

## Assessing Socio-Economic Factors in Therapy for Children with Developmental Delays in Southern TamilNadu

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**Abstract:**

Developmental delays in children refer to slower-than-expected growth in cognitive, motor, social, or emotional skills, which can considerably impact their long-term growth and quality of life. The problem is the lack of comprehensive understanding of how socio-economic factors, such as family income, education and admittance to healthcare, influence the effectiveness of therapy for children with developmental delays in Southern Tamil Nadu, hindering optimal treatment outcomes. The objectives are to examine the impact of socio-economic factors like family income, education, and healthcare access on therapy outcomes for children with developmental delays in Southern Tamil Nadu, and to identify barriers affecting effective treatment and support systems. Data collection for this study will involve a combination of structured surveys and semi-structured interviews with parents, caregivers, therapists, and healthcare professionals in Southern Tamil Nadu. Key parameters will include family income, parental education and admittance to healthcare services, considering factors like affordability and proximity. Information on therapy frequency, types (speech, occupational, physical), and session duration will be gathered, alongside assessments of the child's developmental progress in areas like communication, motor skills, and cognition. Barriers to therapy access, including social, cultural, and logistical issues, will also be explored. Data analysis will focus on identifying correlations between socioeconomic conditions and therapy outcomes, offering insights into how these factors influence effective treatment and overall child development in the region. Findings show that rural areas face lower parental literacy (60-70%), limited therapy options (2-3), and high travel (20-40 km). Urban regions have better literacy (80-90%), more therapy options (5-6), and higher costs (₹1,500-₹3,000) and are implemented in SPSS Software. Future research can explore targeted interventions, policy reforms, and community-based programs to reduce socioeconomic disparities in therapy access, improving outcomes for children with developmental delays in Southern Tamil

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Nadu.

Key Words: Socio-Economic, Developmental Delays, Parental Education, Financial Barriers, Family Income.

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## 1. INTRODUCTION

Assessing socio-economic factors in early intervention therapy for children with developmental delays in southern Tamilnadu is a vital research topic as it seeks to understand the various barriers and facilitators that influence the effectiveness of therapy programs in a specific socio-economic context. Early intervention plays a dangerous role in improving developmental results for kids with delays but the access quality and success of these interventions can be heavily influenced by socio-economic factors [1]. The socioeconomic background of families contains income level is the affordability of primary involvement services is often tied to family income. Families in lower income brackets may not have the resources to access private therapy or may rely on underfunded public services [2-4]. The educational status of parents is the educational level of parents influences their awareness of changing stays and their ability to navigate and advocate for appropriate therapy services. Employment status is the parents who are employed may have limited time to engage with therapeutic interventions particularly if the therapy sessions are scheduled during work hours. Access to insurance and healthcare in some regions families may have incomplete access to healthcare or health insurance that covers developmental therapy services thus impacting their capability to search for early intervention [5]. The geographical location contains the urban and rural divide in southern Tamilnadu with its blend of rural and urban areas presenting a geographical divide in the obtainability of services.

Rural areas might lack specialized therapists while urban centres may have a better infrastructure but still struggle with affordability [6]. Transportation and Accessibility in Remote Areas Transportation challenges may prevent children from attending therapy sessions. Assessing the proximity of families to therapy centres is important for understanding access.

Cultural beliefs and social norms contain stigma and awareness is the cultural beliefs regarding disabilities and developmental delays can significantly affect how early intervention therapies are perceived [7-8]. In some communities, there may be stigma or misunderstanding about developmental delays which could discourage families from seeking professional help. Community support networks The presence of community-based support systems such as extended family or local social groups can influence the success of early interventions. Families in close-knit communities may find it easier to seek help and receive support [9]. Traditional healing practices in many parts of Tamilnadu traditional healing practices might be prioritized over modern medical or therapeutic interventions. Understanding how these practices interact with or delay formal therapy is crucial. Government and other support contain public health programs assessing the effectiveness of public health initiatives in southern Tamilnadu aimed at supporting kids with growing delays is key [10-12]. Government policies may provide subsidies or free services but these might not always reach marginalized populations. The role of nongovernmental organizations may play an essential role in filling gaps in public services [13].

Parent training is an effective training program for parents can increase their involvement in their child therapy [14-16]. The willingness and ability of parents to absorb the therapy process influenced by socioeconomic stressors may affect outcomes. The impact of socioeconomic factors on therapy outcomes is the early diagnosis in socioeconomic status may affect the timing of diagnosis [17]. Children from wealthier families may have earlier access to diagnostic services whereas children from poorer families may receive a diagnosis later, potentially delaying intervention. Consistency of therapy is the children whose families face financial constraints may not be able to commit to long-term therapy which can negatively impact outcomes. In contrast, families who can afford consistent therapy sessions may see more significant progress. Therapist Availability is a socioeconomic factor that also influences the number and quality of trained therapists in the region. Zones with advanced attention to wealth may have better access to well-trained professionals successful in the value of care. Data collection and research methodology is qualitative research that involves conducting interviews with parent's healthcare providers and therapists to understand their perspectives on socio-economic factors affecting early intervention therapy.

Quantitative research collects data on the number of kids with developing interruptions in different socio-economic groups and compares outcomes such as therapy adherence frequency of sessions and child development progress. Surveys to assess the socio-economic status awareness and perceptions of early intervention therapies among parents [18]. Assessing socio-economic factors in early intervention therapy for kids with progressive postponements in southern Tamilnadu requires an understanding of the local socio-cultural economic and healthcare context. Analysing these factors can identify key barriers and opportunities to improve the accessibility quality and success of initial involvement services. Effective interventions should not only focus on the child's needs but also provide holistic support to families considering the broader socio-economic influences that impact their ability to access and engage with therapy. Socioeconomic factors play a significant role in early intervention therapy for youngsters with growing interruptions in southern Tamil Nadu [19-20]. These factors include family income educational background and contact to healthcare. Families with limited financial resources often struggle to afford therapy services which affects early diagnosis and treatment. Educational levels influence the understanding of developmental delays with more educated parents likely to seek early intervention. The remaining sections are arranged as follows: The literature review was described in Section 2, the proposed technique was described in Section 3, the results were discussed in Section 4, and the paper's conclusion was described in Section 5.

## **2. LITERATURE SURVEY**

The literature survey depends on several factors, including sample size and selection a larger, representative sample would improve the study's accuracy, ensuring that the findings are more generalizable. Lakhan et al., [21] introduced the variables considered would likely examine socio-economic factors such as income level, education, family structure, and access to fitness care services, among others and the time consumption is decreased by 99.7% of student innovation. The accuracy of results depends on whether these variables are comprehensively measured and correctly analysed. Nair et al., [22] examined some potential findings that could include containing access to therapy children from wealthier families may have better access to specialized therapies and healthcare services compared to those from lower socio-economic backgrounds, where there may be financial or geographic barriers to receiving therapy and the delay of other countries children innovation is to be decreased by comparing the new method. Karthigaiselvam et al., [23] assessed the effectiveness of therapy

in families with higher levels of education may be more aware of growing interruptions and the importance of early intervention, which could lead to more successful therapy outcomes. Family delay calculation is easy in new methods for innovative children projects is very easy.

Family support is the level of family support that could be a key socio-economic factor, with more supportive and involved families potentially contributing to better developmental outcomes for the child. Benjamin et al., [24] demonstrated the healthcare infrastructure is the obtainability and superiority of local healthcare infrastructure could influence the timeliness and quality of early intervention therapy, with rural areas in Tamil Nadu potentially facing more challenges than urban centres and it increased the accuracy in children intervention is 97.7%. Janaki et al., [25] investigated the socio-cultural factors a cultural perception of growing interruptions and therapy may also play a role, potentially influencing whether families seek help or not and this method of performance metrics is easy to calculate and find out the delay. Key socio-economic factors likely assessed income level are the ability to afford therapies, treatments, and other associated costs. Parental education is the impact of parents' knowledge about developmental delays and the importance of early intervention. Dank et al., [26] determined that social support is part of prolonged family and community support in facilitating access to therapy. Healthcare Services Availability is whether families have easy access to medical professionals, early intervention programs, or resources for kids with evolving delays.

The study would likely conclude that socio-economic aspects play an important role in determining the success of original involvement for youngsters with varying stays. Bhat et al., [27] explored the better understand the exact findings, it would be essential to look at the study's specific results, such as statistical correlations, graphs, and deeper analyses of the socio-economic variables involved. In this framework, socio-economic features such as revenue, education, and access to caring health play a significant role in shaping the success of primary intervention plans and the delay of children intervention is calculated as 98.9%. Thirupalu et al., [28] carried out the child development progress is the improvement in motor skills, cognitive development, and language abilities post-intervention.

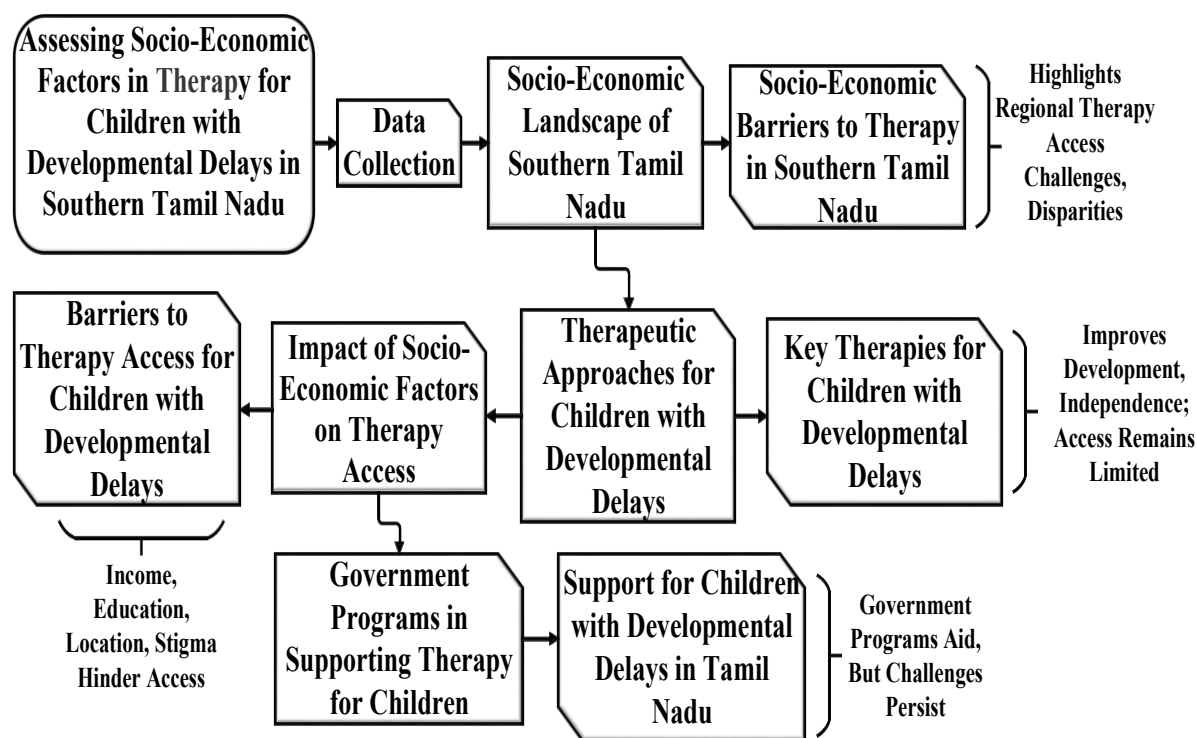
Family involvement is the active participation of families in therapy sessions, their support systems, and adherence to therapeutic practices and it is very decreased in time consuming. Jabi et al., [29] investigated the accessibility by evaluating how socioeconomic factors (income, education, etc.) affect access to therapy services, ensuring inclusivity for low-income families. Cost-effectiveness by assessing the affordability of therapy for families and its sustainability. Community support is the character of local health infrastructure and community resources in facilitating or hindering intervention programs.

Families in lower socio-economic strata often face financial constraints that boundary their contact with quality healthcare services, including early intervention therapy. Mandeville, et al., [30] assessed the many rural areas of southern Tamil Nadu, there may be limited accessibility to particular facilities, and transportation costs can further hinder access to therapy centres. Additionally, a lack of consciousness about evolving delays and available resources can stop families from seeking help. Learning level is another key factor, as parents with lesser informative attainment may not fully know the significance of early intervention or may fight to advocate for their child's requirements. To confirm effective timely intervention, plans must address these socio-economic barriers by providing financial support, raising awareness, and ensuring that facilities are accessible and socially sensitive to the single requirements of families in southern Tamilnadu.

### 3. RESEARCH PROPOSED METHODOLOGY

The proposed methodology for assessing socio-economic factors influencing therapy access for children with developmental delays in Southern Tamil Nadu will involve a mixed-methods approach. First, a quantitative survey will be conducted across rural and urban regions to collect data on household income, parental literacy rates, therapy access, and healthcare utilization.

The survey will target parents of children with developmental delays, healthcare providers, and local therapy centres. Qualitative interviews will be conducted with parents and healthcare professionals to gain deeper insights into barriers and challenges in accessing therapy, such as affordability, distance, and awareness. Geographic Information Systems (GIS) will be used to map therapy centre locations and travel distances. Data analysis will identify key socio-economic factors affecting therapy access, and regional comparisons will highlight disparities between urban and rural populations.



**Figure 1:** Block Diagram of the Proposed Work

Figure 1 presents an assessing Socio-Economic Factors in Therapy for Children with Developmental Delays in Southern Tamil Nadu begins with Data Collection, which informs the Socio-Economic Landscape of the region highlighting rural dominance, lower income, and limited resources. This leads to identifying Socio-Economic Barriers to Therapy, emphasizing disparities in access. An overview of Therapeutic Approaches follows, detailing speech, occupational, physical, and behavioural therapies, which, while beneficial, remain underutilized due to access issues.

The Impact of Socio-Economic Factors is then analyzed, showing how income, education, geographic location, and stigma hinder therapy. Finally, Government Programs like NHM, RBSK, and Anganwadi centers are explored under Support for Children, acknowledging their

vital role, while also noting persistent outreach and infrastructure challenges in rural Southern Tamil Nadu.

### **Hypothesis of This Study**

**H1:** Lower household income significantly reduces access to therapy services for children with developmental delays in Southern Tamil Nadu.

**H2:** Parental education level is positively associated with awareness and utilization of developmental therapy services.

**H3:** Children in rural areas face greater barriers to therapy access compared to those in urban areas, due to limited healthcare infrastructure.

**H4:** Social stigma and cultural beliefs negatively influence therapy-seeking behaviour among families of children with developmental delays.

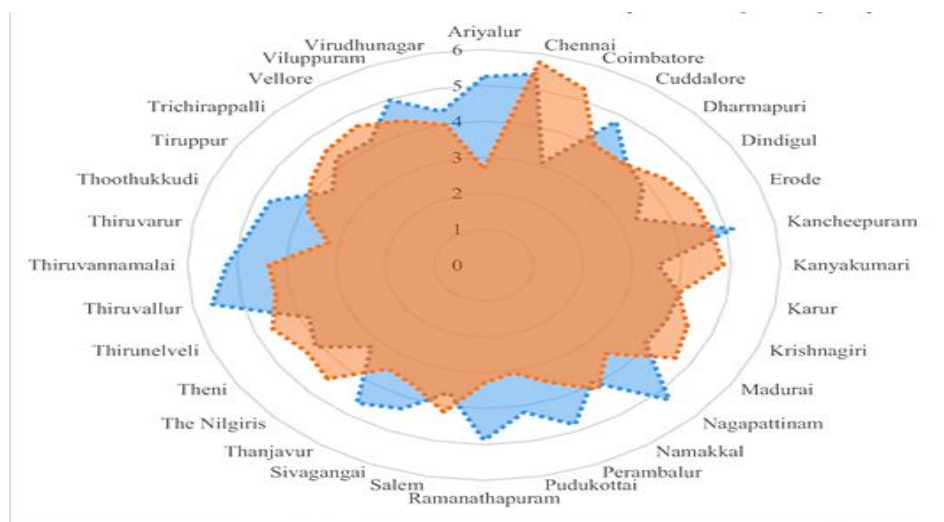
**H5:** Government intervention programs moderately improve therapy access, but are limited by outreach, resource availability, and awareness among beneficiaries.

### **3.1 Data Collection**

Data collection will utilize a combination of structured surveys and semi-structured interviews, targeting parents, caregivers, therapists, and healthcare professionals in Southern Tamil Nadu. The primary parameters for data collection will include family income levels, the educational background of parents or caregivers, and the accessibility of healthcare services, including affordability and proximity. Information on the frequency and type of therapy (e.g., speech, occupational, physical) will also be collected, along with the duration of therapy sessions. The child's developmental progress will be assessed through standardized tools, focusing on communication, motor skills, and cognitive development. Barriers to accessing therapy will be explored, including social, cultural, and logistical factors. Data will be analyzed to identify patterns and correlations between socioeconomic conditions and therapy outcomes, with an emphasis on understanding how these factors hinder or support effective treatment and overall child development in the region.

### **3.2 Socio-Economic Landscape of Southern Tamil Nadu**

Southern Tamil Nadu is a region characterized by a mix of rural and urban areas, with agriculture being the primary livelihood for many. The region has relatively lower income levels compared to urban centres like Chennai, with significant disparities in wealth distribution. Educational attainment varies, with rural areas having lower literacy rates and partial admittance to quality education. Healthcare infrastructure is concentrated in urban hubs, making access to specialized therapy services for children with developmental delays more difficult in rural communities. These socio-economic factors significantly impact the accessibility and effectiveness of therapy services.



**Figure 2:** Climatic Risks and Socio-economic Vulnerability in Tamilnadu

Figure 2 illustrates the interplay between climatic risks and socio-economic vulnerability in Tamil Nadu, highlighting how environmental factors exacerbate social challenges. It identifies key climatic exposures such as floods, droughts and rising temperatures that impact agricultural productivity and water resources. The figure also maps socio-economic indicators, showcasing areas with high vulnerability, including regions with low income, partial admittance to healthcare, and poor infrastructure. By visualizing this relationship, the figure emphasizes how marginalized communities are excessively pretentious by climatic changes, leading to increased food insecurity and economic instability. Overall, the figure serves as a critical tool for understanding a crucial necessity for targeted policies and interventions that address both climate adaptation and socio-economic resilience in vulnerable regions of Tamil Nadu.

### 3.2.1 Economic Structure and Livelihood

Southern Tamilnadu's economy is primarily with agriculture employing a large helping of the populace. Major crops grown in this area include rice, groundnuts, cotton, and vegetables. Although the agricultural sector is the backbone of the cheap, it is also marked by economic challenges such as little productivity, dependence on seasonal monsoons, and an absence of modern farming techniques. The revenue from farming is often not necessary to support large families, leading many to seek supplementary causes of income through other occupations such as minor business, manual labour, and movement to urban areas. Urbanization in the area is slower compared to cities like Chennai, which consequences in lower overall income levels. As an outcome, people in southern Tamilnadu usually earn lower wages and face economic constraints that boundary their capability to access high-quality services, with healthcare and education. The disparity between municipal and country areas in terms of income stages exacerbates socio-economic inequalities.

### 3.2.2 Disparities in Wealth Distribution

There are significant disparities in wealth spreading in southern Tamilnadu. While urban areas like Madurai and Nagercoil skill more economic progress and opportunities for employment, rural areas fight with lower income levels, fewer job opportunities, and partial admittance to markets. The wealth gap is also reflected in housing situations, where urban areas have more modern organization and amenities, while rural regions often lack

basic services like cleanliness, clean drinking water, and trustworthy electricity. These disparities contribute to unequal access to social services, including healthcare and education, which are vital for kids with developmental suspensions. In rural areas, a huge portion of the people live in poverty, which limits their capacity to have enough money for specialized healthcare services. In contrast, wealthier families in urban areas have the financial means to look for therapy services for families with evolving challenges. This economic division leads to significant gaps in the provision of necessary therapies, with rural families often unable to admittance or afford essential interventions for their children.

### 3.2.3 Education and Literacy Levels

Educational attainment in southern Tamilnadu varies greatly between countryside and city areas. While urban centres have good schools with trained teachers and access to current educational tools, rural areas face tests related to low literacy rates, underqualified teachers, and lack of infrastructure. Many rural children have partial admittance to universities, especially in remote areas, and may drop out early due to the need to fund their families through agricultural work or other labour. The low literacy rates in country societies mean that parents often surplus responsiveness to growing delays in their children, making it hard for them to seek early intervention services. Furthermore, the incomplete availability of special education services and resources for kids delayed in rural areas leads to lower access to critical therapies. Urban areas, in contrast, have a complex rate of educational attainment, which enables improved awareness of developmental problems and extra access to early intervention programs.

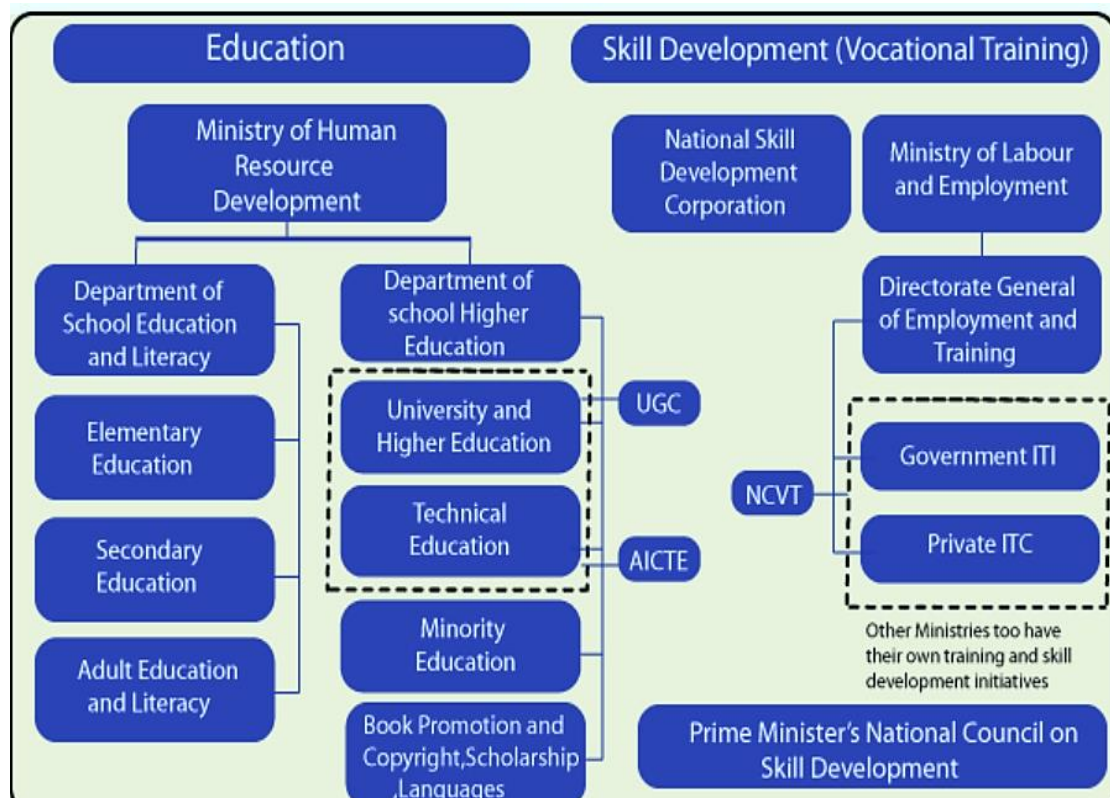


Figure 3: Education and Skill Development Sector

Figure 3 illustrates the education and skill development sector highlighting its pivotal role in enhancing human capital and driving economic growth. The figure categorizes various components, including primary, secondary, and tertiary education, along with vocational training and skill development programs. It emphasizes the interconnectivity between these levels, illustrating how foundational education supports advanced learning and skill acquisition. The figure may showcase partnerships among industry stakeholders and educational institutions underscoring the importance of aligning curricula with market demands. By visually representing enrolment rates, graduation statistics, and funding sources, Figure 3 provides a comprehensive overview of current challenges and opportunities within the sector, emphasizing the need for continued investment and innovation to equip individuals with the essential talents for an evolving job market.

### ***3.2.4 Healthcare Infrastructure and Access***

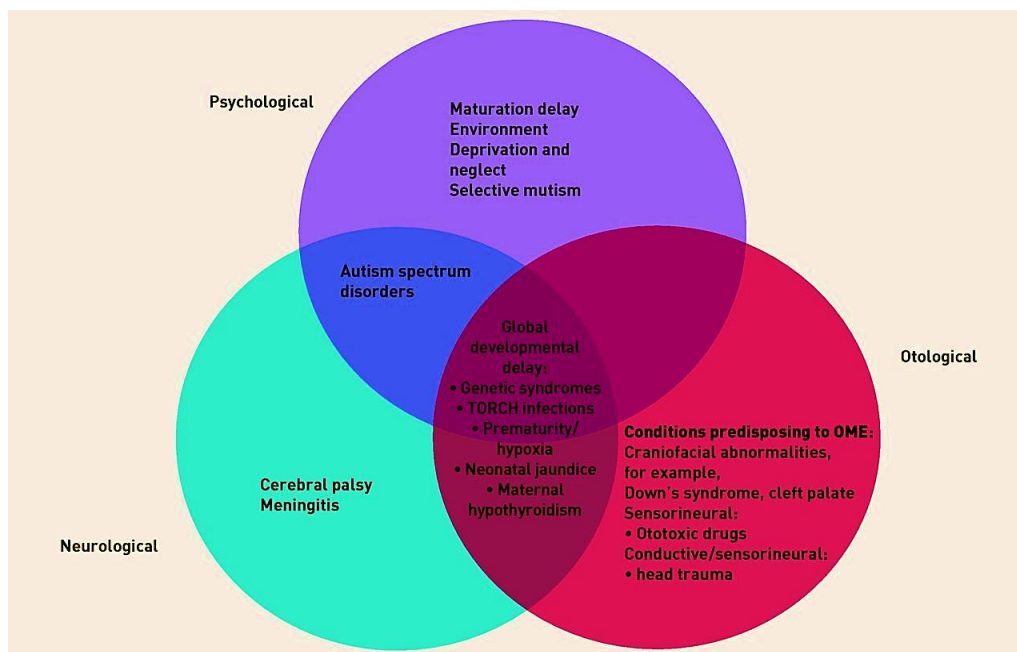
The health system is sincerely concentrated in urban centres, with an insufficient number of healthcare facilities in rural areas. This care of healthcare services in cities like Madurai and Tirunelveli, and the Nagercoil significance in a significant gap in healthcare access for people living in remote villages. While urban centres have well-equipped hospitals with specialized surgeons and therapists, rural areas are often in want of smaller government-run primary healthcare centres, which lack the income to provide progressive care for youngsters with developmental delays. Access to treatment services such as occupational cure speech therapy and physical therapy is chiefly hard for rural families. These therapies which are needed for children with growing tasks are typically available only in larger hospitals or private clinics in urban areas making it luxurious and logistically challenging for country families to access these facilities. In count to the financial constraints, the geographical distance between rural homes and treatment centres further exacerbates the problem.

### **3.3 Therapeutic Approaches for Children with Developmental Delays**

Therapeutic approaches for children with developmental delays include a range of interventions such as speech therapy, occupational therapy, physical therapy, and behavioural therapy. Speech therapy helps with communication skills while industrial treatment aids in daily functioning and motor skills development. Physical therapy focuses on improving movement and coordination. Behavioural therapy addresses social, emotional, and behavioural challenges, often using techniques like Applied Behavior Analysis (ABA). These therapies are tailored to the child's specific needs, aiming to enhance their abilities and promote independence. Access to these therapies, however, can be limited, particularly in rural areas.

#### ***3.3.1 Speech Therapy***

Speech treatment is one of the most crucial therapies for families with rising delays. It focuses on improving message skills both verbal and nonverbal. Children who struggle with speech and language development often find it hard to express their needs follow instructions or engage in social connections. Speech analysts work with youngsters to develop their language skills enhance articulation and recover listening abilities and teach alternative communication methods such as sign language or augmentative message devices. Speech therapy may contain exercises that improve vocabulary sentence structure and the capacity to know and respond to others. By supporting communication abilities, speech therapy aids children to gain sureness in social situations and improve their academic and interpersonal skills.



**Figure 4:**Speech and Language Delay in Children

Figure 4 illustrates the prevalence of speech and language delays in children, highlighting key statistics and demographic trends. The figure presents a comparison of delays across different age groups, showcasing that early childhood (ages 2-4) experiences the maximum rates of language-speech interventions. It also breaks down the data by gender, revealing that boys are more likely to exhibit delays than girls. Furthermore, the figure may include regional variations, indicating that socio-economic factors and access to early developmental resources play significant roles in these delays. Overall, Figure 4 emphasizes the significance of primary identification and intervention for language speech issues, advocating for enhanced support systems to address these developmental challenges effectively and promote better outcomes for affected children.

### **3.3.2 Occupational Therapy**

Occupational therapy helps kids improve the needed skills to participate in daily activities from self-care habits to school tasks. It focuses on successful fine-motorized skills hand-eye coordination and sensory handling. Kids with growing delays may struggle with jobs such as covering and feeding themselves and writing or using implements effectively. Occupational therapists design specific activities to enhance these services.

In accumulation to motor skills occupational therapy often addresses sensory processing problems. Some youngsters with developing suspensions may be hypersensitive or under-sensitive to sensory effort prominent to problems in managing textures sounds lights or movement. Occupational treatment helps families reach these sensitivities and find ways to interact with their environment additional comfortably.

### **3.3.3 Physical Therapy**

Physical treatment focuses on improving a child's motorized talents such as running and coordination. It helps children develop strength balance and flexibility and mobility. Numerous families with developmental delays experience challenges in movement making it

difficult for them to achieve basic tasks like climbing stairs riding a bike or even sitting or standing up properly.

Through mental therapy, youngsters can build the strength and matching needed to perform physical tasks more capably. Physical therapy interventions may include exercises that improve muscle tone increase joint litheness and enhance body awareness. Physical therapists use specialized techniques and equipment to help children progress movement patterns which in turn supports their overall physical development.

### **3.3.4 Human Behaviour Intervention**

Behavioural therapy addresses public, emotional, and behavioural experiments that kids with developing delays may face. One widely used approach is applied behaviour analysis which is in the ethics of behaviourism. Applied behaviour analysis efforts on reinforcing positive behaviours and minimizing undesirable ones through structured interventions. It involves breaking down tasks into smaller steps and using rewards to boost the child's progress.

Applied behaviour analysis has been especially effective in treating kids with autism band syndrome but can also be supportive for kids with other developmental delays. The healing helps kids develop skills in message, social interaction, and self-regulation. Behavioural therapy fosters a situation where children learn appropriate behaviours and coping approaches for challenges they may encounter.

### **3.3.5 Tailoring Therapies to Individual Needs**

Individually child with an age-related delay has a single set of powers and weaknesses and therapeutic interventions should be individualized to meet these specific needs. The process includes thorough assessment by a squad of specialists including paediatricians therapists and educators. Based on the child's growing profile therapists make modified intervention plans that may combine numerous approaches to address numerous features of growth. The achievement of these therapies depends on stable checking and changes to the approach as the child evolves. Initial intervention is particularly dangerous as it can meaningfully grow the child's long-term developmental outcomes and whole excellence of life.

### **3.3.6 Government Initiatives and Support**

To address these trials, the government must implement creativities that provide financial provision to families and recover admittance to therapeutic services. Government-funded plans, such as mobile therapy units and community outreach programs, can benefit rural populations. Moreover, training local healthcare providers to recognize and treat developmental delays can bridge the break in therapy services.

Therapeutic interventions are vital for supporting children with growing delays in southern Tamilnadu. By giving that contact to language therapy, job-related therapy, physical therapy, and behavioural treatment, children can be equipped with the abilities they want to be successful. Conversely, socioeconomic obstacles must be addressed to guarantee that these therapies are accessible to all people, frequently those in rural areas. Through government support, community-based creativities, and increased awareness it is likely to recover the excellence of lifecycle for kids with rising postponements in southern Tamilnadu and beyond.

## **3.4 Impact of Socio-Economic Factors on Therapy Access**

Socio-economic factors significantly influence access to therapy for children with evolving suspensions. Families with lower income levels frequently face

commercial obstacles, limiting their ability to afford necessary therapies. Educational background also plays a role, as parents with limited knowledge about developmental delays may not seek appropriate interventions. In rural areas, the lack of nearby healthcare facilities and specialized therapy services further exacerbates access issues. Cultural attitudes and social stigmas can prevent families from seeking help, delaying treatment and negatively impacting the child's development and overall quality of life.

### 3.4.1 Financial Barriers Influence of Income Levels

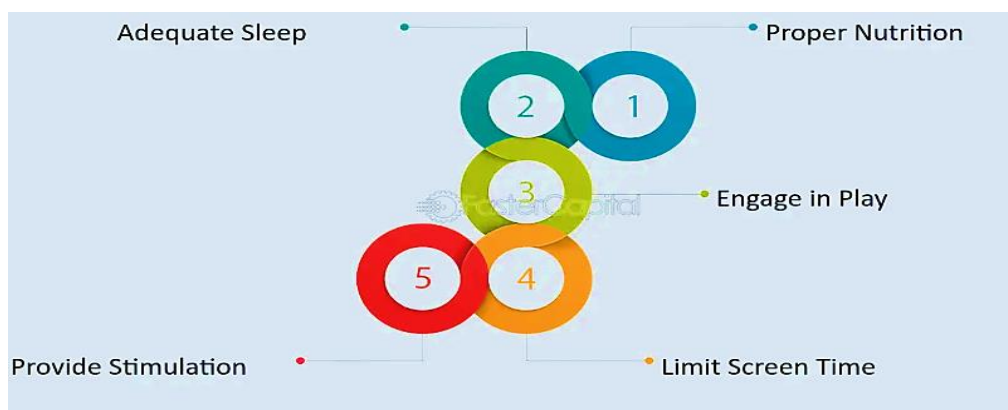
One of the most significant socio-economic factors affecting access to therapy is the family's income level. Families with lower income often find it difficult to afford therapies, such as speech therapy, occupational therapy, and physical therapy, which are essential for the development of children with developmental delays. Therapy costs can be substantial, especially when multiple sessions are required over long periods. For low-income families, paying for these services might be beyond their financial capacity, resulting in delayed or inadequate treatment.

Government-funded or low-cost therapy options may be available, but in many cases, they are limited in number or location, further restricting access. Additionally, even when financial assistance is provided, out-of-pocket costs for transportation, medical supplies, or additional services can add up, making it difficult for families to access comprehensive care. As a result, children may experience gaps in therapy, leading to less optimal development and fewer opportunities for improvement in their abilities.

### 3.4.2 Educational Background of Parents or Caregivers

Another crucial socio-economic factor is the educational background of parents or caregivers. Parents with lower levels of education may lack awareness of developmental intervals and the significance of early intervention therapies. They might not recognize the signs of developmental intervals or understand the importance of timely therapeutic support, resulting in delayed diagnoses and therapy initiation.

Moreover, parents with limited education may also face challenges in navigating healthcare systems, understanding medical terminology, or seeking out appropriate specialists. This lack of knowledge can lead to an absence of follow-up care or inadequate treatment for children. In contrast, parents with higher education stages are extralikelly to be aware of the available therapies and their benefits, making it easier for them to seek appropriate care and engage in the therapy process more effectively.



**Figure 5:** Strategies of Parents and Caregivers

Figure 5 illustrates various strategies employed by caregivers and parents to support the development and well-being of their children. The figure categorizes these strategies into key areas such as emotional support, educational involvement, and health-related practices. Emotional support encompasses nurturing behaviours, effective communication, and fostering a secure environment, which help build children's self-esteem and resilience. Educational involvement highlights the significance of engaging in academic activities, monitoring progress, and collaborating with educators to enhance learning outcomes. Health-related practices include promoting healthy lifestyles, ensuring regular check-ups, and addressing emotional and psychological needs. Together, these strategies reflect the multifaceted role of parents and caregivers in facilitating holistic development, demonstrating their crucial influence on children's overall growth and success in various life domains.

### ***3.4.3 Geographical Disparities Rural vs. Urban Access***

The geographical location of a family plays a precarious part in determining access to therapy services. Families living in remote or rural areas of Southern Tamil Nadu face greater challenges compared to those in urban centres. In rural areas, specialized therapy services such as occupational and speech therapy are often concentrated in urban hubs, meaning families in rural regions must travel long distances to access services. This lack of proximity to healthcare facilities poses both logistical and financial barriers for families. Travel costs, time constraints, and the inability to take time off from work to attend therapy sessions can further limit access to necessary treatments. Rural healthcare infrastructure may be underdeveloped, with fewer trained therapists or specialized services available, making it harder for children in these areas to obtain suitable care.

In urban areas, although therapy services are more accessible, socio-economic disparities still exist, with lower-income families in cities facing the same financial challenges and imperfect admittance to affordable care.

### ***3.4.4 Cultural Attitudes and Social Stigmas***

Cultural attitudes and social stigmas surrounding developmental delays and disability can have a profound impact on therapy access. In some communities, there is a lack of awareness and acceptance of developmental disabilities, leading to stigma and discrimination. Families might feel embarrassed or ashamed of their child's condition and, as a result, might avoid seeking therapy services. This social stigma can prevent open discussions about developmental delays, delaying diagnosis and treatment.

Families may fear being judged by others, which could lead them to hide their child's condition or avoid formal healthcare settings altogether. In more conservative communities, there may also be resistance to certain therapeutic approaches, particularly if they are perceived as Western or unfamiliar practices. This can outcome in families relying on traditional healing methods which can't be effective in treating developmental delays.

Cultural beliefs about disability and special needs can affect how families view the child's potential. Some families might consider developmental delays as a phase that will resolve on its own, delaying their decision to seek professional therapy. This lack of cultural acceptance of disabilities and therapeutic interventions can expressively affect a child's growth and the effectiveness of therapy.

Socioeconomic factors such as financial status, parental education, geographical location, cultural attitudes, and the availability of social support play a significant role in determining access to therapy for children with developmental delays. Addressing these factors through

policy changes, increased awareness, and improved infrastructure is essential to ensure that all children, regardless of socio-economic background, receive the necessary therapeutic interventions to support their development and well-being.

### **3.5 Government Programs in Supporting Therapy for Children**

The government of Tamil Nadu supports therapy for children with developmental delays through several programs, such as the National Health Mission (NHM), which includes early intervention services and special education initiatives. The state also promotes Anganwadi centres, providing basic developmental support to children in rural areas. The Rashtriya Bal Swasthya Karyakram (RBSK) offers free screenings and treatment for children with disabilities. Government-funded rehabilitation centres and inclusive education schemes aim to improve access to therapy and resources. Despite these efforts, challenges like limited outreach and resource constraints remain.

#### ***3.5.1 National Health Mission (NHM)***

The NHM is essential in helping children receive treatment services. The NHM, which was introduced by the Indian government, includes early intervention services as a key element. Reducing newborn and maternal mortality, expanding the right to use healthcare, and improving child developmental screening are the mission's main objectives. To identify children who might need developmental help, community health workers known as ASHAs work closely with families under the NHM. In addition to helping families find therapists and other medical specialists, they also offer information about available services. The NHM incorporates special education programs, guaranteeing that children with growing disabilities receive both therapy care and suitable educational materials.

#### ***3.5.2 Anganwadi Centers***

Anganwadi institutions are essential for pre-schoolers, particularly in rural areas. These facilities provide a range of services, including nourishment, healthcare, and early childhood education. Since many children from low-income families would not have access to specialist treatments, developmental support needs to be given top priority in Anganwadi institutions. In addition to providing fundamental developmental tests, Anganwadi personnel collaborate with parents to promote skill development via organized play and activities. The facilities also act as a link, connecting families in need of further support with qualified medical professionals and therapists. Anganwadi staff receive training that emphasizes the importance of identifying developmental issues at an early age to facilitate timely intervention.

#### ***3.5.3 Rashtriya Bal Swasthya Karyakram***

The RBSK is another nationwide initiative that has a major impact on children's health and development. This method concentrates on the early detection and treatment of diseases, disabilities, and deficiencies in children between the ages of 0 and 18. To identify children who can be at hazard for developmental delays, RBSK provides free health screenings in schools and communities. Psychological evaluations and therapies for a range of disabilities are among the free treatment and therapy options available to children identified by RBSK. Working along with medical facilities, the program makes sure kids get the therapeutic interventions and medical care they need.

#### ***3.5.4 Rehabilitation Centers***

The construction of government-funded rehabilitation facilities is a vital resource for kids with disabilities. A variety of treatments are provided by these facilities, like occupational

therapy, speech therapy and physical therapy. They have qualified experts on staff who specialize in working with kids who have developmental difficulties. Individualized treatment programs that address the particular requirements of every kid are offered by rehabilitation centres. To promote a collaborative environment between parents and specialists, families are urged to actively contribute to the therapeutic process. However, accessibility may occasionally be a problem because not all places may have enough rehabilitation facilities to meet demand.

### ***3.5.5 Inclusive Education Schemes***

Tamil Nadu's inclusive education programs aim to fit kids with developmental disabilities into regular classrooms so they can get the instruction and therapy they need. Government programs help teachers become more knowledgeable about how to help kids with numerous learning and developmental problems. It is necessary to provide resources for children with impairments, such as learning materials and teachers with specialized training. These initiatives aim to establish a welcoming classroom where all kids, despite developmental obstacles, can succeed.

Children using developmental delays can now receive treatment services within a supportive framework created by the Tamil Nadu government. Programs such as the RBSK, Anganwadi centres, and NHM provide vital resources and assistance. Although there has been a lot of progress, more work is still required to solve current issues and enhance results for all kids taking therapy.

## **4. EXPERIMENTATION AND RESULT DISCUSSION**

The experimentation involved assessing the socio-economic factors affecting early intervention therapy for children with developmental delays in Southern Tamil Nadu. Data was collected through surveys and interviews with parents, healthcare providers, and educators. Key socio-economic variables such as family income, parental education level, and entrance to healthcare services were analyzed to determine their influence on the availability and effectiveness of early intervention services. Results indicated that higher income levels and better parental education positively correlated with timely access to therapy and improved outcomes. Conversely, lower-income families faced significant barriers, such as financial constraints and lack of awareness, limiting their children's access to early intervention services. The study also highlighted the disparity in service availability among urban and rural areas, with rural families experiencing limited access to trained professionals and therapeutic resources. These results highlight the need for targeted interventions that address socio-economic disparities to enhance therapy accessibility and outcomes for all children.

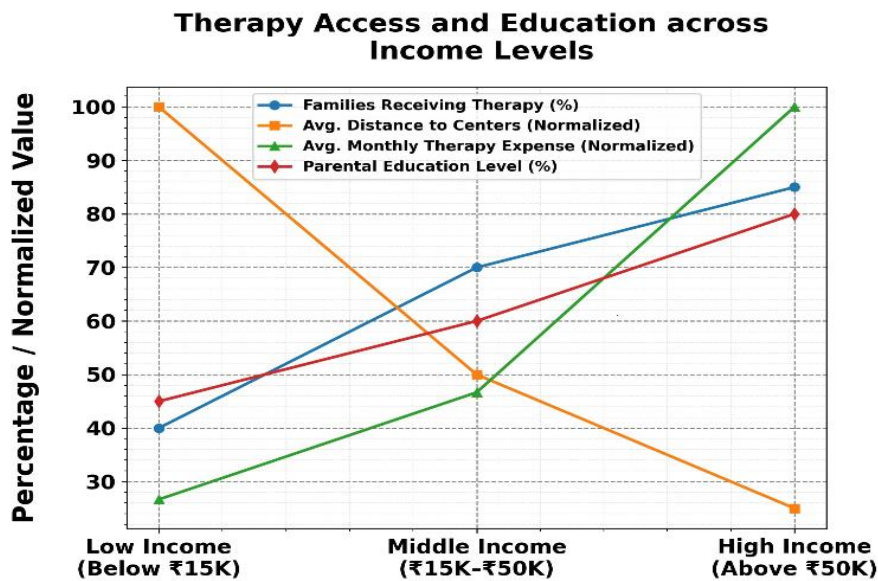


Figure 6: Socio-Economic Disparities in Therapy Access

Figure 6 illustrates the relationship between socio-economic factors and access to therapy for children with developmental delays in Southern Tamil Nadu. With an average monthly cost of ₹2,000 and a 20-kilometre commute to therapy centres, 40% of low-income households (those making less than ₹15,000/month) receive therapy. 70% of middle-class families (earning between ₹15,000 and ₹50,000 per month) participate in therapy, with therapy facilities typically located 10 km distant and costing ₹3,500 per month. With the lowest average distance of 5 km and the highest monthly therapy expense of ₹7,500, high-income households (making above ₹50,000/month) show the highest therapy engagement at 85%. Furthermore, parental education levels rise throughout economic brackets, with parents in 80% of high-income households having completed at least secondary school, compared to 60% of middle-income families and 45% of low-income families. These factors highlight the socio-economic differences in admittance to and affordability of therapy services.

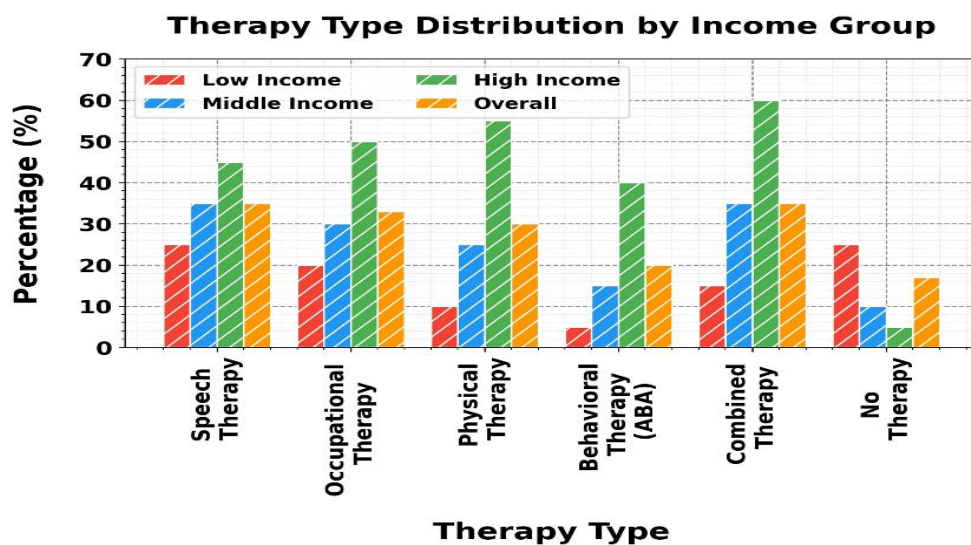
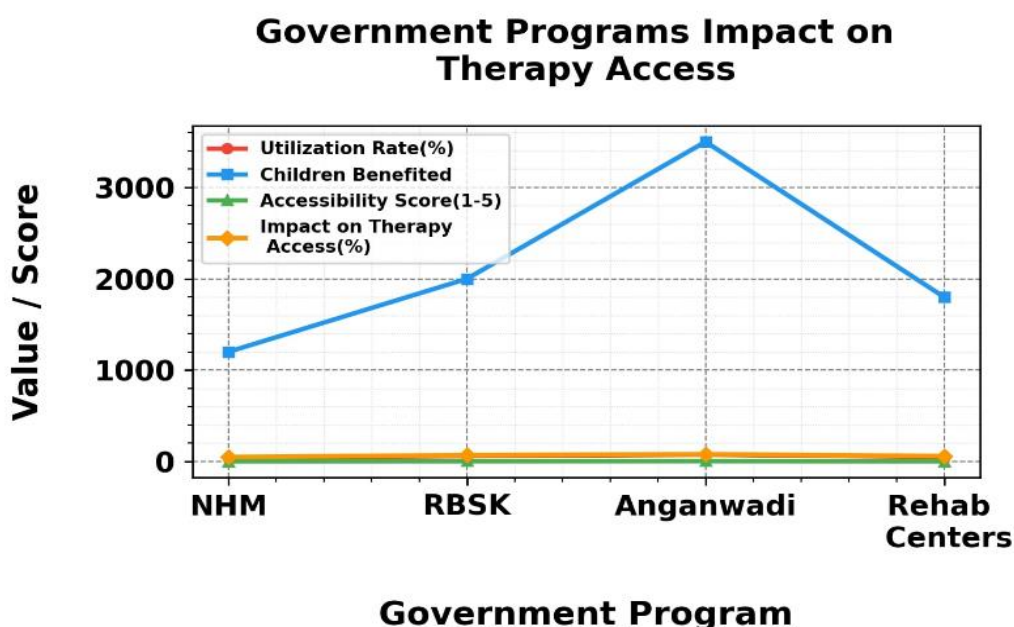


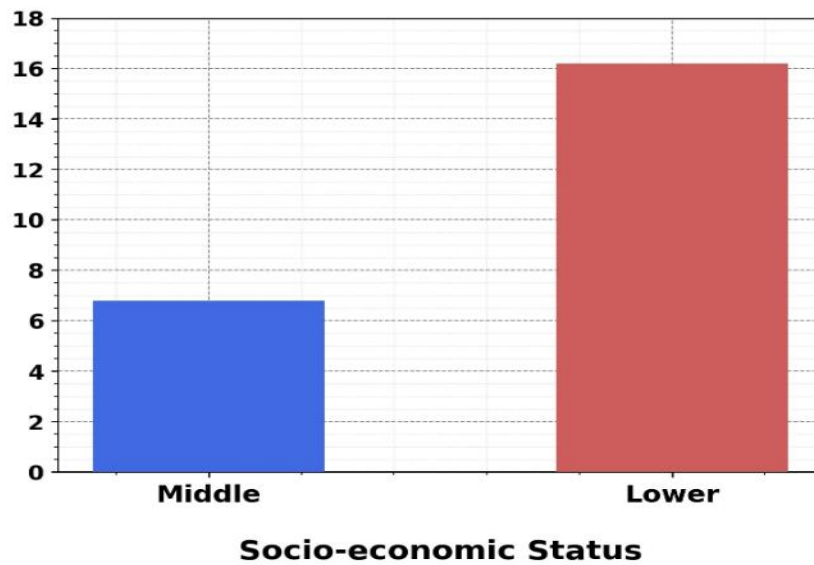
Figure 7: Therapy Type Distribution Across Income Groups

Figure 7 shows how different therapy kinds are distributed throughout various socioeconomic brackets. The low-income group participates in speech therapy at the lowest rate (25%) whereas the middle- and high-income groups participate at higher rates (35 and 45 percent, respectively), for a total of 35 percent. Similarly, 20% of low-income people participate in occupational therapy, 30% of middle-class people do so, and 50% of high-class people do so, for a total participation rate of 33%. The lowest participation rate is 10% among those with low incomes, rising to 25% among those with middle incomes and 55% among those with high incomes, for a total rate of 30%. With 5% in the low-income group, 15% in the middle-income group, and 40% in the high-income group, behavioural treatment (ABA) exhibits a more pronounced disparity, with an overall rate of 20%. 15% of persons in the low-income group, 35% of persons in the middle-income group, and 60% of those in the high-income group participate in combined therapy, for a 35% overall rate. With a prevalence of 17% overall, no therapy is most common in the low-income group at 25%, sharply declining to 10% in the middle-income group and 5% in the high-income group.



**Figure 8:** Government Programs Impacting Therapy Access

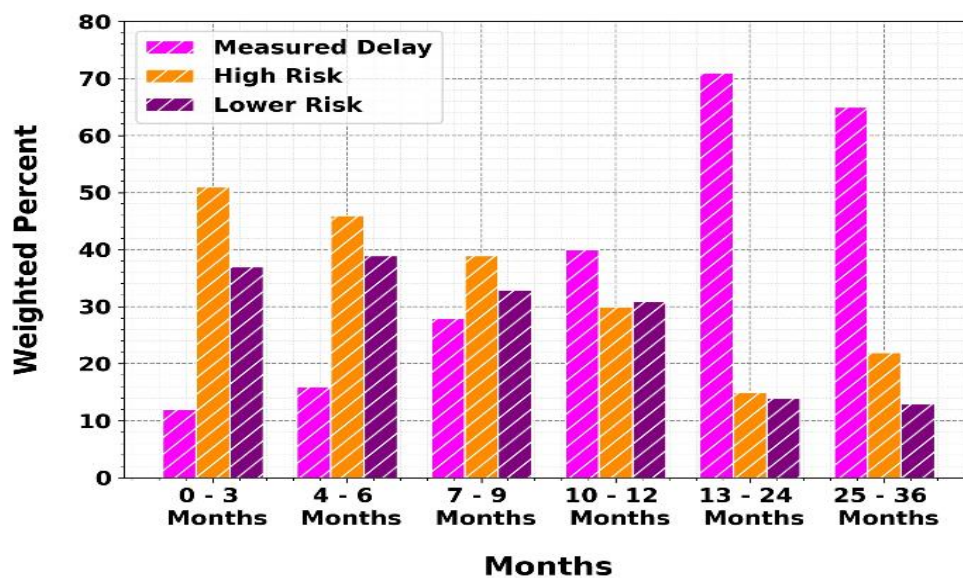
Figure 8 outlines the utilization and impact of various government programs supporting children with developmental delays in southern TN. About 1,200 children benefit from the NHM, which has a 40% use rate, a 3 accessibility score, and helps to improve therapy availability by 50%. Approximately 2,000 children benefit from the RBSK, which has a higher utilization rate of 60%, an accessibility score of 4, and a 70% impact on therapy access. With an accessibility score of five and an 80% influence on therapy access, Anganwadi Centers which offer developmental support—have the greatest utilization rate at seventy-five percent, helping 3,500 children. Serving 1,800 children, the Government's Rehabilitation Centers have a 50% use rate, a 3 accessibility score, and a 60% impact on therapeutic access. These programs collectively highlight the varied impact of government initiatives on therapy access, with Anganwadi Centers showing the most significant positive outcomes.



**Figure 9:** Socio-Economic Disparities in Therapy Access

Figure 9 illustrating therapy access for children with developmental delays in Southern Tamil Nadu reveals significant disparities. It shows that there are 7 individuals classified within the middle socioeconomic category, contrasting sharply with 16 individuals in the lower socioeconomic group.

This distribution highlights critical experiments handled by the lower socioeconomic group, who are likely to encounter financial barriers, inadequate access to therapy facilities, and limited availability of resources. While individuals in the middle category may experience somewhat easier access, they still struggle with issues related to the affordability and availability of therapy services. This analysis calls attention to the urgent need for targeted interventions aimed at mitigating these socioeconomic disparities and improving therapy accessibility and outcomes for children with developmental delays in the region.



**Figure 10:** Developmental Delay and Risk Levels Over Time

Figure 10 presents the weighted percentage of children categorized by their developmental delay status in southern TN. With percentages of 12, 16, 28, 40, 70, and 64 at various measurement sites, the "Measured Delay" category exhibits a changing trend, suggesting that the percentage of children with detectable delays rises initially before dipping significantly toward the conclusion. The "High Risk" group begins at 50%, decreases to 46%, 38%, and 30%, and then rises once again to 70% and 64%. This suggests that there is a decrease in high-risk children at first, followed by an increase in later stages. The "Lower Risk" group exhibits a decreasing tendency, beginning at 36% and thereafter falling to 26%, 32%, 30%, and ultimately reaching 14% and 13%. This recommends that the amount of children categorized as lower risk has significantly decreased over time. This data highlights varying patterns of risk and developmental delay, pointing to shifts in child development outcomes and potential influences of interventions.

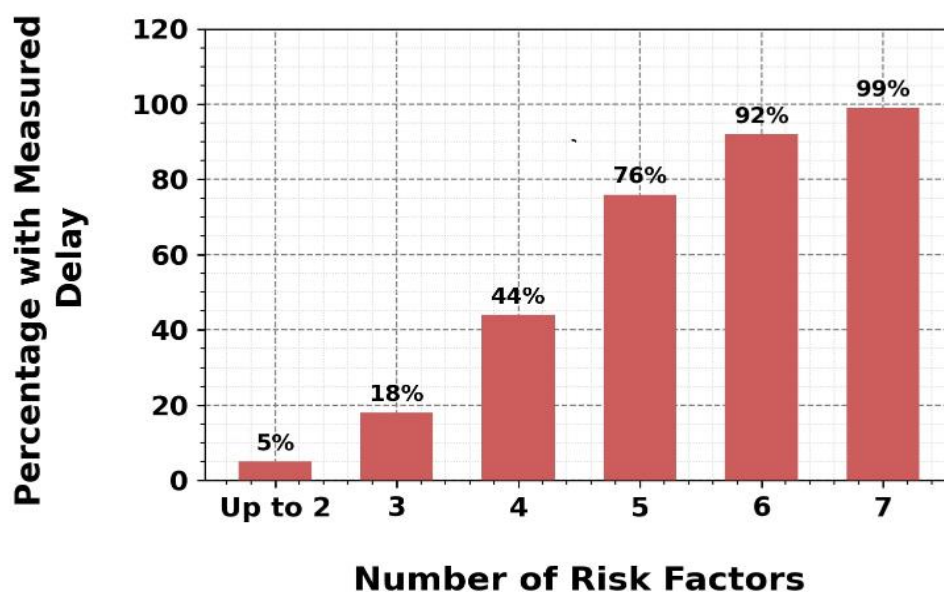
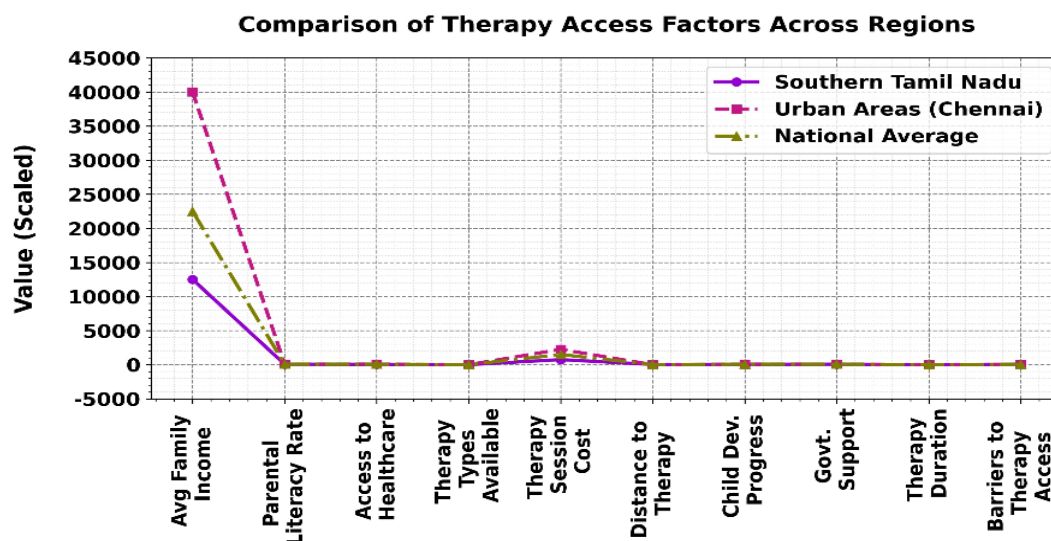


Figure 11: Rising Identification of Developmental Delays

Figure 11 illustrates the increasing percentage of children with measured developmental delays over time in southern TN. A comparatively low incidence of delays is indicated by the initial 5% of children with measured delays. But with time, this percentage increases dramatically, rising to 18%, 44%, 76%, 92%, and 99%. This increasing tendency implies that as the measuring period goes on, a larger percentage of children are found to have developmental delays. This could be because of improved diagnostic procedures, raised awareness, or easier access to health evaluations. The dramatic increase in percentages suggests that more children are receiving diagnoses for developmental delays, which may also be related to better intervention and support facilities available in the area. The information highlights the increasing awareness and detection of developmental impairments in southern TN youngsters.



**Figure 12:** Factors Influencing Therapy Access

Figure 12 shows various factors affecting therapy access for children with developmental delays in southern TN, urban areas like Chennai, and the national average. The average monthly household income in Southern Tamil Nadu is between ₹10,000 and ₹15,000, while the parental literacy rate is between 60 and 70 percent; in rural areas, this number is lower. There are just two or three forms of therapy available, and 40–60% of people have entrance to health-care facilities. Therapy centres are 20–40 km away, especially in countryside areas, and sessions cost between ₹500 and ₹1,000. 40–55% of children improve in their development, while 60–80% of them, mostly in rural regions, have difficulty getting therapy. In contrast, parents in urban regions are more likely to be literate (80–90%) and earn between ₹30,000 and ₹50,000 per month. There are additional therapy options (5–6), and the centres are 5–10 km away. The prices range from ₹1,500 to ₹3,000 each session. The national average reflects a balance between urban and rural conditions, with access to government programs at 75%.

## 5. RESEARCH CONCLUSION

The research concluded that socio-economic factors play a vital role in determining the accessibility and effectiveness of early intervention therapy for children with developmental delays in Southern Tamil Nadu. Families with higher income levels and better educational backgrounds were more likely to access timely and quality interventions, leading to better developmental outcomes for their children. In contrast, socio-economic challenges, such as low family income and limited awareness, significantly hindered access to essential services, particularly in rural areas. The study emphasized the need for targeted policies that address these disparities, ensuring that all children, regardless of socioeconomic status, receive the primaryinterference they need. Increased community awareness, financial support programs, and improved healthcare infrastructure in rural areas could help bridge the existing gaps. The result indicates rural areas face lower parental literacy (60-70%), limited therapy options (2-3), and high travel (20-40 km). Urban regions have better literacy (80-90%), more therapy options (5-6), and higher costs (₹1,500-₹3,000) and are implemented by using SPSS Software. By addressing these socio-economic barriers, it is possible to enhance the

effectiveness of early intervention therapies and improve developmental outcomes for children across Southern Tamil Nadu.

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