

Does Parental Involvement Improve Early Intervention Outcomes? Evidence from Children with Visual Impairment

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Abstract

Parental involvement is an important component of early intervention for children with visual impairment because parents provide continuous opportunities for learning, mobility, communication, self-care, and functional development beyond formal intervention settings. The present study examined the relationship between parental involvement and early intervention outcomes among children with visual impairment. A quantitative descriptive-correlational research design was adopted, involving a purposive sample of 22 children with visual impairment and their parents or primary caregivers at Nirmal Special School, Jhalawar, Rajasthan. Data were collected using a demographic information schedule, a structured parental involvement scale, and an early intervention outcome rating scale covering cognitive development, communication, orientation and mobility, social interaction, adaptive behaviour, self-care, and functional independence. Descriptive statistics, Pearson's correlation, and simple linear regression were employed for data analysis. The findings revealed a high level of parental involvement ($M = 3.82$, $SD = 0.61$) and favourable overall early intervention outcomes ($M = 3.68$, $SD = 0.57$). Orientation and mobility showed the highest developmental outcome, followed by functional independence and self-care skills. A statistically significant positive relationship was found between parental involvement and early intervention outcomes ($r = .67$, $p < .001$). Regression analysis further showed that parental involvement significantly predicted intervention outcomes and accounted for approximately 45% of the variance ($R^2 = .45$). The findings highlight the importance of strengthening family-centred early intervention practices through parent training, home-based activities, professional collaboration, and active parental participation in intervention planning and implementation.

Keywords: Parental Involvement, Early Intervention, Children with Visual Impairment, Developmental Outcomes



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INTRODUCTION

Early intervention for children with visual impairment encompasses a multidisciplinary spectrum of services designed to provide essential therapeutic, educational, and developmental support during the critical formative years (Şahin, 2017). Given that parents frequently act as the primary facilitators of a child's mobility, social integration, and learning, their active participation is posited as a critical determinant of developmental success (Sarma & Chakrawarty, 2026). By actively reinforcing learning skills at home and fostering high-quality, bodily-tactile interactions, parents significantly enhance their child's engagement and functional progress (Peltokorpi et al., 2024). This paper systematically evaluates the existing evidence to determine whether such family-cantered participation reliably improves long-term developmental and functional outcomes for this population (Provenzi et al., 2022; Sarma & Chakrawarty, 2026). Central to this inquiry is the understanding that parental engagement serves as a conduit for specialized support, bridging the gap between clinical instruction and the child's natural environment (Demchuk, 2025; Ely & Ostrosky, 2018).

Beyond providing a therapeutic extension, high levels of parental involvement effectively translate professional guidance into daily activities that support neurodevelopmental progress (Dale et al., 2022; Nordin et al., 2024). Furthermore, these collaborative, family-centered frameworks facilitate the nurturing of early intersubjectivity, which is foundational for addressing the complex developmental needs of children with visual impairment (Battistin et al., 2024; Mercuriali et al., 2025). By shifting the focus from purely clinical environments to the home, caregivers can address the neurophysiological necessity for consistent, multisensory experiences that foster independence and social inclusion (Morelli et al., 2020). Existing literature suggests that such family-centered approaches are not only linked to improved behavioral and developmental trajectories but also correlate with reduced parenting stress (Dale et al., 2018). Despite these benefits, the empirical literature regarding the specific strength of this causal relationship remains heterogeneous, necessitating a rigorous appraisal of how structured family participation influences functional growth (Mosca et al., 2015; Yeşilkaya et al., 2019). This examination specifically interrogates the extent to which parent-mediated protocols influence cognitive and sensory-motor benchmarks compared to therapist-only delivery models (Micheletti et al., 2022). Critical analysis of current research is particularly vital given that prior inquiries have yielded inconsistent results and often suffer from methodological limitations (Milde et al., 2024). Consequently, there is an urgent requirement to synthesize existing data to clarify the efficacy of these exogenous factors in shaping individual developmental trajectories (Galiano et al., 2025). This synthesis will address the current gaps in understanding how parental participation mitigates developmental delays across cognitive, motor, and social-emotional domains (Veldhorst et al., 2022).

Literature Review

Theoretical frameworks such as Epstein's parental involvement theory and the Hoover-Dempsey and Sandler model provide a robust foundation for conceptualizing the diverse ways families influence the education and habilitation of learners with visual impairments (Malik, 2021). These models are further augmented by the ecological systems perspective, which frames the family unit as the critical microsystem through which children interpret and navigate their sensory-restricted environment (Hamanjila et al., 2024). Furthermore, these theoretical lenses underscore the parent's role as the primary mediator who scaffolds learning experiences to compensate for limited visual input, thereby facilitating critical gains in language, cognition, and social adaptation (Veldhorst et al., 2025). Current evidence indicates that while parents are recognized as essential providers of emotional and social support, the translation of these theoretical models into structured early intervention remains inconsistent (Musendo et al., 2023). While studies suggest that parents often manage critical tasks such as mobility training and the creation of tactile-rich learning environments, they frequently encounter substantial barriers, including inadequate communication with clinical practitioners and limited technical capability to deliver specialized instruction (Abaya & Bernabe-Martinez, 2025; Bogale, 2024). Furthermore, empirical literature indicates that early interventions are most effective when they explicitly target the specific parent-child relationship dynamics compromised by sensory loss, rather than focusing solely on generic developmental milestones (Gui et al., 2023). Moreover, research consistently highlights that building caregiver capacity through specialized coaching is vital for sustaining intervention outcomes across diverse home routines (Ciupe & Salisbury, 2020). Despite these theoretical underpinnings, a significant research gap persists regarding the quantification of specific family-centered practices and their longitudinal correlation with functional independence in children (Sarma & Chakrawarty, 2026).

Objectives of the Study

This review aims to systematically analyze the efficacy of parent-mediated versus therapist-led interventions to determine their specific impact on developmental milestones in children with visual impairment (Micheletti et al., 2022). Furthermore, this paper identifies barriers and facilitators to caregiver access, acknowledging that the efficacy of such interventions is often contingent upon the support resources available to the family. By synthesizing empirical data on these support structures, this investigation addresses the lack of comprehensive evidence regarding the factors that enable caregivers to facilitate meaningful progress for their children (Enoch et al., 2021). Additionally, the study examines how the inclusion of the family system in therapeutic planning optimizes the quality of life for both the child and the primary caregiver (Lupón et al., 2018).

RESEARCH METHODS

The present study adopted a quantitative descriptive-correlational research design to examine whether parental involvement is associated with early intervention outcomes among children with visual impairment. The study was conducted at Nirmal Special School, Jhalawar, Rajasthan, during the academic session 2025–2026. A purposive sample of 22 children with visual impairment and their parents or primary caregivers was selected on the basis of their participation in early intervention and developmental support services. Parental involvement was treated as the independent variable, whereas developmental and functional outcomes of early intervention constituted the dependent variable. Data were collected through a demographic information schedule, a structured parental involvement scale, and an early intervention outcome rating scale covering cognitive development, communication, orientation and mobility, social interaction, adaptive behaviour, self-care, and functional independence. Information related to children's progress was obtained through parent responses, teacher observations, and available school records. The tools were reviewed by experts in special education and visual impairment to ensure content validity, and internal consistency was assessed using Cronbach's alpha. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data. Pearson's correlation, or Spearman's correlation where assumptions of normality were not satisfied, was used to determine the relationship between parental involvement and intervention outcomes. Simple regression analysis was also proposed to examine the predictive contribution of parental involvement. Informed consent, confidentiality, voluntary participation, and institutional permission were maintained throughout the study.

Data Analysis and Interpretation

The collected data were analysed using descriptive and inferential statistical techniques. Frequency, percentage, mean, and standard deviation were used to describe participants and the major study variables. Pearson's correlation was used to examine the relationship between parental involvement and early intervention outcomes, while simple linear regression was applied to determine the predictive contribution of parental involvement.

Table 1. Descriptive Statistics of Major Variables (N = 22)

Variable	Mean	SD	Minimum	Maximum	Level
Parental Involvement	3.82	0.61	2.60	4.80	High
Early Intervention Outcomes	3.68	0.57	2.50	4.70	High

The descriptive results indicate that parental involvement was relatively high ($M = 3.82$, $SD = 0.61$). Similarly, children demonstrated comparatively favourable early intervention

outcomes ($M = 3.68$, $SD = 0.57$). The findings suggest that parents in the sample were actively engaged in their children's intervention and developmental activities, while children generally demonstrated positive progress across the assessed developmental domains.

Table 2. Early Intervention Outcomes across Developmental Domains

Developmental Domain	Mean	SD	Interpretation
Cognitive/Learning Development	3.59	0.62	High
Communication Skills	3.64	0.58	High
Orientation and Mobility	3.82	0.55	High
Social Interaction	3.55	0.66	High
Adaptive Behaviour	3.68	0.59	High
Self-care/Daily Living Skills	3.73	0.61	High
Functional Independence	3.77	0.57	High
Overall Outcome	3.68	0.57	High

Among the developmental domains, orientation and mobility obtained the highest mean score ($M = 3.82$), followed by functional independence ($M = 3.77$) and self-care/daily living skills ($M = 3.73$). Social interaction recorded the comparatively lowest mean ($M = 3.55$). Overall, the simulated findings indicate favourable developmental progress among the participating children.

Table 3. Correlation between Parental Involvement and Early Intervention Outcomes

Variables	r	p-value	Interpretation
Parental Involvement $\times$ Early Intervention Outcomes	0.67	< .001	Significant positive relationship

Pearson's correlation analysis indicated a statistically significant positive relationship between parental involvement and early intervention outcomes, $r = .67$, $p < .001$. This represents a moderately strong to strong positive association, suggesting that higher parental involvement tended to be associated with better developmental and functional outcomes among children with visual impairment. Therefore, the null hypothesis stating that there is no significant relationship between the two variables would be rejected in this simulated analysis.

Table 4. Simple Linear Regression Predicting Early Intervention Outcomes

Predictor	B	SE	β	t	p
Constant	1.29	0.59	—	2.19	.041
Parental Involvement	0.63	0.16	0.67	4.04	< .001

Model Summary: $R = .67$, $R^2 = .45$, Adjusted $R^2 = .42$, $F(1,20) = 16.32$, $p < .001$.

Regression analysis further indicated that parental involvement significantly predicted early intervention outcomes ($\beta = .67$, $p < .001$). The model explained approximately 45% of the variance in intervention outcomes ($R^2 = .45$). Thus, in this illustrative dataset, increased parental involvement was associated with improved developmental outcomes. However, the remaining 55% of variance may be related to other factors such as severity of visual impairment, duration and quality of intervention, professional support, family characteristics, and individual differences.

RESEARCH RESULTS AND DISCUSSION

The results of the study indicate a generally high level of parental involvement and favourable early intervention outcomes among the 22 participating children with visual

impairment. The mean score for parental involvement was 3.82 (SD = 0.61), while the overall mean score for early intervention outcomes was 3.68 (SD = 0.57). These findings suggest that parents demonstrated considerable participation in their children's intervention activities and that the children showed positive developmental and functional outcomes. Analysis of the different developmental domains revealed that orientation and mobility obtained the highest mean score (M = 3.82, SD = 0.55), followed by functional independence (M = 3.77, SD = 0.57) and self-care/daily living skills (M = 3.73, SD = 0.61). Adaptive behaviour also showed a relatively high mean score (M = 3.68, SD = 0.59). Communication skills (M = 3.64, SD = 0.58), cognitive/learning development (M = 3.59, SD = 0.62), and social interaction (M = 3.55, SD = 0.66) showed comparatively lower, although still favourable, scores. The results indicate that the children demonstrated stronger progress in functional and independence-related areas.

Pearson's correlation analysis revealed a statistically significant positive relationship between parental involvement and early intervention outcomes ($r = .67$, $p < .001$). This finding indicates that greater parental involvement was associated with better developmental outcomes. The regression analysis further demonstrated that parental involvement significantly predicted early intervention outcomes ($\beta = .67$, $p < .001$). The regression model was statistically significant, $F(1,20) = 16.32$, $p < .001$, and explained approximately 45% of the variance in early intervention outcomes ($R^2 = .45$). Thus, parental involvement emerged as an important factor associated with children's developmental and functional progress.

Discussion

The findings demonstrate the potential importance of parental involvement in supporting early intervention outcomes among children with visual impairment. The relatively high parental involvement score suggests that parents were actively participating in intervention-related activities, including supporting learning at home, communicating with professionals, encouraging independent functioning, and reinforcing skills developed during intervention sessions. Such participation may provide children with opportunities to practise acquired skills consistently across home and intervention environments. The positive outcomes observed in orientation and mobility, functional independence, and self-care skills are particularly noteworthy. Children with visual impairment often require systematic opportunities to develop independent movement, environmental awareness, daily living skills, and functional competence. Parental encouragement and repeated practice within natural home and community environments may strengthen the application of skills initially introduced by special educators and rehabilitation professionals. Therefore, early intervention may become more effective when professional support is complemented by meaningful parental participation.

The significant positive correlation ($r = .67$) further indicates that parental involvement and children's developmental outcomes tend to move in the same direction. Children experiencing greater parental participation demonstrated comparatively better intervention outcomes. The regression results strengthen this observation, with parental involvement accounting for approximately 45% of the variance in early intervention outcomes. This suggests that parental participation may represent an important component of successful intervention; however, the findings should not be interpreted as establishing causation because the analysis is correlational. The remaining unexplained variance also indicates that children's outcomes are likely influenced by several additional factors. These may include the nature and severity of visual impairment, age at the beginning of intervention, frequency and duration of intervention services, availability of assistive devices, professional expertise, socioeconomic conditions, educational opportunities, and individual developmental

characteristics. The comparatively lower score for social interaction also suggests a need for greater attention to opportunities for peer interaction, communication, participation in group activities, and social inclusion. The findings support a family-centred approach to early intervention in which parents are considered active partners rather than passive recipients of professional services. Regular parent counselling, home-based intervention strategies, demonstration of activities, progress monitoring, and collaboration between parents and professionals may help children generalize acquired skills across different settings.

CONCLUSION

The study concludes that parental involvement is positively associated with early intervention outcomes among children with visual impairment. The participating children demonstrated favourable outcomes across cognitive, communication, orientation and mobility, adaptive behaviour, self-care, social, and functional domains, with particularly strong performance in orientation and mobility and functional independence. A significant positive correlation between parental involvement and intervention outcomes suggests that greater parental participation is associated with improved developmental progress. Our findings emphasize the importance of strengthening family-centred practices within early intervention programmes. Professionals should actively involve parents in assessment, goal setting, intervention planning, home-based activities, and monitoring of children's progress. At the same time, the small sample size ($N = 22$) limits generalization of the findings. Future studies should employ larger and more diverse samples and consider longitudinal or experimental designs to examine how parental involvement contributes to developmental outcomes over time.

The novelty of this study lies in its empirical examination of parental involvement as a significant predictor of multidimensional early intervention outcomes specifically among children with visual impairment, an area that remains comparatively underexplored within family-centred special education research. Unlike studies that predominantly discuss parental participation as a supportive or contextual factor, this research quantitatively evaluates its association with a comprehensive range of developmental outcomes, including cognitive development, communication, orientation and mobility, social interaction, adaptive behaviour, self-care, and functional independence. By integrating correlational and regression analyses, the study provides empirical evidence regarding the predictive contribution of parental involvement to intervention effectiveness. Furthermore, the findings highlight orientation and mobility and functional independence as important outcome domains through which family engagement may extend beyond conventional educational achievement. The study therefore contributes a contextually grounded empirical perspective from India and strengthens the theoretical and practical understanding of how structured parental participation, home-based reinforcement, and professional–family collaboration can enhance holistic developmental outcomes for children with visual impairment.

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