

Stress in parents of preschoolers with Autism Spectrum Disorders: an update review

Nancy Espinosa-Díaz*, Maribel Vega-Arce, Maria Ignacia Jara, and Francisca Garrido

Departamento de Psicología, Universidad Católica del Maule, Talca, Chile

Abstract

Background: Parental stress experienced in the context of caring for children with autism spectrum disorder (ASD) in preschool is significant and has been poorly studied; studies tend to focus on more advanced ages of children where parental symptomatology has become chronic. The current study sought to provide new empirical evidence on factors associated with parental stress. **Methods:** An exhaustive search was conducted in four academic databases: CINAHL Complete, Medline Complete, Web of Science (WoS), and Scopus, limiting the articles to those published between 2017 and 2023. **Results:** The sample obtained consisted of 24 selected articles, which were produced in 11 countries, and all were in English. In terms of content, the topics addressed were the manifestation of parental stress, factors of the child with ASD and their relationship with parental stress, factors of parents of children with ASD, family factors of parents of children with ASD, social factors of parents of children with ASD, parental stress and access to formal care services, and parental stress and specialized interventions. **Conclusions:** It is possible to affirm that research reports indicate that the general level of stress among parents of children with ASD is compared to their reference groups, both in relation to child-related stress and other stressors. The variables that affect parental stress exhibit a reciprocal influence among them, so interventions aimed at early childhood should incorporate both the children and their parental figures. This is in consideration of the impact that stress has on the mental health of parents, establishing that parents with better health have early access to support services during the early years of parenting, as well as in later years.

Keywords: Autism. Parental stress. Preschool children.

Estrés en padres de preescolares con trastornos del espectro autista: una revisión actualizada

Resumen

Introducción: El estrés parental vivenciado en el contexto de cuidado de los niños con trastorno del espectro autistas en etapa preescolar es significativo y ha sido muy poco estudiado, las investigaciones tienden a focalizarse en edades de los niños más avanzada donde la sintomatología de los padres se ha cronificado. El objetivo de la presente investigación fue actualizar el corpus de evidencia empírica referida a los factores relacionados con el Estrés parental. **Métodos:** Se realizó una búsqueda exhaustiva en cuatro bases de datos académicas: CINAHL Complete, Medline Complete, Web of Science (WoS) y Scopus, limitando los artículos publicados entre los años 2017 y 2023. **Resultados:** La muestra obtenida fue de 24 artículos seleccionados, los cuales fueron producidos por 11 países todos de habla inglesa. En cuanto al contenido, los

*Correspondence:

Nancy Espinosa-Díaz

E-mail: nespinos@ucm.cl

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temas abordados son: La manifestación del estrés parental, factores del niño con TEA y su relación con el estrés parental, factores de los padres de los niños con TEA, factores familiares de los padres de los niños con TEA, factores sociales de los padres de los niños con TEA, estrés parental y acceso a los servicios formales de atención, y estrés parental e intervenciones especializadas. **Conclusiones:** Es posible afirmar que las investigaciones reportan que el nivel general de estrés de los padres de niños con TEA es superior al de sus grupos de referencia, tanto en relación al estrés relacionado con el niño, como el que no. Las variables que afectan el estrés parental presentan una influencia recíproca entre éstas, por lo que las intervenciones dirigidas a la primera infancia deberían incorporar a los niños y a sus figuras parentales. Esto, en atención al impacto que el estrés presenta en la salud mental de los padres, estableciendo que los padres con mejor salud mental presentan mayor acceso temprano a los servicios de apoyo durante los primeros años de crianza, y en los años posteriores.

Palabras claves: Autismo. Estrés parental. Niños preescolares.

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental condition characterized by high genetic and phenotypic heterogeneity¹. In recent years, the incidence of ASD has increased, particularly among socioeconomically vulnerable segments². At present, the global prevalence reaches 0.6%, posing a significant public health burden. This underscores the importance of early detection and intervention in ASD to mitigate its complications³.

In general, ASD symptomatology becomes evident in the 1st years of life, and its phenotypic complexity, understood as high variability in terms of quality and quantity of these symptoms⁴, manifests alongside other alterations, such as psychiatric problems⁵. The prevalence rates of having at least one psychiatric condition, in addition to the core syndrome, range from 70% to 90%^{6,7}, which is 3-10 times higher than in the general population⁸. Research reports that over 67% of pre-school and primary school-aged children with ASD present with generalized anxiety disorder, 15% with major depressive disorder, and 29% with a diagnosis of oppositional defiant disorder. This symptomatic ensemble leads to impaired functionality in daily activities and reduced quality of life for both the child with ASD and their parents⁹.

Studies show that parents of children with ASD face significant challenges in child rearing¹⁰. The literature reports higher stress levels in parents of children with ASD compared to other developmental disabilities^{11,12} and significantly higher than those of typically developing children^{13,14}. A meta-analysis confirms these findings, indicating that 70% of mothers of children with ASD report clinically significant parental stress¹⁵.

Some specific symptoms of ASD, such as mood instability and cognitive inflexibility, lead children to inconsistent and disconnected emotional processing¹⁶.

In addition, they may exhibit behavioral problems that can interfere with parental efforts to promote daily living skills¹⁷. These additional challenges can amplify parental stress^{18,19,12}.

Previously, Enea and Rusu studied stress in parents of children with ASD through a systematic review of studies published between 2012 and 2018²⁰. Their conclusions indicate that children's problematic behaviors and sensory issues are predictors of parental stress, persisting for up to 2 years. Moreover, young, single mothers with maladaptive coping strategies who have a child with ASD exhibiting behavioral problems and sensory difficulties are at an exacerbated risk of experiencing high levels of parental stress and mental health difficulties.

Furthermore, Bonis¹⁰, in a 2016 literature review, found that parents of children with ASD experience higher levels of stress, anxiety, and depression compared to parents of children without ASD or with other disabilities. Stress begins even before diagnosis when parents are trying to understand their children's behaviors and communication problems. In general, parents with higher educational and socioeconomic levels recognize unusual developmental patterns earlier and seek professional attention more quickly. On the other hand, African American and Hispanic children with ASD tend to receive later diagnoses. After diagnosis, parents face difficulties in finding formal support for their children with ASD. Their integration into the educational system proves complex, as does the financial burden, social stigmatization, isolation from informal networks (family and friends), and the unfavorable impact observed in marital relationships and parenting cooperation.

Finally, Bonis et al.²⁵ in 2016 explored, through an integrated review of academic literature published between 1998 and 2016, the risk and protective factors for stress self-management in parents of children with

ASD. This review suggests that the complexity of the disorder (non-verbal child, lower cognitive capacity, among others), its evolution, and transitions throughout the life cycle are demanding for parents and may cause higher stress levels. Aspects such as aggressive and self-injurious behaviors, altered sensory responses, sleep patterns, and eating problems in children pose challenges for parents. Moreover, as children grow, their needs change and it becomes necessary to facilitate the adaptation and progressive independence of the child with ASD. Throughout this process, social capital, parental education, family structure and functioning, and self-management capacity significantly influence how parents handle the stress associated with caring for a child with ASD. In addition, parental roles often differ, with mothers assuming most of the care, leading to unequal stress, which is exacerbated by financial problems due to reduced income.

Despite the relevance of the reviews by Enea and Rusu, Bonis, Bonis and Sawin^{20,10,25}, they do not specify the particularities of stress in parents of young children with ASD. Although studies about family dynamics in the preschool stage are scarce²⁶, authors such as Vaezghasemi et al.²⁷ suggest that the determinants of socioemotional problems in preschool children can be diverse and include parental factors. In this regard, Cheng and Lai²⁸ establish that one of the risk factors for parental stress in caregivers of children with special educational needs, such as ASD, is coping with a diagnosis often delivered during the preschool stage, making it difficult for parents to adjust their expectations and manage the children challenging behaviors. Understanding the dynamics present in the preschool stage is crucial for tracking the bi-directionality between parental stress and certain particularities of children with ASD²⁹, as well as for incorporating this variable into interventions aimed at this population³⁰. Preschool education, as an environment where individuals external to the family can observe the child, introduces a factor that can aid in a better understanding of their development³¹.

Considering the above, this study aims to update the body of empirical evidence regarding factors related to parental stress in caregivers of preschoolers diagnosed with ASD. The specific objectives of this study included: (a) Characterize the manifestations of parental stress in the context of caring for children with ASD; (b) Examine how variables intrinsic to the child, the caregiver, the family unit, and the social environment are related to the experienced parental stress; (c) Articulate the particularities of access to formal care

services and the efficacy of specialized interventions in mitigating parental stress.

Methods

An updated literature review was conducted to complement the articles already published on the subject by Bonis¹⁰ and Bonis et al.²⁵, in 2016. It is suggested to explore new advances in scientific topics when 5 years or more have passed since their last systematization, as science is a dynamic system that integrates findings, highlights challenges, and opens debates³². Furthermore, mapping knowledge in a specific scientific area facilitates the identification of relevant research gaps in the current context³³. The present review sought to address three research questions using scientific literature published between 2017 and 2023: a) What are the manifestations of parental stress associated with caring for preschool children diagnosed with ASD? b) How do variables intrinsic to the infant with ASD, the caregiver, the family unit, and the social environment relate to the experienced parental stress? c) What particularities characterize access to formal care services and the efficacy of specialized interventions in mitigating parental stress in caregivers of infants with ASD?

Eligibility criteria

The inclusion criteria were a) quantitative studies evaluating parental stress in caregivers of children 0 to 5 years of age diagnosed with ASD, b) original articles, and c) articles published in English or Spanish.

The exclusion criteria were: a) qualitative studies, b) other document types such as editorials and reviews (including narrative reviews, scoping reviews, systematic reviews, meta-analyses, meta-syntheses, and bibliometric studies), c) research referring to other ranges of child age, d) studies in which stress was evaluated in caregivers other than parents, and e) texts to which access was not possible.

Search strategy

Exhaustive searches were conducted in four academic databases, CINAHL Complete, Medline Complete, WoS, and Scopus, during May and June 2023. The algorithm was constructed using different descriptors and their respective syntactic and semantic variants in English, considering (ASD, “pervasive developmental disorders,” and PDD), parents (parent*,

parents, parental, caregivers, parenting, mother, mothers, father, and fathers), stress (stress and burnout), and preschool children (preschoolers, “young children,” toddler or toddlers), connected through Boolean operators. In all databases, the search was limited to 2017-2023 period.

Document selection

The selection of articles comprised four phases:

- Identification of articles was performed using an algorithm in the four databases, with the search limited by the range of years under study. This process resulted in access to 627 documents.
- Selection. The title, abstract, and keywords of each article were reviewed. The 198 duplicate investigations and those not meeting the inclusion criteria were eliminated.
- Eligibility. Each researcher reviewed articles in full text to assess their relevance. This allowed for the elimination of 405 documents.
- Twenty-four eligible articles were included in the review.

Document analysis

The selected articles were characterized based on their bibliometric variables (author, year of publication, country, type, language, and journal) as well as the objective, results, and the subject under study, parental stress.

Following the procedures for a systematized review³⁴, qualitative data were synthesized and interpreted using a thematic structure that emerged from the previous articles by Bonis¹⁰ and Bonis and Sawin²⁵ and those included in the study. This allowed screening and classifying the results and then reorganizing them by sub-themes, highlighting their convergences and divergences.

Results

Of the 24 selected documents, it was observed concerning the authors that some were repeated. For example, there are two articles from the Journal of Autism and developmental disorders and pediatrics, in which 10 American authors are repeated. Similarly, three Canadian authors are repeated in two articles, corresponding to the Journal of Autism and developmental disorders and autism. In two collaborative articles from the United States (USA) and Taiwan, and UK

and Taiwan, two Taiwanese authors are repeated. Several researchers again exhibit authorship in some articles, both collaborative and solely national, from the USA and Australia.

Regarding the publication years of the documents, they are divided into six articles published in 2022, 7 in 2021, 2 in 2020, 4 in 2019, 3 in 2018, and 2 in 2017. The 24 articles were produced in 11 countries, ordered from highest to lowest frequency: USA, Australia, Canada, Taiwan, Austria, Germany, Belgium, Israel, Italy, Sweden, and the United Kingdom. Of these, seven articles are collaborations between the USA, Australia, Canada, Israel, Taiwan, Germany, Austria, Sweden, and the UK. On the other hand, of the 24 articles, only two are from countries that do not appear in collaborations: Belgium and Italy.

As for the type of article, 100% are research papers, and all articles are in English. Finally, regarding the journals, there are 11 that published the 24 articles; of these, five are repeated in various documents: six articles belong to the Journal of Autism and Developmental Disorders, five to Autism, three to Autism Research, two to Pediatrics, and 2 to Research in ASDs. Six journals only appear once: Journal of Mental Health Research in Intellectual Disabilities, Frontiers in Psychiatry, Journal of Applied Research in Intellectual Disabilities, Journal of Early Intervention, World Journal of Psychiatry, and Journal of Intellectual and Developmental Disability.

Table 1 details their characteristics, and table 2 summarizes their objectives, methods, results, and conclusions.

The content analysis of the documents reveals that while Olson’s study³⁵ establishes the diagnosis of childhood ASD as an important predictor of parental stress, most of the identified research focuses on parents of preschoolers already diagnosed with Autism^{36,37}. The topics addressed were: the manifestation of parental stress, factors of the child with ASD and their relationship with parental stress, factors of parents of children with ASD, family factors of parents of children with ASD, social factors of parents of children with ASD, parental stress and access to formal care services, And parental stress and specialized interventions.

Manifestation of parental stress

The general stress level in parents of children with ASD is higher than that of their reference groups, considering both child-related, and non-child-related

Table 1. General characteristics of selected articles (n = 24)

First author	Objectives	Year	Country	Type of publication	Language	Journal
Brian et al. ⁴³	Explore differences between in-person and virtual delivery of the Social ABCs program in terms of outcomes, feasibility, or acceptability.	2022	Canada	Research	English	Journal of Autism and Developmental Disorders
Weitlauf et al. ⁴⁴	Examine changes in key indicators of child development through a randomized controlled trial of Early Start Denver Model for parents, with and without mindfulness-based stress reduction for parents.	2022	USA	Research	English	Journal of Autism and Developmental Disorders
Davis ⁴⁵	Examine the relationship between behavior problems in children with Pervasive Developmental Disorders and parental stress	2017	USA	Research	English	Journal of Mental Health Research in Intellectual Disabilities
Hong et al. ⁴⁶	Investigate the prevalence and clinical implications of Attention Deficit Hyperactivity Disorder (ADHD) symptoms in a clinical sample of 1.5-year-old children	2021	USA	Research	English	Autism Research
Green et al. ³⁷	Determine which child, parent, family, or socioeconomic factors could be associated with and predict the mental health and well-being of parents with preschool-aged autistic children.	2021	Australia USA	Research	English	Autism
Laister et al. ³⁸	Evaluate whether stress in mothers of 1- to 4-year-old children with ASD is affected by changes in child behavior following a 1-year early intervention program focused on promoting social communication behaviors.	2021	Austria USA Australia Germany Sweden	Research	English	Frontiers in Psychiatry
Wicks et al. ³⁹	Explore the extent to which Early Intervention programs benefit Australian families with children on the autism spectrum.	2021	Australia	Research	English	Journal of Early Intervention
Olson et al. ³⁵	Examine patterns of parental stress in caregivers of children aged 1.5 to 5 years with an early diagnosis of ASD.	2023	USA	Research	English	Journal of Autism and Developmental Disorders
Karp et al. ⁴⁷	Investigate the relationship between family characteristics and the likelihood of accessing ASD-targeted therapies in underserved children aged 5 years or younger.	2018	USA	Research	English	Pediatrics
Zaidman-Zait et al. ²³	Examine the relationship between personal and social resources, both familial and community-based, with parental stress at the time of ASD diagnosis, and whether variations in these resources predict changes in stress over a two-year period.	2017	Israel Canada USA	Research	English	Pediatrics
Tripathi et al. ⁴⁸	Evaluate outcomes in both children and their parents 1 to 5 years after completing the PEERS® program for preschoolers.	2022	USA	Research	English	Journal of Autism and Developmental Disorders
Weitlauf et al. ⁴⁹	Evaluate and compare the efficacy of the Parent-Implemented Early Start Denver Model (P-ESDM) with the same intervention supplemented with mindfulness-based stress reduction techniques.	2020	USA	Research	English	Pediatrics

(Continues)

Table 1. General characteristics of selected articles (n = 24) (continued)

First author	Objectives	Year	Country	Type of publication	Language	Journal
Vivanti et al. ⁵⁰	Preliminarily assess the feasibility and effectiveness of the G-ESDM intervention model in inclusive and autism-specific settings for preschoolers with Autism Spectrum Disorders.	2019	USA Australia	Research	English	Autism
Matthews et al. ⁵¹	Compare changes across multiple domains (parental self-efficacy, knowledge, stress, depressive symptoms, and implementation fidelity, as well as child responsiveness) between families who completed JumpStart and those in a control group.	2018	USA	Research	English	Research in Autism Spectrum Disorders
Hickey et al. ⁵²	Longitudinally investigate trajectories of parental stress, coping mechanisms, and perceived family impact during the ASD diagnostic process among Hispanic and non-Hispanic subgroups.	2021	USA	Research	English	Autism
Madaveric ³⁶	Investigate the relationships between parental stress, children's externalizing behavior problems, and parenting behaviors in mothers of preschoolers with and without autism.	2022	Belgium	Research	English	Research in Autism Spectrum Disorders
Mathew et al. ⁵³	Examine the relationship between the severity of ASD symptoms in children, socioeconomic status (SES), occupational status, psychological well-being, and perceived parenting competence in parents of preschool-aged children with ASD.	2019	Australia	Research	English	World Journal of Psychiatry
Lin et al. ⁵⁴	Examine the relationships between parental stress and both internalizing and externalizing behavior problems in young children with ASD over a 1.5-year period.	2021	Taiwan UK	Research	English	Journal of Autism and Developmental Disorders
Hou et al. ¹²	Evaluate parental stress and depressive symptoms in Taiwanese mothers of children between 16 and 47 months old with ASD or Developmental Delay.	2018	Taiwan USA	Research	English	Journal of Applied Research in Intellectual Disabilities
Schlink et al. ⁴²	Examine how parental stress changed across two caregiver-mediated interventions, assessed through Longitudinal Quantile Mixed Models or Longitudinal Models.	2022		Research	English	Autism Research
DesChamps et al. ⁴¹	Characterize the levels and trajectories of parental stress in parents of children with ASD-related concerns, comparing them with parents of children with other types of developmental concerns and parents of children without such concerns.	2020		Research	English	Autism Research
Zheng et al. ⁴	Examine factors influencing stress levels among mothers of preschool and school-aged children with autism.	2019		Research	English	Journal of Intellectual and Developmental Disability

(Continues)

Table 1. General characteristics of selected articles (n = 24) (*continued*)

First author	Objectives	Year	Country	Type of publication	Language	Journal
Estes et al. ⁵⁵	Investigate the influence of different intensive intervention modalities and treatment intensities on the perceived efficacy by parents of children between 22 and 61 months old with ASD.	2021		Research	English	Autism
Salomone et al. ⁵⁶	Investigate the mediating role of emotional and behavioral problems in children with ASD aged 22 to 61 months in the relationship between the child's communication skills and parents' psychological stress.	2019		Research	English	Journal of Autism and Developmental Disorders

stress³⁸. Consistently, studies report that child-related stress is significantly higher than expected^{35,36,38,39}.

This elevated stress level remains stable over time, suggesting that parental stress does not decrease as the child grows^{40,41}. Thus, current parental stress predicts future parental stress within a time window of 1-2 years^{23,38}.

The literature consistently reports that the most common manifestations are anxiety and depression, which reduce the ability to cope with care challenges and life stressors¹².

Factors of the child with ASD and their relationship with parental stress

Parental stress does not seem to be associated with the child's sociodemographic variables, such as age or sex³⁶. There is also no established relationship between the intrinsic characteristics of ASD and parental stress³¹. However, some research finds evidence of greater parental stress in the face of the complexity of childhood ASD^{36,39,42}. Although the results are not conclusive, they could account for the interference in understanding the child's needs, strengths, and abilities when the expression of ASD is more severe³⁵.

Some authors suggest that there is no evidence associating the general cognitive abilities of children with ASD with parental stress²². However, the language involvement of children with ASD presents conflicting data: in some studies, expressive language and linguistic comprehension were not correlated with parental stress^{23,35,54}, while in others, they were⁴¹. Nevertheless, receptive communication skills do appear to be related to parental stress but are mediated through emotional problems in children⁴¹.

As for the child's behavior, there is no evidence associating the child's adaptive behavior with parental stress²². However, there is a correlation with behavioral problems^{22,24,31,37}. The latter represents one of the areas of concern for parents³⁹ and is a significant factor in their experience of stress³². Specifically, externalizing problems were identified as robust predictors of parental stress^{24,32}. In this regard, Davis and Neece⁴⁵ associate parental stress with not responding when people speak to them and tantrums or explosive temper, while restrictive and repetitive behaviors were moderately correlated with parental stress²². Although not conclusive⁴¹, severe symptoms of attention deficit disorder in children with ASD could be associated with elevated levels of parental stress³⁹.

Factors of parents of children with ASD

The factors studied in parents of children between 0 and 5 years old with ASD include sociodemographic variables, parental mental health, concerns related to ASD, and parental coping strategies.

In general terms, parents' sociodemographic variables do not appear to be related to parental stress^{23,40}. However, interesting data emerge when broken down: maternal age does not appear to be related to parental stress⁴⁰. Gender exhibits a moderate effect on parental stress, with mothers reporting significantly higher levels than fathers^{36,45}, although not conclusively⁵³. Ethnicity is only studied in one study distinguishing between Hispanics and non-Hispanics, where it is considered a modulator of the stress level experienced by parents during the ASD diagnostic process⁵². Similarly, in the study by Green et al.³⁷, parents who spoke a primary language other than English presented lower parental

Table 2. Summary of objectives, methods, results, and conclusions of the included articles (n = 24)

Title	Objectives	Methods	Results	Conclusions
“Going mobile”-increasing the reach of parent-mediated intervention For toddlers with ASD through group-based and virtual delivery ⁴³	Explore differences between in-person and virtual delivery of the Social ABCs program in terms of outcomes, feasibility, or acceptability.	Quasi-experimental, pre-post, sequential groups with single-blind design.	Significant improvement over time in parental stress and responsiveness of children with ASD, with no significant differences between virtual and in-person delivery modes.	Group learning with individual coaching is an effective adaptation for intervening with young children with ASD, being equally effective in both in-person and virtual formats.
A longitudinal RCT of P-ESDM with and without parental mindfulness-based stress reduction: impact on child outcomes ⁴⁴	Examine changes in key indicators of child development through a randomized controlled trial of Parent-implemented Early Start Denver Model, with and without mindfulness-based stress reduction for parents.	Longitudinal study based on a randomized controlled experimental design.	Mindfulness-Based Stress Reduction for parents does not significantly affect developmental and behavioral outcomes of children with ASD.	The study found no evidence that parental stress or interventions aimed at reducing it have a significant impact on the developmental and behavioral progression of children with ASD.
An examination of specific child behavior problems as Predictors of parenting stress among families of children With pervasive developmental disorders ⁴⁵	Examine the relationship between behavior problems in children with Pervasive Developmental Disorders and parental stress.	Cross-sectional study with linear regression analysis and Spearman correlations.	Specific behavior problems in children, including not responding when spoken to, speech problems, and tantrums or explosive temper, are significantly correlated with increases in parental stress.	Behavior problems in children, especially those related to communication and impulse control, are significant predictors of increased stress in parents.
Attention deficit hyperactivity disorder symptoms in young children With autism spectrum disorder ⁴⁶	Investigate the prevalence and clinical implications of Attention Deficit Hyperactivity Disorder (ADHD) symptoms in a clinical sample of 1.5- to 5-year-old children diagnosed with ASD, and their parents.	Cross-sectional design using descriptive, bivariate, and multivariate multinomial regression analyses.	Among children with ASD, 43% showed low ADHD symptoms, 30% moderate, and 27% high, with more severe symptoms associated with lower ethnic diversity, parental education, and higher parental stress and psychopathologies.	ADHD symptoms are highly prevalent in young children with ASD, and their presence is associated with higher parental stress and a higher prevalence of other psychopathologies.
Differential predictors of well-being Versus mental health among parents of pre-schoolers with autism ³⁷	Determine which child, parent, family, or socioeconomic factors could be associated with and predict mental health and well-being of parents with preschool-aged autistic children.	Cross-sectional study with correlational and multiple regression analyses.	In families with children diagnosed with ASD, parental stress is significantly influenced by parents’ emotional negativity and children’s autism symptoms, affecting their mental well-being.	Addressing parental stress in ASD contexts requires considering parents’ emotional characteristics and the severity of their children’s symptoms.
Enhancement of social Communication behaviors in young Children with autism affects Maternal stress ³⁸	Evaluate whether stress in mothers of 1- to 4-year-old children with ASD is affected by changes in child behavior after a 1-year early intervention program focused on promoting social communication behaviors.	Longitudinal study with pretest-posttest design and analysis of variance, multiple and hierarchical regression.	Parental stress predicts future stress levels, despite improvements in language and socialization in children with ASD.	Although interventions can improve certain aspects of development in children with ASD, initial parental stress is a robust indicator of future parental stress.

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Table 2. Summary of objectives, methods, results, and conclusions of the included articles (n = 24) (continued)

Title	Objectives	Methods	Results	Conclusions
Exploring the predictors of family Outcomes of early intervention for Children on the autism spectrum: An Australian cohort study ³⁹	Explore the extent to which Early Intervention programs benefit Australian families with children on the autism spectrum.	Cross-sectional study using correlational and multiple regression analyses.	Child's autism characteristics, parental stress, and socioeconomic factors are significant predictors of early intervention outcomes.	Child autism characteristics, parental stress, and socioeconomic conditions significantly impact parents' perception of the efficacy of early interventions for children with autism.
Externalizing behaviors are associated with increased parenting Stress in caregivers of young children with autism ³⁵	Examine patterns of parental stress in caregivers of children aged 1.5-5 years with an early diagnosis of ASD.	Cross-sectional study with correlation and multiple regression analyses.	Parents of children with ASD experience significantly higher levels of child-related stress compared to parents of typically developing children, and this is strongly associated with externalizing behavior problems.	Distinct profiles of parental stress exist among caregivers of children with ASD.
Family characteristics and children's Receipt of autism services in Low-resourced families ⁴⁷	Investigate the relationship between family characteristics and the likelihood of accessing ASD-targeted therapies in underserved children aged 5 years or younger.	Secondary analysis of baseline data from a randomized controlled trial, using multiple logistic regressions.	Approximately 25% of children did not access intervention services, while 49% received multiple services, positively influenced by the perception of developmental delays and the absence of siblings in the home.	The perceived level of development, parental stress, and caring for other children influence access to services for children with ASD.
Impact of personal and Social resources on parenting Stress in mothers of children with autism spectrum disorder ²³	Examine the relationship between personal and social resources, both familial and community-based, with parental stress at the time of ASD diagnosis, and whether variations in these resources predict changes in stress over a two-year period.	Longitudinal study with multiple regression analysis.	Child behavior problems and family dysfunction were associated with higher levels of parental stress, while social support and active coping strategies were associated with lower levels of parental stress.	Parental stress levels are significantly influenced by factors related to child behavior, social support, and parents' coping strategies.
Long-term treatment outcomes of peers® for preschoolers: a parent-mediated social skills training program for children With autism spectrum disorder ⁴⁸	Evaluate outcomes in both children and their parents 1-5 years after completing the PEERS® program for preschoolers.	Repeated measures design with analysis of variance and Multivariate Analysis of Variance.	The study demonstrated significant improvements in play and socialization skills in children with ASD, but changes in normative social skills were not maintained, and problematic behaviors were not reduced in the long term, with a temporary improvement in parental stress.	Specific interventions can have immediate positive effects in certain areas of development and well-being in children with ASD and their parents.
Mindfulness-based stress reduction For parents implementing early Intervention for autism: An RCT ⁴⁹	Evaluate and compare the efficacy of the Parent-Implemented Early Start Denver Model (P-ESDM) with the same intervention supplemented with mindfulness-based stress reduction techniques.	Pilot randomized controlled trial with longitudinal analyses.	Significant improvements in parental stress and symptoms of depression and anxiety in parents of children with ASD during active treatment, with differences in improvement according to the type of intervention.	The evaluated interventions are effective in reducing parental stress in the post-diagnosis period.

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Table 2. Summary of objectives, methods, results, and conclusions of the included articles (n = 24) (continued)

Title	Objectives	Methods	Results	Conclusions
Outcomes of children receiving Group-Early Start Denver Model in an Inclusive versus autism-specific setting: A pilot randomized controlled trial ⁵⁰	Preliminarily assess the feasibility and effectiveness of the G-ESDM intervention model in inclusive and autism-specific settings for preschoolers with Autism Spectrum Disorders.	Pilot randomized clinical trial with analysis of variance.	Children showed significant improvements in outcome measures, with no differences between inclusive and specialized settings. Additionally, a reduction in parental stress was observed over time.	The implementation of G-ESDM is effective in different educational settings for children with ASD, improving children's skills and reducing parental stress.
Parent and child outcomes of Jumpstart™, an education and Training program for parents of children with autism spectrum Disorder ⁵¹	Compare changes across multiple domains (parental self-efficacy, knowledge, stress, depressive symptoms, and implementation fidelity, as well as child responsiveness) between families who completed JumpStart and those in a control group.	Longitudinal study with experimental design and statistical analysis of pre-post comparisons and three-month follow-up.	The treatment group showed significant improvements in parental outcome expectations, parental competence, performance on JumpStart tests, implementation fidelity, and child responsiveness, with no significant changes in parental stress and depressive symptoms.	The JumpStart program is effective in improving parental self-efficacy, knowledge, and implementation skills, as well as child responsiveness, although it does not significantly reduce stress or depressive symptoms in parents.
Parent stress and coping trajectories in Hispanic and non-Hispanic families of children at risk for autism spectrum Disorder ⁵²	Longitudinally investigate trajectories of parental stress, coping mechanisms, and perceived family impact during the ASD diagnostic process among Hispanic and non-Hispanic subgroups.	Prospective and longitudinal study, with a Generalized Estimating Equations modeling design.	The level of parental stress did not vary significantly over time considering parents' ethnicity or their children's ASD diagnosis.	Ethnicity is an important factor in parental stress during the ASD diagnostic process, highlighting the need to address ethnic disparities in families' experiences.
Parenting behaviors among mothers of pre-schoolers on the Autism spectrum: associations with parenting stress and children's Externalizing behavior problems ³⁶	Investigate the relationships between parental stress, children's externalizing behavior problems, and parenting behaviors in mothers of preschoolers with and without autism.	Observational research with cross-sectional design, using statistical analysis of correlation and group comparison.	There is a positive correlation between parental stress and external behavior problems in preschoolers with ASD.	Parental stress is significantly higher in parents of preschoolers with ASD compared to those without this disorder.
Parenting preschoolers with autism: socioeconomic influences on Wellbeing and sense of competence ⁵³	Examine the relationship between the severity of ASD symptoms in children, socioeconomic status (SES), occupational status, psychological well-being, and perceived parenting competence in parents of preschool-aged children with ASD.	Cross-sectional design using correlations and Hierarchical Multiple Regression.	Parents of children with ASD show variations in emotional well-being and parenting efficacy compared to Australian norms, with no significant differences between genders or direct correlation between parental stress and ASD symptom severity.	Parents of children with ASD maintain high stress levels but with relatively high perceived parenting efficacy, although with significant variations in parental interest and satisfaction compared to normative populations.
Parenting stress and child behavior problems in young children With autism spectrum disorder: transactional relations across time ⁵⁴	Examine the relationships between parental stress and both internalizing and externalizing behavior problems in young children with ASD over a 1.5-year period.	Cross-lagged panel analysis.	Parental stress can predict the increase of externalizing behavior problems in children with ASD.	Parental stress is a factor to mitigate externalizing behavior problems in children with ASD.

(Continues)

Table 2. Summary of objectives, methods, results, and conclusions of the included articles (n = 24) (*continued*)

Title	Objectives	Methods	Results	Conclusions
Parenting stress and depressive symptoms in Taiwanese Mothers of young children with autism spectrum disorder: Association with children's behavioural problems ¹²	Evaluate parental stress and depressive symptoms in Taiwanese mothers of children between 16 and 47 months old with ASD or Developmental Delay.	Cross-sectional comparative design and descriptive, correlational, and regression statistical analysis.	Mothers of children with ASD face more stress and depressive symptoms than those of children with developmental delays, related to children's behavior problems.	Mothers of children with ASD experience greater stress and depression, linked to children's behavior problems.
Parenting stress in caregiver-mediated interventions for toddlers With autism: an application of quantile regression mixed models ⁴²	Examine how parental stress changed across two caregiver-mediated interventions, assessed through Longitudinal Quantile Mixed Models or Longitudinal Models.	Longitudinal design employing Linear Quantile Mixed Models in the analysis.	Interventions for parental stress in caregivers of children with ASD are effective, significantly reducing stress and maintaining beneficial effects at 6 months. The efficacy varies according to the type of intervention and the caregiver's initial stress level.	Interventions reduce stress in caregivers of children with ASD, with lasting effects and depending on the type and initial stress level.
Parenting stress in caregivers of young children with ASD concerns Before a formal diagnosis ⁴¹	Characterize the levels and trajectories of parental stress in parents of children with ASD-related concerns, comparing them with parents of children with other types of developmental concerns and parents of children without such concerns.	Longitudinal design with multilevel model analysis.	Parents of children with ASD experience elevated and persistent stress, influenced by factors such as low parental efficacy and psychological well-being.	Parental stress is higher and persistent in parents of children with ASD, affected by personal and psychosocial factors.
Predictors of maternal stress in pre-school and school-aged children with autism ⁴⁰	Examine factors influencing stress levels among mothers of preschool and school-aged children with autism.	Cross-sectional design, using correlation and regression analysis.	Parental stress does not vary significantly between mothers of preschool and school-aged children with ASD, but the factors and predictors of this stress differ according to the child's age.	Although parental stress does not fluctuate significantly with the age of the child with ASD, the elements that induce it and its indicators evolve according to the child's age.
The effect of early autism intervention on Parental sense of efficacy in a randomized Trial depends on the initial level of parent Stress ⁵⁵	Investigate the influence of different intensive intervention modalities and treatment intensities on the perceived efficacy by parents of children between 22 and 61 months old with ASD.	Longitudinal design, using a generalized linear mixed model to analyze how different interventions affect changes in parental efficacy over time.	General increase in parental efficacy over time, regardless of treatment style or intensity. Initial parental stress modulates how treatment intensity influences this efficacy, with a more positive impact on less stressed parents.	Parental efficacy improves over time regardless of treatment and is moderated by initial stress. Parents with less stress benefit more from intensive treatments.
The interplay of communication skills, emotional and behavioral Problems and parental psychological distress ⁵⁹	Investigate the mediating role of emotional and behavioral problems in children with ASD aged 22-61 months in the relationship between the child's communication skills and parents' psychological stress.	Randomized controlled trial.	Receptive communication skills in children with ASD indirectly influence parental stress through the child's emotional problems, without mediation of behavioral problems.	Emotional problems in children with ASD increase parental stress when children have difficulties understanding others.

Source: prepared by the authors.

stress and better mental health outcomes than English speakers. The impact of family income on parental stress does not seem significant^{39,40}. Likewise, a lower educational level was related to higher levels of parental stress³⁹, but not when exploring the mother's educational level³⁸.

Regarding parental mental health observed in the post-diagnostic phase, there is a high prevalence of symptoms of depression, anxiety, and stress in parents^{37,48}, as well as self-reported negativity³⁷. Similarly, the average well-being score of the parents studied was significantly lower than the population norm⁵⁶.

Concerns regarding ASD seem to be associated with parental stress. The interaction between the concern type and the child's age does not seem significant, accounting for a certain stability in this relationship⁴¹. Similarly, low parental competence⁴², lower psychological well-being in parents⁴¹, and lower parental efficacy^{41,55} seem to be associated with parental stress. It is relevant to note that although the mothers in Mathew et al. study⁵³ showed significantly higher levels of efficacy than their reference group, they presented less interest in the parental role than expected. Finally, parental coping strategies would contribute to the variability in parental stress, with active strategies related to lower levels of parental stress and deactivated strategies related to higher stress levels²³.

Family factors of parents of children with ASD

Family factors are scarcely studied in the identified research. In Karp et al. study⁴⁷, having a sibling was associated with lower probabilities of accessing any intervention service. However, in Green et al. study³⁷, the presence of more than one child with ASD indicated less stress and better parental mental health outcomes.

Social factors of parents of children with ASD

Social support would be a protective factor against parental stress. Mothers who experienced more social support had lower levels of parental stress, and improvements in social support helped mitigate the impact of parental stress over time²³. Similarly, lower social support would predict higher levels of parental stress⁴¹.

Parental stress and access to formal care services

Karp's study found that a higher level of parental stress is associated with lower probabilities of accessing more than one specialized intervention service, with no significant correlation observed with other family characteristics. However, in the case of mothers who had perceived delays in child development, the probability of accessing support services increased⁴⁷.

Parental stress and specialized interventions

Several studies have investigated interventions for childhood ASD, distinguishing aspects related to parental stress. The results indicate that intervention programs directed at parents might need to consider the initial stress level to be more effective. This is because some authors present findings that suggest treatment effects are not uniform and partly depend on the initial level of parental stress^{38,42,55}.

While some interventions favorably impact parental stress^{42,43,50}, well-being⁵², or efficacy⁵⁵, interventions do not necessarily have a favorable effect on parental stress^{38,48,51}. Variables such as the type of treatment^{42,56}, treatment intensity⁵⁵, intervention delivery mode⁴³, impact over time⁴², and therapeutic environment⁵⁰ should be considered in designs that aim to investigate changes in parental stress concerning ASD in children between 0 and 5 years old.

Conclusions

The present study sought to update the corpus of empirical evidence regarding factors related to parental stress in caregivers of preschoolers diagnosed with ASD. Its first objective was to characterize the manifestations of parental stress in the context of caring for children with ASD. Consistently, the literature reports that the general stress level in parents of children with ASD is higher than that of their reference groups, considering both child-related and non-child-related stress³⁸. This may be due to the behaviors of children with ASD being associated with parental distress⁵⁷. That is, as these behaviors or symptoms become more evident, great confusion arises in parents due to the complexity of understanding what is happening to their child, requiring constant attention that soon transforms into dependency. This can generate significant family maladjustment and increased physical and mental

health problems, which implies the limitation of vital opportunities for the adult⁵⁸. The literature suggests that this is associated with loss of life meaning and depression, reduced family leisure opportunities, lack of social support, and an increase in personal and professional sacrifice⁶⁰.

Similarly, studies report that stress related to children is significantly higher than expected^{35,42}, and this remains independent of the child's age. This is particularly important because studies on children with ASD are generally conducted at older ages, and interventions begin at school age. By this time, parents may already have experienced challenges in their parenting roles, possibly leading to feelings of inefficiency and dissatisfaction with their performance as parents. This supports the conclusions of Costa e Silva and Roama-Alves⁶¹, who suggest that parents of children with ASD are more likely to experience low levels of parental self-efficacy, which in turn mediates the relationship between stress and other psychological factors, such as depression, anxiety, and adaptability. Although there are not many studies exploring this concept in parents of children with ASD, there is a consensus that the management of parental stress is of vital importance for the successful management of children with challenging behaviors⁶². Furthermore, they report that maternal parental stress significantly predicts externalizing behavior problems⁶³ and that the demands of parenting, particularly the feeling of loss of control and feeling overwhelmed by parental responsibilities, predict child behavior problems⁶⁴.

In this regard, parental efficacy has been related to caregiver distress, leading to the conclusion that higher efficacy is associated with fewer internalizing behaviors in children⁶⁵ and less distress in the caregiver⁶⁶. This is crucial for the design of interventions, as while these tend to focus on behavioral aspects of children, changes in this area do not mitigate parental stress, making this an important focus for early intervention³⁰. Therefore, it would be interesting to implement interventions that focus their efforts on the caregiver, especially at an early age of the children, promoting parental self-efficacy from the beginning, allowing them to address the parenting challenges satisfactorily, given that an association exists.

Regarding the second objective, which was to examine how variables intrinsic to the child, the caregiver, the family unit, and the social environment relate to the experienced parental stress, it is possible to affirm that, while the parental stress of parents of children with ASD is higher than that of parents of neurotypical

children^{66,69}, the understanding of specific variables is partially known. In this sense, rather than isolated effects, there seem to be clusters of variables with reciprocal influence, for example, between parental self-efficacy, parents' mental health, and children's behavioral problems⁶⁷. This is also important since interventions focus on providing parents with behavioral management of children⁶⁸ and not on parents' mental health⁷⁰. Moreover, aspects such as externalizing problems in children with ASD, considered a robust predictor of early parental stress^{26,37}, seem to have bidirectional effects over time, such that an increase in parental stress produces more behavioral problems and *vice versa*²³.

Regarding the third objective of the study, which was related to articulating the particularities of access to formal care services and the efficacy of specialized interventions in mitigating parental stress, studies show that a higher level of parental stress is associated with lower probabilities of accessing more than one specialized intervention service. This becomes significant as high parental stress exhibits less hope for help or change. This is relevant since the literature shows that parents who perceive interventions as emotional support demonstrate a greater commitment to treatments⁷¹, and a higher perceived social support is associated with a decrease in caregiver stress in families with ASD patients^{72,73}.

Moreover, emotional and behavioral problems could affect parental stress differently¹⁵, which underscores the hypothesis that considering specific approaches to families' experiences is necessary to respond to their needs in a pertinent and timely manner. For example, research results on parents' psychological well-being attribute a higher predictive value to socioeconomic support and parental cognition rather than to child-related variables⁷⁴.

This study has several limitations. One of them is that we considered only four academic databases: CINAHL Complete, Medline Complete, WoS, and Scopus, meaning that articles indexed only in regional catalogs, such as Scielo, were not integrated. Similarly, the definition of eligibility criteria, including excluding studies with qualitative designs, narrows the results obtained. Finally, reviews that fail to consider the quality assessment of the selected articles may compromise the reliability and validity of the findings, as well as introduce biases.

Although the generalization of the presented results must be established by future research, the present study has allowed for advancement in understanding

parental stress in parents of preschool children with ASD as a complex condition influenced by various factors related to the characteristics of the child, the socio-demographic and psychological aspects of the parents, as well as the family and social environment. This study underscores the importance of addressing parental stress in early interventions, considering both the specific needs of caring for a child with ASD and the variables that modulate this experience, including social support, parental coping strategies, and factors related to parents' mental health.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author has this document.

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