

Original Research Article

Perceived Social Support and Post-Traumatic Growth among Parents of Children with Neurodevelopmental Disorders: A Cross-Sectional Study

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Abstract: Background: Parents of children with neurodevelopmental disorders (NDDs) often face chronic caregiving stress, yet some also report positive psychological change, known as post-traumatic growth (PTG), alongside this adversity. Perceived social support is theorised to buffer caregiving stress and facilitate such growth, but evidence in this population, and on gender differences within it, remains limited. **Objective:** This study examined the relationship between perceived social support and PTG among parents of children with NDDs and tested for gender differences in both variables. **Methods:** A cross-sectional, correlational and comparative design was used. Participants: Eighty parents (40 male, 40 female), aged 18 years and above, of children with NDDs were recruited by convenience sampling from child rehabilitation centres and special schools in Malappuram District, Kerala, India. Measures: A personal data sheet, the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet *et al.*, 1988), and the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996) were administered. Statistical analysis: Data were analysed using Pearson's correlation and independent-samples t-tests. **Results:** Perceived social support was significantly and positively correlated with post-traumatic growth ($r = .590$, $p < .01$), a large effect by conventional benchmarks. No significant gender differences emerged in perceived social support ($t(78) = -0.558$, $p = .579$, $d = 0.12$) or in post-traumatic growth ($t(78) = -1.312$, $p = .193$, $d = 0.29$). **Conclusion:** Higher perceived social support was strongly associated with greater post-traumatic growth among parents of children with NDDs, irrespective of gender. Findings support incorporating social-support-focused, gender-inclusive components into services for these families, though the correlational design precludes causal inference and the modest, single-district sample limits generalisability.

Keywords: Perceived social support; post-traumatic growth; Neurodevelopmental disorders; Parents; Caregivers; Gender differences; Psychological well-being.

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INTRODUCTION

Raising a child with a neurodevelopmental disorder (NDD) is a demanding and often lifelong undertaking that touches nearly every domain of a parent's life. Neurodevelopmental disorders, a category that includes intellectual disability, communication disorders, autism spectrum disorder, attention-

deficit/hyperactivity disorder, specific learning disorders, and motor disorders, are characterised by early-onset developmental deficits that impair personal, social, academic, or occupational functioning (American Psychiatric Association, 2013). Because these conditions typically persist across the lifespan, parents assume an extended caregiving role that combines medical

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decision-making, therapy coordination, advocacy, and day-to-day practical care, often without a clear endpoint.

Parents of children with NDDs commonly report elevated caregiving stress, financial strain arising from therapy and specialised education costs, restricted social and occupational participation, and, in some cases, symptoms consistent with traumatic stress (Miodrag & Hodapp, 2010). Faden, Merdad, and Faden (2023), using a mixed-methods design with parents of children with NDDs in Saudi Arabia, similarly found that financial, familial, and well-being concerns were the most salient challenges reported by parents, and that quality of life was poorest among parents of children with more severe symptoms. Where the child's condition is experienced as life-altering or threatens the family's expected life course, the parental experience can meet criteria for a potentially traumatic event, which may in turn give rise to clinically relevant distress.

Historically, research on parents facing this kind of adversity has concentrated almost exclusively on negative outcomes such as stress, anxiety, and depression. Over the past three decades, however, positive-psychology perspectives have drawn increasing attention to post-traumatic growth (PTG), defined as positive psychological change experienced as a result of the struggle with highly challenging life circumstances (Tedeschi, Shakespeare-Finch, Taku, & Calhoun, 2018). First articulated by Tedeschi and Calhoun (1995) and operationalised the following year with the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), the construct encompasses positive change across five domains: new possibilities, relating to others, personal strength, spiritual change, and appreciation of life. Central to the model is the idea that PTG arises through effortful cognitive processing of the traumatic experience, and that it occurs alongside, rather than in place of, ongoing distress (Tedeschi & Calhoun, 2004; Tedeschi *et al.*, 2018).

Complementary theoretical accounts situate PTG within a broader biopsychosocial framework, in which biological, psychological, and social factors jointly shape the potential for growth after adversity (Engel, 1977), and within existential and humanistic traditions. Frankl's (1963) concept of finding meaning even within suffering, and Maslow's (1971) account of self-actualisation through the mastery of adversity, both anticipate the idea that hardship, when actively processed, can be generative rather than purely destructive. Together, these frameworks suggest that parents of children with NDDs, who face chronic, non-normative adversity, are a theoretically appropriate, if under-studied, population in which to examine PTG.

A growing body of empirical work supports this expectation. Hungerbuehler, Vollrath, and Landolt (2011) found that a substantial proportion of parents of children with severe or chronic illness reported at least

moderate PTG. Similar findings have been reported specifically among caregivers of children with disabilities: Behzadi, Rassouli, Mojen, and Karahroudy (2018) documented meaningful PTG among mothers of children with cancer, with the largest gains in spiritual change and appreciation of life; Counselman-Carpenter (2016) found qualitative evidence of all five Tedeschi and Calhoun growth domains among mothers of children with Down syndrome; and Çokluk (2022), comparing parents of children with special needs to parents of typically developing children, found significantly higher total PTG scores in the special-needs group. Among caregivers of children with developmental disabilities specifically, Lu *et al.* (2022) found that resilience positively predicted PTG, with this relationship mediated by positive coping style and self-efficacy, while Farhadi, Bahreini, Moradi, Mirzaei, and Nemat (2022) found that the meaningfulness and manageability dimensions of sense of coherence, along with emotion-focused coping, predicted PTG among mothers of children with disabilities. Chan *et al.* (2019) further showed that PTG was not simply the inverse of psychological distress among caregivers of children with autism, but operated through self-compassion in a way that could be protective of mental health.

A parallel body of research links these positive outcomes to perceived social support, defined as an individual's subjective belief that assistance, understanding, and connection are available from their social network, as distinct from the objective, received support that others may actually provide (Cohen & McKay, 1984). Several theoretical accounts converge on why this belief matters. The stress-buffering hypothesis holds that perceived support protects individuals from the harmful psychological effects of stressful events by supplying emotional comfort, practical assistance, and guidance that reduce the perceived severity of a stressor (Cohen & McKay, 1984; Cohen & Wills, 1985). Social comparison theory suggests that perceiving oneself as adequately supported, relative to others facing similar circumstances, reinforces a sense of belonging and self-worth (Festinger, 1954). Attachment theory further proposes that securely attached individuals are more likely to perceive support as available because they have learned, from early caregiving relationships, to expect others to be responsive (Ainsworth, Blehar, Waters, & Wall, 1978). Taken together, these frameworks position perceived social support as a psychological resource that could plausibly facilitate, rather than merely accompany, post-traumatic growth.

Direct empirical evidence for a positive association between perceived social support and PTG has emerged across diverse populations coping with serious health-related or traumatic adversity. A meta-analysis of 31 studies in people with breast cancer found a moderate-to-strong positive association between perceived social support and PTG (Ma, Wan, & Chen, 2022), and a more recent meta-analysis of seven studies

focused specifically on caregivers of autistic children likewise found a significant positive association, with support from friends and a significant other emerging as particularly important (Lloyd, 2026). Comparable associations have been reported among COVID-19 patients discharged from hospital (Gok & Ciftci, 2023), young adolescents during the COVID-19 pandemic (Kazemi, Esfahani, Amiri, Tavan, & Farahmandnia, 2022), adults navigating the pandemic more generally (Xie & Kim, 2022), and survivors of the Wenchuan earthquake more than a decade after the event (Xue & Xu, 2022). Within parent and caregiver populations specifically, Wang, Zhang, Liu, and Ni (2023) found a moderate positive correlation between perceived social support and PTG among parents of premature infants in neonatal intensive care, and a recent multi-centre study similarly linked perceived social support to PTG among parents of very low birth weight infants, chiefly through its effect on positive coping style (Wu, Pan, & Jiang, 2025).

Evidence on perceived social support among parents of children with NDDs, while more limited, points in a similar direction and highlights its broader psychosocial value. Nidhi and Rema (2023) found a moderate positive relationship between perceived social support and general well-being among caregivers of children with NDDs. Javed and Zahid (2021) reported that social support significantly predicted life satisfaction among mothers of children with NDDs, with family and 'special person' support emerging as the strongest predictors. Weiss, Robinson, Riddell, and Flora (2021), in a one-year longitudinal study of parents of autistic children and adolescents, found that baseline perceived social support predicted subsequent reductions in parenting stress and child behaviour problems. Sajjad, Asad, Gul, and Ghauri (2022) linked perceived social support to greater subjective well-being among mothers of children with autism spectrum disorder, and Kuru and Piyal (2018) found a significant positive relationship between perceived social support and quality of life among parents of children with autism. Collectively, this literature suggests that perceived social support is consistently implicated in the psychological adjustment of parents of children with NDDs, even though its specific relationship with PTG in this population has rarely been tested directly.

A further open question concerns gender. Mothers and fathers of children with NDDs may occupy different caregiving roles within the family and might therefore be expected to differ in how much support they perceive and in the growth they experience. The available evidence, however, is mixed and, on balance, does not support a strong gender difference in this population. Nidhi and Rema (2023) found no significant gender difference in perceived social support among caregivers of children with NDDs, and Faden et al. (2023) similarly found no significant difference between mothers and fathers in quality of life or parental stress.

Outside the NDD-caregiving context, Cundiff, Fromuth, and Fuller (2023) found that total perceived social support and overall PTG did not differ significantly by gender among survivors of intimate partner violence, although men reported higher support specifically on the familial-support subscale. By contrast, Xue and Xu (2022) found that gender moderated the pathway between perceived social support and PTG among earthquake survivors, indicating that gender-invariance cannot simply be assumed across all trauma-exposed populations and warrants direct testing in any new sample.

Despite this expanding literature, relatively little research has examined perceived social support and PTG together, in the same sample, among parents of children with NDDs in the Indian context, where caregiving is shaped by particular cultural, familial, and service-access conditions. Existing Indian studies in this space (e.g., Nidhi & Rema, 2023) have examined perceived social support alongside general well-being rather than PTG specifically. The present study addresses this gap by examining, in a sample of parents of children with NDDs in Malappuram District, Kerala, (a) the relationship between perceived social support and post-traumatic growth, and (b) gender differences in each of these variables. Three hypotheses were tested: H1, there is a significant relationship between perceived social support and post-traumatic growth among parents of children with NDDs; H2, there is a significant gender difference in perceived social support among these parents; and H3, there is a significant gender difference in post-traumatic growth among these parents.

MATERIALS AND METHODS

Study Design

A cross-sectional, correlational and comparative design was employed. Perceived social support and post-traumatic growth were assessed at a single time point using standardised self-report instruments; their association was examined using Pearson's correlation (H1), and gender-based group differences were examined using independent-samples *t*-tests (H2, H3). This design was chosen for its efficiency in establishing whether, and how strongly, the two constructs are associated in a previously under-studied population, and to provide an initial gender comparison to guide future, more resource-intensive research (e.g., longitudinal or intervention designs). No experimental manipulation, intervention, or follow-up assessment was undertaken, and no causal or directional inference is drawn from the correlational finding.

Participants

The sample comprised 80 parents (40 male, 40 female) aged 18 years and above, each the primary caregiver (mother or father) of a child diagnosed with a neurodevelopmental disorder, recruited from Malappuram District, Kerala, India. No a priori power analysis was reported for the original study; the achieved

sample size is broadly comparable to related published studies on perceived social support in caregivers of children with NDDs and similar populations (e.g., $N = 34$ in Nidhi & Rema, 2023; $N = 63$ in Faden *et al.*, 2023; $N = 90$ in Kuru & Piyal, 2018), and is presented here with that context so that readers can judge its adequacy for the effect sizes obtained.

Sampling and Setting

Participants were recruited by convenience sampling, a non-probability method chosen for its feasibility given the absence of a single, centralised registry of parents of children with NDDs in the district. Data were collected from child rehabilitation centres and special schools in Malappuram District, settings chosen because they are routinely attended by the target population and therefore offered practical access to eligible parents. As with any convenience sample, participants recruited through these specific institutions may not be fully representative of all parents of children with NDDs in the district, including those who do not access such centres; this is addressed further under Limitations.

Inclusion and Exclusion Criteria

Inclusion criteria: (1) parents aged 18 years or above with a child or children diagnosed with a neurodevelopmental disorder; (2) parent is the primary caregiver of the child (mother or father).

Exclusion criteria: (1) presence of a diagnosed psychiatric or neurological condition in the parent; (2) grandparents or other family members who are not the primary caregiving parent.

Measures

Personal data sheet. A researcher-prepared form recording name, age, and gender.

Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988).

A 12-item, 7-point Likert scale (1 = very strongly disagree to 7 = very strongly agree) assessing perceived support across three four-item subscales: Family, Friends, and Significant Other. Total scores range from 12 to 84, with 12–35 conventionally classified as low, 36–60 as moderate, and 61–84 as high perceived support. The original scale has demonstrated high internal consistency ($\alpha = .88$) and test–retest reliability ($r = .85$), and has since shown strong construct validity and factorial stability across clinical and community populations internationally, including prior use with parents and caregivers of children with NDDs and related conditions (e.g., Kuru & Piyal, 2018; Nidhi & Rema, 2023; Sajjad *et al.*, 2022).

Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996).

A 21-item scale rating positive change following a highly stressful or traumatic experience on a 0 (I did not experience this change) to 5 (I experienced this change to a very great degree) scale, spanning five domains: New Possibilities, Relating to Others, Personal Strength, Spiritual Change, and Appreciation of Life. Total scores range from 0 to 105, with 0–60 conventionally classified as low, 60–65 as medium, and 66–105 as high. The original scale has shown high internal consistency ($\alpha = .90$) and test–retest reliability ($r = .71$), with established construct, concurrent, and discriminant validity, and has been widely used in caregiver populations, including parents of children with cancer, autism, and other disabilities (Behzadi *et al.*, 2018; Chan *et al.*, 2019; Lu *et al.*, 2022).

Procedure

Ethical and institutional permission was obtained from the participating child rehabilitation centres and special schools prior to data collection. The researcher visited each site in person and, in consultation with centre or school staff, identified parents who were present at the time of the visit (for example, while accompanying their child to a therapy or school session) and who appeared to meet the inclusion criteria.

Each parent was individually approached, and the researcher established rapport before explaining the purpose, procedures, and voluntary nature of the study in accessible, non-technical language. Parents who agreed to participate were asked to read and sign a written consent form; the researcher remained available throughout to answer questions and clarify any item on request.

Participants then completed the personal data sheet, MSPSS, and PTGI as a single booklet, in the presence of the researcher, taking approximately 10–15 minutes in total. Where a parent had difficulty with independent reading, the researcher read the items aloud and recorded the parent's verbal response, without altering the wording or order of the items.

On completion, each booklet was checked for missing responses before the participant left, and any omissions were, where possible, resolved with the participant at that time. Completed questionnaires were then scored according to the respective published scoring keys for the MSPSS and PTGI, and scores, together with the demographic variables, were entered into a spreadsheet for verification and subsequent statistical analysis.

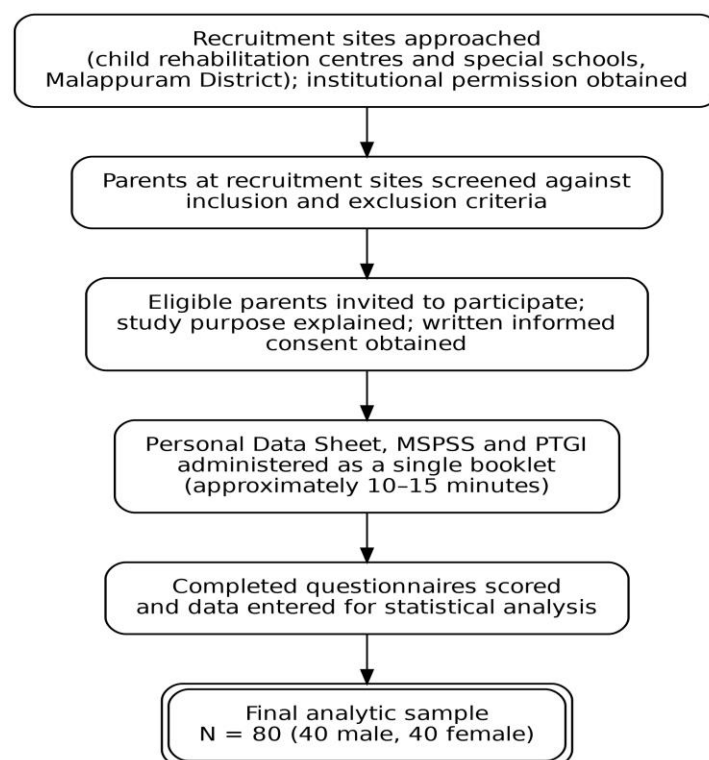


Figure 1: Participant recruitment and data-collection flow

Ethical Considerations

The study was conducted in accordance with recognised ethical principles for research involving human participants, consistent with the 1964 Helsinki Declaration and its later amendments. Written informed consent was obtained from all participants prior to data collection. Participants were informed of the purpose and voluntary nature of the study, assured of the confidentiality of their responses, and informed of their right to withdraw at any time without penalty or effect on the care their child received at the recruitment site. Completed data were anonymised prior to analysis, with no personally identifying information retained in the analytic dataset (see also Ethics Approval and Informed Consent, below).

Statistical Analysis

Data were analysed using SPSS. Descriptive statistics (frequencies, means, and standard deviations) were computed for sociodemographic variables and for perceived social support and post-traumatic growth scores. Pearson's product-moment correlation coefficient was computed to test the association between perceived social support and post-traumatic growth (H1), and

independent-samples t-tests were used to test for gender differences in perceived social support (H2) and post-traumatic growth (H3), with degrees of freedom of 78 under the assumption of equal variances for $n = 40$ per group. The significance threshold was set at $p < .05$ (two-tailed) throughout, consistent with the level actually used to interpret significance in the original analysis. Effect sizes are reported to aid interpretation: for the correlation, using Cohen's (1988) conventional benchmarks ($r \approx .10$ small, $.30$ medium, $.50$ large); for the group comparisons, using Cohen's d , computed from the reported means, standard deviations, and group sizes using the standard pooled-variance formula ($d \approx 0.20$ small, 0.50 medium, 0.80 large). No other statistical procedures (e.g., regression, ANOVA, or mediation analysis) were performed.

RESULTS

A total of 80 parents completed all study measures with no missing data at the item level; all 80 cases were retained for analysis. Table 1 summarises the sociodemographic characteristics of the sample.

Table 1: Sociodemographic Characteristics of Participants (N = 80)

Characteristic	Category	n (%)
Gender	Male	40 (50.0%)
	Female	40 (50.0%)
Age	18 years and above	80 (100.0%)
Location	Malappuram District, Kerala, India	80 (100.0%)
Sampling method	Convenience sampling	80 (100.0%)

Relationship between Perceived Social Support and Post-Traumatic Growth (H1)**Table 2: Correlation between Perceived Social Support and Post-Traumatic Growth**

Variable	r	p
Perceived social support – Post-traumatic growth	0.590**	< .01

**Correlation is significant at the 0.01 level (2-tailed).

Pearson's correlation revealed a statistically significant, positive relationship between perceived social support and post-traumatic growth, $r(78) = .590$, $p < .01$. By conventional benchmarks (Cohen, 1988), this represents a large effect: perceived social support accounted for approximately 34.8% of the variance in

post-traumatic growth scores ($r^2 = .348$). Hypothesis 1 was therefore supported.

Gender Differences in Perceived Social Support and Post-Traumatic Growth (H2, H3)**Table 3: Gender Differences in Perceived Social Support and Post-Traumatic Growth**

Variable	Group	M	SD	t(78)	p	d
Perceived social support	Male (n = 40)	58.18	17.828	-0.558	.579	0.12
	Female (n = 40)	60.45	18.642			
Post-traumatic growth	Male (n = 40)	51.60	21.234	-1.312	.193	0.29
	Female (n = 40)	58.73	26.990			

Note. Equal variances assumed. d = Cohen's d , computed from the reported means, standard deviations, and group sizes; conventionally, 0.20 = small, 0.50 = medium, 0.80 = large.

No statistically significant gender difference was found in perceived social support, $t(78) = -0.558$, $p = .579$, $d = 0.12$ (a negligible-to-small effect), and Hypothesis 2 was therefore not supported. Female participants ($M = 60.45$, $SD = 18.642$) scored marginally higher, on average, than male participants ($M = 58.18$, $SD = 17.828$), but this difference was small in magnitude and not statistically reliable.

Similarly, no statistically significant gender difference was found in post-traumatic growth, $t(78) = -1.312$, $p = .193$, $d = 0.29$ (a small effect), and Hypothesis 3 was therefore not supported. Female participants ($M = 58.73$, $SD = 26.990$) again scored somewhat higher, on average, than male participants ($M = 51.60$, $SD = 21.234$); the larger standard deviation in the female group indicates greater variability in post-traumatic growth scores among mothers than among fathers in this sample.

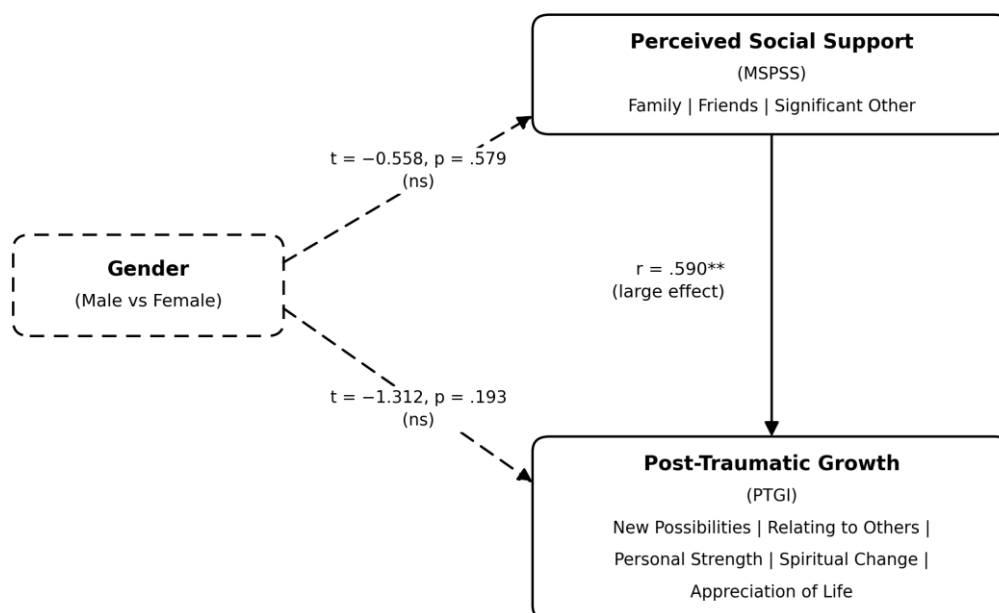


Figure 2: Conceptual and analytic framework showing the association between perceived social support and post-traumatic growth, and the gender comparisons tested. Solid arrow: significant association; dashed arrows: non-significant (ns) gender comparisons

DISCUSSION

This study examined the relationship between perceived social support and post-traumatic growth among parents of children with neurodevelopmental disorders, and tested for gender differences in each variable. Three findings emerged. First, perceived social support was strongly and positively associated with post-traumatic growth. Second, no significant gender difference was found in perceived social support. Third, no significant gender difference was found in post-traumatic growth. Each is discussed in turn, followed by the study's strengths, limitations, and implications.

The large positive association between perceived social support and post-traumatic growth ($r = .590$, accounting for approximately 35% of the variance) is consistent with, and numerically stronger than, associations reported in several other populations coping with serious adversity, including breast cancer ($r = .425$; Ma *et al.*, 2022), premature infants in neonatal intensive care (moderate correlation; Wang *et al.*, 2023), and, most recently, very low birth weight infants (Wu, Pan, & Jiang, 2025), and aligns with positive associations reported among COVID-19 patients (Gok & Ciftci, 2023), adolescents (Kazemi *et al.*, 2022), and adults more generally during the pandemic (Xie & Kim, 2022). It is also consistent with the broader pattern, seen across caregivers of children with cancer, autism, and other developmental disabilities, that psychosocial resources, whether framed as social support, resilience, sense of coherence, or self-compassion, are positively linked to post-traumatic growth (Behzadi *et al.*, 2018; Chan *et al.*, 2019; Farhadi *et al.*, 2022; Lu *et al.*, 2022), a pattern reinforced by a recent meta-analysis focused specifically on caregivers of autistic children (Lloyd, 2026).

Several theoretical mechanisms may explain this association. Consistent with the stress-buffering hypothesis (Cohen & McKay, 1984; Cohen & Wills, 1985), parents who perceive greater support may experience caregiving stressors as less overwhelming, preserving the psychological resources needed for the effortful cognitive processing that Tedeschi and Calhoun's (1996, 2004) model identifies as central to growth. Supportive relationships may also provide the emotional validation and sense of belonging described by social comparison theory (Festinger, 1954), reducing the isolation that can otherwise accompany caregiving for a child with an NDD. From an attachment perspective (Ainsworth *et al.*, 1978), parents who are able to draw on trusted, responsive relationships may find it easier to explore and integrate difficult emotions rather than suppress them, a process consistent with existential accounts of meaning-making after adversity (Frankl, 1963) and with humanistic accounts of growth through the mastery of hardship (Maslow, 1971). It is important to note, however, that a large correlation does not establish causation or its direction: it remains equally plausible that parents who have already experienced some degree of psychological growth engage more

actively and effectively with their support networks, or that both perceived support and growth are jointly influenced by an unmeasured third variable, such as coping style (cf. Farhadi *et al.*, 2022; Lu *et al.*, 2022) or family resilience (cf. Wang *et al.*, 2023).

The absence of a significant gender difference in perceived social support is consistent with prior work in closely related populations. Nidhi and Rema (2023), studying caregivers of children with NDDs, and Faden *et al.* (2023), studying parents of children with NDDs more broadly, both reported no significant gender difference on comparable constructs (perceived social support and quality of life/stress, respectively). It is also broadly consistent with Cundiff *et al.* (2023), who found that total perceived social support did not differ significantly between male and female survivors of intimate partner violence, although that study did detect a significant gender difference on one support subscale (familial support) that a total-score comparison, like the present one, would not capture. This raises the possibility that subscale-level gender differences (for example, in support from family versus friends versus a significant other) could exist in the present sample even though the total MSPSS score did not differ; the present data do not allow this to be tested; and this is highlighted as a direction for future analysis.

The absence of a significant gender difference in post-traumatic growth likewise aligns with evidence from other trauma-exposed and caregiving populations in which men and women showed broadly comparable growth (Cundiff *et al.*, 2023). It contrasts, however, with Çokluk (2022), who found that parents of children with special needs reported significantly higher post-traumatic growth than parents of typically developing children, a comparison of a different kind (special-needs versus typically-developing parent status, rather than gender within a special-needs-parent sample) that nonetheless indicates group differences in post-traumatic growth are detectable in this broader literature when the comparison groups differ sufficiently. It also contrasts with Xue and Xu (2022), who found that gender moderated the relationship between perceived social support and post-traumatic growth among earthquake survivors. Taken together, this suggests that gender's role in post-traumatic growth may depend on the type of adversity, the cultural context, and the specific comparison being drawn, and should not be assumed to generalise automatically from one trauma-exposed population to another.

A further consideration concerns statistical power. The gender comparisons in this study used group sizes of 40 per group, and the observed effect for post-traumatic growth ($d = 0.29$) was in the small range; a sample of this size has limited power to detect effects of this magnitude at conventional significance thresholds. The non-significant finding for post-traumatic growth should therefore be interpreted as an absence of strong

evidence for a gender difference in this sample, rather than as definitive evidence that no such difference exists in the wider population of parents of children with NDDs. The effect for perceived social support ($d = 0.12$) was smaller still and closer to what would be expected under a true null effect.

Clinically and programmatically, these findings suggest two implications. First, because perceived social support is strongly linked to post-traumatic growth, interventions and services that actively strengthen parents' sense of being supported, for example structured peer-support groups, family-inclusive counselling, and case-management approaches that help parents recognise and access existing support, may plausibly assist parents of children with NDDs in finding meaning and positive change alongside the demands of caregiving, although controlled or longitudinal designs are needed before any causal claim can be made. Second, because no significant gender difference was found in either variable, such interventions need not be differentiated by parent gender by default; services should nonetheless remain attentive to individual variation, given the wide range of scores observed within each gender group (as reflected in the standard deviations in Table 3), and particularly the greater variability in post-traumatic growth among mothers.

This study has several notable strengths. It used two internationally validated, widely used instruments (the MSPSS and PTGI) with well-established psychometric properties, facilitating comparison with the broader literature reviewed above. It addressed an outcome, post-traumatic growth, that remains comparatively under-studied in parents of children with NDDs relative to negative outcomes such as stress and burden, and it recruited across two distinct types of community setting (rehabilitation centres and special schools) rather than a single site, broadening the base from which participants were drawn within the district.

The study also has limitations that should guide the interpretation of its findings. The cross-sectional design means that the direction of the association between perceived social support and post-traumatic growth cannot be established, and reverse or reciprocal pathways remain plausible. The convenience sample was drawn from a single district (Malappuram) and from parents who were accessing rehabilitation centres or special schools at the time of recruitment; parents who do not access such services, or who live in other regions, may differ systematically and are not represented. The sample size ($N = 80$; 40 per gender group), while broadly comparable to related published studies in this area, may have been underpowered to detect small-to-medium gender effects, as noted above. The study relied exclusively on self-report measures completed at a single time point, which may be subject to social desirability or recall bias, and examined only two substantive variables, without measuring or controlling for potentially relevant

factors such as the specific NDD diagnosis or its severity, time since diagnosis, marital status, household income, or parental coping style, several of which have been implicated as predictors of post-traumatic growth in related caregiver populations (Farhadi *et al.*, 2022; Lu *et al.*, 2022).

Future research should build on these findings in several ways: longitudinal designs, such as that used by Weiss *et al.* (2021) in parents of autistic children, would help clarify the direction of the association between perceived social support and post-traumatic growth over time; larger, multi-district or multi-state samples would improve statistical power for gender and other subgroup comparisons and support generalisation beyond Malappuram District; mediation and moderation models incorporating coping style, resilience, or sense of coherence, of the kind recently modelled using structural equation modelling among parents of very low birth weight infants (Wu *et al.*, 2025), and consistent with earlier work in this area (cf. Farhadi *et al.*, 2022; Lu *et al.*, 2022), would help clarify the mechanisms underlying the observed association; and qualitative or mixed-methods approaches, as used by Counselman-Carpenter (2016) and Faden *et al.* (2023), could enrich the quantitative picture by capturing how parents themselves understand the role of support in their psychological adjustment.

CONCLUSION

Among a sample of 80 parents of children with neurodevelopmental disorders in Malappuram District, Kerala, perceived social support showed a strong, statistically significant positive association with post-traumatic growth, and no significant gender differences were found in either perceived social support or post-traumatic growth. These findings, interpreted within the constraints of this study's cross-sectional design, convenience sample, and single-district setting, suggest that strengthening parents' perceived social support, through psychosocial support programmes, peer- and family-based interventions, and gender-inclusive service design, may be a valuable focus for services supporting the psychological adaptation of parents of children with NDDs. Because the design is correlational, causal claims are not warranted; longitudinal and mechanism-focused research, together with replication in larger and more geographically diverse samples, is recommended to extend and test the generalisability of these findings.

Acknowledgement

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Ethics Approval

This study was approved by the Institutional Ethics Committee. All procedures involving human participants were conducted in accordance with the ethical standards of the institutional research committee

and with the 1964 Helsinki Declaration and its later amendments.

Informed Consent

Written informed consent was obtained from all individual participants included in the study prior to data collection.

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Conflict of Interest: The authors declare no conflict of interest.

Author Contributions

Farha P: conceptualisation, data collection, formal analysis, investigation, writing – original draft. Shahna Sharin K: supervision, methodology, writing – review and editing. Farseen Mohammed P: conceptualisation and preparation of the manuscript for publication, writing – review and editing, project administration, corresponding author. All authors read and approved the final manuscript.

Data Availability

The datasets analysed during the current study are available from the corresponding author on reasonable request.

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