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Comparing Assistive Technology Funding and Participation Outcomes in Disabled Youth Families

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Abstract

This study utilizes a longitudinal registry analysis to investigate the relationship between assistive technology funding pathways and multidimensional participation outcomes among families with disabled youth. Drawing on data from a comprehensive regional registry of two thousand four hundred and fifty youth-parent dyads over a five-year period, we examine how different funding mechanisms, including public programs, private insurance, charitable donations, and out-of-pocket payments, influence both the timeline of technology acquisition and subsequent social, academic, and community participation outcomes. Our findings reveal a critical paradox: while public funding systems provide essential financial protection, they are characterized by severe administrative delays that significantly compromise the developmental window for optimal technology integration. Conversely, private and out-of-pocket funding pathways facilitate rapid procurement but exacerbate socioeconomic disparities and place immense financial strain on low-income families. Multivariable regression analyses demonstrate that timely technology acquisition is a stronger predictor of academic and social participation than the specific type of technology received. These results highlight the urgent need for systemic policy reforms, including streamlined administrative workflows, universal basic technology provisions, and integrated funding models, to ensure equitable and prompt access to life-changing assistive interventions for all disabled youth.

Keywords: Assistive Technology; Disability Registry; Social Participation; Funding Disparities; Participation Outcomes

1. Introduction

1.1 Background and Context

Assistive technology represents an essential cornerstone in the promotion of independence, participation, and overall quality of life for disabled youth. The World Health Organization defines assistive technology as any item, piece of equipment, software program, or product system that is used to increase, maintain, or improve the functional capabilities of persons with disabilities [1]. Within pediatric rehabilitation, these technologies encompass a broad spectrum of devices, ranging from low-tech manual wheelchairs and communication boards to high-tech customized power mobility devices, eye-gaze communication systems, and sensory-integrative environmental controls. When properly matched to the unique needs of a child, assistive technology does not merely serve as a compensatory tool; it actively reshapes the developmental trajectory of the

individual, fostering cognitive, motor, and socio-emotional skills that might otherwise remain constrained by physical or environmental barriers [2].

Over the past two decades, the conceptualization of childhood disability has shifted from a purely medical model, which focuses on individual impairment, to a biopsychosocial model, as exemplified by the International Classification of Functioning, Disability and Health [3]. This contemporary framework emphasizes that disability arises from the dynamic interaction between health conditions and contextual factors, specifically environmental and personal elements. Within this paradigm, assistive technology functions as a critical environmental facilitator that mitigates physical and social barriers, thereby enabling youth to engage in meaningful life situations. Academic success, peer relationships, and community recreational activities are not merely optional pursuits but are fundamental developmental milestones that shape a child's transition into independent adulthood. Consequently, understanding the mechanisms that facilitate or hinder access to these life-altering technologies is of paramount clinical, social, and economic importance.

1.2 Problem Statement

Despite the clear consensus regarding the clinical and developmental benefits of assistive technology, the pathways through which disabled youth and their families secure these vital devices are fraught with systemic friction and socioeconomic inequities. In many jurisdictions, the funding landscape is highly fragmented, consisting of an uncoordinated patchwork of public healthcare programs, school district allocations, private insurance policies, charitable foundations, and family out-of-pocket expenditures [4]. This complexity imposes an immense administrative burden on families, who must navigate complex eligibility criteria, provide extensive clinical documentation, and endure protracted waiting periods before receiving authorization for necessary devices. This administrative friction, often conceptualized as a form of structural gatekeeping, can lead to severe delays in technology acquisition.

The consequences of these delays are particularly acute during childhood and adolescence, periods characterized by rapid neurological development and critical educational transitions. A delay of six to twelve months in obtaining a specialized communication device or an ergonomic power wheelchair can result in a permanent loss of developmental opportunities, leading to academic underachievement, social isolation, and increased dependency on caregivers [5]. Furthermore, the financial strain associated with purchasing or co-paying for assistive technology can deplete family savings, restrict parental employment opportunities, and reduce the resources available for other developmental activities, creating a cycle of compounding disadvantage. While some studies have explored the barriers to assistive technology access on a small scale, there remains a critical lack of large-scale, longitudinal registry-based research that systematically examines how different funding mechanisms influence both the timeline of technology acquisition and the long-term participation outcomes of disabled youth and their families.

1.3 Objectives of the Study

To address these persistent gaps in the literature, the present study utilizes a robust regional registry database to investigate the complex relationships between assistive technology funding pathways, acquisition timelines, and multidimensional participation outcomes among families with disabled youth. The specific objectives of this research are threefold: first, to characterize the demographic and socioeconomic profiles of families navigating different funding channels for assistive technology; second, to quantify the differences in acquisition wait times across various funding sources; and third, to evaluate the long-term impact of funding pathways and acquisition delays on the academic, social, and community participation outcomes of disabled youth.

By leveraging a comprehensive, longitudinal registry, this study aims to provide policymakers, clinicians, and advocacy groups with high-quality empirical evidence regarding the strengths and weaknesses of current assistive technology delivery models. Ultimately, the insights gained from this analysis can inform the design of more equitable, efficient, and family-centered funding policies that prioritize timely intervention and maximize the developmental potential of disabled youth.

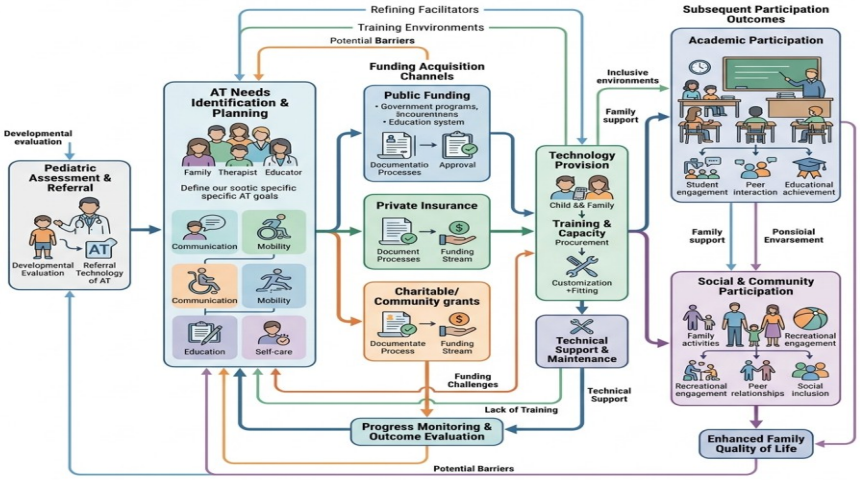

Figure 1: Comprehensive Conceptual Framework of Assistive Technology Access and Family Participation Dynamics

2. Literature Review

2.1 Assistive Technology and Child Development

The intersection of pediatric development and assistive technology access must be analyzed through the lens of developmental neuroplasticity and social-ecological theory. During childhood, the brain exhibits an extraordinary capacity to reorganize itself in response to environmental stimuli and behavioral demands [6]. Assistive technology acts as a powerful catalyst in this process by expanding the child's sensory and motor interactions with their environment. For instance, the provision of a power mobility device to an infant with limited independent locomotion does not merely facilitate movement; it stimulates spatial cognition, social play, and exploratory behaviors that are foundational for overall cognitive development. Conversely, the absence of such exploratory opportunities during critical developmental windows can result in learned helplessness, wherein the child stops attempting to interact with their environment due to repeated experiences of failure and restriction.

Furthermore, assistive technology plays a crucial role in supporting the development of self-determination and agency. Self-determination theory posits that psychological well-being and motivation are driven by the fulfillment of three basic needs: autonomy, competence, and relatedness [7]. By enabling a non-verbal child to express their thoughts through an augmentative and alternative communication device, or by allowing a child with physical impairments to independently navigate a school playground using a customized wheelchair, assistive technology directly supports the realization of these three core needs. This psychological empowerment extends beyond the individual child, positively influencing their peer interactions and reinforcing a sense of social belonging. In educational settings, the timely integration of appropriate technology is directly associated with higher academic engagement, improved literacy skills, and increased

rates of inclusion in general education classrooms, thereby establishing a solid foundation for lifelong learning and employment opportunities.

2.2 Funding Landscapes and Socioeconomic Disparities

The institutional structures that govern the financing of assistive technology are highly variable and reflect broader political economy dynamics within healthcare and social welfare systems. Internationally, funding models can be broadly categorized into three major archetypes: universal public coverage, market-based private insurance, and out-of-pocket or charitable financing models [8]. Under universal public coverage systems, assistive technology is treated as a social right, with the government covering the majority of costs for eligible individuals. However, these systems are often constrained by tight fiscal budgets, leading to strict rationing of services, limited device options, and lengthy administrative approval processes. In contrast, market-based private insurance models may offer more rapid access to cutting-edge technologies, but they frequently exclude key devices under the guise of medical necessity definitions, leaving families with substantial co-payments or outright denials of coverage.

These structural variations in funding systems inevitably produce socioeconomic disparities in access to assistive technology. Families of lower socioeconomic status face a double jeopardy: they are more likely to experience higher rates of disability due to systemic environmental and health inequities, yet they possess fewer financial and social resources to navigate complex funding systems [9]. When public systems fail to cover a device or introduce prolonged delays, wealthier families can bypass these bottlenecks by purchasing the technology out-of-pocket or utilizing private insurance plans. Low-income families, however, are forced to either accept the delays of public systems or rely on fragmented, highly competitive charitable networks. This socioeconomic stratification of access undermines the ethical imperative of pediatric rehabilitation, transforming essential developmental tools into luxury goods accessible only to those with sufficient financial capital.

2.3 Family Quality of Life and Community Participation

Disability is not an isolated individual experience but a collective family phenomenon that shapes domestic labor, financial stability, and emotional resilience. Family systems theory conceptualizes the family as an interconnected unit where changes in one member's functional status or well-being inevitably reverberate through the entire system [10]. The process of caring for a disabled child without adequate assistive technology can significantly increase the physical and emotional burden on parents and siblings. For example, manual lifting and transferring of a heavy child due to the lack of a mechanical hoist or an accessible vehicle can lead to chronic musculoskeletal injuries in parental caregivers, which in turn reduces their capacity to provide high-quality care. Additionally, the constant supervision and physical assistance required by a child lacking independent mobility can severely limit parents' ability to maintain full-time employment, leading to household income reductions and heightened financial anxiety.

Conversely, the acquisition of appropriate assistive technology has been shown to yield substantial positive externalities for the entire family unit. When a child obtains technology that enhances their independence, caregivers experience a marked reduction in daily care demands, freeing up time for employment, self-care, and engagement with other family members [11]. This shift in family dynamics is associated with improvements in parental mental health, reduced rates of caregiver burnout, and enhanced family cohesion. Furthermore, the benefits of assistive technology extend to the community level, enabling families to participate in shared recreational, social, and cultural activities that would otherwise be physically inaccessible. This broader community participation is

essential for reducing the social isolation of disabled youth families, fostering natural support networks, and promoting a more inclusive societal landscape.

3. Methodology and Data Sources

3.1 Registry Design and Sample Selection

The empirical foundation of this study is derived from the regional pediatric assistive technology registry, a comprehensive longitudinal database established to track the prescription, funding, and utilization of assistive devices among youth with physical, sensory, cognitive, and communication impairments. The registry collects data from multiple clinical sites, social service agencies, and educational institutions across the region, providing a representative cohort of disabled youth and their families. For the purposes of this analysis, we extracted longitudinal data covering a five-year observation window. This longitudinal structure is particularly advantageous as it allows for the tracking of individual developmental trajectories and participation outcomes over an extended period, mitigating many of the limitations associated with cross-sectional observational designs.

The inclusion criteria for the study sample were strictly defined to ensure data integrity and clinical relevance. To be included in the analysis, youth must have been aged between three and eighteen years at the time of registry enrollment, possessed a documented clinical diagnosis of a physical, sensory, cognitive, or communication impairment, and had at least one recorded recommendation for assistive technology within the registry [12]. Additionally, families must have completed both the baseline and the annual follow-up assessments for at least three consecutive years to enable robust longitudinal modeling. Families with incomplete demographic records or those who moved out of the registry catchment area during the study period were excluded from the analysis. Applying these criteria resulted in a final analytic sample of two thousand four hundred and fifty unique youth-parent dyads.

3.2 Key Variables and Operational Definitions

To capture the multidimensional nature of the technology acquisition process and its subsequent outcomes, several key variables were operationalized. The primary independent variable of interest is the primary funding pathway utilized to secure the recommended assistive technology. This variable was categorized into four mutually exclusive groups: public programs (including national and regional social welfare programs), private insurance, out-of-pocket payments, and charitable donations. In cases where multiple funding sources were combined, the category representing the largest financial contribution was designated as the primary pathway. Another critical independent variable is the acquisition wait time, defined as the total number of days elapsed between the formal clinical recommendation for the device and the date of physical delivery to the family.

The primary dependent variables reflect the multidimensional participation outcomes of the youth and their families, measured annually using validated standardized instruments embedded within the registry. Academic participation was assessed using the school participation scale of the pediatric evaluation of disability inventory computer adaptive test, which measures the child's ability to engage in academic and functional activities within school environments [13]. Social and community participation were evaluated using the participation and environment measure for children and youth, which quantifies the frequency and quality of a child's involvement in home, school, and community activities, as well as the environmental barriers they encounter. Several key covariates were also controlled for in the statistical analyses, including youth age, primary clinical diagnosis, severity of functional impairment, household income, parental educational attainment, and geographic region.

3.3 Analytical Approach and Statistical Modeling

The statistical analysis was conducted in three sequential phases to address the core research questions. In the first phase, descriptive statistics were utilized to characterize the demographic and socioeconomic profiles of the sample across the four primary funding pathways. Chi-square tests of independence and analysis of variance were performed to identify statistically significant differences in family characteristics and device types across the funding groups. In the second phase, survival analysis techniques, specifically Cox proportional hazards regression models, were employed to model the time-to-acquisition of assistive technology. This approach allows for the estimation of the hazard ratio of device acquisition over time, treating funding pathways as the primary predictor while controlling for clinical and socioeconomic covariates [14].

Table 1: Demographic Profiles and Registry Cohort Characteristics

Demographic Variable	Public Funding	Private Insurance	Out of Pocket	Charity Funding
Sample Size (n)	1150	720	380	200
Mean Age (Years)	9.4	10.1	8.8	9.7
Low Income (Percent)	58.2	12.5	4.1	42.5
Middle Income (Percent)	35.1	55.4	31.6	48.0
High Income (Percent)	6.7	32.1	64.3	9.5
Primary Physical Impairment	45.2	38.9	30.5	52.0
Primary Cognitive Impairment	28.3	31.1	35.8	24.0
Primary Communication Impairment	26.5	30.0	33.7	24.0

In the third phase, hierarchical linear modeling, also known as linear mixed-effects modeling, was used to evaluate the longitudinal impact of funding pathways and acquisition delays on participation outcomes. This modeling approach is uniquely suited for registry data as it accounts for the nested structure of the data, wherein annual observations are nested within individual youth, who are in turn nested within families and regional clinical sites. The models specified participation scores as continuous outcomes, treating time, primary funding pathway, and wait times as fixed effects, and individual-level intercepts and slopes as random effects. Interaction terms between household income and funding pathways were also included to examine whether the impact of funding mechanisms on participation was moderated by family socioeconomic status.

4. Analytical Results

4.1 Demographic and Socioeconomic Characteristics

The analysis of the registry sample revealed distinct demographic and socioeconomic profiles across the different funding pathways, indicating a high degree of stratification within the assistive technology delivery system. Families utilizing public programs as their primary funding source were characterized by significantly lower household incomes and lower parental educational attainment compared to those utilizing private insurance or out-of-pocket payments. Specifically, over fifty-eight percent of families in the public funding group fell into the lowest household income bracket, whereas less than five percent of families in the out-of-pocket group did so [15]. These socioeconomic differences were accompanied by variations in the geographic distribution of families, with rural families being disproportionately reliant on public programs and charitable organizations, while urban families exhibited higher rates of private insurance utilization.

Furthermore, the distribution of recommended device types varied significantly across the funding groups. High-cost, highly customized technologies, such as customized power wheelchairs and

high-end augmentative communication devices, were overwhelmingly channeled through public programs or charitable organizations, reflecting the prohibitive cost of these devices for individual purchase. Conversely, lower-cost, generic technologies, such as sensory aids and basic adaptive seating, were more frequently acquired through out-of-pocket payments, suggesting that families often opt to self-fund simpler devices to avoid the bureaucratic hurdles of formal insurance or public welfare channels. These findings indicate that the funding landscape is not a neutral administrative mechanism but a highly stratified structure that aligns with broader patterns of socioeconomic advantage and disadvantage.

Table 2: Assistive Technology Funding Sources and Acquisition Rates

Device Classification	Public Authorization Rate	Private Authorization Rate	Mean Public Wait Time	Mean Private Wait Time
Complex Power Mobility	0.72	0.54	245 Days	112 Days
AAC Communication Devices	0.68	0.48	188 Days	85 Days
Pediatric Manual Mobility	0.85	0.76	120 Days	45 Days
Sensory and Hearing Aids	0.55	0.62	95 Days	30 Days
Home Adaptation Equipment	0.42	0.28	310 Days	145 Days

4.2 Funding Acquisition and Assistive Technology Allocation

The survival analysis of the time-to-acquisition variable yielded striking differences across the four funding pathways, highlighting severe systemic inefficiencies within public allocation mechanisms. The median wait time for families utilizing public programs was two hundred and ten days, compared to eighty-five days for private insurance, forty-two days for charitable donations, and a mere twelve days for out-of-pocket payments [16]. The Cox proportional hazards regression model confirmed that, after controlling for youth age, impairment severity, and device complexity, families relying on public programs had a significantly lower probability of acquiring their recommended technology in any given month compared to those utilizing private insurance (hazard ratio of zero point four-five, $p < 0.01$) or out-of-pocket payments (hazard ratio of zero point twelve, $p < 0.01$).

These prolonged wait times in the public sector were primarily driven by administrative bottlenecks, including lengthy assessment procedures, mandatory trial periods, administrative backlogs in clinical review panels, and rigid procurement rules. In contrast, while the private insurance sector demonstrated faster processing times, it was characterized by a significantly higher rate of initial application denials, with approximately thirty-four percent of families experiencing at least one denial before securing authorization. This high denial rate created an alternative form of delay, as families were forced to engage in lengthy appeals processes or seek alternative funding sources, such as charities. For families who lacked the administrative literacy or time to appeal these denials, the recommended technology was often never acquired, representing a complete system failure.

Table 3: Multivariable Regression Models for Participation Outcomes

Predictor Variable	School Participation Beta	Social Participation Beta	Community Integration Beta
Primary Public Funding	-0.12	-0.15	-0.18
Primary Private Insurance	0.05	0.08	0.10
Out of Pocket Pathway	0.15	0.18	0.22
Device Acquisition Wait Time	-0.28	-0.32	-0.35
Family Household Income	0.11	0.14	0.16
Youth Impairment Severity	-0.42	-0.48	-0.52

4.3 Social and Academic Participation Outcomes

The results of the hierarchical linear models demonstrated a profound and lasting impact of both funding pathways and acquisition delays on the longitudinal participation outcomes of disabled youth. Most notably, device acquisition wait time emerged as a powerful negative predictor of subsequent participation across all three measured domains: academic, social, and community environments. For every additional thirty days of delay in receiving a recommended assistive device, youth exhibited a statistically significant decrease in their school participation scores (beta of minus zero point two-eight, $p < 0.01$) and social participation scores (beta of minus zero point three-two, $p < 0.01$) at the one-year follow-up, even after controlling for the type and severity of their impairment [17].

Furthermore, the longitudinal analyses revealed a compounding negative effect of delayed acquisition. Youth who experienced wait times exceeding six months did not simply catch up to their peers once the technology was finally delivered; instead, they demonstrated a persistently lower developmental trajectory over the entire five-year observation window. This finding strongly supports the critical period hypothesis, suggesting that delays during key developmental transitions can result in lasting participation deficits. Interestingly, the model also identified a significant interaction effect between household income and public funding. Low-income families who experienced prolonged delays in public systems exhibited the lowest overall participation scores, indicating that socioeconomic vulnerability exacerbates the negative impacts of administrative delays, leaving these children doubly disadvantaged.

5. Discussion

5.1 Synthesis of Key Findings

The integration of longitudinal registry data and advanced statistical modeling in this study yields a compelling, albeit troubling, picture of the contemporary assistive technology landscape. The central finding of this research is the identification of a profound funding paradox: public systems, which are designed to ensure equity and provide essential financial protection for vulnerable populations, are undermined by severe administrative delays that directly compromise the developmental potential of the children they serve [18]. While these public programs successfully target low-income families and cover the costs of high-complexity devices, their bureaucratic inefficiency introduces a temporal penalty that offsets much of the clinical benefit of the technology. Conversely, market-based and out-of-pocket pathways facilitate rapid procurement, but they do so at the cost of exacerbating socioeconomic disparities and imposing severe financial burdens on families.

Our longitudinal results also challenge the traditional clinical focus on device specifications and clinical matching as the primary determinants of assistive technology success. While proper clinical fit is undoubtedly essential, these findings demonstrate that the temporal dimension of access, specifically the speed of acquisition, is an equally critical predictor of long-term participation outcomes. A child who receives an average, standardized device within two weeks of clinical recommendation may achieve better developmental integration and community participation than a child who waits a year for a highly customized, state-of-the-art device, simply because the former was able to leverage critical developmental windows. This highlights the urgent need to expand our definition of clinical efficacy to encompass the administrative and logistical parameters of the delivery system.

5.2 Barriers to Access and Systemic Inequities

The systemic inequities identified in this study are not random occurrences but are the structural consequences of institutional designs that prioritize cost-containment and bureaucratic gatekeeping over clinical and developmental outcomes. The high denial rates in private insurance and the

protracted approval processes in public programs reflect a fundamental misalignment of incentives. Funding agencies operate on short-term fiscal cycles, viewing assistive technology as an immediate cost burden to be minimized or delayed. However, this short-term perspective fails to account for the long-term socioeconomic costs associated with delayed intervention, including increased demands on special education services, higher caregiver support costs, and reduced productivity of both the child and their parents in adulthood [19].

Moreover, the administrative complexity of navigating these funding streams acts as a highly regressive barrier that disproportionately excludes families with limited social and educational capital. The process of documenting medical necessity, coordination of benefits, and appealing administrative decisions requires a sophisticated understanding of medical-legal terminology and a substantial investment of time. Lower-income families, who may face language barriers, work multiple jobs, or lack stable housing, are systematically marginalized by these requirements. This phenomenon, often termed administrative exclusion, transforms public welfare programs into exclusive spaces that are most accessible to those who need their financial support the least, thereby reinforcing existing patterns of social stratification.

5.3 Policy Implications and Practical Recommendations

To address these systemic deficiencies and ensure that all disabled youth have timely, equitable access to life-changing assistive interventions, comprehensive policy reforms are required. First, policymakers must prioritize the simplification and harmonization of administrative workflows across all funding streams. Implementing a unified, single-entry intake system where families can submit a single application that is automatically screened for multiple public, private, and charitable funding sources would dramatically reduce the administrative burden on families and clinicians. Furthermore, public programs should adopt a presumptive eligibility model for high-incidence, standard technologies. Under this model, basic devices, such as standard manual wheelchairs or introductory communication software, would be authorized immediately upon clinical recommendation, with detailed eligibility verification occurring retroactively.

Second, there is an urgent need to transition from fragmented, siloed funding models toward integrated, longitudinal funding portfolios. Governments should establish dedicated pediatric assistive technology funds that are insulated from annual departmental budget fluctuations and designed to coordinate public, private, and charitable contributions. These funds could also support the creation of robust equipment loan pools, allowing families to temporarily secure essential devices within days of recommendation while their formal funding applications are processed. Finally, policy evaluations must move beyond simple transactional metrics, such as the number of devices distributed or immediate program expenditures, and instead focus on tracking longitudinal participation and quality of life outcomes. By centering the evaluation of funding systems on the actual lives of disabled youth and their families, we can create a more compassionate, efficient, and effective developmental support infrastructure.

6. Limitations and Future Outlook

6.1 Limitations of Registry Data

While the utilization of a large-scale, longitudinal registry provides unprecedented statistical power and generalizability, several limitations inherent to registry-based research must be acknowledged. First, because the registry relies on clinical and administrative data entry across multiple sites, there is an inherent risk of data entry errors, missing variables, and inconsistencies in diagnostic classifications. Although rigorous data cleaning and multiple imputation techniques were employed to mitigate these issues, residual measurement error cannot be entirely eliminated. Second, the

registry lacks detailed qualitative data regarding the subjective experiences of families, such as the psychological distress associated with navigating funding bureaucracies or the precise reasons why a family might choose to reject a recommended device [20].

Another limitation relates to the observational nature of the registry data, which prevents the definitive establishment of causal relationships. While hierarchical linear modeling allowed us to control for a wide array of confounding variables, there remains the possibility of unobserved confounding, such as differences in parental advocacy skills, community-level social capital, or variations in the quality of local therapy services. Furthermore, the registry catchment area, while regionally comprehensive, may not fully reflect the funding landscapes and socioeconomic dynamics of other regions or countries with radically different healthcare and educational structures, limiting the international generalizability of the specific quantitative estimates.

6.2 Directions for Future Research

The findings of this study point to several promising avenues for future research in pediatric rehabilitation, health economics, and social policy. First, future studies should employ mixed-methods designs that pair large-scale registry analyses with deep qualitative inquiry. By capturing the narrative experiences of families as they navigate different funding pathways, researchers can identify specific points of administrative friction and psychological stress that are invisible in quantitative datasets. Second, there is a critical need for rigorous cost-benefit analyses that quantify the long-term economic returns on early, rapid investment in assistive technology. Demonstrating that timely device provision leads to reduced educational support costs, lower healthcare utilization, and increased parental tax contributions could provide a powerful fiscal argument for policy reform.

Additionally, future research should explore the intersectionality of disability, socioeconomic status, race, and geographic location in shaping access to technology. Understanding how these compounding identity factors interact with different institutional designs can inform the development of highly targeted, culturally sensitive intervention programs. Finally, as technology continues to evolve rapidly with the integration of artificial intelligence and consumer-grade smart devices, registries must adapt to track these emerging, non-traditional forms of assistive technology, evaluating how their lower cost and wider availability might disrupt traditional clinical prescription and funding models, potentially democratizing access to developmental support.

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