Predictors of parenting stress in parents of children diagnosed with autism spectrum disorder: a scoping review

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Abstract

Introduction: Identifying the predictors of parenting stress in parents of children with autism spectrum disorder is crucial to provide the best health-care services.

Main text: The scoping review was conducted. Search engines (EBSCO, Springer, PubMed, Ovid, Google Scholar, and Science Direct) were used to collate published studies between the years 2009 and 2020. Keywords used were parenting stress, parental stress, predictors of parenting stress, Autism disorder, Autism, and scoping review. Primary screening of the titles and abstracts of 1039 articles was conducted. The secondary screening of 348 articles resulted in 27 articles included in this review. The reviewed articles revealed core symptoms of the disorder, namely, behavior problems, and socio-communication impairments strongly linked with the high level of parenting stress.

Conclusion: This scoping review is the initial step toward encouraging future efforts to provide supportive interventions for parents of children with autism spectrum disorder.

Keywords: Autism spectrum disorder, Scoping review, Parenting stress, Predictors of parenting stress

Introduction

Autism spectrum disorder (ASD) is defined as one of the neurodevelopmental disorders with moderate-to-severe difficulties. These difficulties are related to social interaction, communication, and repetitive and restricted behaviors [1]. Besides, ASD is described as a group of disorders that includes autism or autistic disorder, pervasive developmental disorder, and Asperger syndrome. Among these, autism or autistic disorder is currently the most popular form of ASD [1]. Notably, children diagnosed with ASD have difficulties in many aspects of their lives, including social interaction, behavior, communication, and language [2, 3]. Therefore, it is challenging for children with ASD to manage their behavior, as well as communicate and establish a social relationship with their parents and other people [4, 5]. In addition, there is no doubt that the main features of ASD are behavioral difficulties and socio-communication skill deficiencies, which contribute to significant stress in parents with these children [6–8].

Invariably, parents are commonly the first to recognize the developmental variations among children with ASD. With that being said, parents who have a child with ASD are more confused and stressed due to unique stressors and demands over time [9–11]. It is observed that the amount of literature on parenting stress is increasing [12, 13]. Everly and Lating [12] defined parenting stress as “a complex construct that involves behavioral, cognitive and affective components, a combination of child and parent characteristics, as well as family situational components as they relate to the person’s appraisal on his or her role as a parent” [p. 28]. Furthermore, Rao and Beidel [13] described parenting stress as the strains and pressures experienced when performing care-related tasks for one’s child. Thus, parenting stress is a common condition that has...
considerable negative impacts on the physical and mental well-being of parents of children with ASD [14, 15]. As far as it is concerned after conducting a thorough search, there is no scoping review about the predictors of parenting stress among parents with children with ASD. Hence, this study is conducted to provide support programs with a comprehensive understanding to parents who may be more vulnerable to developing mental health problems. It is also hoped that these supportive programs could assist parents in coping with their children with ASD and living positively as a family unit. Health-care professionals and nurses working with children with ASD may use this scoping review finding to reduce parenting stress and improve health well-being.

Main text

Aim
The scoping review is conducted to identify and map the evidence available on the predictive variables correlated with the high level of parenting stress among parents with children with ASD.

Methods
Various systematic methods available to review published literature were considered and decided. This was performed to ensure that a scoping review of published studies could be conducted as the best way of mapping the trends in predictors of parenting stress research for the last decade. The scoping review approach was especially useful in examining a widely covered area to comprehensively map the literature and identify core concepts, evidence, or published research gaps. Dissimilar to systematic reviews or meta-analyses, scoping reviews did not even narrow the review parameters to clinical trials or require quality assessment. However, this form of the review was rigorous and methodological in its approaches to review the range, extent, and nature of research activity in a specific field. The pioneering work of Arksey and O’Malley [16] was employed in developing our scoping reviews. Arksey and O’Malley [16] stated that the five steps of the scoping review as presented below.

Stage 1: Identifying the research question
This scoping review attempted to answer the following research question:
What are the predictive factors correlated with the high level of parenting stress among parents with ASD children?

Stage 2: Identifying the relevant studies
Research papers were searched using the following medical databases: EBSCO, Springer, PubMed, Ovid, and Science Direct. Apart from that, search terms used for review were parenting stress, parental stress, Autism disorder, Autism, Autistic disorder, and scoping review. Databases were also searched with combinations of keyword search terms, medical subject headings, and key subject headings joined together with the Boolean operators “AND” or “OR.” Moreover, a search was conducted for literature to identify studies published and focused on the predictive factors associated with a high level of parenting stress in parents with ASD children. Figure 1 PRISMA 2009 diagram shows the flow of literature studies search. First, the initial search found 1201 full-text papers through the search engine results, and an additional seven articles were found from other sources, such as PsycINFO (for psychology-related literature) and ERIC (for education-related literature). Duplication of research papers was removed from the list of those discovered. After that, 1039 papers were screened mainly for the relevant title and abstract articles. The papers’ abstracts were then thoroughly read, while 348 papers had been subjected to secondary examination for eligibility after screening. Lastly, the final search for the literature that included 27 papers was conducted.

Stage 3: Determining study selection
Full-text articles written in English between 2009 and 2020 that examined parenting stress or parental stress as the main study outcome were included. The exclusion criteria were (1) systematic review, (2) articles reviewed, (3) meta-analysis papers, and (4) case reports. The titles and abstracts were read and screened by two authors. The authors independently reviewed the full-text version of the relevant articles. The final decision was determined based on the inclusion and exclusion criteria. Any disagreements were fixed by discussion.

Stage 4: Charting the data
Methodological characteristics were synthesized from the adapted JBI Template study details, characteristics, and result extraction instrument [17]. The study details charted were citation details, namely, the author or authors, year of publication, country, study aim and design, sample characteristics, and results.

Stage 5: Collating, summarizing, and reporting the data
Results of the published research on predictive factors of parenting stress in parents with ASD children from 2009 to 2020 are displayed in Table 1.

Discussion
To the authors’ knowledge, no scoping review had investigated the predictive factors correlated with a high level of parenting stress. The evidence suggested that behavioral problems and social-communication impairments
were the two most common predictor factors of the high parenting stress level.

Behavior problems
As time had passed, more studies related to behavior problems correlated with a high level of parenting stress had been published. The behavior problem was identified in 13 studies as a correlate with high parenting stress [11, 22, 23, 25, 26, 28–31, 33, 35, 37]. However, there seemed to be contradictory evidence about the significance of the relationship between parenting stress and problem behaviors. For instance, the findings of a study by Su and colleagues [21] and Peters-Scheffer et al.’s study [38] revealed that the relationship between parenting stress and problem behaviors was not significant. These studies [21, 38] only considered the viewpoints of the mothers and lacked involving the views of the fathers.

Additionally, the small sample size of Su and colleagues’ study [21] and Peters-Scheffer et al.’s study [38] may not have been adequate for the accurate prediction of cross-section study results concerning the association between behavior problems and high level of parenting stress. The small sample sizes may have also affected the findings and led to discrepancies. Additionally, the inclusion of both parents in the study allowed the researcher to identify the predictors of parenting stress of both fathers and mothers systematically that considered its effect on parent’s well-being. Hence, to study the whole family structure, it is essential to include both parents and to recruit a larger study sample in future research.

Social-communication impairments
The scoping review highlighted predictor variables associated with a higher level of parenting stress. In the literature studies, socio-communication impairment was
### Table 1 Summary of published studies on predictors of parenting stress in parents of children with Autism Spectrum Disorder (2009–2020)

| Authors/ year/ country | Study aim | Study design | Description of study | Predictors addressed | Results |
|-------------------------|-----------|--------------|----------------------|----------------------|---------|
| Merdan [18] Turkey      | Identified the correlation between parenting stress and children’s behavior problem | Cross-sectional | Sample: one hundred forty-two mothers of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Problem behaviors | Problem behaviors of children predicted with a high level of parenting stress ($p = 0.001$) |
| Pozo and Sarriá [19] Spain | Investigated the predictive association between behavioral problems and parenting stress | Longitudinal study | Sample: twenty-one mothers of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Behavior symptoms | A significant relationship between the high level of parenting stress and behavior problem ($p = 0.028$) |
| Zheng et al. [20] Australia | Examined stressors in mothers of preschool- and school-aged children with ASD | Cross-sectional | Sample: fifty-six mothers of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Problem behaviors, cognitive ability, communication, daily living skills, socialization and sensory processing | Repetitive and problematic behaviors ($p = 0.05$) communication and daily living skills ($p = 0.05$), socialization and sensory sensitivities ($p = 0.001$) were correlated with a high level of parenting stress |
| Su et al. [21] China | Examined the relationship between parenting stress and children’s core ASD symptoms | Cross-sectional | Sample: one hundred twenty-two mothers of children with ASD Instrument: the Depression Anxiety and Stress Scale (DASS-21) | Problem behaviors | No significant correlation between parenting stress and child ASD characteristic ($p = 0.161$) |
| Zaidman-Zait et al. [11] Canada | Identified the relations between child behavior problems and parenting stress | Longitudinal study | Sample: two hundred eighty-three mothers of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Behavior problems | Longitudinal relationship between a high level of parenting stress and behavior problems ($p<0.001$) |
| Craig et al. [22] Italy | Investigated the association of parenting stress with socio-demographic variable, behavioral and emotional problems | Cross-sectional | Sample: eighty-one parents of children with ASD (father $n = 39$, mother $n = 42$) Instrument: Parent Stress Index-Short Form (PSI-SF) | Socio-demographic variable (e.g., parent age), behaviors, and emotional problems | Older parents, age of mothers ($p<0.001$) and age of fathers ($p=0.021$), emotion, and behavior problems ($p = 0.001$) are predictors of the high level of parenting stress |
| Harrop et al. [23] USA | Examined the relationship between child behavior problems and parenting stress | Longitudinal study | Sample: one hundred ninety-three caregivers of children with ASD (biological $n = 188$, adoptive $n = 3$, maternal grandparent $n = 2$) Instrument: Parent Stress Index-Short Form (PSI-SF) | Behavior problems | Longitudinal relationship between behavior problems and a high level of parenting stress ($p < 0.001$) |
| Batool and Khushid [24] Pakistan | Explored the relationship between parent stress and factors (e.g., social-communication, parent’s gender) | Cross-sectional | Sample: one hundred parents of children with ASD (father $n = 50$, mother $n = 50$) Instrument: Parenting Stress Scale (PSS) | Impairments of social-communication and gender of the parent | Only socio-communication impairment predictor of a high level of parenting stress ($p < 0.001$) |
| Brei et al. [25] USA | Identified the association between parenting stress and autism-associated symptomatology (i.e., problem behaviors, and social-communication) | Cross-sectional | Sample: forty parents of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Problem behaviors and social-communication skills | Behavioral problems were strongly linked to a high level of parenting stress ($p < 0.001$) |
| Giovagnoli et al. [26] Italy | Investigated the role of several factors in parental stress, including the impairments of social-communication, behaviors, and emotional problems. | Cross-sectional | Sample: one hundred ninety parents of children with ASD (95 fathers, 95 mothers) Instrument: Parent Stress | Socio-communication impairments, behaviors, and emotional problems | The high level of parenting stress strongly associated with behavior and emotional problems ($p < 0.001$) |
### Table 1 Summary of published studies on predictors of parenting stress in parents of children with Autism Spectrum Disorder (2009–2020) (Continued)

| Authors/year/country | Study aim | Study design | Description of study | Predictors addressed | Results |
|----------------------|-----------|--------------|----------------------|----------------------|---------|
| Green and Carter [27] USA | Investigated the relationship between daily living skills and parenting stress | Longitudinal study | Index-Short Form (PSI-SF) | Daily living skills | A significant relationship between the high level of parenting stress and daily living skills ($p = 0.05$) |
| Huang et al. [28] Taiwan | Examined the emotional and behavioral problems with parenting stress in parents of children with ASD | Cross-sectional | Sample: fifty-two parents of children with ASD (father $n = 8$, mother $n = 44$) Instrument: Parent Stress Index-Short Form (PSI-SF) | Emotional and behavioral problems | Behavior problems significantly correlated with the high level of parenting stress ($p < 0.001$) |
| McStay et al. [29] Dutch | Examined the association of child-related factors (i.e., age, impairments of social-communication, child QoL, and problem behavior) and parenting stress of children with ASD | Cross-sectional | Sample: one hundred fifty parents of children with ASD (42 fathers, 108 mothers) Instrument: Parent Stress Index-Short Form (PSI-SF) | Child age, child quality of life (Qol), and behavior problems | Behavior problems associated with a high level of parenting stress among parents of children with ASD ($p=0.05$) |
| Rivard et al. [30] Canada | Identified the association between ASD core symptoms and parenting stress | Cross-sectional | Sample: two hundred thirty-six parents of children with ASD (118 fathers and 118 mothers) Instrument: Parent Stress Index-Short Form (PSI-SF) | Deficits of social-communication interaction and behavior problems | The high level of parenting stress associated with the core ASD ($p < 0.001$) |
| Allen et al. [31] Australia | Examined the association between parenting stress and ASD symptoms | Cross-sectional | Sample: one hundred twenty-four parents of children with ASD (23 fathers, 101 mothers) Instrument: Perceived Stress Scale (PSS) | ASD symptoms (social-communication interaction, behavior problems) | All ASD symptoms are predictors with a high level of parenting stress ($p=0.05$) |
| Estes et al. [32] USA | Examined child problem behavior, socio-communication skills, and daily living skills as predictors with parenting stress | Cross-sectional | Sample: forty-six mothers of children with ASD Instrument: the Questionnaire on Resources and Stress (QRS) | Child behavior problems and deficits of social-communication interaction and daily living skills | Only child behavior problems ($p=0.006$) as a significant predictor with a high level of parenting stress |
| Firth and Dryer [33] Australia | Identified what is characteristic of ASD as a predictor of parenting stress | Cross-sectional | Sample: one hundred nine parents of children with ASD Instrument: the Parental Stress Scale (PSS) | Problem behaviors and socio-communication impairments | Social impairments ($p < 0.001$) and behavior problems were ($p < 0.001$) observed as a predictor of a high level of parenting stress |
| Totsika et al. [34] UK | Investigated the relationship between parenting stress and behavior problems | Longitudinal study | Sample: one hundred thirty-two mothers of children with ASD Instrument: General Health Questionnaire (GHQ) | Behavior problems | No significant relationship ($p = 0.321$) |
| Walsh et al. [35] USA | Investigated various factors as predictors of parenting stress | Cross-sectional | Sample: one hundred forty-eight parents of children with ASD (father $n = 14$, mother $n = 132$) Instrument: Parenting Daily Hassles (PDH) | Problem behaviors | Behavior problems were significantly related to a high level of parenting stress ($p < 0.001$) |
| Wang et al. [36] China | Identified factors linked to parenting stress among mothers of children with ASD | Cross-sectional | Sample: one hundred fifty mothers of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Behavior problems | Child's behavior problems were correlated with a high level of parenting stress ($p < 0.001$) |
| Weiss et al. [37] | Explored the relations between child problem behavior and | Cross-sectional | Sample: two hundred twenty-eight parents of | Child problems behavior | The significant correlation between problem behaviors |
another identified correlation with some contradictory evidence concerning its association with a high level of parenting stress. Seven studies [20, 24, 27, 30, 31, 33, 39] reported that socio-communication impairment is associated with a high level of parenting stress. However, there appears to be some contradictory evidence concerning the significance of the relationship between a high level of parenting stress and impairments of socio-communication skills [25, 26, 32, 34, 38, 42].

The small sample size of previous literature studies [25, 26, 32, 34, 38, 42] was one of the most commonly reported challenges, making it insufficient for the precise estimation results in cross-sectional studies. As a result, the small sample size was a contributing cause for the variation in the association between high levels of parenting stress and impaired socio-communication skills. Apart from that, the population study sample difference was a potential reason for the variation in the correlation between parenting stress and impairments of socio-communication skills. The findings of a study by Giovagnoli et al. [26] demonstrated that there was no significant association between a high level of parenting stress and impairments of socio-communication skills. In Giovagnoli et al.’s study, the population sample encompassed only mothers with ASD children and male children with ASD. Given the participant’s different characteristics, they may show different results representing their various demands. Consequently, it seemed that this participant’s profiles might be the cause of contradicting findings. This was because the absence of both parents’ gender was limited to identify the correction between parenting stress and socio-communication skills impairments. To conclude, the small sample size may not have been appropriate to accurately determine the

Table 1 Summary of published studies on predictors of parenting stress in parents of children with Autism Spectrum Disorder (2009–2020) (Continued)

| Authors/ year/ country | Study aim | Study design | Description of study | Predictors addressed | Results |
|------------------------|-----------|--------------|----------------------|---------------------|---------|
| Canada                 | parenting stress | Cross-sectional | Sample: one hundred mothers of children with ASD (father n = 50, mother n = 50) Instrument: Parent Stress Index-Short Form (PSI-SF) | Deficits of social-communication interaction and daily living skills | No significant correlation of social-communication impairment (p = 0.42), behavior problems (p = 0.21), and parenting stress |
| Peters-Scheffer et al. [38] Dutch | Examined factors predicting parenting stress | Cross-sectional | Sample: seventy-five parents of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Deficits of social-communication interaction and daily living skills | A high level of parenting stress associated with impairments of social-communication interaction (p = 0.05) and daily living skills (p = 0.05) |
| Hall and Graff [39] USA | Examined factors associated with parenting stress | Cross-sectional | Sample: seventy-five parents of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Deficits of social-communication interaction and daily living skills | A high level of parenting stress associated with impairments of social-communication interaction (p = 0.05) and daily living skills (p = 0.05) |
| Rezendes and Scarpa [40] USA | Assessed parenting stress as related to behavior problems in children with ASD | Cross-sectional | Sample: one hundred mothers of children with ASD Instrument: Parent Stress Index-Short Form (PSI-SF) | Child behavior problems | The high level of parenting stress among mothers of children with ASD associated with behavior problems (p < 0.001) |
| Totsika et al. [41] UK | Investigated the association of behavioral problems of children with ASD and parenting stress | Cross-sectional | Sample: seventy-five parents of children with ASD Instrument: Parental Stressor Scale: Developmental Disabilities (PSS-DD) | Behavior problems | A significant relationship between behavior problems and the high level of parenting stress (p < 0.001) |
| Osborne and Reed [42] UK | Examined the relationship between characteristics of a child with ASD and parenting stress | Cross-sectional | Sample: one hundred thirty-seven parents of children with ASD Instrument: Questionnaire on Resources and Stress (QRS-F) | Behavior problems, deficits of social-communication interaction and intellectual functioning | A high level of parenting stress was strongly correlated with child’s behavior problems (p < 0.001) |
| Phetrasuwan and Shandor Miles [43] USA | Described the factors of parenting stress in mothers of children with ASD | Descriptive-correlational | Sample: one hundred eight mothers of children with ASD Instrument: Parental Stressor Scale: Developmental Disabilities (PSS-DD) | Behavior symptoms | Behavioral problems were predictors with a high level of parenting stress (p < 0.001) |
cross-sectional study results concerning parenting stress and impaired socio-communication skills. Therefore, further research using larger samples, including both parents who have children with ASD, should be implemented.

Strengths and limitations
This was the first scoping review to describe and identify the breadth of evidence of predictive factors and a high level of parenting stress in parents who have children with ASD. It was noted that the methodology, such as the broad criteria for inclusion and a search strategy, had facilitated the comprehensive identification of studies. The scoping review was also conducted meticulously and robustly. For example, two reviewers independently performed every stage of the screening, selection, and evaluation of the included papers’ eligibility. Besides that, theoretical frameworks [16] were used to evaluate the data supporting the results by conducting different scoping analysis stages, including identifying the research question, identifying relevant studies, determining the study selection, charting the data, and collating, summarizing, and reporting the results. Notwithstanding several strengths, there were limitations worthy of note in this scoping review. First, only articles published in English were included. This may cause some articles related to this review not to be captured. Second, most of the studies were conducted in Western countries, so the findings were skewed toward this specific culture. Finally, a formal quality assessment was not undertaken for most identified papers.

Conclusion
Parenting stress in children with ASD has gained growing attention recently. The current scoping review provides a holistic view concerning the main predictive factors correlated with a high level of parenting stress and offers a good starting point for developing support programs for parenting. Based on the scoping review, there have been consistencies regarding the predictor variables. Previous studies have provided a consistent picture to agree on core ASD symptoms as correlating with a high level of parenting stress. As a result, this scoping review makes a significant contribution to research as a key to the development of an interventional support program that focused mainly on ASD core symptoms. The findings may also make a crucial contribution in helping parents improve their adaptation to stressful situations.

Acknowledgements
The authors thank the editorial team and anonymous reviewers for their insightful comments and suggestions.

Authors’ contributions
HMA contributed to the conception, design of the work, and data acquisition; drafted the work, and approved the submitted version. LK contributed to drafting the work, critically revised the manuscript, and approved the submitted version. The authors read and approved the final manuscript.

Funding
No funding was provided for this review.

Availability of data and materials
The datasets used during the current scoping review are available from the corresponding author and are ready to be shared upon reasonable request.

Declarations
Ethics approval and consent to participate
Not applicable.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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Received: 1 December 2020 Accepted: 22 June 2021
Published online: 27 July 2021

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