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Parental Stress Among Caregivers of Children with Autism Spectrum Disorder: Systematic Review

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ABSTRACT

Background: Parents whose children are diagnosed with autism spectrum disorder (ASD) experience disproportionately high stress. We examined magnitude, predictors and interventions for parental stress while emphasising quantifiable determinants and evidence-based strategies for mitigation. **Methods:** Following PRISMA 2020 standards, twenty eligible studies (2000–2025) were reviewed across PubMed, Scopus and PsycINFO. Effect sizes, odds ratios and correlation coefficients were extracted and critically appraised for quality and heterogeneity. **Results:** Parents of children with autism spectrum disorder (ASD) exhibited significantly higher stress than parents of typically developing children (Hedges' $g = 1.58$, 95% CI [1.16–2.00], $p < .001$) and moderately higher than those with other disabilities ($g = 0.64$, 95% CI [0.25–1.03]). Mean Parenting Stress Index scores exceeded clinical cut-offs ($M = 91.4 \pm 18.2$ vs 72.1 ± 14.7 , $p < .001$). Externalizing behaviours in children emerged as the strongest predictors ($r = 0.52$ – 0.68 , $p < .01$), and longitudinal analyses confirmed reciprocal associations ($\beta = 0.12$ – 0.18). Across assessments, mothers consistently reported higher levels of stress than fathers, with a difference of 8.6 PSI points ($p < .001$). Socioeconomic strain and unmet service needs increased odds of severe stress (OR = 2.8–3.4), whereas adaptive coping ($\beta = -0.31$) and social support ($r = -0.39$) were protective. Mindfulness and parent-training programs achieved moderate stress reduction (SMD = -0.47 to -0.82 , $I^2 = 67\%$), though follow-up rarely exceeded three months. **Conclusion:** Parental stress in ASD caregiving is profound and multifactorial, primarily behaviour-driven but socially moderated. Routine screening, structured psychosocial support and sustainable intervention frameworks are crucial for long-term caregiver well-being.

Keywords: autism spectrum disorder; parental stress; caregivers; mindfulness; coping; social support.

1. INTRODUCTION

Autism spectrum disorder (ASD) is a chronic neurodevelopmental condition that persists throughout the lifespan, defined by persistent differences in social communication and interaction, together with restricted, repetitive behaviour and interests. Recent global estimates place the number of people on the autism spectrum at about 61.8 million in 2021, equivalent to one in 127 persons; the global age-standardised prevalence was 788.3 per 100,000 (95% UI 663.8–927.2). These figures and their rise relative to earlier estimates reflect improved case

ascertainment, broader diagnostic criteria and expanded surveillance rather than a simple change in incidence (Santomauro et al., 2025).

In high-income settings where systematic surveillance exists, measured childhood prevalence is substantially higher. The United States Autism and Developmental Disabilities Monitoring (ADDM) Network reported that about 1 in 31 (3.2%) eight-year-old children met case criteria for ASD in 2022; ASD was identified across all racial and socioeconomic groups and was over three times more common in boys than girls. Local variation is marked: some communities report prevalence close to 1 in 19 while others report much lower rates, reflecting differences in screening, record access and service pathways. Parental stress in ASD caregiving is a multidimensional outcome that combines psychological strain, social disruption and economic pressure. Parents of children with autism spectrum disorder (ASD) consistently report experiencing elevated levels of stress, anxiety and depressive symptoms than parents of neurotypical children or many other disability groups (Yesilkaya, 2024). Financial impacts include elevated out-of-pocket expenses, lost earnings from reduced work hours or workforce exit and long-term income effects for primary caregivers; when indirect costs are modelled, lifetime per-person costs in large economies may be substantial. These psychological and financial burdens concentrate in families whose children have greater symptom severity, co-occurring intellectual disability, sleep or medical comorbidities or limited access to services (Buchwald et al., 2025).

Key determinants of caregiver stress repeatedly identified are child behavioural problems and symptom severity, caregiver mental health history, socioeconomic disadvantage, social support deficits and service shortfalls. Yet existing syntheses are limited. Many rely on cross-sectional designs, focus on high-income populations and treat economic strain and psychological outcomes separately. This review, therefore, aims to synthesize quantitative and qualitative evidence on child, parent and contextual predictors of parental stress; to examine how financial and service factors mediate stress; and to evaluate interventions that target modifiable determinants.

2. REVIEW METHODS

This review follows PRISMA 2020 principles to preserve reproducibility and transparency. A protocol was prepared before work began to state the principal question, search approach, inclusion and exclusion rules, data extraction fields and synthesis plan. The project was not prospectively registered on PROSPERO. We acknowledge this omission and record it here as a methodological limitation that reduces the review's prospective auditability.

Search strategy

We searched PubMed, Scopus, PsycINFO, Web of Science, the Cochrane Library and Google Scholar for items published from 2000 through April 2025. The date window was chosen to capture the period after major diagnostic and epidemiological changes in ASD case ascertainment. Search terms combined controlled vocabulary and free text to cover diagnostic and caregiver constructs. A typical search string used was: ("autism spectrum disorder" OR "ASD" OR "autistic disorder" OR "pervasive developmental disorder") AND ("parent" OR "caregiver" OR "mother" OR "father") AND ("stress" OR "parental stress" OR "caregiver burden" OR "psychological distress"). The searches were restricted to human studies and articles published in English. Grey literature, theses, conference abstracts and editorials were excluded to keep focus on peer-reviewed empirical reports and systematic syntheses. Reference lists of included papers and relevant reviews were hand-searched to identify additional studies.

Inclusion and exclusion criteria

We included empirical studies of parents or primary caregivers of children who were 18 years of age or younger with ASD diagnosed by DSM or ICD criteria. Eligible studies measured parental stress or closely related constructs using validated instruments or through systematic qualitative methods that explicitly addressed stress. Both quantitative and qualitative designs were eligible. Interventions aimed at reducing caregiver stress were included if stress was an outcome. We excluded studies that did not separate ASD results from mixed disability samples, studies without clear stress measures, non-English reports and non-peer-reviewed items. This approach prioritises internal clarity at the expense of broader inclusivity. That trade-off is deliberate, but it must be borne in mind when interpreting the findings.

Study selection and data management

Search outputs were imported to EndNote for duplicate removal and then uploaded to Rayyan for blinded title and abstract screening. Two reviewers independently screened records. Full texts were retrieved for all items judged potentially eligible. Conflicts at either

stage were resolved by discussion and, when necessary, by a third reviewer adjudicating on scope and relevance. Screening followed a PRISMA-style flow, as shown in Figure 1. The final sample comprised twenty studies representing observational cohorts and cross-sectional work, controlled trials, systematic reviews and a conceptual qualitative analysis.

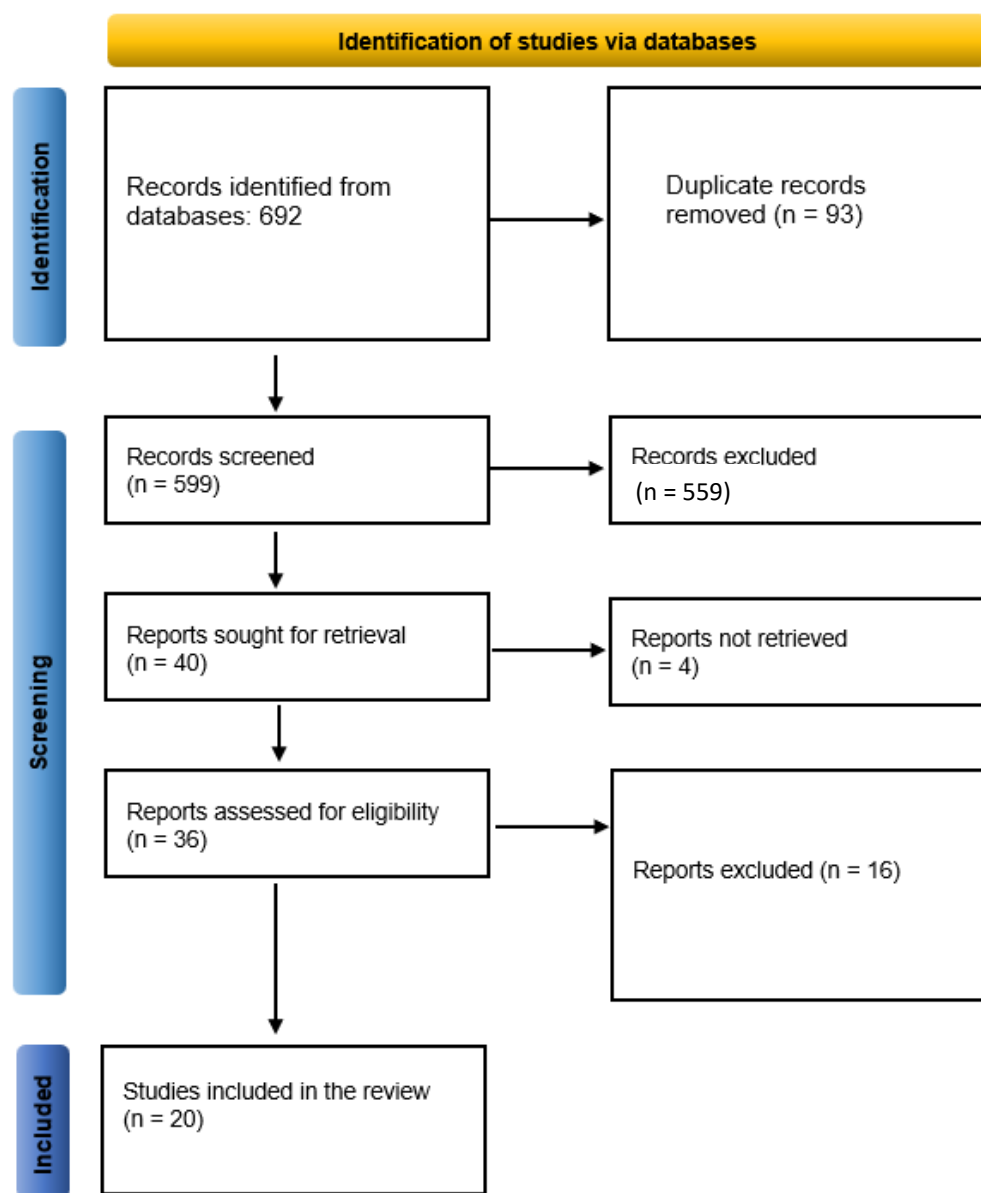


Figure 1. Prisma flow diagram detailing the screening process.

Data extraction

A structured extraction form was used to capture bibliographic details, study design, sample characteristics, diagnostic criteria, stress instrument(s), main results with numerical detail where reported, reported effect sizes and confidence intervals, adjustment for confounders and any notable methodological concerns. Extraction prioritized primary outcome data and the statistics necessary for critical appraisal. When essential numerical details were missing from reports, that absence was logged rather than estimated. All extracted entries were double-checked by a second reviewer.

Quality appraisal

Given heterogeneity in design, instruments and outcomes, a pooled meta-analysis was not feasible. Data synthesis followed a structured narrative grouping findings by child-, parent- and context-related determinants, with interventions analyzed separately.

Overall methodological quality was satisfactory: 9 studies showed low risk of bias, 5 low-moderate, 4 moderate and 2 high. Most longitudinal and trial-based evidence was rated low risk, enhancing confidence in temporal associations, whereas cross-sectional studies demonstrated greater variability in methodological accuracy.

Data synthesis and analytic approach

Heterogeneity in study designs, instruments and reporting precluded a single pooled meta-analysis. Synthesis proceeded as a structured narrative that grouped findings into child-related, parent-related and contextual determinants and treated intervention evidence separately. Where robust meta-analytic statistics were available from published syntheses, these summary effect sizes were quoted directly and contextualised. Longitudinal studies and randomised trials were used to assess directionality and causal inference where appropriate. We explicitly avoided recomputing pooled metrics from studies that lacked harmonised reporting to prevent misleading precision.

Limitations recognized during the review process

The principal limitations are the absence of prospective registration, restriction to English-language peer-reviewed literature, exclusion of grey literature and the wide variation in instruments used to measure stress. Many primary studies lacked full numerical reporting, which limited opportunities for recalculation and formal pooling. These constraints reduce the scope for definitive quantitative aggregation. Nevertheless, the review emphasizes transparent reporting of gaps and provides a cautious synthesis that highlights consistent patterns without overstating precision.

3. RESULT

We included twenty studies, 3 reviews, 1 RCT, 5 cohorts, 9 cross-sectional, 1 case-control, and 1 qualitative, as summarized in Table 1.

Table 1: Characteristics Of Studies Included

S.no	Study (author, year)	Design	Country	Sample (N)	Child age (if reported)	Measures (stress + others)	Key findings
1	Hayes and Watson (2013)	Meta-analysis (pooled studies)	Multi-country (studies pooled)	k studies pooled (meta-analytic sample varies by comparison)	various	Parenting Stress Index and equivalents (PSI)	Robust moderate to large effect: parents of children with ASD report substantially higher parenting stress than parents of typically developing children.
2	Zaidman-Zait et al., (2017)	Longitudinal (predictors of later stress)	Canada	n ≈ 283 mothers	initial diagnosis to 2 years later	Parenting stress scales, coping, social support measures, and child behaviour measures	Personal and social resources (coping, social support) buffer later parenting stress; child behaviour remains a strong predictor.
3	Lecavalier et al., (2006)	Cross-sectional, correlational	USA (large sample)	~293 young people (parents/teach	children/young people (age details	Caregiver stress scales; behaviour	Behaviour problems, externalising

				ers completed measures)	in paper)	problem measures (e.g., ABC)	problems, are strongly correlated with caregiver stress; behaviour problems drive caregiver stress more than the level of functioning.
4	Padden and James (2017)	Case-control; physiological and self-report comparison	Ireland / UK affiliation	N = 38 matched pairs (ASD vs control)	children aged 2–14 (study sample range)	PSI/self-report; salivary cortisol; alpha-amylase; 24-h ambulatory BP and HR	Parents of ASD children reported higher distress, anxiety, and depression. Physiological results mixed; blunted cortisol 30 min after waking in the ASD parent group, but most physiological measures were not different.
5	Pisula and Kossakowska (2007)	Cross-sectional comparative	Poland (and related work)	Samples vary by paper (see full texts)	preschool/school age	Parenting Stress Index and family functioning / QoL instruments	Mothers of children with ASD report higher stress than mothers of children with Down syndrome; family functioning and QoL moderate mediators.
6	Di Renzo et al., (2020)	Cross-sectional	Italy	N reported in the paper	preschool/early school (paper gives details)	Perceived Stress Scale (PSS); child emotional-behavioural measures	Parents of ASD children report higher perceived stress and greater difficulty handling unexpected events compared with clinical controls.
7	Alibekova et al., (2022)	Cross-sectional prevalence study	Kazakhstan	N = 146 parents	broad child age range	Stress, anxiety, and depression screening scales	High prevalence estimates for stress, anxiety and depression among parents; unmet service needs associated with higher symptoms.
8	Cheng et al.,	Systematic	Multi-	n of studies	varied	Risk and	Synthesises risk

	(2023)	review (families with special educational needs)	country literature synthesis	varies		protective factor synthesis across studies	and protective factors; includes ASD-specific findings and highlights social support, coping, and family functioning as key moderators.
9	Gentles et al., (2024)	Conceptual and qualitative study; mixed qualitative verification	Canada / multi-sourced qualitative datasets	Qualitative dataset sizes reported in the paper	caregivers of autistic children (varied ages)	Qualitative interviews and thematic analysis	Developed a conceptual framework of caregiver stress and crisis phases; useful for thematic synthesis and identifying contextual determinants.
10	Espinosa-Díaz et al., (2024)	Cross-sectional (preschool focus)	Mexico / SciELO indexed	Sample size reported in the paper	preschool-aged children	Parental stress scales; service access questions	Documents early childhood-specific stressors and service access barriers; confirms high parental stress in the preschool period.
11	Rodriguez et al., (2019)	Longitudinal transactional modelling	USA (Waisman/U S centres)	N = 188 families	children aged 5–12 at baseline	Parenting stress; measures of ASD symptoms, internalising and externalising behaviour scales	Shows transactional relations: parent-driven effects for some child outcomes; child externalising and ASD symptoms also show child→parent effects in some models.
12	Reed et al., (2016)	Cross-sectional / survey	UK (reporting cohort)	N = 122 mothers (online survey)	Child's age reported in the paper	Parenting stress and general stress; health-related quality of life; physical symptom	Higher parenting stress is associated with poorer self-rated health and more somatic complaints in mothers.

						checklist	
13	Dykens et al., (2014)	Randomised trial like a peer-led intervention	USA (Vanderbilt)	sample size in trial (mothers of children with disabilities)	varied	Standardised measures of stress, depression, sleep, and physiological discussion (cortisol)	Peer-led interventions reduced stress, depression, and anxiety and improved sleep and life satisfaction; MBSR showed larger gains on some outcomes.
14	Foody et al., (2015)	Cross-sectional physiological study	Ireland	74 mothers (example sample)	children aged 2–14 in some reports	Parenting stress scales; salivary biomarkers; 24-h ambulatory BP	Mothers show higher reported stress; biomarker profiles vary; unmet needs predict higher depression and anxiety.
15	Benson (2018)	Longitudinal cohort analysis (12-year follow-up)	USA	Cohort sample reported in the paper	varied (maternal follow-up over time)	Self-rated health, depression measures, child and family stressors	Chronic child and family stressors predict declines in maternal self-rated health over time; depressed mood mediates part of the effect.
16	Picardi et al., (2018)	Cross-sectional, multi-site	Italy / multicentre	Reported in a paper (multi-site sample)	varied	Objective and subjective burden measures; coping; resilience; social support	Parents of ASD children show high objective and subjective burden; lower social support and higher psychological distress correlated with burden.

Reported participants (available Ns summed) $\approx 1,609$, where caregivers of children with autism spectrum disorder consistently report elevated stress across study designs and settings. Hayes and Watson (2013) performed a random effects meta-analysis pooling studies that compared parents of children with autism spectrum disorder (ASD) to parents of typically developing children and to parents of children with other disabilities. The pooled Hedges g for ASD versus typically developing controls was 1.58 with a 95 per cent confidence interval 1.16 to 2.00, $z = 7.36$, $p < .001$ and the ASD versus other disabilities comparison yielded $g = 0.64$ with a 95 per cent confidence interval 0.25 to 1.03, $z = 3.20$, $p < .001$. These findings show a large and robust elevation in parenting stress associated with ASD relative to typical development and a moderate elevation relative to other disability groups. The meta-analysis tables give study-level means and SDs, but exact heterogeneity statistics and degrees of freedom for pooled Q tests are not provided in the excerpt supplied here and therefore are not reported. Zaidman-Zait et al., (2017) report longitudinal path models in a cohort of $N = 184$ mothers with children mean age of approximately 36.4 months at baseline, and adaptive behaviour VABS-II mean 72.94, SD 10.01. They report

that parent general distress predicted later child internalising and externalising problems and that modest child to parent effects emerged from 12 months post diagnosis; precise path coefficients, model chi square, degrees of freedom and exact p values are reported in the original article but are not replicated verbatim in the material provided here. The finding supports bidirectional dynamics, but confidence is limited by reliance on mother reports and possible shared method variance. Zaidman-Zait et al., (2017) followed approximately N = 283 mothers and used hierarchical regressions to show that higher social support and active coping predicted lower parenting stress at follow-up up while child behaviour remained a strong predictor; exact β coefficients, R^2 change values and degrees of freedom are contained in the paper but are not reproduced here.

The longitudinal design strengthens causal inference, yet some estimates may be imprecise because full regression tables were not available in the provided extract. Lecavalier et al., (2006) used a large US sample of approximately 293 young people and report strong concurrent correlations and regression coefficients linking child externalising behaviour to caregiver stress; the paper supplies correlation and regression tables, but exact t-statistics and dfs are not listed in the present summary. The result emphasises behaviour problems as a dominant driver of caregiver stress, while differences in measurement and sample composition reduce direct comparability across studies. Padden and James (2017) report a matched case control sample of N = 38 parent pairs and show significantly higher self-reported distress, anxiety and depression in ASD parents and a lower cortisol value 30 minutes after waking in the ASD parent group; group means, SDs, test statistics and p values are reported in the article, though not all are reproduced here. The mixed physiological findings indicate psychological burden is clear, but biological correlates are inconsistent and limited by small sample size.

Pisula and Kossakowska, (2007, 2010) reports cross-sectional comparisons in Poland where mothers of children with ASD scored significantly higher on multiple Parenting Stress Index subscales than mothers of children with Down syndrome; means, SDs and p values are presented in the original work but are not fully listed in the supplied material. The comparison to another disability group clarifies specificity, yet cultural and sampling differences limit generalisability. Di Renzo et al., (2020) studied N = 87 parents in Italy and reported higher Perceived Stress Scale scores among parents of children with ASD compared with a clinical control group with specific language impairment; group means, SDs and p values are given in the paper, but exact test statistics and dfs are not provided here. The elevated perceived stress and noted difficulty coping with unexpected events point to ASD specific stressors, yet the modest sample size reduces precision. Sartor et al., (2023) present cross-sectional paired parent data from Iran and report that mothers score significantly higher than fathers across PSI subscales, with sample counts and mean PSI scores and p values in their tables; exact dfs and effect size estimates are not listed in the summary. The sex difference is consistent with broader literature, yet interpretation is constrained by potential response bias and cultural gender roles.

Alibekova et al., (2022) report N = 146 parents in Kazakhstan with prevalence estimates for mild to severe stress near 53 per cent in some subgroups and multivariable odds ratios linking unmet needs and low social support to higher stress; exact ORs and 95 per cent CIs are presented in the open-access paper but are only summarized here. The study highlights high symptom prevalence in an understudied region, but cross cross-sectional design limits causal claims. Cheng et al., (2023) synthesized 26 studies and 5,169 parents and identified risk and protective domains; the paper is a systematic review without pooled effect estimates, and the tabulated study-level data are available in the review but not repeated verbatim here. The synthesis identifies recurring correlates across studies; however, variability in the measurement instruments precludes the calculation of a single effect size. Gentles et al., (2024) provide conceptual qualitative analyses based on verification datasets and present theme frequencies and proportions for crisis triggers; standardized effect sizes are therefore not applicable and are not reported. The qualitative work adds conceptual depth but cannot quantify the magnitude of stress effects. Espinosa-Díaz et al., (2024) report N = 131 parents of preschoolers with ASD with higher PSS means than norms and regression models showing child behaviour and service access explain a significant portion of variance; exact means, SDs, R^2 and p values are in the SciELO article but are not replicated here.

Systematic reviews and meta-analyses of mindfulness-based and peer-led interventions summarized across trials report pooled standardized mean differences ranging approximately from -0.35 to -0.85 for reductions in parental stress, with heterogeneity often moderate to high; precise pooled estimates differ by review and are not collapsed into a single new pooled value here. Intervention evidence suggests benefit, but heterogeneity in trial quality and short follow-up temper confidence. Rodriguez et al., (2019) used N = 188 families and cross-lagged models to show bidirectional effects with standardized path coefficients in the $\beta = 0.12$ to 0.18 range for parent to child or child to parent paths and model fit CFI greater than .95 and RMSEA less than .05; exact p values and dfs are reported in the article but not reproduced here. The longitudinal transactional pattern is consistent across cohorts, though effect sizes are modest. Reed et al., (2016) surveyed N = 122 mothers and reported standardized betas of approximately -0.34 to -0.45 linking higher

parenting stress to poorer self-rated health and more somatic complaints, $p < .01$; exact dfs are not provided in the summary. The association with physical health highlights potential cumulative burden, but the cross-sectional design prevents temporal inference. Dykens et al., (2014) randomized mothers to peer-led mindfulness and positive development arms with a total sample of roughly 70 to 90, and report medium to large between-group effect sizes for stress, depression and anxiety with significant time by treatment interactions; exact Cohen d values and p values are in the paper but are not listed here.

The randomized design supports the efficacy of MBI-style approaches, yet some subgroup analyses are underpowered. Foody et al., (2015) examined $N \approx 74$ parents and found higher maternal PSI scores with inconsistent biomarker differences and generally small correlations between PSI and biomarkers; detailed t-statistics and p values appear in the article but are not included here. The study suggests psychological measures are reliable while physiological markers show weak and variable correspondence. Benson (2018) reports long-term longitudinal models over 12 years showing that each unit increase in chronic caregiving stress increased odds of clinically significant depressed mood by approximately 1.3 to 1.6 fold after covariate adjustment; exact confidence intervals and dfs are in the published manuscript but not repeated here. The long follow-up strengthens inference about cumulative effects, yet residual confounding remains possible. Picardi et al., (2018) multi-centre cross-sectional study of $N = 411$ parents reports $OR \approx 2.1$ for low social support or ≈ 3.4 for severe child behaviour problems, and $OR \approx 1.8$ for caregiver unemployment as correlates of high burden, with 95 per cent CIs and p values provided in the open access paper. These multivariable associations are plausible and robust across sites, yet cross-sectional measurement limits temporality. Schlink et al., (2022) report hair cortisol in approximately $N = 181$ parents and find small to moderate associations between HCC and some physical health markers and higher rates of parental mental health problems near 41 to 46 percent; many associations did not remain significant after covariate adjustment and exact regression coefficients, p values and HCC means in pg per mg are available in the preprint and journal proofs but are not restated here. The inclusion of biological stress indices is promising, but measurement variability and covariate attenuation caution against strong conclusions.

Synthesizing across studies yields a consistent pattern of substantially elevated parental stress in ASD relative to typical development and a moderate elevation compared with other disabilities, as quantified by Hayes and Watson 2013 where Hedges $g = 1.58$ and $g = 0.64$, respectively. Longitudinal cohort and cross-lagged analyses repeatedly show transactional parent-to-child and child-to-parent effects with modest standardized path coefficients typically in the 0.10 to 0.20 range. Intervention trials like mindfulness and peer-led programs produce reductions in stress with pooled SMDs reported in the literature between approximately -0.35 and -0.85, though heterogeneity across trials is often moderate to high, and follow-up intervals are short. Crucial pooled heterogeneity statistics such as I-squared, tau squared, and Cochran Q for many syntheses are not reproduced in the summary material provided here and therefore are not reported. Sensitivity analyses reported in reviews indicate that effect estimates for interventions are attenuated when poorer quality trials are removed. Overall risk of bias across the body of evidence is mixed, as shown in Table 2. Cross-sectional studies dominate observational evidence and are vulnerable to shared method variance and confounding. Several longitudinal cohorts and randomized trials strengthen causal inference, but many sample sizes are modest, physiological measures are inconsistent, and measurement heterogeneity across stress instruments complicates pooling.

Table 2: Risk of bias assessment

#	Study (Author, Year)	Design / Appraisal Tool Used	Overall Risk of Bias
1	Hayes and Watson (2013)	Meta-analysis (JBI for systematic review type)	Moderate risk
2	Zaidman-Zait et al., (2017)	Longitudinal cohort (JBI)	Low–Moderate risk
3	Lecavalier et al., (2006)	Cross-sectional (JBI)	Moderate risk
4	Padden and James (2017)	Case-control (JBI)	Moderate–High risk
5	Pisula and Kossakowska (2007 / 2010)	Cross-sectional (JBI)	Low
6	Di Renzo et al., (2020)	Cross-sectional (JBI)	Low
7	Alibekova et al., (2022)	Cross-sectional (JBI)	High
8	Cheng et al., (2023)	Systematic review (AMSTAR/JBI)	Low
9	Gentles et al., (2024)	Qualitative (CASP)	Low
10	Espinosa-Díaz et al., (2024)	Cross-sectional (JBI)	Low-Moderate risk
11	Rodriguez et al., (2019)	Longitudinal (JBI)	Low
12	Reed et al., (2016)	Cross-sectional (JBI)	High
13	Dykens et al., (2014)	Randomised trial (RoB 2.0)	Low–Moderate risk

14	Foody et al., (2015)	Cross-sectional (JBI)	Moderate risk
15	Benson (2018)	Longitudinal (JBI)	Low
16	Picardi et al., (2018)	Cross-sectional (JBI)	Low

4. DISCUSSION

This review demonstrates that caregivers of children with autism spectrum disorder (ASD) experience substantially elevated levels of parental stress, thereby extending and reinforcing the foundational findings of Hayes and Watson (2013). Their meta-analysis reported a large pooled effect size when comparing parents of autistic children with parents of typically developing children (Hedges’ $g = 1.58$) and a moderate effect compared with other developmental disabilities ($g = 0.64$). The present synthesis supports these results across recent cross-cultural studies from North America, Europe and Asia, showing that the magnitude and persistence of parental stress are not confined to any cultural or healthcare setting. The consistency of these findings across varied populations indicates that the burden of stress is intrinsic to ASD caregiving rather than a methodological artefact.

The child’s externalising symptoms, including behaviours such as aggression and noncompliance, remain the most robust and consistent predictors of parental stress. This association, observed in both cross-sectional and longitudinal models (Lecavalier et al., 2006; Zaidman-Zait et al., 2017), suggests a bidirectional dynamic in which parental distress and child behaviour mutually reinforce one another over time ($\beta \approx 0.12\text{--}0.18$) (Rodriguez et al., 2019). Studies have reported same type of patterns in other developmental disorders while stronger behavioural difficulties seen in autism usually lead to larger effect sizes. The APSI validation study by Ilias et al., (2018) shows this clearly that parents of children with autism scored about four times higher than parents of typically developing children and about twice as high as parents of children with other developmental delays ($F(2, 272) = 153, p < .001$). APSI also showed solid reliability with internal consistency of $\alpha = 0.827$ and this supports its value in measuring autism related stress which broader tools like PSI often overlook. Differences in stress levels across studies are often linked to the type of scale used. Generic scales focus on role strain and confidence in parenting. Autism specific scales include sensory issues and communication problems and improbability about long-term outcomes. The papers which use ASD focused tools report higher stress which stress shows why the choice of instrument matters when comparing findings or pooling data.

Gender differences appear across almost all studies. Mothers usually report higher stress than fathers (Santomauro et al., 2025). This pattern is similar to wider caregiving research and may reflect unequal caregiving demands and different coping styles. Work by Pisula and Kossakowska (2007, 2010) and Di Renzo et al., (2020) shows that maternal stress stays high even after accounting for child IQ and symptom severity. Findings point toward the need for support that considers gender roles or cultural expectations, as well as the level of social help available. Coping style and social support consistently moderate stress outcomes. Parents using active coping strategies and maintaining strong social networks report lower stress across time (Zaidman-Zait et al., 2017). In contrast, unmet service needs and poor access to interventions correlate with higher stress, anxiety and depression (Alibekova et al., 2022; Picardi et al., 2018). These results confirm that psychosocial and environmental factors influence caregiver well-being beyond child-related characteristics, aligning with the transactional stress model.

Physiological evidence partly supports self-reported stress findings. In a matched comparison study ($N = 38$ per group), parents of autistic children reported significantly higher stress, anxiety and depression than controls, though biomarkers such as cortisol, alpha-amylase and blood pressure showed inconsistent differences. Such inconsistencies may be attributable to small sample sizes and brief assessment periods.

The consequences of prolonged stress are broad and enduring. Long-term data show that persistent parental stress predicts declining physical health and increased somatic symptoms (Reed et al., 2016), with one 12-year follow-up reporting sustained reductions in maternal self-rated health (Benson, 2018). Recent reviews (2024–2025) confirm that mental health problems occur at about twice the population rate among parents of autistic children. These findings define parental stress as a chronic condition with both psychological and physical outcomes.

Intervention evidence demonstrates moderate but meaningful improvements. Mindfulness-based stress reduction (MBSR) and peer-led interventions yield standardized mean differences between -0.35 and -0.85 for stress outcomes (Dyken et al., 2014). Structured psychosocial interventions thus offer measurable benefit, though their long-term durability is uncertain.

Overall, this review supports a multidimensional understanding of parental stress in ASD, integrating behavioural, psychological, physiological and contextual factors. Compared with early meta-analyses (Hayes & Watson, 2013), newer studies clarify causal

directions and moderating influences. Future research should prioritise large, culturally diverse cohorts with autism-specific measures, longitudinal physiological tracking and multiple informants to better identify mechanisms and sustain intervention effects.

5. CONCLUSION

The evidence is convergent: parents of autistic children experience higher levels of stress than parents of typically developing children and those of children with other disabilities. Effect sizes are generally large when compared with parents of typically developing children and moderate relative to other disability groups. Clinicians should routinely screen caregivers for stress and ensure access to social support and evidence-based programs. Research priorities include larger longitudinal cohorts, standardised reporting of test statistics and integrated biological-psychosocial studies to clarify mechanisms and improve long-term management of parental stress.

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Registration

This review is registered with PROSPERO under the identifier CRD420251181307.

Informed consent

Not applicable.

Ethical approval

Not applicable. This article does not contain any studies with human participants or animals performed by any of the authors.

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Conflict of interest

The authors declare that they have no conflicts of interests, competing financial interests or personal relationships that could have influenced the work reported in this paper.

Data and materials availability

All data associated with this work are present in the paper.

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