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# Parenting self-efficacy mediates relationship between caregiving burden and parenting stress among parents of adolescents with disabilities: a cross-sectional study

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**ABSTRACT**

**Introduction:** Caring for children with disabilities can place significant demands on parents, potentially resulting in added stress and burden. Parenting self-efficacy plays a critical role in reducing stress for parents of children with disabilities. The study examines the role of parenting self-efficacy as a mediator in the relationship between caregiver burden and parenting stress.

**Methods:** A cross-sectional study was conducted with 204 parents of children with disabilities. Data were collected using self-administered questionnaires, including the General Information Questionnaire, Zarit Burden Interview Questionnaire, Parenting Sense of Competence Scale (PSOC Scale), and Parenting Stress Index. Data analysis included multiple linear regression and Hayes's PROCESS Macro.

**Results:** The mean scores for caregiving burden, parenting self-efficacy, and parenting stress were 16.98 (SD = 10.10), 31.03 (SD = 6.72), and 61.72 (SD = 12.84), respectively. Parenting stress was negatively correlated with parenting self-efficacy ($r = -0.35$, $p < 0.001$). The findings reveal that caregiving burden significantly reduces parenting self-efficacy ($B = -0.16$, $p < 0.001$), which in turn lowers the ability of caregivers to manage stress ($B = -0.48$, $p < 0.001$). While caregiving burden has a direct effect on parenting stress ($B = 0.07$, $p < 0.001$), the total impact, including both direct and indirect influences, remains significant ($B = 0.52$, $p < 0.001$) with mediation percentages of 12.9%.

**Conclusions:** The findings suggest that strategies to enhance parenting self-efficacy could significantly reduce the negative impact of caregiving burden on parenting stress. By improving self-efficacy, caregivers may better manage stress, highlighting the importance of targeted interventions that boost self-efficacy.

**Keywords:** caregivers' burden, children, disability, parenting stress, self-efficacy

## Introduction

Raising a child with a disability presents substantial challenges for the majority of parents. It is widely recognized that parents of children with disabilities can experience adverse impacts on their mental well-being due to the burden of care they experience. The increased caregiver burden associated with tending to a child with a disability has been found to correlate with heightened distress and diminished quality of life among parents. Studies indicate that these parents experience higher levels of stress and depression compared to parents of typically developing children (Ricci *et al.*, 2017, Alibekova *et al.*, 2022, Dijkstra-de Neijs *et al.*, 2024). Research also consistently shows that a higher care burden is associated with an increased risk of poor health-related quality of life for parents (Vonneilich *et al.*, 2016, Öztürk and Alemdar, 2023, Dijkstra-de Neijs *et al.*, 2024).

An estimated 240 million children around the globe are living with a disability. This figure exceeds previous

estimates and is based on a more comprehensive and inclusive definition of disability. This definition encompasses various domains of functioning, including those associated with psychosocial well-being (UNICEF, 2023a). In Indonesia, according to RISKESDAS 2018, 3.3 percent of children (aged 5-17 years) have a disability (Ministry of Health Indonesia, 2018). There is an equal proportion of children with disabilities among females and males, and in urban and rural areas. Susenas surveys in 2018 and 2021 found that the percentage of children (aged 2-17 years) with disabilities in Indonesia was even lower, at 1.1 and 0.6 percent, respectively (UNICEF, 2023b).

The increasing burden among parents with disability can be attributed to factors such as the need for additional childcare, reduced availability of leisure time activities, and heightened health-related expenditures. This burden seems to be associated with the child's age, gender, type and severity of disability, behavioral issues, comorbidities, and level of social support (Smith *et al.*, 2010, Unwin and Deb, 2011, Cidav *et al.*, 2012, Irazábal *et al.*, 2012, Langley *et al.*, 2017, Picardi *et al.*, 2018). A recent study has indicated that parents of children with disabilities experience a reduction in their quality of life as their caregiving burden increases. The research has established a negative correlation between the level of family burden and the quality of life experienced by the parents (Keniş-Coşkun *et al.*, 2020, Çolak and Kahriman, 2023).

Previous research has consistently shown a negative correlation between parenting self-efficacy and parenting stress among parents of children with disabilities. In addition, mediation analysis showed that parenting self-efficacy served as a mediator in the relationship between parenting stress and parental burnout (Aktu, 2024, Wu *et al.*, 2024). Other research has also shown that parents of children with autism spectrum disorder (ASD) who have higher levels of self-efficacy tend to experience reduced levels of parenting stress (Iskayanti and Hartini, 2019, Stephenson *et al.*, 2023). Research conducted by Stephenson *et al.* (2022) has proven that parenting self-efficacy mediates the relationship between child behavior problems and parenting stress. For example, greater externalizing problems in children with ASD were associated with lower parenting self-efficacy (Chen *et al.*, 2021). This relationship underscores the importance of fostering self-efficacy among parents to improve their well-being and increase their capacity to support their children effectively. Recent studies have explored PSE's mediating role in this context. For instance, research indicates that parenting stress negatively impacts PSE, which in turn contributes to parental burnout. This suggests that interventions aiming to enhance PSE could mitigate the effects of stress and prevent burnout among parents (Aktu, 2024). Improvements in PSE are associated with reductions in parenting stress. However, changes in child behavior were less evident, highlighting the complex interplay between these factors. (Albanese *et al.*, 2019)

Parenting self-efficacy is a vital factor in alleviating stress for parents of children with disabilities (Yazicioğlu *et al.*, 2024). Despite extensive research on parenting stress and child behavior, there remains a gap in understanding the role of parental self-efficacy as a mediator in this relationship, particularly in diverse socio-cultural contexts. Most existing studies focus on direct correlations without exploring the psychological mechanisms that influence parenting stress and affect child behavior (Iskayanti and Hartini, 2019, Chen *et al.*, 2021, Fu *et al.*, 2023, Stephenson *et al.*, 2023). Additionally, research has primarily examined mothers, leaving fathers' experiences and perspectives underrepresented. Our study aims to explore the role of parenting self-efficacy as a mediating variable in the relationship between caregiver burden and parenting stress, offering a more comprehensive understanding of the interplay between these factors. By incorporating diverse caregiver perspectives and contextual influences, this study provides novel insights that can inform targeted interventions to enhance parental coping strategies and improve child outcomes. This innovative approach is anticipated to contribute significantly to this field's existing body of knowledge.

## Materials and Methods

### Study Design

This cross-sectional survey identified the mediating effects of parenting self-efficacy on the relationship between caregiving burden and parenting stress among parents of adolescents with disabilities in Indonesia.

### Study setting

This study was conducted in ten national elementary schools designated as inclusive educational institutions in Surabaya, East Java, Indonesia. In these schools, students with disabilities are integrated into the same classrooms as their peers without disabilities. The data collection took place from January to March 2024.

### Participants and sampling

The participants in this study were recruited from a school in Surabaya City that caters to children with disabilities. Questionnaires were sent to 284 parents. Two hundred four parents returned the questionnaires, resulting in a participation rate of 72 %. Participants who met the following inclusion criteria were included in this study: (1) parents with children between 11 and 17 years old, (2) children with attention deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD), cerebral palsy, speech disorder, intellectual disorder and learning disorder (3) participated voluntarily, (4) understood the questionnaire well, and (5) had practical

communication skills. The convenience sampling method was used due to its practicality, accessibility, and feasibility in reaching the target population within the given research constraints. It allows for quick data collection from readily available participants, making it suitable for studies with time and budget limitations. Additionally, in studies involving specific groups, such as caregivers or parents of children with disabilities, random selection may not be feasible due to the limited accessibility of such populations. Details can be seen in Table 1.

## Variables and Measurements

### *Demographics information*

The questionnaire used in this study is closed-ended since the socio-demographic form provides predefined response options for each variable, allowing participants to select from fixed categories. The socio-demographic form included items for age, gender, parent's education (no education, elementary school, junior high school, senior high school, and university, family income (< USD 63.05, USD 63.05 to USD 126.10, USD 126.10 to USD 189.15, USD 189.15 to USD 252.20, and > USD 252.20) per month, number of children, type of disability, child's sex (boy and girl).

### *Caregiver Burden*

The family burden assessment utilized the Zarit Burden Interview questionnaire, developed by Siegert *et al.* (2010). This questionnaire consists of three subscales: personal strain (ten items), role strain (ten items), and feelings of guilt (two items) (Siegert *et al.*, 2010). The items are scored using a five-point Likert scale, where "never" is assigned a score of 1, "rarely" is assigned a score of 2, "sometimes" is assigned a score of 3, "often" is assigned a score of 4, and "always" is assigned a score of 5. The total score was calculated by adding each response (range: 22–110), with higher scores representing a higher caregiver burden. The questionnaire has been translated into an Indonesian version by Khatimah in 2018. The translated version showed a high reliability with a Cronbach alpha of 0.86, indicating strong internal consistency (Khatimah, 2018).

### *Parenting self-efficacy*

The parenting self-efficacy tool used is the Parenting Sense of Competence Scale (PSOC Scale), which consists of two subscales: self-efficacy and satisfaction. In this study, researchers only used the efficacy subscale of 7 items in accordance with the variable, namely parenting self-efficacy (Johnston and Mash, 1989). This efficacy subscale consists of 3 dimensions: competence, problem-solving ability, and ability in the parenting role. Of the three dimensions, there are three behavioral indicators: considering the problem easy, being a good example, being able to organize, meeting expectations, finding answers, knowing the role, and having skills. Using a Likert scale with six answer choices, the answer choices use strongly agree, agree, somewhat agree, somewhat disagree, disagree, and strongly disagree. The total score was calculated by adding each response (range: 7–42), with higher scores representing a higher Parenting self-efficacy. The Indonesian version of this questionnaire was available (Yolanda, 2012). The reliability test results using Cronbach alpha resulted in a reliability coefficient value of 0.860 (Yolanda, 2012).

### *Parenting Stress Index*

Parenting stress was measured using a scale created by the researcher based on aspects of parenting stress expressed by Abidin (1995). The preparation of the parenting stress scale is based on aspects of parenting stress consisting of: 1) parent domain, 2) child domain, and 3) parent-child interaction. The scaling model used refers to the Likert scaling model, which consists of five categories: very suitable (5), appropriate, cannot determine with certainty, not suitable, or very unsuitable (1). The score range of each statement ranges from 1 to 5 concerning the nature of the item (favorable or unfavorable). The total score was calculated by adding each response (range: 26–130), with higher scores representing a higher Parenting Stress. The scale underwent a psychometric evaluation in its Indonesian version (Daulay *et al.*, 2020). The Cronbach's alpha of the Parenting Stress Index was 0.823 (Daulay *et al.*, 2020).

## Data collection

Upon receiving approval from the school principal, a detailed letter about the survey was sent to inform the parents about the study, explain its purpose, and assure them that participation was voluntary. After gaining permission, the school provided a list of parents who met the criteria for participation. Following this, questionnaires were distributed to the parents during specific school events, such as report card distribution in the classrooms and morning drop-offs in the school yard. This approach ensured convenient access for parents to complete the questionnaires while engaging in routine school activities. Six research assistants with bachelor's degrees in nursing assisted with the distribution and were briefed about the study by the researcher. They participated in a one-day training session that covered the study objectives, participant eligibility, data collection procedures, and the informed consent process. The training also included role-playing interview techniques. During data collection, the researcher ensured that the parents understood the research objectives, the time required to complete the questionnaire, and the informed consent process. We ensured parents knew their participation was voluntary and could be withdrawn anytime. Throughout the study,

Table 1 Characteristics of the Participants

| Variables | *n* | % | t/F | *p-value*[a] |
|---|---|---|---|---|
| **Parent's Gender** | | | | |
| Male | 66 | 32.4 | .59 | <.001 |
| Female | 138 | 67.6 | | |
| **Parent's age (years)** | 45.6 (8.3)[┼] | 14–68[╫] | -1.51 | .130 |
| **Parent's Education** | | | | |
| Elementary School | 21 | 10.3 | | |
| Junior High School | 47 | 23 | -.21 | .827 |
| Senior High School | 110 | 53.9 | | |
| University | 26 | 12.7 | | |
| **Income** | | | | |
| < $63.05 USD | 32 | 15.7 | | |
| $63.05 to $126.10 USD | 61 | 29.9 | | |
| $126.10 to $189.15 USD | 50 | 24.5 | -1.15 | .252 |
| $189.15 to $252.20 USD | 31 | 15.2 | | |
| > $252.20 USD | 30 | 14.7 | | |
| **Number of Children** | 2.3 (0.9)[┼] | 1-4[╫] | .99 | .321 |
| **Child's Gender** | | | | |
| Male | 121 | 59.3 | -1.44 | .149 |
| Female | 82 | 40.2 | | |
| **Chid's age (years)** | 14.3 (1.2)[┼] | 11-18[╫] | .92 | .355 |

*Note. n = 204;* ┼*Mean (Standard Deviation, SD);* ╫*Range (min–max)*
*aChi-square test*

we maintained transparency and offered assistance if they had questions, providing a positive and respectful approach to data collection.

### Statistical analysis

We employed SPSS 25 (IBM Corp, Chicago, Illinois) for descriptive statistics, which included median, standard deviation, and frequencies, to describe all the variables. A person correlation coefficient and a Chi-square test were used to determine the correlation between quantitative variables and caregiver burden, parental self-efficacy, and parenting stress scores. This study also uses multiple linear regression to analyze the relationship between one dependent and several independent variables. In addition, the author also uses the Hayes Process Model 3. This model analyzes parenting self-efficacy as a mediation influenced by moderation. Model 3 is specifically designed for situations with multiple moderations, namely when the mediating effect is influenced by two moderators, namely caregiver burden and parenting stress.

### Ethical considerations

The Institutional Review Board at Universitas Muhammadiyah Surabaya has formally approved this study under reference number 064/KET/II.3/AU/F/2023. We ensured that all participants provided their consent voluntarily, with no instances of coercion involved.

## Results

### Sociodemographic characteristics

Questionnaires were sent to 284 parents. Three hundred four parents returned the questionnaires, resulting in a participation rate of 72 %. Regarding the gender of the parents, the majority were female (67.6%), while males constituted 32.4%, with a significant difference ($p < .001$) between the proportions. The average age of the parents was 45.6 years (SD = 8.3), ranging from 14 to 68 years, and no significant difference was observed in the parent age distribution ($p = 0.130$).

In terms of education level, most parents had completed senior high school (53.9%), followed by junior high school (23%), elementary school (10.3%), and university education (12.7%). There was no significant difference in the distribution of education levels ($p = 0.827$). Regarding income, the largest group of parents reported earning between USD 63.05 to USD 126.10 per month (29.9%). Other income brackets included less than USD 63.05 (15.7%), USD 126.10 to USD 189.15 (24.5%), USD 189.15 to USD 252.20 (15.2%), and above USD 252.20 (14.7%). Income differences were not statistically significant ($p = 0.252$).

The number of children per family averaged 2.3 (SD = 0.9), ranging from 1 to 4 children. No significant differences were found in the number of children across

Table 2 Correlations Among Parenting Self-efficacy, Caregiving Burden, and Parenting Stress (n = 204)

| | Caregiving Burden | Parenting Self Efficacy | Parenting Stress |
|---|---|---|---|
| Caregiving Burden | 1.00 | | |
| Parenting Self Efficacy | -0.241** | 1.00 | |
| Parenting Stress | 0.47** | -0.35** | 1.00 |
| *Mean* | 16.98 | 31.03 | 61.72 |
| *SD* | 10.10 | 6.72 | 12.84 |
| Range (min–max) | 0–52 | 7–42 | 34–101 |

*Note*. SD = Standard Deviation; ** $p < 0.001$ (2-tailed)

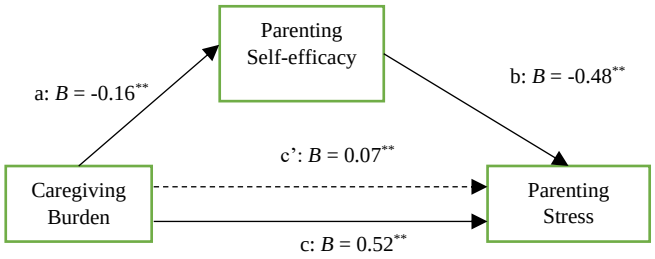


Figure 1. The mediation model of Parenting Self-Efficacy on caregiving burden and parenting stress

*Note***p < 0.001*

the sample (p = 0.321). For children's gender, the sample included more male children (59.3%) than female children (40.2%), though this difference was not statistically significant (p = 0.149). The average age of the children was 14.3 years (SD = 1.2), with a range of 11 to 18 years, and the variation was not significant (p = 0.355). The participant group predominantly consists of female parents with a high school education and middle-range income levels, ranging from USD 63.05 to USD 126.10. There were no significant differences in variables such as parent age, education, income, number of children, children's gender, or age, except for the significantly higher proportion of female parents.

### Correlations Among Parenting self-efficacy, Caregiving Burden, and Parenting Stress

The mean scores for caregiving burden, parenting self-efficacy, and parenting stress were 16.98 (SD = 10.10), 31.03 (SD = 6.72), and 61.72 (SD = 12.84), respectively. The range for caregiving burden was 0–52, for parenting self-efficacy 7–42, and for parenting stress 34–101, indicating substantial variability in these constructs.

Correlations between key variables are presented in Table 2. Caregiving burden was negatively correlated with parenting self-efficacy (r = –0.241, p < 0.001), indicating that higher caregiving burden was associated with lower confidence in parenting abilities. Parenting stress was positively correlated with caregiving burden (r = 0.47, p < 0.001), suggesting that increased caregiving burden is linked to higher stress levels. Additionally, parenting stress was negatively correlated with parenting self-efficacy (r = –.35, p < .001), showing that greater confidence in parenting abilities is associated with lower stress.

### Determinants of Parenting Stress

The findings of this study highlight the partial mediating role of parenting self-efficacy in the relationship between caregiving burden and the dependent variable (e.g., parenting stress). In the initial model (Step 1), caregiving burden significantly predicted the outcome variable (β=0.47, $p$<0.001), explaining 22% of the variance ($R^2$=0.22) However, when parenting self-efficacy was introduced as an additional predictor (Step 2), the effect of caregiving burden decreased (β=0.41, $p$<0.001), indicating partial mediation. Parenting self-efficacy itself was a significant predictor (β=−0.25, $p$<0.001), suggesting that higher parenting self-efficacy can reduce the adverse impact of caregiving burden. The inclusion of parenting self-efficacy improved the explanatory power of the model, with $R^2$ increasing to 0.28 ($\Delta R^2$=0.06). Table 3 illustrates the interrelations among care burden and parenting self-efficacy, emphasizing the partial mediating effect of parenting stress.

### Mediating effect of Parenting Self-Efficacy on caregiving burden and parenting stress

Figure 1 explores the mediating role of parenting self-efficacy in the relationship between caregiving burden and parenting stress. The findings reveal that caregiving burden significantly reduces parenting self-efficacy (B = −0.16, p <0.001), which in turn lowers the ability of caregivers to manage stress (B = −0.48, p <0.001). While caregiving burden has a direct effect on parenting stress (B = 0.07, p <0.001), the total impact, including both direct and indirect influences, remains significant (B = 0.52, p <0.001). Furthermore, the indirect effect of caregiving burden on parenting stress through parenting self-efficacy (−0.16 × −0.48 = 0.0776) highlights that a portion of the relationship between caregiving burden

Table 3 Hierarchical multiple linear regression for determinants of Parenting Stress (n = 204)

| Model | Variable | b | *B* | t | *p-value*[a] | 95,0% Confidence Interval for B | | $R^2$ change | $R^2$ | Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound | | | |
| Step 1 | (Constant) | 51.51 | | 33.07 | <0.001 | 48.440 | 54.581 | 0.22 | 0.22 | 0.22 |
| | Caregiving burden | 0.60 | 0.47 | 7.62 | <0.001 | 0.446 | 0.757 | | | |
| Step 2 | (Constant) | 67.82 | | 16.00 | <0.001 | 59.467 | 76.183 | 0.06 | 0.28 | 0.27 |
| | Caregiving burden | 0.52 | 0.41 | 6.69 | <0.001 | 0.370 | 0.678 | | | |
| | Parenting self-efficacy | -0.48 | -0.25 | -4.11 | <0.001 | -0.715 | -0.252 | | | |

and parenting stress is mediated by parenting self-efficacy. These findings underscore the importance of interventions to boost parenting self-efficacy to reduce the stress associated with caregiving burden.

The analysis revealed both direct and indirect effects of the predictor variable on the outcome variable. The direct impact was 0.52400, indicating a substantial influence of the predictor on the outcome without considering the mediator. The indirect effect, mediated through an intermediary variable, was 0.07760, highlighting an additional pathway through which the predictor affects the outcome. The total effect, combining both direct and indirect impact, was 0.60160. These results suggest that while the predictor has a substantial direct impact, the mediator also plays a significant role in explaining the relationship, emphasizing the importance of addressing both pathways in intervention strategies.

## Discussions

The present study's findings reveal a complex interaction between caregiving burden, self-efficacy, and parenting stress, with caregiving burden emerging as a significant predictor of parenting stress and self-efficacy serving as a key mediating factor. Specifically, the study demonstrates that higher caregiving burdens are associated with lower self-efficacy, which, in turn, contributes to increased parenting stress. This pattern underscores the significant psychological challenges that parents of children with intellectual disabilities experience in their caregiving roles (Yang *et al.*, 2016). The negative impact of caregiving burden on self-efficacy highlights how caregiving's physical and emotional demands can erode caregivers' belief in their ability to manage their responsibilities, further exacerbating stress effectively (Yeung *et al.*, 2020).

This is consistent with a similar study by Sevgi and Ayran (2024), in which parents of children found a significant association between increased caregiving burden and higher levels of parenting stress. Their research emphasized that as the caregiving demands intensified, parents reported feeling less capable and confident in their abilities to handle the daily challenges of caregiving. This diminished self-efficacy led to an escalation of stress, confirming the results of the present study. In our study, self-efficacy was a critical mediator in this relationship, suggesting that interventions to improve caregivers' sense of competence could effectively reduce parenting stress, even when the caregiving burden remains high.

Furthermore, Fong and Ali (2023) conducted a study examining the impact of the caregiving burden on parents of children with intellectual disabilities. Their findings corroborate the results of this study, indicating that higher caregiving demands lead to lower self-efficacy and more significant parenting stress. One potential solution to mitigate these adverse effects is the enhancement of self-efficacy through training programs and support interventions (Gupta, 2007). In line with this, the current study's findings strongly suggest that strengthening caregivers' self-efficacy could serve as a protective factor, allowing them to manage better the stresses associated with caregiving. This might be achieved through various support systems, such as caregiver education, peer support groups, and professional counselling services, which can help boost caregivers' confidence in their abilities and coping strategies.

Moreover, the study's results align with findings from China, which reported that caregivers who believed in their ability to manage their caregiving tasks tended to engage in more positive caregiving behaviors, leading to lower stress levels. When caregivers feel more capable and supported, they are more likely to adopt effective self-care strategies, ultimately reducing the impact of stress (Sabo and Chin, 2021). Fostering a strong sense of self-efficacy could be essential to any intervention designed to reduce parenting stress, particularly for parents responsible for children with significant caregiving needs (Parker Oliver *et al.*, 2017). Self-efficacy can buffer the adverse effects of the caregiving burden. They argue that caregivers who feel confident in their skills can better cope with the daily demands of caregiving, leading to improved emotional well-being (Kurzrok, McBride, and Grossman, 2021). The role of self-efficacy as a mediator suggests that caregivers' perceptions of their ability to manage their responsibilities directly influence their stress levels. For instance, when caregivers perceive that they can successfully meet the demands of their caregiving role, they experience less stress and greater emotional well-being, even if the burden of care is heavy (Yang *et al.*, 2023).

The current study underscores the significance of addressing the caregiving burden through targeted interventions to enhance self-efficacy. The burden alone does not adequately predict parenting stress; it is crucial to consider caregivers' perceptions of their ability to manage their responsibilities. This conclusion is consistent with the findings from the research, which Fye (2019) indicates that caregivers who experience feelings of being overwhelmed are more prone to neglecting self-care and may engage in maladaptive coping strategies. However, enhancing self-efficacy among caregivers can significantly improve their ability to manage stress and maintain healthier behaviors. This improvement is vital for the caregivers' well-being and the well-being of the children in their care (Parker Oliver *et al.*, 2017; Kurzrok, McBride and Grossman, 2021).

In a broader context, the present study's findings contribute to the growing body of research on parenting stress and caregiving by demonstrating the intricate relationship between caregiving burden, self-efficacy,

and stress. The results suggest that reducing caregiving burden alone may not alleviate stress; instead, it is equally important to foster caregivers' belief in their ability to cope with their demands (Fields, 2021, Romano *et al.*, 2022, Yang *et al.*, 2023). This finding underscores the need for multifaceted interventions addressing caregiving's objective and psychological aspects. For example, respite care programs temporarily relieve caregivers, reducing stress and burnout (Cookson, 2022, Duru *et al.*, 2024, Lawrence, 2024). Meanwhile, psychoeducational support groups have improved caregivers' coping skills and emotional well-being (Frias *et al.*, 2020, Sak-Dankosky *et al.*, 2022, Ashmitha *et al.*, 2024). There is potential for psychological interventions to improve self-efficacy and reduce parenting stress significantly (Ashmitha *et al.*, 2024). Interventions that provide caregivers with the tools and knowledge to navigate caregiving challenges more effectively are essential in reducing stress levels. Such interventions might include training programs focused on caregiving skills, emotional support from peers or professionals, and education about the specific needs of children with intellectual disabilities (Sak-Dankosky *et al.*, 2022). Enhancing caregivers' self-efficacy can empower parents, enabling them to feel more in control of their situation and better equipped to handle the demands of caregiving (Pihet *et al.*, 2024). This sense of empowerment can be transformative, reducing stress and improving the quality of care provided to children with intellectual disabilities (Frias *et al.*, 2020).

In conclusion, the findings of this study suggest that interventions designed to reduce parenting stress among caregivers of children with intellectual disabilities should focus on strengthening self-efficacy as a central component. By improving caregivers' confidence in their abilities to manage caregiving tasks, these interventions can help reduce the negative impact of caregiving burden and improve the overall well-being of parents. Future research should continue to explore the mechanisms through which self-efficacy influences parenting stress and investigate the long-term effects of interventions to enhance caregivers' self-efficacy. Such research will be essential in developing more effective support programs for parents, ultimately benefiting both caregivers and children with intellectual disabilities. It provides valuable insights through mediation analysis, exploring how the caregiving burden influences parenting stress via parenting self-efficacy. Convenience sampling is easy to implement and cost-effective. However, convenience sampling may lead to selection bias and limited generalizability since participants are chosen based on availability rather than random selection. This can result in an unrepresentative sample, reducing the reliability and applicability of the findings. This study adopted a cross-sectional research design, which provides a snapshot of the relationship between the variables at a single point in time.

## Conclusion

This study investigates the role of parenting self-efficacy as a mediator in the relationship between caregiving burden and parenting stress. Enhancing parenting self-efficacy may mitigate the adverse effects associated with caregiving burden. Increased self-efficacy empowers caregivers to manage stress more effectively, underscoring the importance of targeted interventions. Future programs should prioritize the strengthening of caregivers' self-efficacy, as this approach could lead to a reduction in stress and an enhancement of caregiving experiences. Healthcare providers must recognize the factors influencing caregiving burden and parenting self-efficacy to deliver tailored support. Future research to explore the long-term effects could use a longitudinal approach to investigate how working conditions and parenting self-efficacy influence parenting stress over time.

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## Availability of data and materials

The authors confirm that the data supporting the findings of this study are available within the article.

## Authors' contributions

Mundakir, Idham Choliq, and Sukadiono were responsible for the study conception and design, supervised the overall research process, and contributed to critical revisions for important intellectual content. Vika Ramadhana Fitriyani and Firman contributed to data collection, conducted literature review and analysis, and were actively involved in manuscript writing and referencing. All authors have read and approved the final version of the manuscript.

## Declaration of Interest

The authors declare no conflict of interest that could have appeared to influence the work reported in this paper.

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