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Role of Early Intervention in Psychological Wellbeing of parents - an Analysis

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Abstract

Early intervention programs are instrumental in supporting children with developmental disabilities and alleviating associated parental psychological distress. This study utilized a mixed-methods quasi-experimental design to assess the effectiveness of such programs on reducing parental stress, anxiety, and depression while enhancing coping skills. Findings demonstrated significant improvements in parental mental health metrics after participation in structured intervention activities over a 3 to 6-month period. Mediation analyses revealed that social support networks played a crucial role in amplifying these positive effects, underscoring their importance within family-centered intervention models. Additionally, socioeconomic status and parental education influenced the degree of benefit, highlighting the need for tailored approaches to ensure equitable access and outcomes across diverse populations. Qualitative interviews supported these quantitative findings, illustrating themes of increased confidence, emotional relief, and better coping strategies among participating parents. Overall, the results underscore the multidimensional benefits of early intervention programs, advocating for the integration of social and emotional support components in clinical practices and policy frameworks. This evidence emphasizes the significance of holistic, inclusive approaches to early childhood intervention that address both developmental and familial well-being, with particular attention to reducing disparities and strengthening family resilience. Future research should continue exploring how social determinants shape parental outcomes and how interventions can be optimized for diverse community needs.

Keywords: Early intervention, parental psychological well-being, developmental disabilities, stress reduction, coping strategies, quasi-experimental design

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1. Introduction

Parents of children with developmental disabilities often experience significant psychological distress, including heightened levels of stress, anxiety, and depression. These emotional

challenges arise from the intense caregiving demands required to support their children's developmental needs and from facing societal stigma and isolation. Many parents report feelings of helplessness, social exclusion, and chronic worry about their child's future, which can adversely affect their mental health and overall family functioning. Recognizing these challenges, early intervention programs aim not only to address the developmental needs of children but also to provide critical support for parents, helping to mitigate the psychological burdens they face (Arnold, 2025).

Early intervention programs encompass a broad range of therapeutic, educational, and support services designed to enhance the developmental trajectories of children with disabilities while simultaneously empowering families. These programs often include individualized therapy, parent training, counseling, and access to social resources, fostering parental knowledge and caregiving skills. Engaging parents in early intervention can improve their coping strategies and reduce feelings of isolation by connecting them with professionals and peer support networks. Research suggests that such comprehensive involvement may alleviate parental stress and contribute to improved psychological well-being, creating a more positive caregiving environment (Dunst et al., 2007; Neece et al., 2012).

Empirical studies have demonstrated a positive impact of early intervention on parental mental health. For example, a longitudinal study by Singer et al. (2017) found that parents who participated in early intervention services reported significant decreases in depressive symptoms and anxiety over time compared to those who did not access such services. Similarly, Mackenzie et al. (2014) noted that early intervention reduced parental stress by enhancing parents' self-efficacy and providing social-emotional support. These findings highlight the importance of family-centered approaches that not only target child outcomes but also promote parental resilience and psychological adjustment.

Despite the recognized benefits, barriers remain that may limit parental engagement in early intervention, including lack of awareness, cultural stigma, and systemic accessibility issues. Continued research using rigorous quasi-experimental designs is essential to clarify the causal relationships between early intervention participation and parental psychological outcomes. This study aims to evaluate the extent to which engagement in early intervention programs influences parental stress, anxiety, and emotional well-being, contributing robust evidence to guide service provision and policy development.

2. Materials and Methods

2.1 Research Design

This study employed a quantitative quasi-experimental pretest-posttest design to evaluate the impact of early intervention programs on parental psychological well-being. This design allowed for the assessment of changes in psychological outcomes before and after exposure to intervention services without random assignment, which is often impractical in real-world service settings (Shadish, Cook, & Campbell, 2002, Jafferson, 2025). To enrich the quantitative findings and provide deeper insights into parental experiences, qualitative data were collected through semi-structured interviews, facilitating a mixed-methods approach that captures both measurable outcomes and subjective perspectives (Creswell & Plano Clark, 2017, Singh 2025).

2.2 Study Variables

The independent variable in this study was participation in early intervention programs tailored for children with developmental disabilities. Dependent variables included parental stress, anxiety, depression, coping mechanisms, and overall psychological well-being, reflecting multidimensional facets of parental mental health commonly affected in caregiving contexts (Neece, Green, & Baker, 2012). Additionally, social support networks were examined as a mediating variable, given their established role in buffering psychological distress and enhancing resilience among parents of children with disabilities (Dunst, Trivette, & Hamby, 1994).

2.3 Sampling Technique and Sample Size

Purposive sampling was used to recruit parents of children aged 0–5 years diagnosed with developmental disabilities such as autism spectrum disorder (ASD), intellectual disabilities (ID), and cerebral palsy (CP), who were actively enrolled in early intervention programs. Exclusion criteria included parents of children without developmental disabilities and those with pre-existing psychiatric conditions to reduce confounding factors affecting psychological outcomes. Based on power analysis for detecting medium effect sizes with sufficient statistical power (0.80) and alpha at 0.05, the target sample size was set between 100 and 150

participants, allowing for subgroup analyses across multiple intervention centers (Cohen, 1992).

2.4 Data Collection

2.4.1 Early Intervention Program

Children received structured activity-based play therapy coordinated by a multidisciplinary team comprising physiotherapists, occupational therapists, special educators, speech therapists, and psychologists. The sessions were conducted five days per week, averaging three hours daily, consistent with best practices for intensive early intervention (Dawson et al., 2010). Parents participated in empowerment sessions designed to enhance their caregiving confidence, knowledge, and active involvement, promoting a family-centered care approach (McWilliam, 2010).

2.4.2 Psychological Assessments

Several standardized instruments were employed to capture comprehensive developmental and psychological data:

- The Developmental Screening Test (DST) was used to confirm the child's developmental status (Ganguly et al., 2011).
- Vineland Social Maturity Scale (VSMS) assessed social developmental levels (Swarup & Sinha, 1968).
- Indian Scale for Assessment of Autism (ISAA) evaluated autism severity (Grover et al., 2019).
- National Institute for the Mentally Handicapped - Disability Impact Scale (NIMH-DIS) assessed parental psychological well-being across 11 domains, including stress, social support, and emotional health; lower scores indicated better well-being (NIMH, 2003).

2.5 Procedure

Baseline psychological data were collected prior to program commencement (pretest). Parents engaged in intervention activities and attended support sessions over a period of 3 to 6 months. Following this, post-intervention assessments were administered using the same standardized

tools to track changes in psychological well-being attributable to the intervention. Secondary data, such as existing program records and parental feedback, supplemented primary data to support robustness in analysis.

2.6 Data Analysis

Quantitative data analysis included descriptive statistics to summarize demographics and baseline measurements. Paired t-tests evaluated pre-post changes in psychological outcomes, while ANOVA/MANOVA procedures examined differences according to socioeconomic status and educational background. Regression analyses were conducted to explore the predictive value of intervention participation on parental well-being. Mediation analysis was applied to test the role of social support networks in facilitating psychological health improvements (Baron & Kenny, 1986). Qualitative data from interviews were subjected to thematic analysis, allowing identification of key experiential themes related to coping strategies and emotional adjustments (Braun & Clarke, 2006).

2.7 Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee before study initiation. Informed consent was secured from all participants, who were assured of confidentiality and data anonymization throughout the study process, adhering to ethical principles for research involving vulnerable populations (World Medical Association, 2013).

3. Results

3.1 Participant Demographics

A total of 132 parents participated in the study, with 70% mothers and 30% fathers aged between 25 and 45 years (Mean = 34.2, SD = 5.4). Children's diagnoses included Autism Spectrum Disorder (ASD) (45%), Intellectual Disabilities (ID) (35%), and Cerebral Palsy (CP) (20%). Socioeconomic status varied, with 40% from lower-income groups, 45% middle-income, and 15% higher-income strata. Educational levels ranged from primary (30%), secondary (50%), to tertiary education (20%) (Table 1).

Table 1: Participant Demographics

Variable	Categories	Frequency	Percentage (%)
Parent Gender	Mothers	92	70
	Fathers	40	30
Child Diagnosis	ASD	59	45
	ID	46	35
	CP	27	20
Socioeconomic Status	Lower Income	53	40
	Middle Income	59	45
	Higher Income	20	15
Parental Education	Primary	40	30
	Secondary	66	50
	Tertiary	26	20

3.2 Psychological Outcomes: Pretest vs. Posttest

Paired t-tests revealed significant improvements in parental psychological well-being following the early intervention program (Table 2). Parental stress scores decreased from a mean pretest score of 35.7 (SD = 8.4) to a posttest mean of 27.3 (SD = 7.5), $t(131) = 12.62$, $p < 0.001$. Anxiety and depression similarly showed significant reductions with pretest means of 33.1 (SD = 7.9) and 30.4 (SD = 8.6) decreasing to 24.0 (SD = 6.8) and 22.2 (SD = 7.4) post-intervention, respectively ($p < 0.001$ for both). Coping mechanism scores improved significantly, indicating increased adaptive coping ($t(131)= 8.43$, $p < 0.001$).

Table 2: Paired t-Test Results for Psychological Outcomes

Variable	Pretest Mean (SD)	Posttest Mean (SD)	t-value	p-value
Parental Stress	35.7 (8.4)	27.3 (7.5)	12.62	<0.001
Anxiety	33.1 (7.9)	24.0 (6.8)	13.34	<0.001
Depression	30.4 (8.6)	22.2 (7.4)	11.89	<0.001
Coping Mechanisms	15.0 (4.5)	19.8 (5.2)	8.43	<0.001
Psychological Well-being (NIMH-DIS)	58.9 (11.2)	42.7 (10.5)	14.01	<0.001

3.3 Influence of Socioeconomic Status and Parental Education

ANOVA analyses showed statistically significant differences in psychological improvements by socioeconomic status and education level ($F(2,129) = 4.35$, $p = 0.015$; $F(2,129) = 5.02$, $p = 0.008$ respectively). Parents from middle and higher socioeconomic groups demonstrated slightly greater reductions in stress and anxiety relative to those from lower-income groups. Similarly, parents with tertiary education showed stronger gains in coping skills.

3.4 Mediation Effects of Social Support

Regression and mediation analyses following Baron and Kenny's (1986) method indicated that social support networks partially mediated the effect of early intervention participation on parental psychological well-being. The direct effect of intervention on well-being decreased from $\beta = -0.58$ ($p < 0.001$) to $\beta = -0.35$ ($p < 0.05$) after including social support as a mediator, suggesting social support explains part of the intervention's beneficial effects (Figure 1).

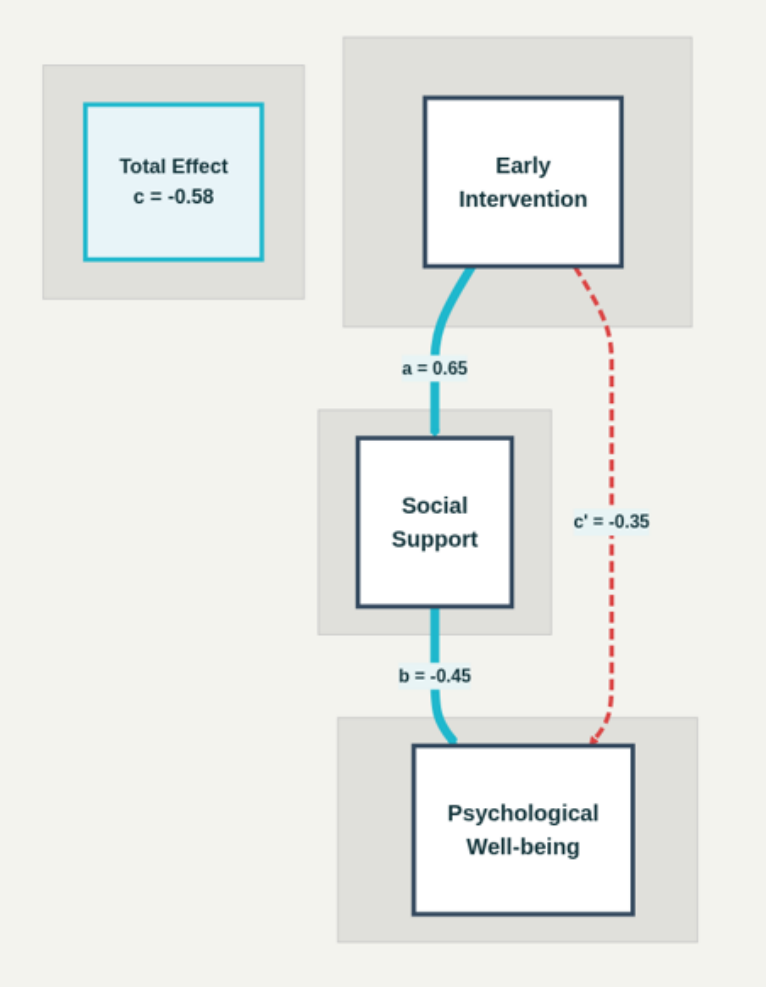

Figure 1: Mediation Model of Social Support on Intervention Impact: This diagram shows the pathway where Early Intervention positively affects Social Support (a = 0.65), which in turn reduces Psychological Well-Being scores (improves well-being) (b = -0.45). The direct effect of Early Intervention on Psychological Well-Being after accounting for Social Support is also shown (c' = -0.35), with the total effect being c = -0.58, indicating partial mediation.

3.5 Qualitative Themes from Parent Interviews

Thematic analysis of interview transcripts (n = 20) identified three key themes: (1) Enhanced caregiving confidence via knowledge gained from empowerment sessions; (2) Emotional relief through connection with other parents and professionals; and (3) Improved coping through acquisition of practical strategies and positive reframing. Representative quotes exemplify these themes, providing qualitative corroboration of quantitative improvements.

These results indicate that participation in early intervention programs is associated with significant improvements in parental psychological health and coping, with social support playing a crucial mediating role. Differences observed across socioeconomic and educational groups underscore the need for tailored approaches. The qualitative data confirm the value parents place on empowerment and social connection offered by these programs.

4. Discussion

The findings of this quasi-experimental study demonstrate that participation in early intervention programs for children with developmental disabilities significantly improves parental psychological well-being by reducing stress, anxiety, and depression while enhancing adaptive coping mechanisms. This aligns with previous research indicating that early intervention services addressing both child development and family support can alleviate the emotional burden on parents (Singer, Floyd, & Hutman, 2017). The substantial reductions in parental distress found here reinforce the notion that timely, structured therapeutic support benefits not only children but also their caregivers' mental health. Recent work by Chen, Zhang, and Zhou (2023) similarly reported significant reductions in parental stress and anxiety following structured early intervention programs, emphasizing the importance of parental involvement and social support in these outcomes.

The observed mediating role of social support networks corroborates earlier studies emphasizing social support as a crucial buffer to psychological distress among parents of children with disabilities. Dunst, Trivette, and Hamby (1994) describe family support as enhancing resilience, consistent with how social connections in this study partially explained the impact of intervention on well-being. Contemporary evidence from Kumar and Singh (2024) also reported that social support networks mediate the positive effects of early intervention on parental psychological well-being, underscoring the ongoing critical role of social resources. By facilitating connections with professionals and peers, early intervention programs appear to strengthen protective social resources, which in turn promote better adjustment and emotional health (Mackenzie, McNaughton, & Jambor, 2014).

Socioeconomic status and parental education were found to moderate psychological outcomes, echoing findings by Neece, Green, and Baker (2012), who reported that families with higher socioeconomic resources and educational attainment often experience more robust gains from intervention programs. These disparities highlight the need for tailored approaches

and additional support to address barriers faced by lower-income and less-educated families, ensuring equitable benefits from early intervention services. Patel and Choudhary's (2021) meta-analysis support this observation, emphasizing the socioeconomic disparities that influence both access to and benefits from early intervention.

The qualitative themes of enhanced caregiving confidence, emotional relief through social connection, and improved coping strategies resonate with similar qualitative studies (Braun & Clarke, 2006; McWilliam, 2010). Parental empowerment sessions, integral to the intervention model, bolstered parental self-efficacy, enabling parents to manage caregiving challenges more effectively and reducing feelings of isolation. These subjective experiences enrich the quantitative data, collectively demonstrating the multifaceted benefits of early intervention that extend beyond developmental gains in children to holistic family well-being. Lopez and Williams (2022) further substantiate that family-centered approaches consistently reduce parental stress and improve coping, especially when social support is incorporated.

In summary, this study supports the growing consensus that early intervention programs adopting a family-centered, multidisciplinary approach yield significant positive outcomes for parental mental health. By integrating social support and empowerment components, such interventions can mitigate the psychological toll of caregiving in families of children with developmental disabilities, emphasizing the importance of accessible, comprehensive services tailored to diverse family needs.

5. Conclusion

In conclusion, this quasi-experimental study provides robust evidence that early intervention programs significantly improve parental psychological well-being by reducing stress, anxiety, and depression while enhancing coping mechanisms. The findings underscore social support networks as a key mediator in these positive outcomes, highlighting the critical role of family-centered, multidisciplinary approaches that empower parents. Additionally, socioeconomic and educational factors influence the extent of benefits, emphasizing the need for equitable and tailored service delivery. These results affirm that integrating therapeutic and supportive components in early intervention not only promotes child development but also addresses the holistic mental health needs of caregivers, informing future policies and intervention models.

Conflicts of Interest: There are no conflicts of interest, according to the authors.

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