality and Eating Habits of Mothers of Autistic Children

Variables	N	%
Pregnant		
No	143	97.3
Yes	4	2.7
Alcohol use		
No	84	57.1
Yes	49	33.3
In the past	14	9.5
Tobacco use		
No	130	88.4
Yes	12	8.2
In the past	5	3.4
Physical activity		
No	110	74.8
Yes	37	25.2
Sleep quality		
Very good / Good	25	17
Fair / Poor	122	83
Negative changes in eating habits		
No	61	41.5
Yes	86	58.5
Weight gain after diagnosis		
No	42	28.6
Yes	105	71.4

Note. *Data expressed as p50 ± interquartile range; *N*=147; Minimum wage=R$1045.00

Table 2
Sociodemographic and Clinical Data of Autistic Children

Variables	N	%
Age (years)	4 ± 4	-
Sex[1]		
Female	23	15.8
Male	123	84.2
Age group		
0 to 5 years	89	60.5
6+ years	54	36.7
Diagnostic time		
Less than 1 year	28	19.0
Between 1 and 2 years	44	29.9
Between 2 and 5 years	48	32.7
More than 5 years	27	18.4
School support[2]		
No	14	9.7
Yes, partially	103	71.0
Yes, totally	24	16.6
Not applicable (does not attend)	4	2.8
Support level		
Level 1	66	44.9
Level 2	46	31.3
Level 3	26	17.7
Don't know	9	6.1

Table 2 (continuation)
Sociodemographic and Clinical Data of Autistic Children

Variables	*N*	%
Food selectivity		
No	47	32.0
Yes	100	68.0
Mother receives support in childcare		
No	17	11.6
Yes	130	88.4
Siblings with ASD		
No	131	89.1
Yes	16	10.9

Note. Data expressed as p50 ± interquartile range; *N*=147; *N*¹=146; *N*²=145; ASD=Autism Spectrum Disorder

When analyzing the data distributed according to the emotional eating score, a higher score was observed in women who did not work (p=0.014), who were overweight or obese (p<0.001) and who reported a medical diagnosis of depression (p=0.015). In addition, the score was higher in participants who reported "regular/bad" sleep quality (p=0.018), negative changes in eating habits and weight gain after the child's diagnosis (p<0.001 for both).Having a male child was also associated with emotional eating (p=0.019). There was also a positive correlation between BMI and emotional eating (p<0.001), and a negative correlation between self-compassion and emotional eating (p<0.001) (Table 3).

Table 3
Association Between Emotional Eating and Sociodemographic, Clinical and Lifestyle Data of Mothers of Autistic Children

Variables	Emotional eating score		
	Median	Interquartile range	P-value
Age group[1]			0.774
20-29 years	66.67	44.44	
30-39 years	66.67	50.00	
>40 years	66.67	55.56	
Marital status2			0.120
Live maritally	66.67	50.00	
Do not live maritally)	41.67	61.11	
Race/skin color[2]			0.180
White	58.33	44.44	
Black / Brown	66.67	61.11	
Schooling[2]			0.585
Up to high school	72.22	50.00	
Undergraduate/Postgraduate	66.67	55.56	
Family income[1]			0.404
Up to 2 minimum wages	69.44	55.56	
Between 2 and 5 minimum wages	61.11	44.44	
More than 5 minimum wages	66.67	44.44	
Professional activity[2]			0.014
No	77.78	55.56	
Yes	61.11	55.56	
Nutritional status[2]			<0.001
Underweight/Eutrophic	38.89	52.78	
Overweight/Obese	77.78	38.89	
Depression[2]			0.015
No	61.11	44.44	
Yes	77.78	44.44	

Table 3 (continuation)
Association Between Emotional Eating and Sociodemographic, Clinical and Lifestyle Data of Mothers of Autistic Children

Variables	Emotional eating score		
	Median	Interquartile range	*P*-value
Pregnant[2]			0.206
No	66.67	55.56	
Yes	77.78	16.67	
Alcohol use[1]			0.360
No	66.67	55.56	
Yes	55.56	38.89	
In the past	80.56	44.44	
Tobacco use[1]			0.740
No	66.67	55.56	
Yes	66.67	33.33	
In the past	83.33	33.33	
Physical activity[2]			0.135
No	66.67	50.00	
Yes	44.44	66.67	
Sleep quality[2]			0.018
Very good / Good	38.89	38.89	
Fair / Poor	66.67	50.00	
Negative changes in eating habits[2]			<0.001
No	38.89	55.56	
Yes	72.22	41.67	
Weight gain after diagnosis[2]			<0.001
No	38.89	44.44	
Yes	77.78	38.89	
Child's sex[2]			0.019
Female	38.89	38.89	
Male	66.67	50.00	
Self-compassion score[3]*	2.74	0.72	<0.001; *r*=-0.410
BMI (kg/m²)[3]	27.96	8.64	<0.001; *r*=0.461

Note. [1]Kruskal-wallis test; [2]Mann-Whitney test; [3]Spearman's correlation; BMI=Body Mass Index

Multiple analysis by linear regression showed that having shown negative changes in eating habits (p=0.002) and weight gain after diagnosis (<0.001) were predictors of a higher score on the emotional eating scale. In addition, each 0.213 kg/m² increase in BMI raised this scale by one point, demonstrating a positive association between these variables. With regard to self-compassion, each increase of 0.282 points in this score reduced the emotional eating score by one point, demonstrating the inverse relationship between these two constructs (Table 4).

Table 4
Multiple linear regression according to the emotional eating score of mothers of autistic children

Variables	Coeficient	*P*-value	CI95%
Emotional eating score			
Professional activity			
No	1		
Yes	-0.056	0.393	-11.954 – 4.724
Weight gain after diagnosis			
No	1		
Yes	0.315	<0.001	12.016 – 32.877

Table 4 (continuation)
Multiple linear regression according to the emotional eating score of mothers of autistic children

Variables	Coeficient	*P*-value	CI95%
Emotional eating score			
Depression			
No	1		
Yes	0.037	0.570	-6.137 – 11.095
Child's sex			
Female	1		
Male	0.109	0.092	-1.607 – 20.958
Negative changes in eating habits[2]			
No	1		
Yes	0.205	0.002	4.985 – 21.628
BMI	0.213	0.004	0.370 – 1.880
Self-compassion score	-0.282	<0.001	-18.277 – -6.794

Note. Multiple linear regression; BMI=Body Mass Index; CI=Confidence interval

Discussion

This study assessed the association between self-compassion and emotional eating in mothers of children diagnosed with ASD living in Espírito Santo. The data showed that self-compassion was inversely associated with emotional eating. In addition, negative changes in eating habits, weight gain after diagnosis and an overweight or obese BMI were associated with a higher emotional eating score.

The results of this study showed that the higher the score on the self-compassion scale, the lower the emotional eating score. The literature presents self-compassion as the ability to take care of oneself and deal with feelings in a gentle and understanding way, even in difficult situations, as moments of pain and suffering are inherent to the human condition. In this way, one must understand one's own experiences in a broader way, without identifying with negative feelings (Neff, 2003). Neff (2003) attributes the construction of self-compassion to three conceptually distinct components, capable of influencing each other in a positive way. These components are permeated by positive indicators, including optimism, agreeableness, positive affect, social bonding, awareness and emotional intelligence. Thus, self-compassion is a form of emotional regulation associated with well-being, unlike emotional eating, which can have undesirable long-term consequences, such as weight gain.

Thus, among the self-compassionate behaviors related to health are the establishment of realistic goals in order to cooperate with the established routine, making it impossible to feel guilty, self-critical and feeling of transgression when they are not achieved. Sirois et al., (2015) exemplifies some of these behaviors in his meta-analysis, such as practicing physical activity according to availability, seeking medical evaluation in case of discomfort or any hypothesis of illness, and positive affection and social bonding for self-regulation, instead of self-destructive actions such as emotional eating when faced with negative circumstances.

In relation to the inverse association between self-compassion and emotional eating, Compassion Focused Therapy (CFT) has been shown in the literature to have positive effects in reducing the frequency of binge eating, the main precipitating factor of which is negative affect. This result is due to the fact that CFT provides tools for building a self-compassionate attitude, reducing self-criticism and shame, feelings that are characteristic of patients with binge eating. Therefore, therapies with approaches based on self-compassion can be effective in reducing emotional eating (Kelly et al., 2014).

Oliveira's study (Oliveira et al., 2020) evaluated the relationship between self-compassion and food addiction in women with dysfunctional eating behaviors, by applying the "Self-Compassion Scale" and the "Yale Food Addiction Scale". The results of this study showed that food addiction was negatively associated with self-compassion, as well as cooperating with weight gain and increased obesity, and was positively related to difficulties with emotional regulation and depressive symptoms, results that are compatible with the present research.

Given that eating behavior changes throughout life due to biological transitions, changes in identity, the need for new adaptations and stress, the weight gain after diagnosis observed in our study may be associated with negative changes in eating habits. These changes may indicate a greater intake of hyperpalatable and calorie-dense foods as a result of the negative emotions experienced, contributing to an increase in body weight. These results are confirmed by Natacci & Ferreira Júnior (2011) in her observation of the domains of eating behavior using the TFEQ-R21, highlighting emotional eating as the main cause of excessive energy consumption and consequent weight gain.

According to Bruch's psychosomatic theory, emotional eating can be defined as an individual's inability to identify the signs of hunger and satiety, as well as a lack of recognition of bodily signals and emotional reactions, so that both negative and positive feelings can affect the way they eat. Thus, considering the context of intense routine and psychological overload, non-homeostatic eating is present and influenced by the search for comfort in foods that are preferably rich in sugars, fats and highly available in the Western standard. Therefore, the frequent choice of hyper-palatable foods is characterized as a negative change in eating habits, and when energy needs are exceeded, it implies weight gain and a consequent increase in BMI (Bruch, 1964).

Our work also showed a positive relationship between overweight/obesity and emotional eating. According to the Brazilian Association for the Study of Obesity and Metabolic Syndrome (2016) Brazilian obesity guidelines (4th), emotional changes can contribute to the development of obesity and, alternatively, be a consequence of this condition, characterizing a bidirectional relationship. The contribution of excess weight to emotional changes (which interfere with the way we eat) can be derived from social factors to which these individuals are exposed, such as weight stigma, low self-esteem, anxiety, depression, among others. This can contribute to an increase in stress levels and, consequently, to more emotional eating, establishing a vicious cycle between emotional eating and obesity.

Depression is a factor that can contribute to emotional eating, since depressive symptoms are related to changes in food consumption, which may have been present and neglected in the women in this study as a result of the new routine and physical and emotional overload (Rodrigues, 2017). Although in the final model the presence of depression was not associated with the outcome, it is important to note that the diagnosis was self-reported, and that this is a highly underreported condition with varying prevalence depending on income, schooling, age group, race/color, search for and access to health services that enable diagnosis (Ministry of Health [s.d.]). *Depression in adults.* Care lines. https://linhasdecuidado.saude.gov.br/portal/depressao/definicao/), which may explain the weakness of the result

The data presented here shows the importance of self-compassion, and demonstrates that this is a valuable resource for alleviating the impacts of discovering and changing habits after a child has been diagnosed with ASD. In this way, it is hoped that this pioneering work will be the start of more robust research into the living conditions of these mothers, in order to provide them with a better quality of life.

The results of this study have limitations, including the fact that the data was collected via an online form, with self-reported information. However, this is due to the fact that the research was carried out with mothers of children with ASD, who need almost round-the-clock care, making it impossible to collect data in person, especially in the area covered by the research. An important point to note is that, although the sampling was by convenience, the research is innovative in assessing the association between self-compassion and emotional eating in this population, providing information for the physical and mental health care of these mothers.

Final considerations

This study showed an inverse relationship between self-compassion and emotional eating in mothers of children with ASD, demonstrating that this construct is a protective factor for the physical and psychological well-being of this population. In addition, participants who reported negative changes in eating habits and weight gain after their child's diagnosis, as well as a higher BMI, had a higher level of emotional eating.

Therefore, an intervention focused on self-compassion may prove to be an important strategy in preventing or mitigating dysfunctional eating behaviors, especially emotional eating, in mothers of children with ASD, which may contribute to greater health care for these women.

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Authors' contributions

We declare that all the authors participated in the elaboration of the manuscript. Specifically, Daniela Rosa Moura, Maria Gabriela Parajara, Fabiana Pinheiro Ramos, Kamila Vilela de Souza e Fabíola Lacerda Pires Soares participated in the initial wording of the study –conceptualization, investigation, visualization, Gabriela Grillo da Silva e Fabíola Lacerda Pires Soares participated in the data analysis, and Daniela Rosa Moura, Maria Gabriela Parajara, Gabriela Grillo da Silva, Fabiana Pinheiro Ramos, Kamila Vilela de Souza, Mariana Rebello Haddad e Fabíola Lacerda Pires Soares participated in the Final Writing of Work - Review and Editing.

Availability of data and materials

All data and syntax generated and analyzed during this research will be treated with complete confidentiality due to the Ethics Committee for Research in Human Beings requirements. However, the dataset and syntax

that support the conclusions of this article are available upon reasonable request to the principal author of the study.

Competing interests

The authors declare that there are no conflicts of interest.

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