

Review

# Stress Reduction Interventions for Parents of Children with Autism Spectrum Disorder: A Focused Literature Review

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**Abstract:** Parents of autistic children report higher levels of parenting stress than any other child-related disabilities, with atypical child behaviour being identified as a key contributor to stress. As stress causes many negative health problems, it is important to understand what interventions are reportedly effective to reduce parenting stress in the literature. Five electronic databases—Cochrane, ProQuest, Pubmed, ScienceDirect, and Scopus—were searched for relevant literature focusing on stress reduction intervention studies, studies on parents of children diagnosed with ASD, and publications no older than ten years. The PRISMA 2020 checklist was used for reporting. A total of 11 articles from 169 were included, including 22 interventions identified and categorised based on theoretical approach, i.e., Applied Behavioural Analysis, Cognitive Behavioural Therapy, Humanistics, and psychoeducation. The evidence synthesised advocates for an integrative approach, such as Mindfulness-Based Positive Behaviour Support, an evidence-based practice approach that appears to offer greater advantages in reducing parenting stress. The implications of our results can inform educators and practitioners regarding available stress interventions for parents of children with ASD. Our findings warrant rigorous design research such as randomised controlled trials to be conducted to further identify the effects of these interventions.

**Keywords:** Autism Spectrum Disorder; parenting stress; stress reduction; literature review; mindfulness



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## 1. Introduction

The rate of children being diagnosed with Autism Spectrum Disorder (ASD) continues to rise, with one in every hundred children in the United Kingdom meeting the criteria [1]. The characteristics of ASD are described as impairments in social interaction, difficulties with communication, and restricted behaviour patterns [2]. The degree to which an individual is affected can differ from child to child; however, symptoms range from mild to severe and, in some instances, can change over time [3,4].

Emerging evidence suggests that parents of children with ASD report higher levels of parenting stress compared to any other child-related disabilities today [5]. Systematic reviews evaluating the mental health of parents of ASD children found high stress among parents in Europe, South and North America, Asia, Middle East, and Oceania [6,7]. Common causes for stress were lack of social supports, severity of autism symptoms, financial difficulty, parents' perception and understanding toward ASD, parents' anxiety and worries about their child's future, and religious beliefs [6–8]. Synthesised evidence identified that the effect size of a relationship between stress and quality of life was large ( $r \geq 0.50$ ) [7]. According to Weitlauf et al. [9], levels of children's disruptive behaviour, resulting from difficulties with emotional dysregulation (outbursts and aggressive behaviour), are believed to be proportional to the levels of stress experienced by parents. However, a meta-analysis reported that mixed results were found in the relationship between ASD children's behavioural problems and parenting stress [10]. Another meta-analysis examining interventions to reduce ASD children's disruptive behaviours identified that behavioural approaches were most effective [11].

Stress, according to Ng and Chin [12], occurs when an individual perceives a situation or its consequences as being beyond his or her capacity to manage. The physiological reaction to stress within the body is the release of the hormone cortisol, and while a mild level of stress is thought to be healthy, increasing one's attention and alertness, under chronic stress, high amounts result in cortisol build-up [13]. Systematic reviews state that stress can lead to many physical health problems such as high blood pressure, heart disease, heart attacks, asthma, and irritable bowel disease infections [14,15]. For mental health, high stress can lead to more complex symptoms such as major depression, addictions, and suicidal thoughts [16–18]. Therefore, stress arising from parenting can greatly impact the health of a parent. In terms of an individual's mental health, the effects of sustained periods of stress can potentially lead to burnout, depression, emotional exhaustion, and fatigue [19,20]. Therefore, when we consider the high levels of stress and the risks posed to physical and mental health [21], the importance of assessing empirical evidence for stress interventions becomes clear. Resilience has been identified as a key coping factor [22,23]; however, a broader approach to parenting stress remains to be appraised.

A systematic review of parent training programmes identified that mindfulness approaches are especially helpful for parenting stress reduction; however, the included studies were almost exclusively from USA and Australia [24]. The current review builds on (or expands) these findings by including countries from around the globe, ensuring a broader and more inclusive review of stress reduction interventions for parents with children on the autism spectrum. Another systematic review also found that mindfulness-based interventions are effective in reducing parenting stress [25]. However, as they noted, mindfulness is a patient-heavy practice that relies on practitioners [26]. To reduce stress in parents with ASD children, more feasible and patient-friendly approaches are needed.

A meta-analysis pointed out that problem-focused coping can protect parental stress and quality of life, supporting parents in thinking mindfully about their stress situations. On the other hand, emotion-focused coping can exacerbate their stress. These findings suggest that psychoeducation may help strengthen their problem-focused coping [27] by increasing parents' knowledge of ASD and how families are often impacted. Parents can make solution-focused decisions aimed at reducing stress.

Stress can lead to diverse negative physical and mental health outcomes. Parental stress among parents of ASD children has been reported to be high. Parents of children with ASD evidently could benefit from support to manage increased levels of stress. However, to date, there has not been a focused literature review, evaluating effective stress interventions for parental stress among parents of ASD children. Therefore, the exploration of examining interventions that support stress management is important given the reported levels of stress reported by parents of children on the autism spectrum and the health-related implications [20]. The term 'intervention' in this instance can be understood as a series of education or skill-practice sessions facilitated by a healthcare professional [28]. Interventions aim to reduce levels of parental stress, leading to better health and well-being. As no similar reviews were found on this topic [6,29–31] this review seeks to critically appraise a body of evidence surrounding stress reduction interventions for the purpose of (1) synthesising what is known about the relative effectiveness of stress management interventions for parents of children with ASD and (2) suggesting areas for further research. This knowledge can then be used to inform evidence-based practitioners, healthcare professionals, and researchers. This review aims to identify stress reduction interventions that are reported effective for parents of children with ASD.

## 2. Materials and Methods

### 2.1. Search Strategy

Five databases were searched: ProQuest, Scopus, ScienceDirect, Cochrane library, and Pubmed. ProQuest and Pubmed were included for their large coverage of scholarly journals; this was thought necessary as the topic of this review is considered under-researched. Due to the large return of citations, the use of ProQuest's 'subject' option narrowed the search to

focus on parents. Scopus was included for its coverage of social science, and ScienceDirect for its coverage of medical and scientific research. Cochrane was included for its coverage of randomised control trials. The search was conducted on 20 March 2021 after all relevant data were collected using the electronic reference manager Endnote [32].

## 2.2. Inclusion Criteria

Inclusion criteria for this review were as follows: (a) studies were published in the English language, (b) study samples consisted of at least one parent of a child with ASD, (c) the child was under the age of 18 years, and (d) the child was diagnosed with the disorder. The publication needed to include a form of intervention aimed at reducing parental stress. Systematic reviews, meta-analyses, randomised controlled trials, cohort studies, case studies, and qualitative studies were added to the inclusion criteria of this review as they are considered to be high-quality sources of evidence [33,34], as shown in the Hierarchy of Evidence Model [35].

## 2.3. Exclusion Criteria

Studies were excluded if stress reduction was not a primary outcome variable or if intervention results were not a focus of the study. Studies older than ten years were also excluded to ensure up-to-date research was collected. We drew this cut-off because the latest version of the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5) was published in 2013, where the definition and understanding of autism were updated [36,37]. One hundred eighty-five articles were found using the search terms 'stress reduction interventions', 'parents of children with autism', and 'ASD'. Of these 185, 16 duplicates were removed. A further 146 articles were removed after applying exclusion criteria during the title and abstract screening. A final 12 were excluded during full-text screening, whereby 11 articles remained. The PRISMA flow diagram for this process is represented in Figure 1.

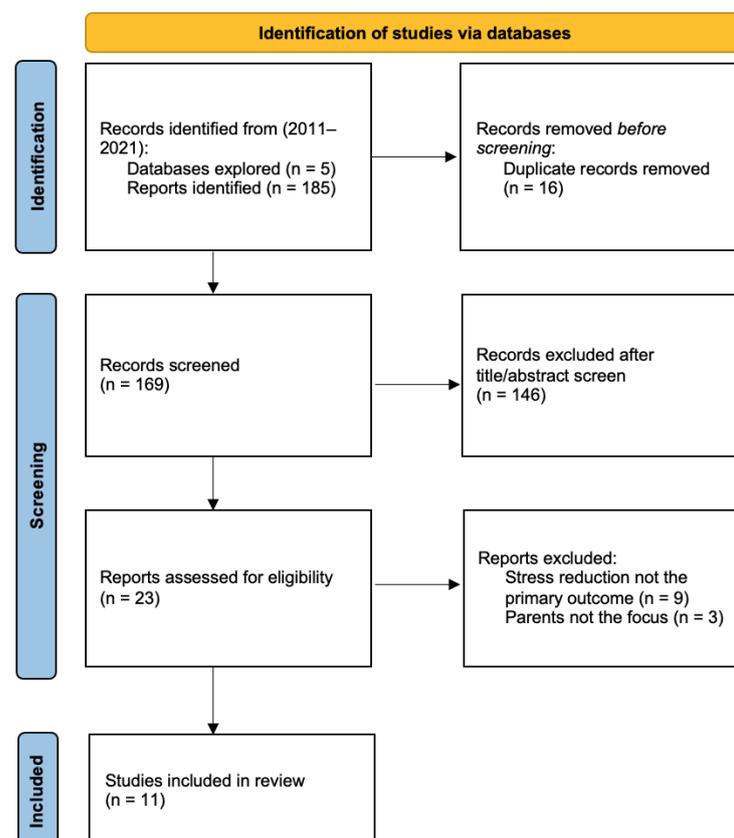


Figure 1. PRISMA Flow Diagram.

#### 2.4. Quality Assurance

To ensure appropriate reporting, critical appraisal, and quality standards were followed. The PRISMA 2020 checklist [38] was used to ensure clear and coherent reporting standards. The PRISMA flowchart [39] was employed to outline the search strategy process. The Critical Appraisal Skills Programme [40] checklist was used to ensure rigorous appraisal of all included evidence, and the National Institute for Health and Care Excellence (NICE) [41] Quality Appraisal checklist ensured that evidence was accurately graded for quality assurance. All studies included a standardised validation test/scale in their study for assessing levels of stress, which secures external validity and confidence when comparing and analysing study results [42].

### 3. Results

The eleven citations included nine randomised control trials and two systematic reviews. A total of 22 parenting interventions aimed at stress reduction were identified for exploration. Based on a theoretical approach outlined in each study included in this review, four themes emerged forming the following classification: Applied Behaviour Analysis (ABA) [43] informed programmes (14 interventions), Cognitive Behaviour Therapy (CBT) [44] informed programmes (5 interventions), Humanistic [45] informed programmes (2 interventions), and Parent-Education Programmes (PEPs) [46] (1 intervention). Specific interventions associated with these four categories are summarised in Table 1. Interventions are listed as described in their respective study. More details of each study (e.g., participant demographics, theoretical/conceptual framework, study design, and used measures) are summarised in Table 2, the critical analysis.

**Table 1.** Categorisation of specific interventions into four major programmes.

Categories	Specific Interventions
ABA Informed Programmes (14)	<ol style="list-style-type: none"> <li>1. The Social-Pragmatic Joint Attention Focused Training programmes</li> <li>2. Self-directed and Directed Learning-Pivotal Response Treatment (PRT)</li> <li>3. Parent training</li> <li>4. Early Start Denver Model (ESDM)</li> <li>5. Prevent-Teach-Reinforce (PTR)</li> <li>6. Developmental Individual Difference, Relationship-Based DIR/Floor time</li> <li>7. Parent Training (ABA) tele-assisted</li> <li>8. Sleep study Curriculum</li> <li>9. Primary Care Stepping Stones Triple P (PCSSTP)</li> <li>10. Preschool Autism Communication Trial (PACT)</li> <li>11. Professionally Supported Parent Focused Intervention</li> <li>12. Parent-mediated Intervention in Comprehensive Intervention Programmes</li> <li>13. Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH)</li> <li>14. Positive Behaviour Support</li> </ol>
CBT-informed programmes (5)	<ol style="list-style-type: none"> <li>15. Mindfulness-based Stress Reduction</li> <li>16. Mindfulness-based Stress Reduction in combination with the Early Start Intervention Protocol</li> <li>17. Mindfulness-based Positive Behaviour Support</li> <li>18. Acceptance and Commitment Therapy (ACT)</li> <li>19. Positive Adult Development (PAD)</li> </ol>
Humanistic informed programmes (2)	<ol style="list-style-type: none"> <li>20. Dance Movement Psychotherapy</li> <li>21. Written Disclosure Therapy</li> </ol>
Parent-Education Programmes (1)	<ol style="list-style-type: none"> <li>22. Psychoeducation programmes (PEP)</li> </ol>

The 14 ABA-informed programmes were primarily aimed toward behaviour modification whereby each intervention had a unique specialisation that incorporated elements

such as speech, language, and behaviour-management skills [35]. The five CBT-informed programmes consisted of various contemporary CBT approaches such as Mindfulness-based Stress Reduction (MBSR) [9], the MBSR-ESDM integrated model [9], Acceptance and Commitment Therapy (ACT) [47], Mindfulness-based Positive Behaviour Support [48], and Positive Adult Development (PAD) [49]. Unique features such as meditation practice and reward systems that support positive child behaviour were employed to assist and promote change. The two humanistic-informed programmes included Dance Movement Psychotherapy to relieve stress [50] and Written Disclosure Therapy, where participants journal traumatic experiences for the purpose of working through any unresolved issues, which is suggested to lead to higher resilience and reduced stress. The psychoeducation programme consisted of informational DVDs and manuals aimed at educating parents on topics related to autism and parenting [35].

### *3.1. Flaws and Risks to Bias*

As noted in the methods section, the NICE [41] quality appraisal checklist informed the grading process for this review. Each study was graded for quality following the application of 27 checklist items: four studies received low grades for serious flaws and risks of bias; two studies received a moderate grade; and five studies were graded high. Critical appraisal and quality notes can be found in Table 2, the literature review matrix. A literature review matrix is a table consisting of data extracted from the articles included in a review, aimed at comparing and contrasting critical data in a more efficient visual design [51].

### *3.2. Characteristics of Included Studies*

Marino et al. [21] conducted a randomized control trial of a behavioural intervention for families with children with ASD to compare the effectiveness of ABA-based intervention techniques via teletherapy and traditional face-to-face therapy. The interventions were facilitated by psychotherapists who were experienced in coaching parents and supported by bioengineers who implemented the protocols via the chosen platform. Behaviour modification training was provided to parents over three phases, an information phase, an introduction to ABA methodology phase, and a behaviour-modification training phase for practical skills. Training was one-to-one between parent and clinical psychologist (post-master's-degree level). Study results indicated significant reductions in stress.

Kuravackel et al. [31] evaluated the effectiveness of a Parent Training and support programme at reducing stress. The COMPASS for Hope (Collaborative Model for Promoting Competence and Success) (C-HOPE) program is an 8-week intervention delivered face-to-face or via teleconference. The training included basic information of ASD, learning about behaviour function, socialization, and communication skills related to improving child interaction. Examples of the skills are encouraging positive child behaviours and the proactive use of available supports to reduce maladaptive behaviour. Training was provided by licensed psychologists and a trained doctoral student. Fidelity was assessed via parent-completed fidelity forms. Study results indicated significant reductions in stress.

Table 2. Literature review matrix.

Author/Year	Level of Quality	Population/Sample Size	Purpose	Theoretical/Conceptual Framework	Exposure and Follow Up	Design and Type of Research	Measurements Used	Analysis and Results	Conclusions and Appraisal Comments
Singh et al., (2021)	High	Mothers of children with ASD N = 195	To assess the effectiveness of mindfulness-based positive behaviour support for reducing parenting stress	Cognitive behaviour therapy Applied Behaviour Analysis	30 Weeks intervention practice A three year follow up.	Experimental research Randomised control trial	Perceived Stress Scale (PSS)	Significant reductions in parenting stress [48]	Mother-only study; how findings may apply to fathers needs to be studied. Large sample size increases generalisability. Robust exposure period. Measurements comply with standards. Low risks of bias found. Claims to have reduced stress and removed children's aggressive behaviour.
Marino et al., (2020)	Low	Parents of children with ASD, mixed genders N = 74	To assess the effectiveness of tele-assisted and face-to-face behaviour interventions for reducing parenting stress	Applied Behaviour Analysis	12 Weeks exposure to the intervention	Experimental research Randomised control trial	Parenting Stress Index (PSI)	Significant reductions in perceived stress [21]	Small sample size and high drop-out (30 parents excluded), as well as missing 2 participants in its calculations. Low generalizability to a greater population. Exposure duration seems acceptable. Measurements standard. Serious risks to bias found ABA expensive.
Weitlauf et al., (2020)	Moderate	Parents of children with ASD, mixed genders N = 61	To assess the effectiveness of mindfulness-based stress reduction and the Early-intervention Denver Model for reducing parenting stress	Cognitive behaviour therapy Applied Behaviour Analysis	12 weeks exposure to intervention A 6 month follow up	Experimental research Randomised control trial	Parenting Stress Index (PSI)	Significant reductions in parenting stress [9]	Small sample size undermines generalizability. Exposure duration seems acceptable. 17 parents dropped out, data missing. Measurements comply with standards. Some risks to bias found.
Shoumitro et al., (2020)	High	Parents of children with ASD, mixed genders	To compile evidence from RCT which assesses ABA interventions for reducing stress	Limited to psychoeducation and behaviour psychology,	Variants depending on the programme	Descriptive research Systematic review, Meta-analysis	Parenting Stress Index (PSI)	Significant reductions in parenting stress [2]	Small sample sizes used. The researchers noted variation in the PT studies. Studies with the same name had various different elements of the same training. Robust exposure periods. Measurements comply with standards.

Table 2. Cont.

Author/Year	Level of Quality	Population/Sample Size	Purpose	Theoretical/Conceptual Framework	Exposure and Follow Up	Design and Type of Research	Measurements Used	Analysis and Results	Conclusions and Appraisal Comments
Rojas-Torres et al., (2020)	High	Parents of children with ASD, mixed genders	To assess the effectiveness of intervention programmes for children with ASD based on parent participation	Applied Behaviour Analysis Psychoeducation	Variants depending on the programmes	Descriptive research Systematic review, Meta-analysis	Parenting Stress Index (PSI)	Significant reductions in parenting stress [52]	Sample sizes were small. Researchers noted many programmes did not use any methodology to evaluate their results. However, behaviour analysis did. This reduces credibility of evidence. Exposure periods and measurement comply with standards.
Aithal et al., (2019)	Low	Mothers of children with ASD N = 12	To assess the effects of dance-movement psychotherapy on parenting stress	Humanistic/ Psychodynamic	3 sessions (days)	Mixed methodology controlled	Parenting Stress Index (PSI)	Significant reductions in parenting stress [50]	Very small sample size. No randomisation was applied. Exposure was very short, 3 sessions for 90 min per session. Measures comply with standards. Risk of bias is high.
Iadarola et al., (2018)	High	Parents of children with ASD, mixed genders N = 180	To examine whether improving parenting competence reduces parenting stress	Applied Behaviour Analysis	24-week experiment	Experimental research Randomised control trial	Parenting Stress Index (PSI)	Significant reductions in parenting stress [53]	High sample size. Randomisation was applied. Exposure was over a lengthy period. Measurements comply with standard Risk to bias is low.
Da Paz et al., (2018)	Low	Parents of children with ASD, gender: female N = 71	To assess the effects of written disclosure on levels of parenting stress	Written disclosure	3-day follow up 6-month follow-up	Experimental research Randomised control trial	Perceived Stress Scale (PSS) Parenting Stress Index (PSI) Salivary cortisol CAR test	Significant reductions in parenting stress [54]	Sample size was mid-range. Exposure seems to have been incredibly short when compared to other stress-reduction studies. Twenty-minute writing exercises for each of the three days assigned. No mention of blinding. Risk of bias high.
Kuravackel et al., (2018)	Moderate	Parents of children with ASD, mixed genders N = 33	To assess the effectiveness of Tele-assisted C-hope compared to face-to-face for reducing parenting stress	Applied Behaviour Analysis	8 weeks 18 month follow up	Experimental research Randomised control trial	Parenting stress index (PSI)	Significant reductions in parenting stress [31]	Small sample size. Exposure seems standard. Randomisation was conducted. Measurements comply with standards. Risk of bias moderate.

Table 2. Cont.

Author/Year	Level of Quality	Population/Sample Size	Purpose	Theoretical/Conceptual Framework	Exposure and Follow Up	Design and Type of Research	Measurements Used	Analysis and Results	Conclusions and Appraisal Comments
Pennefather et al., (2018)	Low	Parents of children with ASD, mixed genders N = 23	To assess the effectiveness of combined approaches to reduce parenting stress: parent-training–ACT–optimism–training	Positive psychology combined with Applied Behaviour Analysis and Contemporary CBT	3 weeks	Comparative design	Perceived Stress Scale (PSS)	Significant reductions in parenting stress [55]	Concerns could be argued with such a small sample size and short exposure duration. Three days for 90 min No randomisation conducted. Risk of bias high.
Dykens et al., (2014)	High	Mothers of children with ASD N = 243	To assess the effectiveness of mindfulness and positive psychology in reducing parenting stress	Positive psychology combined with Contemporary CBT: mindfulness	6 weeks 6 month follow up	Experimental research Randomised control trial	Parenting stress index (PSI)	Significant reductions in parenting stress [49]	Very large sample size with an acceptable dropout percentage under 20%. Appropriate randomisation controls applied. Measurements comply with standards. Risk of bias low.

Iadarola et al. [53] conducted a randomized clinical trial of parent training (PT) compared to psychoeducation (PEP). PT is outlined as training in new skills to reduce child disruptive behaviour, specifically children with ASD, delivered by therapists. Training consisted of direct instructions, video examples, and roleplay between a parent and a therapist. PEP is described by Iadarola et al. [53] as an intervention delivered over 12 sessions with one home visit. This training consisted of an informational manual being provided to parents of children with ASD, which did not provide any instructions on child behaviour management. When comparing PT with PEP, results show that PEP was an effective intervention for improving child outcomes; however, PT was shown to decrease children's disruptive behaviour, which led to improved parental competency and reductions in parental stress. Fidelity is reported to have been assessed using checklists during sessions.

Shoumitro et al. [2] performed a systematic review and meta-analysis to assess the effectiveness of parent training on levels of parenting stress. Various forms of the programme parenting training were found during the evaluation of this study; The Social-Pragmatic Joint Attention Focused Training programme, a behaviour-management protocol focused on speech and language training to help develop joint attention; directed Learning-Pivotal Response Treatment (PRT), designed to teach parents strategies to improve children's behaviour and social communication, and provide opportunities for positive child responses. PRT was delivered by clinical psychologists, assisted by psychology graduate students; Parent Training, behaviour modification training; and Early-Start Denver Model (ESDM), a behaviour-based parent training aimed at increasing child motivation and attention. Training sessions were provided by experienced therapists over a 12-week period: the Developmental Individual Difference, Relationship-Based DIR/Floor time, an Integrated framework focused on interaction, environment, and function emotional development; the Sleep study Curriculum, a parent workshop regarding child sleep problems and resolutions, whose main concept is cultivating sleeping routines and appropriate sleeping environments; and Primary Care Stepping Stones Triple P (PCSSTP), which consists of four sessions focused on addressing two individualized problems which parents recognize as challenging behaviours. This training programme was provided by therapists with degrees in psychology: Preschool Autism Communication Trial (PACT), a training programme to enhance child-parent communication and improve interaction by promoting a collaborative relationship of problem solving and programme development. It consists of lectures, videos, and discussions with behaviour specialist facilitation, and Professionally Supported Parent Focused Intervention, a set of ten informative workshops on ASD consisting of effective behaviour strategies and social- and communication-improvement techniques. This programme was provided by a trained facilitator twice weekly.

Weitlauf et al. [9] compared a parent-implemented Early-Start Denver Model programme (P-ESDM) with an integrated P-ESDM programme that included Mindfulness-Based Stress Reduction (MBSR), a longitudinal randomized controlled trial. MBSR is a mindfulness practice suggested to lower levels of stress by keeping one's awareness in the present moment and cultivating gratitude. Both P-ESDM and P-ESDM plus MBDR participants received 12 weekly sessions provided by certified trainers, with the MBDR group receiving a further 6 MBDR practice sessions. MBDR sessions were provided by clinicians with at least a master's degree, supervised by a clinical psychologist. Fidelity was assessed using checklists. Both interventions improved parental distress; however, the group exposed to MBSR showed greater improvements.

Singh et al. [48] examined the effectiveness of an integrative approach intervention called Mindfulness-Based Positive Behaviour Support (MBPBS) for mothers of children with ASD in a three-arm randomized control trial. MBPBS includes mindfulness training combined with Positive Behaviour Support (PBS), teaching parents effective skills for positively managing child behaviour. PBS is suggested to limit children's maladaptive behaviours, while mindfulness is claimed to reduce psychological stress, anxiety, and burnout. This study consisted of one group receiving MBPBS training, another receiving mindfulness training, and the third receiving Positive Behaviour Support training. All three interventions

showed improvement in reducing stress; however, the MBPBS group showed great results, as mentioned in Table 2. Fidelity was assessed for all three experimental conditions.

Dykens et al. [49] conducted a randomized trial on mothers of children with ASD to evaluate the effectiveness of Mindfulness-Based Stress Reduction in reducing stress. It consisted of 6 weeks of 1.5-hour sessions, where participants were led by peer mentors (all mothers of children with ASD trained in and practicing mindfulness and PBS) supervised by a psychologist. Training was delivered in person, and fidelity was monitored during the intervention. Study results indicated significant reductions in stress.

Pennefather et al. [55] evaluated the effects of an integrated online training programme to reduce parental stress. This programme included a three-week intervention consisting of an introduction to Applied Behavioural Analysis (ABA). This programme included a three-week intervention consisting of an introduction to Applied Behavioural Analysis (ABA) with a focus on examining the function of behaviour sequence or “Antecedent Behaviour Consequence (ABC)” sequence. ABC was then combined with another practice called Acceptance and Commitment Training (ACT), a stress-reduction mediation practice focusing on acceptance. This online programme was provided by a clinical psychologist and a masters-level childhood intervention specialist. This integrated methodology claimed to reduce parental stress and improve child maladaptive behaviour.

Rojas-Torres et al. [52] reviewed early intervention parent training programmes such as Parent Training (PT), an ABA programme; Parent-mediated Intervention in Comprehensive Intervention programme, training parents to address core symptoms of their child’s ASD, namely the development of social skills, focusing on strengthening communications difficulties and reducing ritualistic behaviours; Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH), a training programme given to parents to adapt environmental settings to suit the needs of the individual situation, which encourages child–parent collaboration in solution-focused communication systems; Early-Start Denver Model (ESDM), a behaviour-based parent training programme; Preschool Autism Communication Trial (PACT), a training programme that is aimed at improving communication between parents and children with ASD; Prevent–Teach–Reinforce (PTR), a training programme aimed at reducing children’s maladaptive behaviour that encourages collaboration to maintain appropriate social behaviours. Study results indicated positive results in terms of reductions in levels of stress.

Da Paz et al. [54] carried out a randomized controlled study on the effects of written disclosure on stress among parents of children with ASD. This study consisted of 20-minute writing tasks over three days, in which participants wrote about a traumatic experience aimed to provide an opportunity for parents to express emotional difficulties in writing and therefore reduce psychological distress. Stress-reduction results were indicated in the study findings.

Aithal et al. [50] investigated the effectiveness of Dance Movement Psychotherapy (DMP) on parenting stress. DMP is described as a humanistic and psychoanalytic-influenced intervention, where participants engage in activities of symbolic and rhythmic movement. Provided by the researcher/therapist, the three-day study was conducted over a two-week period. The fidelity of the intervention was assessed.

### *3.3. Measures Used in Reviewed Studies*

Measurement scales employed to assess participant stress in the studies included in this review consisted primarily of the Parenting Stress Index (PSI); a 36-item set of questions completed by parents to assess their levels of stress [56]. However, some studies included additional tests appropriate to their research, such as the Perceived Stress Scale (PSS) [57], a test where parents described aspects associated with their perceived stress; and the Salivary Cortisol CAR test [58], a test that measures levels of the stress hormone cortisol in saliva. While the PSI and PSS both measured perceived stress, the PSI test is more commonly used because it has two additional sub-categories; one assessing Parent–Child Dysfunctional Interaction, and the other examining parental perceptions toward a Difficult Child. The PSI, therefore, provides greater insight into how parents link their experiences and situations to

stress. The Salivary Cortisol test was used in one study in an attempt to triangulate stress biologically [58]; however, this method of measuring stress can lead to misinterpretation of findings due to inadequate correlations to stress causation.

#### 4. Discussion

The purposes of this focused literature review were (1) to synthesise what is known about the relative effectiveness of stress management interventions for parents of children with ASD, and (2) to suggest areas for further research. The eleven included articles introduced 22 interventions, which were categorised into Applied Behaviour Analysis (ABA) [43] informed programmes (14 interventions), Cognitive Behaviour Therapy (CBT) [44] informed programmes (5 interventions), Humanistic [45] informed programmes (2 interventions), and Parent-Education Programmes (PEP) [46] (1 intervention). Findings from the review of 14 ABA-informed interventions show that it is effective in reducing parenting stress as a result of decreased maladaptive behaviour; however, its success depends largely on a parent's ability to influence changes in their child's behaviour [53]. How this might affect levels of stress where parents are unsuccessful in changing child behaviour was not explored in the evidence.

The study also found that CBT-informed integrative interventions appeared to offer better outcomes than single-intervention modalities. The evidence regarding Mindfulness-based Positive Behaviour Support (MBPBS) [48] demonstrated this, as it combined the most effective aspects of CBT, ABA, and PEP to customise an intervention that comprised stress-reduction techniques such as mindfulness (child inclusion encouraged), meditation, parent education, and specialised child behaviour management plans to address challenging behaviour. MBPBS reported significant reductions in levels of stress and the removal of children's disruptive behaviour [48]. Due to the MBPBS study only involving mothers, further research including fathers is needed to examine how this might affect results.

Finally, the humanistic-informed dance movement and written disclosure studies were found to have had a therapeutic effect on participants, and while causation of daily stressors was not explored directly, stress reduction was still achieved through physical movement or the phenomenological act of writing on past traumatic experiences [50,54]. The study involving psychoeducation programmes outlined how providing participants with manuals regarding ASD and behaviours that can be expected was enough to prepare them sufficiently for possible stressful situations ahead [53].

According to Saunders et al. [59], evidence-based practice in healthcare is an essential skill for ensuring the best evidence is considered for practice i.e., researching high-quality and rigorous literature on a topic before considering application in practice. Whether contemporary approaches or applied behaviour branches of CBT are considered, the practice of evidence-based research appears to offer the most benefit to parents of children with ASD for reducing parenting stress. There were a number of additional studies that were omitted from this review due to the limitations set in the inclusion/exclusion criteria. One such area of study involves the role of Compassion-Focused Therapy (CFT) in parenting [60]. The evidence in this area seems promising as it focuses on the alleviation of suffering and improving quality of life. However, future research is needed to investigate how this approach might apply to parents of children with ASD.

##### 4.1. Limitations

Limitations found in this review include small sample groups used in seven studies, the smallest being  $N = 12$  ("Backing the backbones—A feasibility study on the effectiveness of dance movement psychotherapy on parenting stress in caregivers of children with Autism Spectrum Disorder"). Sample sizes are an important aspect of studies as they indicate whether a study's results should be considered valid [40]. For example, when compared with a larger sample size, such as Dykens et al. [49], where the sample size was  $N = 243$ , a sample size of  $N = 12$  loses the impact that could have been accomplished with larger group sizes such as  $N = 245$ . While we acknowledge the concerns regarding

validity in relation to studies employing smaller samples, these kinds of small-scale studies allow cost-effective research to be conducted and can serve as a starting point for further investigation by larger sample size studies [40]. Furthermore, because this review was conducted in a focused manner on one area, the breadth of its scope was limited. Moreover, we only searched the literature in the English language. Considering that ASD is present worldwide, it would be helpful to include ASD articles in other languages [61]. This review did not consider the impact of COVID-19. COVID-19's impact on parents of children with ASD is reportedly large; therefore, future reviews should evaluate the impact.

Limitations can be found in the reliance on Table 2 to convey information about each intervention included in this review, which may result in difficulties to draw reliable conclusions regarding the effectiveness of interventions in terms of their clinical significance and value without more details surrounding the family, clinical context, and delivery method. However, difficulty in drawing conclusions may be related more to an undefined definition of autism than is currently held, i.e., a neurodevelopmental disorder described as deficits in three key areas, social communication, social interaction, and restricted repetitive patterns of behaviour [2]. A further limitation can be noted in which participant demographics, severity of the condition, and family context were not the focus of our review.

Lastly, the positionality of the research team needs to be noted. The team involved two parents of ASD children who played the lead role in this study. During the research meetings, their voices might have weighed more than the voices of others. The other researchers offered more subjective perspectives, as they do not have personal experience parenting a child with ASD. Moreover, we invited another academic who was not a parent of ASD children to review the manuscript.

#### *4.2. Implications and Future Research*

The implications of these results can inform educators and practitioners regarding available stress interventions for parents of children with ASD. Depending on the situational needs, such as whether the informational approach of PEP is needed; a more behavioural intervention such as that offered by ABA; or whether a humanistic approach or mind-body intervention offered by CBT would be a better fit. Future research directions have been indicated throughout this review for the purpose of strengthening or confirming findings; these include a Mindfulness-based Positive Behaviour Support study [62], including fathers as well as mothers, which may confirm its effectiveness across genders. Another was the Backing the Backbones study [50], a study consisting of a larger sample size, which may strengthen its transferability and offer a greater representation of the population. Finally, research investigating how a CFT programme [60] could apply as a stress-reduction intervention for parents of children with ASD may provide an additional option with respect to the findings of this review.

This paper has reviewed existing literature for the purpose of identifying available stress-reduction interventions to address the high levels of stress experienced by parents of children with ASD. After searching five databases, ProQuest, Scopus, ScienceDirect, Cochrane library, and Pubmed, we found 22 interventions that met relevant criteria for inclusion. These were later categorized into four themes, Applied Behaviour Analysis [43] programmes, Cognitive Behaviour Therapy [44] programmes, Humanistic [45] informed programmes, and Parent-Education Programmes [46]. While critically appraising each, we found that interventions that consisted of CBT-informed, integrated approaches, such as MBPBS, provided more benefits (child/parent collaborative relationship and reduced aggressive behaviour) to parents of children with ASD than interventions that did not.

#### *4.3. Limitation of this Review*

All authors are European-based mental health professionals. Their experience in other areas may be thin. However, two of the authors are parents of ASD, providing lived experience.

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