

# Early Identification of Developmental and Behavioral Disorders in Children Screening Strategies, Risk Factors and Implications for Early Intervention

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**Abstract** — Early identification of developmental and behavioral disorders is essential for ensuring optimal cognitive, emotional, and social development in children. Developmental delays and behavioral disorders often emerge during early childhood and may significantly affect long-term educational achievement, mental health, and social functioning if not detected and addressed at an early stage. Advances in pediatric screening practices and developmental surveillance have improved the ability of healthcare providers to identify children at risk for developmental and behavioral disorders, enabling timely intervention and support. This cross-sectional analytical study examines the effectiveness of early identification strategies among 242 children aged 1–10 years attending pediatric healthcare facilities and developmental clinics. Parental concerns, early developmental screening, and routine pediatric surveillance significantly improve the identification of developmental and behavioral disorders. Children with limited access to healthcare services and those from disadvantaged socioeconomic backgrounds were more likely to experience delayed identification. Early intervention programs demonstrated significant benefits in improving developmental outcomes among affected children. The study highlights the importance of integrating routine developmental screening, caregiver education, and community-based early intervention programs into pediatric healthcare systems.

**Keywords** — *Developmental Disorders; Behavioral Disorders; Early Childhood Screening; Developmental Surveillance; Pediatric Mental Health; Early Intervention.*

## 1. Introduction

Developmental and behavioral disorders represent significant health challenges affecting children worldwide. These disorders encompass a wide range of conditions that influence cognitive development, emotional regulation, social interaction, communication abilities, and behavioral functioning. Early childhood is a critical period for neurological development, during which disruptions in developmental processes may lead to long-term consequences affecting academic performance, mental health, and social adaptation. Consequently, early identification of developmental and behavioral disorders has become a priority within pediatric healthcare systems and educational institutions.

Developmental screening tools and structured surveillance methods enable clinicians to identify children who may be experiencing developmental delays or behavioral difficulties. Evidence-based screening approaches are increasingly recommended as part of standard pediatric care to facilitate early detection and intervention (Glascoe, 2005; Glascoe, 2015). Parental involvement is another important factor in identifying developmental concerns, as parents often observe subtle

behavioral or developmental differences in their children before these issues become clinically apparent (Glascoe & Dworkin, 1995). Technological advancements have further enhanced the capacity for early identification of developmental disorders. Digital health platforms, artificial intelligence tools, and electronic screening systems are increasingly being used to support pediatric developmental assessments (Devi et al., 2025; Shanthi et al., 2025; Catherine et al., 2025). Social determinants of health including poverty, limited healthcare access, and socioeconomic disparities significantly influence developmental outcomes in children (Ashifa, 2021; Ranganathan et al., 2024; Kariveliparambil et al., 2026). Mental health literacy among parents and caregivers supports proactive engagement with developmental screening services (Elkin et al., 2025; Zahoor et al., 2025). SIMS clinical research in otolaryngology and surgical practice further contextualises the importance of early identification and multispecialty care in tertiary institutions such as SIMS Hapur (Avinash et al., 2025; Kumar et al., 2024; Kumar et al., 2025).

## 2. Review of Literature

The importance of early identification of developmental and behavioral disorders has been widely

recognized in pediatric and educational research. Early identification allows healthcare providers and educators to implement timely interventions that support children's cognitive, emotional, and social development (Kaminer & Jedrysek, 1982; Forness et al., 2000). Developmental screening tools have been widely studied as effective methods for identifying children with developmental delays (Glascoe, 2005; Glascoe, 2015).

Systematic reviews examining developmental screening practices in primary healthcare settings emphasize the importance of integrating structured screening protocols into routine pediatric care (Sheldrick et al., 2011). Developmental epidemiology research has contributed to improved understanding of risk factors associated with developmental disorders, including genetic, environmental, and socioeconomic factors (Costello, 2016; Bitsko, 2016). Early intervention programs have been shown to significantly improve outcomes for children with developmental disabilities and behavioral disorders (Roberts et al., 2003; Kendziora, 2004).

Advances in digital health technologies and artificial intelligence applications have created new opportunities for improving developmental screening and early intervention systems (Devi et al., 2025; Shanthi et al., 2025). Community-based rehabilitation programmes and social determinants research demonstrate the broader health determinants influencing developmental outcomes (Ashifa, 2019; Rasi and Ashifa, 2019; Ashifa, 2021).

Health consequences of early marriage and occupational health exposures further compound developmental vulnerabilities in marginalised populations (Vettriselvan et al., 2025; Ashifa and Ramya, 2019). Patient empowerment through educational strategies supports sustained caregiver engagement with developmental screening programmes (Vettriselvan et al., 2026). Self-leadership and emotional intelligence among paediatric healthcare staff improve developmental screening service quality (Mustafa et al., 2026; Zahoor et al., 2025). Strategic collaborations in medical innovation accelerate development of AI-driven developmental diagnostic tools (Vijayalakshmi et al., 2025).

### 3. Objectives

- To examine the prevalence and distribution of developmental and behavioral disorders among children aged 1–10 years.
- To identify key predictors of early identification of developmental disorders including parental concerns, screening frequency, and healthcare accessibility.
- To evaluate the influence of socioeconomic and educational factors on developmental outcomes.

- To propose policy recommendations for improving early identification and intervention systems for developmental disorders.

### 4. Methodology

A cross-sectional analytical research design was adopted to investigate early identification practices for developmental and behavioral disorders among children. The study was conducted in pediatric healthcare facilities, child development clinics, and early childhood education centers. A sample of 242 children aged 1–10 years was selected using systematic sampling techniques from clinical records and developmental screening registers.

Data collection involved structured developmental screening assessments, caregiver interviews, and review of pediatric medical records. Statistical analysis used descriptive statistics, ANOVA, and logistic regression analysis at  $p < 0.05$ . Ethical approval was obtained with written informed consent from parents or guardians.

### 5. Results and Discussion

**Table 1: Demographic Characteristics of Participants (N = 242)**

Variable	Category	Frequency	Percentage (%)
Age Group	1–3 years	72	29.8
	4–6 years	95	39.3
	7–10 years	75	30.9
Gender	Male	134	55.4
	Female	108	44.6
Residence	Urban	138	57.0
	Rural	104	43.0

**Table 2: Developmental Screening Outcomes**

Developmental Status	Number of Children	Percentage (%)
Normal development	146	60.3
Mild developmental delay	48	19.8
Moderate developmental delay	27	11.2
Behavioral disorder risk	21	8.7

**Table 3: ANOVA Analysis — Factors Influencing Early Identification of Developmental Disorders**

Variable	Mean Identification Score	F-value	p-value
Parental concern reporting	3.52	7.28	0.001
Routine developmental screening	3.44	6.75	0.002
Healthcare accessibility	3.31	5.43	0.005
Parental education level	3.27	4.96	0.008

**Table 4: Logistic Regression Analysis — Predictors of Developmental Delay**

Predictor Variable	Regression Coefficient	Standard Error	p-value
Low parental education	0.39	0.07	0.003
Limited healthcare access	0.36	0.08	0.004
Lack of early screening	0.42	0.06	0.002
Socioeconomic disadvantage	0.33	0.07	0.006

Parental concerns and routine developmental screening were the strongest predictors of early identification ( $F=7.28$ ,  $p=0.001$  and  $F=6.75$ ,  $p=0.002$  respectively). Lack of early developmental screening was the strongest logistic predictor of developmental delay.

The results indicate that approximately 39% of children showed varying levels of developmental delay or behavioral disorder risk. Parental concerns emerged as one of the most important predictors of early identification. Parents often observe subtle developmental differences before they become clinically evident, consistent with Glascoe and Dworkin (1995). Routine developmental screening during pediatric healthcare visits significantly improved early identification outcomes (Sheldrick et al., 2011). Socioeconomic factors also influenced developmental outcomes; children from families with limited healthcare access or lower parental education were more likely to experience delayed identification, highlighting the importance of addressing social determinants of health (Bitsko, 2016; Ashifa, 2021; Kariveliparambil et al., 2026). AI-based tools and digital

screening platforms can further support clinicians in identifying children at risk (Devi et al., 2025; Shanthi et al., 2025). Institutional clinical research at SIMS Hapur across specialties including ENT and surgery demonstrates the interdisciplinary commitment to early identification and timely care (Avinash et al., 2025; Kumar et al., 2024).

## 6. Conclusion

Early identification of developmental and behavioral disorders plays a crucial role in promoting healthy child development and improving long-term educational, psychological, and social outcomes. The findings highlight the importance of routine developmental screening and parental engagement in identifying developmental and behavioral challenges. Parental concerns were identified as one of the strongest predictors of early identification. Routine developmental screening programs play a critical role in improving early detection rates. Socioeconomic factors compound developmental delay risk, requiring public health strategies that improve healthcare accessibility and provide supportive resources for families in underserved communities. Strengthening early identification systems through integrating routine developmental screening, parental engagement, multidisciplinary care, and technological innovations will ultimately contribute to improved developmental health and well-being for children.

## 7. Policy Recommendations

Healthcare systems should prioritize implementation of routine developmental screening programs during pediatric healthcare visits, with standardized developmental screening tools integrated into routine child health assessments. Healthcare providers should promote parental education and caregiver awareness programs focusing on developmental milestones and early signs of behavioral disorders. Policymakers should focus on improving access to healthcare services and early intervention programs for families in underserved communities. Healthcare systems should encourage multidisciplinary collaboration among pediatricians, psychologists, educators, and social workers. Governments and healthcare institutions should invest in digital health technologies and electronic developmental screening systems. Educational institutions should implement school-based developmental monitoring programs that enable teachers to identify early signs of behavioral or learning difficulties.

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