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## Impact of early intervention on school outcomes

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### Abstract

The long-term effect of early intervention in infants at risk for developmental disorders is unclear. The VIP project ( $n = 46$ , originally) evaluated by means of a randomized controlled trial the effect of the family centered early intervention programme COPCA (Coping with and Caring for infants with special needs) in comparison to that of traditional infant physiotherapy (TIP). To evaluate the effect of early intervention on functional outcome at school age. Parents of 40 children (median age 8.3 years) participated in this follow-up study. Outcome was assessed with a standardized parental interview (Vineland Adaptive Behavior Scale) and questionnaires (Developmental Coordination Disorder Questionnaire, Child Behaviour Checklist, and questions on educational approach). Quantified video information on physiotherapeutic actions during infancy was available.

**Keywords:** early intervention, developmental disorder, child behaviour checklist, educational approach, physiotherapeutic

### Introduction

Early intervention (EI) is a system of professional services provided to children from birth until about five years of age who are disabled, have delayed development or are at risk of delayed development. To help children with disabilities, it is essential to focus on the earliest years of development, since this is a critically important time for early learning which powerfully affects the child's future life course. Along with medical and rehabilitation services (where ever required), the children are actively engaged in an instructional program many times a week, throughout the year. It involves planned professional intervention organized around relatively brief periods of time for the very young children so that they may receive sufficient adult attention. The Early Intervention Program offers a variety of therapeutic and support services to eligible infants and toddlers with disabilities and their families, including:

- Family education and counselling, home visits, and parent support groups
- Special education
- Speech pathology and audiology
- Occupational therapy
- Physical therapy
- Psychological services
- Medical services
- Nutrition services
- Social work services
- Assistive technology devices and services

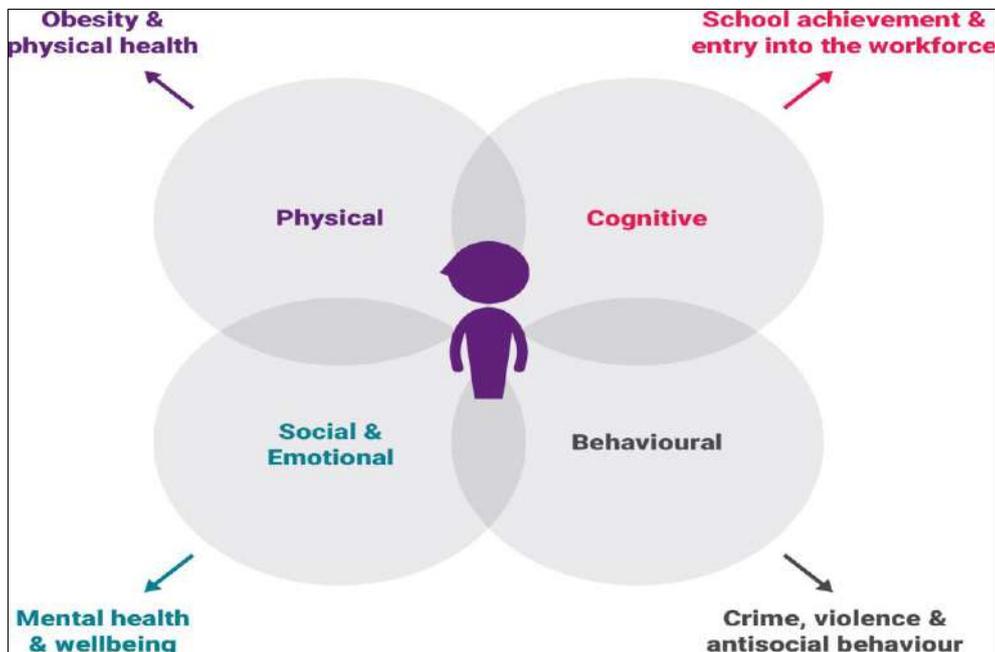
### Early Intervention in Various Disabilities

The UNCRPD stresses the importance of habilitation and rehabilitation beginning at the earliest possible stage and being based on individual needs and strengths. Early identification, availability of services, trained professionals and information and support to families are all considerations of quality early intervention services. The demand for early intervention is expected to grow as the survival rate of high-risk babies is increasing with advances in medical technology, and consequently the number of babies who might end up with developmental delays and disabilities is increasing. Due to the absence of a universal new born screening program coupled with the lack of awareness, majority of babies born deaf in India have been missing the opportunity of getting early intervention. The Early Intervention curriculum is indigenous and primarily focuses on language, audition and early literacy skills.

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**Fig 1:** Early Intervention Foundation

The EI services for children with visual impairment is required to detect blindness and prevent further disabling condition early in life and hence reduce the impact of visual impairment. The services are provided to accelerate the rate of development in the child and to facilitate acquisition of new behaviour patterns and skills by the child that enhances skills for independent functioning of the child with visual impairment.

Since children with autism find it difficult to work in large groups, the early intervention services for them should follow a structured program of one-on-one training or training in small groups to help attain individual goals. Early intervention services for children with cerebral palsy comprise multiple interventions such as medical intervention for premature babies who might be 'at risk', family counselling, family training, physical, occupational, speech therapy and/or special education intervention for children below the age of three years of age. Early Intervention services are crucial for children with cerebral palsy, since the services can take advantage of the plasticity of the brain and provide opportunities for optimal development of the child's potential. It is important that early intervention services adopt a family centred approach, rather than a child-centred approach, since families are key to ensuring the best results for the child. Many children with Multiple Disability may require specialized intervention and environments for longer than other children receiving early intervention.

### How to Organize and Facilitate Early Intervention Services

The early intervention services are provided through various models as described below.

#### 1. Home-based Programme

Initially early intervention programmes were home-based, mainly for the benefit of rural families as they were far from health facilities. The key persons in a home based programme are the home visitors. They need not be professionals. In fact, if they are SSC passed and receive

intensive training in early intervention and have good supervision and guidance, then they do equally well. The home visitor is the active agent who takes the planned system of skills based sequentially, to the home and fulfills the role of a counselor and friend to both mother and child. The mother teaches the suggested activities based on the skills to her child and reports the progress to the home visitor at each visit. She in her turn, reports back to the supervisor regularly. In this way, the child's progress can be constantly monitored and the skills adjusted as necessary.

#### 2. Centre-based Programme

Center-based early intervention is usually carried out in a children's hospital, a clinic or a center for children or a rehabilitation center for disabled children. If such programmes are in hospitals they are part of OPD services and are conducted daily. They are usually attached to a Department of Neonatology/Pediatrics. In the latter case, they are offered daily on a full-time or part-time basis. In center-based early intervention, the services of units like physiotherapy, occupational therapy speech therapy are also available and are provided as part of the programme. In addition, a Children's Hospital has other units like Departments of Neurology Cardiology, ENT, Ophthalmology, etc., where center-based children can be referred for tests and consultation. For multiply disabled infants, a center-based programme becomes imperative. However, the effect of early intervention can only be gauged over a long-term, mothers who are overburdened, or have other young children or who have to travel over long distances, usually are unable to continue unless there is family support. Unfortunately, very few hospitals so far have undertaken such programmes as they involve additional expenses. In center-based early intervention, the supervisor can be a pediatrician or a public health nurse, therapist or a special educator with knowledge in child development and experience in early intervention. Under her, she may have staff who are trained (equivalent to home visitors) and who give the planned system of skills sequentially to the mother individually. She works in the

same way as a home visitor and guides the mother periodically in learning activities based on the skills.

### 3. Mixed (Centre and home based) Intervention

There are some agencies which offer both home based and center based early intervention. It is offered to those families in urban areas who are far away from centers offering early intervention and where health services are lacking. The latter programme is offered to those families who live in districts and can come to centers on a fortnightly or monthly basis. The programme is also offered to those infants who are multiply disabled and who need paramedical and other services (for instance, babies with convulsive disorders).

Effective early intervention works to prevent problems occurring, or to tackle them head-on when they do, before problems get worse. It also helps to foster a whole set of personal strengths and skills that prepare a child for adult life. Early intervention can take different forms, from home visiting programmes to support vulnerable parents, to school-based programmes to improve children's social and emotional skills, to mentoring schemes for young people who are vulnerable to involvement in crime. While some have argued that early intervention may have its strongest impact when offered during the first few years of life, the best evidence shows that effective interventions can improve children's life chances at any point during childhood and adolescence

Early intervention works to reduce the risk factors and increase the protective factors in a child's life. We have a good understanding of the risk factors that can threaten children's development, limit future social and economic opportunities, and increase the likelihood of mental and physical health problems, criminal involvement, substance misuse, or exploitation or abuse in later life. These factors exist at different levels within the child's environment – at the individual, family, community and society level – and interact in complex ways.

Protective factors are the characteristics or conditions of individuals, families, communities and society that can mitigate these risks and increase the health and wellbeing of children and families. In many cases, risk and protective factors are two sides of the same coin: for example, poor parental mental health may pose a risk to a child's healthy development, while good parental mental health may provide a protective factor against other negative outcomes, such as behavioral problems or poor academic attainment. These risk factors are not deterministic or predictive at an individual level: they cannot tell us exactly which child or young person will need help. But they can help us to identify children who are vulnerable and who may need extra support. Studies show that early intervention works best when it is made available to children on the basis of pre-identified risks.

Early intervention approaches often focus on supporting four key aspects of child development – their physical, cognitive, behavioral, and social and emotional development – where it has the potential to make the biggest difference and provide benefits throughout a person's life.

- **Physical development:** Involves children's physical health, maturation and the presence or absence of a physical disability, and it provides the basis for positive development in all other areas. Physical outcomes targeted by early intervention activities include

improving birth outcomes, reducing the incidence of infectious diseases and decreasing childhood obesity.

- **Cognitive development:** Includes children's acquisition of speech and language skills, their ability to read and write, their numeracy capabilities and their understanding of logical problem-solving. Positive cognitive development is strongly associated with a child's success in school and entry into the workforce. Cognitive outcomes typically targeted by early intervention include performance on standardised tests, school achievement, and higher education and employment opportunities once they leave school.
- **Behavioural development:** Involves children's ability to monitor and regulate their own behaviour, attention and impulses. Children's self-regulatory skills are highly associated with their ability to form positive relationships with others, as well as their success in school. Behavioural self-regulation difficulties during childhood are highly predictive of children's involvement in criminal activity during the teenage years and adulthood. Behavioural outcomes frequently targeted by early intervention include reducing antisocial behaviour and crime, violence and aggression at school, and affiliation with antisocial peers.
- **Social and emotional development:** Involves children's awareness of their own emotional needs and the emotional needs of others. Social and emotional development also encompasses the development of children's self-esteem and their ability to manage negative feelings. Social and emotional development is strongly associated with a child's ability to form positive relationships with others and a reduced risk of depression and other mental health outcomes. Early intervention outcomes associated with children's social and emotional development include increasing pro-social behaviour, improving self-esteem and reducing the incidence of clinically diagnosed mental health problems.

Early intervention also targets three key additional 'threats' to a child's development which are strongly associated with adverse outcomes during adolescence and adulthood: child maltreatment, substance misuse and risky sexual behaviour.

### Understanding the Benefits of Early Intervention

#### 1. Early Intervention helps your child make the most of learning through play

Purposeful play is a child's work and essential to brain development, particularly during their first three years. If your child appears to be experiencing developmental challenges, getting support early and understanding exactly how services can help is essential. Opportunities for play with a caregiver or Early Intervention specialist can facilitate the development of the skills needed for problem-solving, self-control, socialization and communication.

#### 2. Early Intervention may reduce the need for specialized instructional support during a child's school years

Early Intervention can be effective in helping a majority of children make progress toward achieving age appropriate developmental milestones. Children receiving Early Intervention support may show potential for increased academic readiness and to better be able to interact with their peers.

**3. Early Intervention occurs where your child is most comfortable and becomes part of their routine**

teli therapists will meet with your family in a natural environment such as your home, or day care. Children are most comfortable in familiar environments, and as a result Early Intervention activities become part of your daily routine. Your child will progress by repetition and incorporation of strategies into meal time, play time, and bed time.

**4. Early Intervention services are provided at NO COST to families**

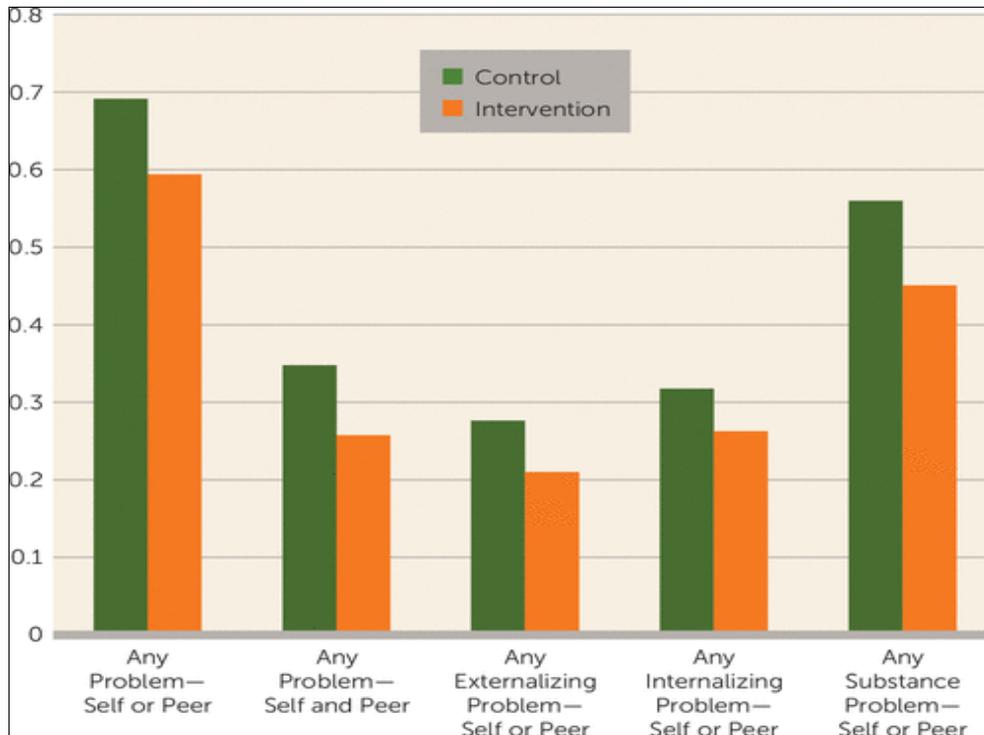
The value of Early Intervention in addressing developmental delays has been recognized. As a result, through available

funding, Early Intervention services are able to be provided to families at no cost.

**5. Early Intervention empowers families to help their child reach their true potential**

As a parent, you are your child’s primary teacher. Through Early Intervention services, you will be empowered with the tools necessary to help your child through their developmental challenges, so that they may reach their full potential.

As a parent, if you have concerns about your child’s development, we are eager to help. teli has partnered with countless families to celebrate the successes of Early Intervention for over 60 years.



**Figure 2:** Impact of Early Intervention on Psychopathology, Crime and Well-Being

**Outcomes and Results**

Child functional outcome in the two randomized groups was similar. Process evaluation revealed that some physiotherapeutic actions were associated with child mobility and parental educational approach at follow-up: e.g., training and instructing were associated with worse mobility.

**Conclusions and Implications**

Functional outcome at school age after early intervention with COPCA (Coping with and caring for infants with special needs) is similar to that after TIP. However, some specific physiotherapeutic actions, in particular the physiotherapist’s approach, are associated with outcome. Participation in an established early childhood intervention for low-income children was associated with better educational and social outcomes up to age 20 years. These findings are among the strongest evidence that established programs administered through public schools can promote children’s long-term success. Early educational interventions during the preschool years are widely touted as an effective way to prevent learning difficulties and to promote healthy development. Preschool programs are central to many

human service reforms. State and local expenditures for preschool exceed \$15 billion annually, and they are expected to continue to increase. Advances in the neuroscience of brain development have further accelerated interest and investments in the early years of life.

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