EFFICACY OF MULTIDISCIPLINARY PREPARATORY SERVICES AT AIISH IN MAINSTREAMING CHILDREN WITH COMMUNICATION DISORDERS

Report of ARF Project
Ref. No. SH/CDN/ARF/3.53/VB/2009-10 dated 30.07.2009

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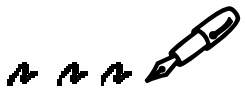

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INTRODUCTION

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1.1 Communication Disorders

Verbal communication is an epitome skill that mankind has acquired through its years of evolution. Though it could be described in the simplest terms, as the ability for human beings to exchange information related to needs, feelings, desires, perception, ideas, and knowledge using words, it is a complex process that involves numerous sensory, neural, cognitive and motor processes in its execution. This intricate complex process could be hampered due to several transitory or permanent conditions, and the resultant impediments are termed as communication disorders. The term 'communication disorders' encompasses a wide variety of problems in language, speech and hearing; including articulation problems, voice disorders, fluency problems, aphasia, and/or delays in speech and language development induced due to the presence of disabling conditions like autism, cerebral palsy, hearing impairment, learning disabilities, mental retardation, etcetera or other environmental factors.

Globally, it is estimated that five percent of school-aged children have some form of speech or language disorder, most of whom are boys (Child Development Institute, 2010). With such considerable number of children being affected with communication disorders the adverse impact of these disorders in growing generation is immense. The conditions in developing countries like India are also of concern. Indian National Census (2001) reports that 2.13 % of the total population have some kind of disabling condition. The 58th round of the National Sample Survey further suggests that approximately 10% of the nation's total population with disabilities are reported to have hearing impairments and 5% speech impairments. About 4% of the sample population are reported with intellectual impairments, and another 11% with multiple impairments (aggregate of percentage distribution in rural and urban areas reported by NSSO, 2003). All these problems are known to lead to communication disorders. Existence of such problems in an individual's life

leads to a lot of repercussions, especially if the problem sets in at a very early stage. NSSO (2003) reports that 1.01% of children under 5 years of age; 2.18% of children between 5 and 9 years of age; and 1.47% of children between 10 and 14 years of age have at least one kind of disability. These figures provide a rough and ready idea of the magnitude of the problem of communication disorders in our country and its consequences.

1.2 Implications of Communication Disorders

As described earlier communication ability is a life surviving skill without which an individual's life may be thrown into disarray. Beginning from fulfilment of daily life needs, through enhancing one's knowledge and skills by means of good education, seeking and keeping good jobs and ensuing economical independence, to integration in the society and living in harmony with the people around; every crucial aspect of life is dependent on good communication skills. Especially, when communication disorders happen at birth or early in life, the brunt is profound and enduring throughout life.

Experts have made attempts to summarise the different symptoms present in children with different kinds of communication problems (CEC, 2011). These may include mundane difficulties like following directions, attending to a conversation, pronouncing words, perceiving what was said, expressing oneself, or being understood. Problems with language may involve difficulty expressing ideas coherently, learning new vocabulary, understanding questions, following directions, recalling information, understanding and remembering something that has just been said, reading at a satisfactory pace, comprehending spoken or read material, learning the alphabet, identifying sounds that correspond to letters, perceiving the correct order of letters in words, and possibly, spelling. Difficulties with speech may include being unintelligible due to a motor problem or due to poor learning. Sounding hoarse, breathy or harsh may be due to a voice problem. Stuttering also affects speech intelligibility because the child's flow of speech is interrupted.

Apart from these everyday difficulties, a strong relationship exists between communication and academic achievement. Language and communication proficiency, along with academic success, depend on whether students can match their communication to the teaching-learning style of the classroom. Verbal communication is the primary medium of instruction in most of our Indian classrooms; and reading, writing the mode of appraising learner outcomes. When learners have difficulty in these modes of communication, their ability for learning is prevented from manifesting outwardly and optimally. And in many instances they are segregated from the mainstreams of education. In the present era of knowledge and information, lack of proper verbal communication skills and education implies diminished means for seeking good jobs and deprivation of proper means for livelihood and integration in the society.

1.3 Early Intervention for Communication Disorders

However, all is not lost when children are impacted with communication disorders congenitally or very early in life. Researches provide evidence that early and comprehensive intervention helps to reduce the impact of communication disorders and even prevent it. Comprehensive intervention would imply teamwork of concerned professionals like ENT doctors, audiologists, speech-language pathologists, psychologists, occupational/physiotherapists, special educators, and caregivers among others. More importantly this teamwork has to start very early in the child's life. Reports from around the world emphasise that early identification and effective multidisciplinary intervention for communication disorders like hearing loss in children help in improving their speech, language, communication, cognitive as well as academic skills (Vohr et al., 2008; AYJNIHH, 2000; Watkin et al., 2000; Yoshinaga-Itano, 1999; Downs & Yoshinaga-Itano, 1999; Yoshinaga-Itano et al., 1998).

The primary impact of any communication disorder on an individual is alienating him/her from the people around in different walks of life beginning from his/her family, through learning environments, work places and in the society at large. Intensive and comprehensive intervention in the early years alone can ensure successful mainstreaming in the family, school, workplace and society later in life. Researches (Moeller, 1991; Martineau et al., 2001) have also revealed the vitality of parental / caregiver participation during this preparatory as well as consequent educational process in order to ensure successful mainstreaming.

1.4 Early Intervention Programmes in India

Success stories of early intervention have been emulated in India also, but most of them are urban-based. One of the pioneering programmes in India is the Parent Infant Programme at the Ali Yavar Jung National Institute for Hearing Handicapped in Mumbai that was started in 1992. Under this programme, parent-centred services are being provided to families of infants with hearing impairment between birth and 3 years of age. The purpose of the programme is to empower parents for effective early intervention of children with hearing impairment, and also facilitate acceptance of the child and the impairment in the family.

Between 2001 and 2004 a follow-up study was undertaken to scientifically appraise the benefits accrued under the programme and clients' perceptions towards the same. Forty-four families had participated in the study in which information was collected from caregivers using questionnaire, as well as assessment of children using tools like 3-D LAT, LPT tests for language assessment, proforma for informal assessment of auditory skills and questionnaires for school teachers' observation of the children under study. The study found parents empowered with skills to promote communication skill development in their children, like in acceptance and regular use of hearing aids and facilitating communication skill development. Majority of the children were reportedly doing fairly well in the learning environment in terms of academic achievement (with 80% success), and few of the

children (20%) were doing well on the co-curricular front also. More than 90% of the children were performing well on the informal assessment for auditory skills that included Ling's 6 sound test, and simple commands. Their teachers had also reported of their competency for managing communication demands in the learning environment through aural-oral mode with/without visual clues. However, there was significant delay in their speech-language compared to their chronological development. The parents of the beneficiaries of the programme had expressed need for expansion of the programme in terms of frequency of services, age limit, parent-professional collaboration and increased focus on forthcoming academic demands (Basavaraj, Nandurkar & Bantwals, 2005).

Apart from the governmental endeavours similar to the one discussed above, there are several successful non-governmental forays in the field of early intervention for communication disorders being made in the country. A few of them have been reported about herein after. These organisations are affiliated to the Alexander Graham Bell Association for the Deaf & Hard of Hearing, in the USA a global pioneer in the field.

Balavidyalaya, a programme for young children with hearing impairment in Chennai, was started in 1969 to help infants and young children acquire language and speech skills to be integrated into mainstream education. Through early and effective auditory management, children are taught to make the best use of their residual hearing. The programme includes; diagnosis and hearing aid fitting, counseling and guidance, early intervention, pre-school, outreach and integration. A non-residential school offering free tuition to all students, the school has prepared over 500 children to be integrated into the mainstream (as on 2005). The school now has 170 students from different parts of India and other countries such as Sri Lanka, Malaysia and the United Arab Emirates, and employs 25 teachers and nine teacher assistants. It has developed a unique curriculum DHVANI (Development of Hearing, Voice and Natural Integration) that has realised successful early intervention and mainstreaming of hundreds of children in schools and society. The

school also offers an on-site teacher training programme, which provides trainees with first hand experience working with infants and young children with hearing impairment under the supervision of experienced and qualified resource persons (Balavidyalaya, 2010; Alexander Graham Bell Association for the Deaf & Hard of Hearing, 2005). Currently, in collaboration with governmental (Government of Tamil Nadu), as well as non-governmental agencies (Tirupati Tirumala Devaswom), Balavidyalaya endeavours to replicate its early intervention model at grassroots.

Another early intervention programme for children with hearing impairment is the AURED Charitable established in 1986 as an Auditory Verbal Therapy/Training (AVT) Centre in Mumbai. It claims to have successfully provided early audiological management and therapeutic intervention for children with hearing impairment under 3 years of age using the 'Aziza Grid' following the Auditory Verbal Approach for hundreds of children from India and 15 other countries every year. Currently, the centre has 53 cochlear implant users and 45 hearing aid users (age 15 months to 11 years). The mission is to help children with hearing impairment to listen and speak and to live life to the fullest extent possible. Children take part in one-to-one therapy sessions and are mainstreamed in regular schools (AURED, 2010; Alexander Graham Bell Association for the Deaf & Hard of Hearing, 2005).

The Education Audiology and Research Centre (EAR) Society was inaugurated in Mumbai, India in 1963. The mission of EAR is to promote early identification of hearing loss and encourage individuals to learn to speak and maximize the use of hearing technology to communicate. EAR serves children from all over India through their Infant Centre, Remedial Centre for children who are mainstreamed, and a School for those children who are not ready for integration. More than 200 teachers have been trained at EAR and are teaching at centres all over India (Alexander Graham Bell Association for the Deaf & Hard of Hearing, 2005).

Suno Centre for Infants and Children with Hearing Impairment was formed to focus on the acoupedic programme inspired by the Listen Foundation in Denver. This programme follows the objectives and methods of the late Dr. Daniel Ling. Suno means listen in Hindi. The main objectives of the organization are early intervention, educational integration, and audiological services (Alexander Graham Bell Association for the Deaf & Hard of Hearing, 2005). COMDEALL based in Bangalore, Karnataka offers early intervention services for children with autism spectrum disorders.

In India efforts are also underway to mobilise home-based early intervention for children with special needs through use of Portage Materials. Portage Project, founded in 1969 in the UK has been supporting families, as well as early childhood programmes through services, materials and advocacy for promoting family-guided, and culturally sensitive development and education of all young children. The educational services are primarily through home visits, and supports are extended to children with special needs as well as their families also (Portage Project, 2012; National Portage Association, 2013).

The Indian National Portage Association based in Chandigarh along with regional partakers across the country have been disseminating Portage services for children with special needs in India. The organisation has reportedly reached out to more than 9,000 children with special needs and their caregivers, as well as more than 12,000 service providers during the three decades between 1980 and 2009. However, not much information is available about the qualitative impact of these efforts (INPA, 2009).

1.5 Need for the Study

Among the pioneering institutes for rehabilitation for communication disorders, the All India Institute of Speech and Hearing in Mysore has been striving to reach out and provide effective rehabilitation for individuals with different types

of communication disorders since 1965 in Mysore in Karnataka. It has been a forerunner in its efforts to intervene early, and mainstream individuals with communication disorders in the learning and social milieu. All along young children have formed considerable chunk of its clientele. To be more specific approx. 16% of the clientele were in the age group of birth to 5 years of age, and approx. another 11% were between 5 and 10 years of age (Savithri, 2012) out of around 20,000 fresh clients served in the year 2010-11 alone. This trend is found to be consistent in the preceding, as well as following years. In 2009-10, 14.39% and 11.27% of the fresh clientele were in age group in birth to 5, and 5 to 10 years, respectively. Similarly in 2011-12, 17.92% of the fresh clientele were between birth to 5 years, and another 11.30% were between 5 and 10 years (*Personal Communication* from Medical Records Officer, AIISH on 10th May 2012).

The Services for these thousands of child-beneficiaries include early identification including neonatal screening, multidisciplinary diagnosis, fitment of necessary assistive aids, relevant therapeutic training, and preschool education. Over the Institution's almost half-a-century of existence, these services have been up graded from time to time. Especially, the preschool training services have been streamlined with a systematic curriculum since the academic year 2003-04. These services for the young clients are amply augmented by support services for their caregivers. In the back drop that most of these young clients migrate to Mysore with their caregivers for receiving early intervention and preparatory services at AIISH and are later taken back to their native places to be mainstreamed (where proper support services may not be available); such caregiver support services become very vital so that they are empowered to independently support the education of their children. Few other young clients and their caregivers who have settled in and around Mysore continue receiving therapeutic services. More recently special educational services in the form of educational assessment, curricular support services, and counselling and guidance are also being provided to these mainstreamed children.

Thus, for considerable time AIISH has been involved in evolving multidisciplinary service delivery model for successful mainstreaming of young children with communication disorders. However, no systematic data has been maintained about the school life and academic survival or achievement of the numerous children who have been discharged from the early intervention and preparatory services at AIISH. It is time to weigh up things in order to assess the impact of these services on the prospects of mainstreaming these children in school, and to appraise factors in the intervention process that positively influence successful mainstreaming. Such investigation is necessary to validate the efficacy of this service delivery model, and lead to necessary up gradation in programme planning and implementation in future.

1.6 Purpose of the Study

With the above need in mind, a research project sponsored by the AIISH Research Fund (ARF) was undertaken in 2009 under the stewardship of the then Director Dr. Vijayalakshmi Basavaraj with the purpose of investigating the impact of the multidisciplinary early intervention services including preschool training, that is preparatory services in mainstreaming children with communication disorders, and probing various factors influencing related developments.

Realisation of these purposes involved accomplishment of the following **Objectives**:

1. To survey the impact of multidisciplinary early intervention services offered at AIISH on the current school performance of children with different kinds of communication disorders.

2. To analyse the influence of factors like
   a. Nature and severity of the disability
   b. Early identification

c. Multi-disciplinary nature of early intervention services
d. Intensity / duration of early intervention services
e. Nature of school set-up
f. Support services during schooling
g. Nature of parental empowerment services
h. Nature of family background

on current school performance of children with communication disorders.

3. To survey existing perceptions among mainstream educators towards inclusive education of children with communication disorders, and study the influence of factors like age, gender, educational qualification and professional experience on these perceptions.

1.7 Research Design

A survey type of research design elucidating causal-effect relationship between the various factors under study had been employed in the process of carrying out this research.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Literature review presented in this section helped the investigators in planning the course of this research, as well as discern important variables to be investigated in the process.

2.1 Communication in Humans

One important aspect that makes human being different from other animals, that is a social animal, is his ability to communicate. Human communication is in fact language in action. It is the process of transferring a message from a sender to a receiver using specific languages. This ability or skill is vital in each and every aspect of individual life from fulfilment of basic needs like food, clothing and shelter that are necessary for survival to higher level of needs like that of maintaining interpersonal interactions and social cohesiveness.

In other words, communication could be described as the process used to exchange information with others and includes the ability to produce and comprehend messages. Communication includes the transmission of all types of messages, including information related to needs, feelings, desires, perception, ideas, and knowledge. Communication also occurs through a variety of modalities, including non-linguistic, verbal, and paralinguistic processes. All of these processes influence an individual's ability to communicate with the environment which is very essential for survival. Language, an integral part of human communications systems, is also a mechanism to control and mediate one's own actions, thoughts, and behaviours. Although language and speech are sometimes thought of as inseparable, they are, in fact, different.

- *Language* is a rule-based system of symbolic communication involving a set of small units (syllables or words) that can be combined to yield an infinite number of larger language forms (phrases and sentences). Language is conveyed through some modality, most commonly oral and aural (speech and hearing), but other

modalities can also be used (such as manual and visual in American Sign Language, or manual and visual in reading and writing).

- *Speech* is the method of verbal language communication that involves the oral production and articulation of words. Speech is the result of specific motor behaviours and requires precise neuromuscular coordination of respiration, phonation, resonance, and articulation systems. Speech requires producing the sounds of speech and combinations of sounds, as well as voice quality, intonation, and rate (CEC, 2011; ASHA, 1993).

As mentioned herein before, humans are the only species to have developed an elaborate system of speech sounds that combine to form meaningful units of language through the use of rules and procedures. The processes of comprehending and expressing language in turn comprises several highly sophisticated skills in areas like

- *Language Comprehension:* (also referred to as reception or processing) the final result and intermediate processes in the analysis and understanding of speech.
- *Language Production*: the spoken or gestural (like in any of the Sign Languages) expression of language.
- *Semantics:* the meaning of words and the meaningful roles of words in phrases or sentence contexts.
- *Syntax:* the rules governing the order and relationships among words or phrases in sentences.
- *Phonology:* the component of language that includes consonants and vowels, sound features, syllables, syllable features (such as syllable stress), and rules for combining sounds and syllables to form words and phrases.
- *Voice:* the vocal quality, pitch, and intensity of speech.
- *Articulation*: the motor movements involved in the production of speech sounds, involving both phonology and articulation.
- *Fluency*: the overall flow or rhythm of speech production.

- *Morphology:* the smallest meaningful units in language including words that can stand alone and syllables or sounds that can add meaning to words and the rules for combining these units.
- *Pragmatics*: the use of language in context including implicit and explicit communicative intent, nonverbal communication (such as intonation, communicative gestures, facial expressions), social aspects of communication, and discourse (turn-taking, topic maintenance, etc.).

The difficulty or delay in acquiring any or a combination of the above mentioned skills leads to communication disorders in individuals. Communication disorders may range from mild problems like sound substitutions to difficult conditions like total inability to use speech and language. Presence of communication disorders depending on its nature and severity may even paralyse basic functions in human life (CEC, 2011; ASHA, 1993).

2.2 Communication Disorders

The term 'communication disorder' covers a range of problems in the areas of speech, language, and auditory processing, and affects a person's ability to relate to others by using and understanding speech and language. Apart from disabilities like autism, cerebral palsy, hearing impairment, learning disabilities and mental retardation, instances of communication disorders include dyspraxia, dyslexia, aphasia and developmental phonological disorders also. Presence of communication disorders result in some general characteristics like, being unable to follow instructions, incomprehensible speech, overly slow speech, problems with articulation, voice, and fluency, stuttering, and difficulty in forming sentences (often saying words out of order). Communication disorders can affect receptive language skills (difficulties understanding spoken language), expressive language skills (difficulties producing speech), or both.

The American Speech and Hearing Association (1993) defines communication disorder as, "An impairment in the ability to receive, send, process, and comprehend concepts or verbal, nonverbal and graphic symbol systems. A communication disorder may be evident in the processes of hearing, language, and/or speech. A communication disorder may range in severity from mild to profound. It may be developmental or acquired. Individuals may demonstrate one or any combination of the three aspects of communication disorders. A communication disorder may result in a primary disability or it may be secondary to other disabilities".

A person can be identified as having impaired speech when it is different enough from the speech of other people that it calls attention to itself, interferes with the communication process, or causes distress either to the speaker or the listener. Speech disorders can be further divided into four areas; language, articulation, voice, and stuttering.

Language disorder refers to impairments in the comprehension and/or development of spoken and written skills, as well as difficulties in listening, while articulation impairment refers to poor pronunciation and formation of sounds or words. There may be difficulties stringing sounds together, or sounds may be omitted or distorted. Voice disorder refers to difficulties in voice quality, pitch, and loudness. Typical characteristics of voice disorders include hoarseness, breathiness, or interruptions to loudness or pitch. Stuttering refers to an interruption in the flow of speech, and includes hesitations when speaking and/or repetition of sounds and words. Stuttering may begin as a sporadic problem and progress to a chronic problem over time.

Apart from the above problems, there are other specific types of communication disorders like Auditory Processing Disorder, which refers to difficulties in processing and interpreting auditory information. People with auditory processing disorder usually have normal hearing and intelligence, but may experience problems paying attention to and recalling oral information, have poor

listening skills, behavioural problems, and difficulties in reading, comprehension, spelling, and vocabulary (NICHCY, 2010).

Dyspraxia/Apraxia, which refers to difficulty getting the body to do what the brain is telling it to do, resulting in a disorder of skilled movements. When this disorder affects speech it is called developmental apraxia of speech, or developmental verbal dyspraxia. People with this disorder often have much better receptive language skills than expressive; they may be hard to understand, and may speak in a slow, effortful manner. They have the ability to say sounds and words, but lack the motor planning required to make the movements required to produce speech (NICHCY, 2010).

Aphasia usually occurs as a result of brain damage, and may result in a loss of phonetic production of speech, an inability to understand speech, and an inability to repeat, hear, or read words with small variations in intonation. There are many types of aphasia, including Broca's aphasia and Wernicke's aphasia. People with Broca's aphasia do not have fluent speech, and they have trouble repeating words or naming objects, and producing spontaneous speech. In contrast, people with Wernicke's aphasia have much more fluent speech, but language is often incomprehensible and full of jargon, and language comprehension is weak (NICHCY, 2010).

Dysfluency (stuttering) affects the flow of speech, and is characterized by an abnormally high number of stoppages in speech. When these breaks in speech occur, they are often accompanied by repetition of sounds or syllables, prolongated sounds, and periods where speech or airflow is blocked. Other indicators include eye blinking, facial grimacing, and physical movements while speaking (NICHCY, 2010).

Developmental Phonological Disorders are a group of language disorders that refer to an inability to produce appropriate speech sounds; often one sound is substituted for another or sounds are omitted altogether. These disorders have also

been known to affect the ability to read or spell. People with phonological disorders often are able to articulate all required speech sounds, but the impairment is in the area of learning to organize these sounds into a cohesive system to enable expressive language (NICHCY, 2010). Apart from these disorders there are also specific disabilities that lead to communication disorders.

2.2.1 Disabilities and other Conditions Causing Communication Disorders

According to The American Heritage Medical Dictionary (2007) communication disorders imply any of the various disabilities or disorders that might impair written or verbal communication. There are a number of causes attributed to communication disorders; such as hearing impairment, physical disability, biological causes and developmental disability. Physical Disability such as cleft lip and palate are known to cause communication disorders, as well as disabilities such as cerebral palsy. Biological causes such as abnormal brain development, exposure to toxins during pregnancy (e.g. abused substances or lead), and genetic factors have also been identified. Developmental Disability can also cause delays in the development of language and speech. Characteristics of people with Pervasive Developmental Disorders such as Autism or Asperger's Disorder include severe impairment in communication skills. Other causes of communication disorders may be mental retardation or emotional or psychological disorders.

The Preschool at the All India Institute of Speech and Hearing caters to children with communication disorders due to the major disabilities like hearing impairment, mental retardation, cerebral palsy and autism. And the current study primarily focuses on these populations and so does further review of literature.

Hearing Impairment whether partial or full, can cause difficulties in the development of speech and language. When a child is in the womb, the ear is the first organ to mature and become functional and after 16 weeks the child can hear all perceivable sounds in the uterine environment. Children with hearing impairment

tend to demonstrate abnormal listening patterns, due to problems in how the received sound is transmitted to the brain and interpreted for its meaning. Consequently their ability to produce speech is affected, as verbal skills are first acquired through listening to speech sounds. If this initial stage is compromised by a weak auditory system, subsequent development of any skill that relies on effective functioning of the listening ability is impeded (NICHCY, 2010).

Autism Spectrum Disorders or ASD as it is briefly termed imply a broad range of pervasive developmental disorders (PDD) including the

- Autism Disorder,
- Asperger's Disorder,
- Childhood Disintegrative Disorder,
- Rett's Disorder,
- Pervasive Developmental Disorder not otherwise specified.

These are characterised by severe and pervasive impairment in several areas of development like, reciprocal social interaction skills, communication skills, or the presence of stereotyped behaviour, restricted interests and activities and sensory processing. However, these children also possess some potential strengths like, special interest area(s), long-term and rote memory, adherence to rules and sequences, visual thinking and learning, concrete concept understanding, decoding text, dependable (maintain schedules and routines), precise and detail oriented, honest and genuine, and ability to focus (particularly for special interests).

The primary implications are related to oddities in sensory processing and reactions like, variable sensitivities depending upon situation and individual stress threshold; delayed reaction/response; anger, stress, or anxiety reactions; auditory system (hearing, for example makes sounds to screen out unwanted noise); visual system (sight, for example sensitive to pulsations in lighting); tactile system (touch, for example avoids touch or contact); olfactory system (taste & smell, for example dislike of strong smells such as perfume); vestibular system (movement, balance,

gravity, for example oblivious to danger of heights); proprioceptive system (movement, one's own position, for example exerting too much pressure when handling objects); and gustatory (taste, for example eats only certain food) among others.

Social skill development is another major casualty in children due to presence of autism spectrum disorders, and they find major difficulties in engaging in and maintaining normal social contact (including friendships); lack of empathy, that is, insensitivity to the feelings and needs of others; inappropriate use of facial expressions and body language; little awareness of personal space; difficulty with interpreting non-verbal language (for example, body language and gestures); lack of or abnormal eye contact; inappropriate and naive social interactions; and lack of or difficulty displaying affection. The major implications of autism spectrum disorders are that individuals having such problems may find surroundings confusing and unpredictable; they may face difficulties 'making sense' of classroom and/or learning activities; they react with anger, fear, irritation and stress to changes in routines and/or environment; they display obsessive behaviour in relation to interest, hobbies and objects; they insist on sameness and resist change; they exhibit ritualistic behaviour like, taking same route to places; they may have impaired creative and imaginative play; they might show inappropriate attachment to objects; and might not knowing how to communicate need or who to go to for help even when they face dire needs.

All these difficulties might in turn adversely affect the basic abilities required for communicating and learning, like ability to communicate and meaningfully interact with their social environment; poor language comprehension as compared to expressive language; difficulty understanding non-verbal communication; difficulty with symbolic or abstract language; delays in speech acquisition; unusual speech patterns (for example, rhythm, pitch, intonation); echolalia, that is, repetition of speech, difficulties initiating and sustaining conversations; and difficulty listening and following directions when given to whole class (NICHCY, 2010).

Intellectual Impairments include conditions like mental retardation which is defined by AAIDD (2002, qtd. in Queensland DET, 2002) as a disability that is characterised by significant limitations both in intellectual functioning and in adaptive behaviour as expressed in conceptual, social, and practical adaptive skills. The definition also adds on that this disability originates before the age of 18. It is suspected to affect 1 to 3 % of the population. Layman's symptoms for mental retardation are lack of development or delayed development of cognitive, motor, communication and self-help skills in children. The severity of the condition may extend from profound intellectual impairment to mild conditions or borderline retardation. The condition may arise out of various risk factors of genetic, environmental, toxic, pathologic, chromosomal, metabolic, trauma and other origin. Presence of the condition in individuals might lead to immature behaviour, decreased learning ability, failure to meet the markers of intellectual development, lack of curiosity and failure to meet the demands of schooling among others.

In the context of education, mental retardation is a condition which limits the understanding and reasoning ability in individuals, and as a result they may take more time to learn new things and may sometimes behave inappropriately. Presence of such problems will affect their learning ability because they are slow to learn and grasp things that are taught; have difficulty in concentrating in the learning task; tend to have short attention span; have poor memory for learnt concepts; have poor ability for applying what they have learnt in new situations and solve problems; incidental learning is difficult and rare; and have great difficulty in higher level of academic accomplishments (Yathiraj & Malar, 2009).

Motor Deficits like Cerebral Palsy (or more correctly, static encephalopathy) is a neuromotor impairment resulting from brain injury or anomaly that occurs early in development. It is estimated to occur in 2 to 5 children per thousand births. Cerebral palsy (CP) has been classified in many ways based on the type of abnormal muscle tone, movement, and coordination that is present; and the area of the body

affected. The injury to the developing brain that causes CP can occur during pregnancy (e.g., as part of a genetic condition), at birth (e.g., due to complications of prematurity or asphyxia), or after birth (e.g., due to meningitis or head trauma). Infants born prematurely (before 36 weeks of gestation) can experience a condition called periventricular leukomalacia, which accounts for approximately 35 – 40% of the cases of CP.

Children with CP are at risk for seizures, feeding problems, speech and language problems, learning disabilities and mental retardation. Developmental language impairment in children with neuromotor conditions, such as cerebral palsy, is often related to limitations in the child's ability to either produce speech or interact with the environment. Movement disorders can interfere with the child's ability to volitionally control reaching, looking, and vocalising. During the stage of infancy itself, the baby's signals may be harder for the caregivers to read and interpret, thereby disrupting the flow of caregiver responsivity, which is important to child's development of initial communication skills. When the movement disorder involves the oral musculature, children will have problems developing the ability to speak. When oral expressive language skills are severely compromised for children with movement disorders, augmentative communication devices can be used to promote functional communication and language development (Nickel & Widerstrom, 1997). In the context of education, presence of cerebral palsy in children might prevent them from meaningfully participate in the instructional activities in the classroom through verbal interaction. Cerebral palsy can also restrict their motor abilities for reading and writing which are considered as fundamental skills for formal education.

2.2.2 Indicators of Communication Disorders

Young children with communication disorders like hearing loss show early signs of communication delays like, inability to follow directions, slow and incomprehensible speech, and pronounced difficulties in syntax and articulation. In

the early years of a child, there are certain indicators of normal language development at various ages, absence which would in turn indicate problems in communication skill development (ASHA, 1991).

Table 1: Indicators of Typical Language Development

Age	Typical language development
3 months	Makes a variety of sounds, smiles at people's faces, is startled by loud noises and voices, stops activity to listen to new sounds.
6 months	Vocalization with intonation, responds to own name, responds appropriately to friendly and angry tones, babbles.
12 months	Understands simple instructions, uses one or more words with meaning, searches for the source of a sound, recognizes new words, and shows wide range of emotion.
18 months	Vocabulary of 5-20 words, can follow simple commands, asks for something by pointing and using sounds or words.
2 years	Vocabulary of 150-300 words, combines words into short sentences, can use pronouns 'I', 'me', 'you' with some confusion, responds to questions correctly, responds to 'show me your nose' like directions.
3 years	Vocabulary of 900-1000 words, uses pronouns 'I', 'me', 'you' correctly, uses some plurals and past tenses, follows two-step directions, can solve simple puzzles.
4 years	Can use at least 4 prepositions, knows one or more colours, often indulges in make-believe, answers 'who', 'how', and 'how many' questions, says sentences of four or more words in length.
5 years	Knows and understands common opposites like 'hard' and 'soft', has number concepts of 4 or more, can follow 3 commands given without interruptions, can point to basic colours, knows own age.
6 years	Should have number concepts of 7 or more, speech should be socially useful, should be able to tell a connected story about a picture, seeing relationships between objects and happenings.
7 years	Should handle opposites analogies easily like 'girl-boy', understands such terms as 'alike' and 'different', should be able to do simple reading and be able to write or print many words.
8 years	Can converse with adults comfortably, should be reading with considerable ease, have control of rate, pitch, and volume, have developed time and number concepts.

Absence of these indicators in children might imply that the development of speech and language skills is not normal and the child may be at risk of some kind of communication disorders. As the child grows up and goes to school, there are other indicators which might hint about presence of communication disorders like;

difference between students' non-language and language performance, where they perform better in non-verbal problem solving tasks compared to tasks involving language use. And comparative poorer ability to use contextual language in social situations compared to use of language in academic tests which is more often reproducing learnt information (NICHCY, 2010; ASHA, 1993).

2.2.3 Incidence of Communication Disorders

The global estimates for prevalence of communication disorders in childhood population are negotiable. However, some of the commonly discussed figures are presented in here to provide a general idea of the pervasive nature of the problem. Childhood stuttering is said to be observed in 4 to 5 % of children (Zebrowski, 2003; Andrews, 1984); simple vocal problems like hoarseness are found in 23% of school-aged children while serious disorders are reported in 6% of them (Faust, 2003); Specific Language Impairments (in absence of sensory or intellectual impairments) is reported in 7% of school aged children (Ziegler et al., 2005, qtd. in Castrogiovanni, 2008); more than 10% of school going children have some kind of learning disabilities (Altarac & Saroha, 2007) and 5% of school-aged children are reported to have hearing levels outside the normal range (Brochert, 2001).

The scene in India is no better, as more than a decade ago itself it had been reported that 2.13 % of the population, that is, 2.19 crores had some kind of disability (Census, 2001). The 58th round of the National Sample Survey (2003) further suggests that out of the total population with disabilities, approximately 10% are reported to have hearing impairments and another 5% speech impairments. About 4% of the sample population are reported with intellectual impairments, and another 11% with multiple impairments (aggregate of percentage distribution in rural and urban areas reported by NSSO, 2003). All these problems are known to lead to communication disorders, which in turn adversely affect personal as well as social facets of an individual's life. Particularly, if the problems occur at birth or during the early years of a child, they could almost paralyse all walks of life. NSSO (2003)

reports considerable casualty in that age group with 1.01% of children under 5 years of age; 2.18% of children between 5 and 9 years of age; and 1.47% of children between 10 and 14 years of age having at least one kind of disability. These estimates just outline the magnitude of the problem. The difficulties caused by early onset of these problems have the potential to cause irreparable damage to the individual child's growth and development, as well as become an encumbrance to the people around.

2.2.4 Implications of Communication Disorders

The brief of the report on the quality of life of Deaf in developing countries that was based on the extensive survey of Deaf people living in 68 developing countries by World Federation of Deaf in 1988 facilitates succinct realisation of the impact of communication disorders in the life of common people (Harris et al., 1992). Among the 80% of Deaf who live in developing countries, only 20% had received any education and only 1% of the children were enrolled in schools at the time of survey. And in 18 of the 68 countries surveyed, teachers had not received any formal training to teach Deaf children. Unemployment among Deaf was three-times higher than the respective national averages, and most of the employed were doing menial, manual jobs. There were also wide reports of denial of rights of the Deaf even for citizenship issues like voting, etc. The specific implications of not only hearing impairment, but also other communication disorders also in different aspects of life shall be further elaborated.

2.2.4.1 Implications in Speech-Language Development

The primary casualty of communication disorders in an individual is his / her communication skills, especially if it is a child the very development of these skills are severely affected. Their ability to acquire speech and language skills; produce speech sounds and oral language; perceive and understand what is spoken by others around them and / or expressing themselves to others leading to problems in

interpersonal adjustments, familial harmony and social integration; perceive and follow through language the happenings in the physical and social environment around them and respond appropriately develop background knowledge and concepts about their environment and its animate and inanimate components through constant interaction as well as acquisition and accumulation of verbal information about it are affected among others. Communication disorders like hearing impairment affect not only the speech and language development, but also a child's personality, social and educational development (Obiakor, Bakken & Rotatori, 2010; AYJNIHH, 2000).

There are even research evidences that despite advances in hearing aid cochlear implant technology, support for earlier diagnosis through neonatal hearing screening programmes, and intensive educational management; many children with hearing loss are delayed in their acquisition of spoken language skills when compared to their normally hearing peers (Blamey et al., 2001; Geers & Moog 1994; Paatsch, Blamey & Sarant, 2001; Serry & Blamey, 1999). A recent study by Blamey et al. (2001) followed spoken language performance for a group of 87 school aged children who had hearing impairment and used hearing aids and cochlear implants. Although language performance improved steadily over a period of 3years, the rates were only approximately 60 % of that in hearing children. The findings (Blamey et al., 2001) suggested that by the time these children entered secondary school at the age of above 12 years, the average language delay would be approximately 4 to 5 years. Such empirical evidence supports the need for language-centred intervention programmes to develop spoken language skills that enable children who have communication disorders like hearing impairment to comprehend the language of the secondary school curriculum and function effectively in the wider community

2.2.4.2 Implications in Psycho-Social Development

Man is a social animal whose interaction with his / her social environment is very vital for his / her survival. In this context, lack of proper skills for

meaningfully communicating with others around could imply difficulty in fulfilment of basic needs in life, as well as deprivation in social adjustments and integration of the individual. This would imply severe problems in the personal and social life of the individual. Presence of a communication disorder like any other disability is said to lead to poor self-concept and confidence, and at times even psychological disturbances like depression, frustration, and mistrust with the surroundings (Alam, 2001; Altshuler, 1976). At the same time the community around also seems to reciprocate in the same vein. Gurnalick et al. (1996) report that presence of communication disorders in individuals lead to lack of social acceptance right from childhood into adulthood. Problems in verbal communication impede opportunities to understand people around as well as make one-self understood by others. These in turn lead to an array of problems in the fulfilment of mundane physical wants to fulfilment of higher needs for acceptance and belongingness, thus stunning one's life.

2.2.4.3 Implications in Education

Our current educational system is entirely language based and as language is the area commonly affected in children with communication disorders; education becomes an inevitable casualty in these children. Their skills for comprehension and expression in verbal mode of communication, as well as reading and writing skills may be affected depending on the nature of the communication disorder. As a consequence, their ability for cognition of the instructional procedures and academic acquisition are also affected (Brackett, 1997).

To elaborate further, students learn through the process of communication, in a range of modes (e.g. spoken, signed, written, etc.) and with a range of communication partners (e.g. teacher to student, student to student, student to teacher, textbook to student). Presence of communication disorders can affect a student's ability to understand and express information; relate to others, including teachers and peers; express needs, abilities and interests in the learning environment;

acquire adequate literacy and numeracy skills; participate in group activities; develop a positive self concept; learn appropriate behaviour and social skills; solve problems; and acquire and demonstrate knowledge in key learning areas (Queensland DET, 2002).

From the above elaboration of student participation in the learning environment it becomes evident that educational performance includes more than academic achievement. The educational performances of deaf pupils could be considered under two major domains, namely, academic performances (for example, examination results and skills in reading, writing and mathematics) and non-academic performances (for example, communicative competence using speech and/or sign, self concept and identity, social adjustment, mental health and social participation). There are ample research evidences that students with communication disorders like hearing impairment are in general underachieving in all these aspects.

Presence of communication disorders can affect a student's participation in and achievement of learning outcomes from all areas of the curriculum. The effect is not restricted to obvious areas such as language learning and communication. For such students Individual Education Plans (IEPs) might be helpful (Queensland DET, 2002). In general, researches report wide-ranging underperformance of students with communication disorders like hearing impairment. While they lag several years behind their typically developing peers in tasks like reading performance (Holt, 1994; Conrad, 1979), the lag is not so great in mathematics although (Wood et al.,1986).

2.2.4.4 Implications in Employment and Independent Living

Limited communication skills combined with poor education in turn affect the opportunities to seek jobs and carry on in jobs leading to rampant unemployment and underemployment among persons with communication

disabilities (Lombana, 1982). In our country Census (2001) reports that for every employed 5,29,514 persons with speech impairments and 4,91,048 persons with hearing impairment, there are 1,111,354 and 7,70,674 persons respectively without employment. Such deprivations have multifold repercussions. At the level of the indivudal, they affect the very quality of life itself leading to lack of self-sustenance and dependency in the persons with these impairments. At the macro level, a welfare state like India is burdened with additional responsibility of providing social security to these persons, besides being constrained without their rightful contributions to the productivity of the nation.

2.2.5 Factors Influencing the Impact of Communication Disorders

How much of the above-listed problems affect an individual's life depends on several factors related to the individuals with communication disorders like,

- gender (Kluwin, 1992; Wood et al., 1986),
- present age (Luckner & McNeill, 1994),
- the time of onset of the disorders, that is, whether at birth, before acquisition of language, after acquisition of language, and so on (Allen, 1986; Fortnum et al., 1996; Jensema, 1975)
- etiology of the communication disorders (Conrad, 1979; Jensema,1975)
- how early the disorder was identified or diagnosed (Wake et al., 2005)
- the type and severity of the disorder (Wake et al., 2005; Allen, 1986; Wood et al., 1986)
- residual abilities like hearing, intelligence, etc. (Conrad, 1979; Lewis,1996), and presence of additional difficulties (Allen, 1986; Conrad, 1979),
- the nature and intensity of early intervention provided (Yoshinaga-Itano et al., 1998),
- age of fitment of necessary assistive devices like hearing aids and consistency in their use (Moores & Meadows-Orlans, 1990; Quigley & Paul, 1984)
- the professional supports that were available

- the nature of inputs from the significant others in the environment (like parents and other family members, etc.) including their socio-economic status (Kluwin, 1992; Conrad, 1979), home language (Harrison, 1986), ethnicity (Allen, 1986; Schildroth & Hotto, 1995), and their knowledge and skills (Bodner-Johnson, 1986; Kluwin & Gaustad, 1994), and
- school factors in terms of nature of educational placement like mainstream vs. special school (Holt, 1994; Kluwin, 1992); and instructional and communication approaches used in school (Brasel & Quigley, 1977; Geers & Moog, 1989; Lewis, 1996).

2.3 Approaches to Intervention for Communication Disorders

However all is not lost for children with communication disorders, early identification along with timely and appropriate intervention goes a long way in alleviating the problem. In the process of providing early and comprehensive intervention, there are four service delivery approaches that serve as both a basis and a guideline for provision of services to persons with communication disorders.

2.3.1 Remedial Approach

The most familiar approach is consistent with a medical model of service delivery and is termed remediation. In a remedial approach, the goal of intervention is to improve functioning in the identified deficit area. Aspects of a child's development are evaluated with respect to age-appropriate skills. Areas of delay or disorder are determined; a plan to remediate or at least mitigate that delay is formulated. Consistent with this approach is the concept of point-of-diagnosis access to services, meaning that a child has a diagnosis of language disorder prior to the commencement of intervention (Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman, & Greenberg, 2003; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Tanock & Girolametto, 1992).

2.3.2 Preventive Approach

Some approaches to intervention focus more on prevention of deficit. The objective of prevention intervention; is to prevent emergence of secondary deficits associated with a primary deficit. Within this approach, children who demonstrate established risk conditions are provided with intervention prior to an actual diagnosis of a language delay or disorder. For example, a child with Down's syndrome may receive speech and language intervention at a very early age in hopes of preventing subsequent delay in speech and language development (Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman, & Greenberg, 2003; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Tanock & Girolametto, 1992).

2.3.3 Compensatory Approach

Oftentimes the focus of intervention is to provide compensation for a deficit condition that cannot be remediated or prevented. In this case, assistive devices or services are provided that correct the problem or detour around the problem. For example, a child with a hearing loss may be provided with a hearing aid in an effort to correct the possible speech-language and hearing problems presented by the loss (Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman, & Greenberg, 2003; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Tanock & Girolametto, 1992).

2.3.4 Promotion / Developmental Approach

Finally, some early interventions for children are designed to acquisition of typical developmental skills. The focus of intervention is the promotion of developmental skills in children that are believed to be at risk for demonstrating a language delay. Children within this group typically include those with biological or environmental risk factors that may place them at risk for developmental

language impairment, (e.g., poverty, low birth weight), but by no means uniformly cause developmental language impairment in children with these conditions. The promotion approach, therefore, focuses on creating the optimal context for facilitating development and typically includes caregiver training or caregiver education programmes irrespective of whether the child displays symptoms of developmental language impairments (Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman & Greenberg, 2003; Girolametto, Wiigs, Smyth, Weitzman & Pearce, 2001; Tanock & Girolametto, 1992). It is important to note that the approaches are not mutually exclusive, and for many children, combinations of approaches may guide service design and implementation.

2.3.5 Inclusive Features of Intervention Services for Communication Disorders

Intervention services can be provided in a variety of settings, including homes, day-care centres, preschools, clinics, and hospitals. Since the 1980s, there has been a move toward providing intervention in the child's natural environment and a move away from traditional 'pull-out', therapy, where the child is removed from the natural environments to provide individual speech and language intervention (Valdez & Mispagel, 2008; Woods & Wetherby, 2003; Strain, McGee & Kohler, 2001; McWilliams, 1996; Wilcox & Shannon, 1996; Wilcox, Kouri & Caswell, 1991).

In particular, Wilcox, Kouri and Caswell (1991) compared the language progress of children who received inclusive classroom-based language intervention to that of children who were pulled out of the class for individual intervention. Results indicated that children who participated in the classroom-level programme demonstrated superior generalization of learned language skills.

Once a child reaches 3 years of age, speech-language intervention and educational services are better provided through the mainstream schools. Classroom settings for children with special needs whenever possible should be

inclusive, in which children with typical development are enrolled in larger numbers than children with special needs. Inclusive programmes provide opportunities for children with developmental language impairments to participate in the regular classroom activities with their peers and receive adaptations and support as necessary for them to engage in those activities (Wetherby, 2002; Wilcox & Shannon, 1996; Rice & Hadley, 1995).

Social interaction is crucial to emerging communication and language skills, and inclusive programmes provide for social interaction with typically developing peers. Maximum opportunities for learning appropriate social behaviours should be an integral part of programming for young children with and without disabilities. In many respects, the opportunity to learn socially appropriate behaviour and interactive strategies is the primary benefit that children with disabilities derive from inclusive toddler and preschool programmes. Through interactions with peers and adults, children are able to learn appropriate social and language skills.

In situations where children with communication disorders need more help, they can be provided within the precincts of the mainstream school in the form of resource room supports or with the self-contained model; where integration may take place to different levels depending on the severity of the special need of the child.

2.5 Early Intervention for Communication Disorders

Such interventions are to be commenced at the earliest and should focus on developing the potentials of the individual to fullest extent possible. Interventions are primarily behavioural in approach and include special education and training services to develop basic self-help, communication and social skills. Depending on level of residual abilities of the child, academic and vocational skills could be worked upon also.

2.5.1 Need for Early Intervention Services

Early intervention applies to children of school age or younger who are discovered to have or be at risk of developing a handicapping condition or other special needs that may affect their development. Early intervention consists in the provision of services such children and their families for the purpose of lessening the effects of the condition. Early intervention can be remedial or preventive in nature, remediating existing developmental problems or preventing their occurrence. Early intervention may focus on the child alone or on the child and the family together. Early intervention programmes may be centre-based, home-based, hospital-based, or a combination. Services range from identification, that is, hospital or school screening and referral services, to diagnostic and direct intervention programmes. Early intervention may begin at any time between birth and school age; however, there are many reasons for it to begin as early as possible.

There are three primary reasons for intervening early with an exceptional child; to enhance the child's development, to provide support and assistance to the family, and to maximize the child's and family's benefit to society. Child development research (CDI, 2010) has established that the rate of human learning and development is most rapid in the preschool years. Timing of intervention becomes particularly important when a child runs the risk of missing an opportunity to learn during a state of maximum readiness. If the most teachable moments or stages of greatest readiness are not taken advantage of, a child may have difficulty learning a particular skill at a later time (Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman, & Greenberg, 2003; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Tanock & Girolametto, 1992). Karnes and Lee (1978) have noted that only through early identification and appropriate programming can children with special needs develop their potential.

Early intervention services also have a significant impact on the parents and siblings of an exceptional infant or young child. The family of a young exceptional

child often feels disappointment, social isolation, added stress, frustration, and helplessness. The compounded stress of the presence of an exceptional child may affect the family's well-being and interfere with the child's development. Families of children with special needs are found to experience increased instances of divorce and suicide, and the child with special needs is more likely to be abused than is a non-handicapped child. Hence, the caregiver/family should be the centre of services provided to young children. Family members are the experts in their children's abilities and are their children's first teachers. Children develop in the context of their family, and the focus of early intervention is to facilitate the family's ability to support their child's development. When a child with communication disorder is receiving early intervention services, expertise is to be directed not only to train the child but also teach caregiver of how to facilitate the child's language development. Similarly, when the child is enrolled in preschool classes, clinical expertise is to be directed to the child's caregivers and the classroom teacher. The goal of intervention is to promote the child's language development in natural or least restrictive contexts, and for the young child, these contexts include the caregivers or teachers who interact with him/her on a regular basis and the environment where the child spends most of him/her time (e.g., home, child-care programme, preschool class). Early intervention can result in parents having improved attitudes about themselves and their child, improved information and skills for teaching their child, and more release time for leisure and employment (CDI, 2010; Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman, & Greenberg, 2003; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Tanock & Girolametto, 1992).

A third reason for intervening early is that society will reap maximum benefits. The child's increased developmental and educational gains and decreased dependence upon social institutions, the family's increased ability to cope with the presence of an exceptional child, and perhaps the child's increased eligibility for employment, all provide economic as well as social benefits (Girolametto & Weitzman, 2006; Baxendale & Hesketh, 2003; Girolametto, Weitzman, & Greenberg,

2003; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001; Tanock & Girolametto, 1992).

2.5.2 Benefits of Early Intervention on Children with Communication Disorders

Half a century of research has resulted in both quantitative (data-based) and qualitative (reports of parents and teachers) evidence, that early intervention increases the developmental and educational gains for children with any kind of disability, improves the functioning of the family, and reaps long-term benefits for society. Early intervention has been shown to result in the child: (a) needing fewer special education and other habilitative services later in life; (b) being retained in grade less often; and (c) in some cases being indistinguishable from typically developing peers, years after intervention (Beckman-Bell, 1981; Cooper, 1981).

Longitudinal data on disadvantaged children who had participated in the Ypsilanti Perry Preschool Project showed that they had maintained significant gains at age 19 (Berrueta-Clement et al., 1984, qtd. in OERI, 2011). These children were more committed to schooling and more of them finished high school and went on to postsecondary programmes and employment than children who did not attend preschool. They scored higher on reading, arithmetic, and language achievement tests at all grade levels; showed a 50% reduction in the need for special education services through the end of high school; and showed less anti-social or delinquent behaviour outside of school.

Specifically in the field of communication disorders also, it has been confirmed that hearing loss that occurs in children by birth or at a young age, may have an adverse influence on their entire course of development. The primary impact is on development of verbal language skills, which in turn affects all other realms of life like social skills, academic achievement and career development. However, it is a globally established fact that if the problem in communication is identified early in children, followed by timely, effective multidisciplinary

intervention for it will help in improving not only their speech, language and communication skills, but also their cognitive, social and academic skills (Vohr et al., 2008; Yoshinaga-Itano, 2003; Watkin et al., 2000; Downs & Yoshinaga-Itano, 1999).

A comprehensive programme for early intervention for children with hearing impairment would essentially involve aspects like audiological evaluation and multidisciplinary assessment, followed by fitting appropriate listening device, intensive training in listening, speech and language skills, and preschool preparation for inclusive education; (Yoshinaga-Itano, 2003; Downs & Yoshinaga-Itano, 1999; Yoshinaga-Itano et al., 1998). Prior researchers, including a decade-long longitudinal study carried out under the Colorado Home Intervention Programme since 1992 (Yoshinaga-Itano, 2003), have reiterated the positive effect of early intervention through aural-oral mode in communication skill development and later academic achievement.

Moeller (1991) through her investigation with 112 children with hearing impairment concluded that children who were enrolled the earliest for intervention (for example, by 11months of age) demonstrated significantly better vocabulary and verbal reasoning skills by 5 years of age. Hall, Oyer and Haas (2001) reported that early intervention along with appropriate cognitive exposures provided to the child results in development of better language skills, as well as speech intelligibility in children with hearing impairment.

However, reports of early identification and timely intervention processes in developing countries have not been encouraging. A status study of early intervention processes for children with hearing impairment covering 37 subjects was carried out in Mauritius (Gopal, Hugo & Louw, 2001). The findings indicated that the median age of identification was 24 months, which was followed by fragmented management processes. These lacunae could be typical of any developing community. With such crucial problems to begin with, later successful rehabilitation in the field of education is doubtful. Studies from other developing

nations like Malaysia (Mukari et al., 1999) reiterate this notion. Lack of early training in appropriate communication skills were found to affect special need children's achievement and academic performance at school.

2.5.3 Indicators of Successful Early Intervention Programmes

All told about the accomplishment of early intervention and inclusive educational programmes for children with communication disorders, there are certain crucial pointers to their successes. Many studies have found predictive relationships between these factors and the progress following early intervention, especially in children with hearing impairment (Blamey et al., 2001; Boothroyd, 1995; Dawson et al., 1995).

2.5.3.1 Age of Early Identification and Intervention

Many studies and literature reviews report that the earlier the intervention, the more effective are the outcomes. With intervention at birth or soon after the diagnosis of a disability or high risk factors, the developmental gains are greater and the likelihood of developing further problems is reduced (Cooper, 1981; Garland et al., 1981; Maisto & German, 1979; Strain, Young & Horowitz, 1981). With specific relevance to communication disorders like hearing impairment, it has been demonstrated time and again by several researchers that early intervention measures like diagnosis of hearing loss before the age of 6 months, early fitting of appropriate listening devices such as cochlear implants and/or hearing aids, and early intervention; increase the probability of developing intelligible and age appropriate spoken language in these children (Geers, Nicholas & Sedey, 2003; Yoshinaga-Itano & Gravel, 2001; Moeller, 2000; Yoshinaga-Itano & Apuzzo, 1998; Yoshinaga-Itano et al., 1998; Ling, 1989; Boothroyd, 1978). More authentic evidence for the positive outcomes of early diagnosis and intervention comes from Colorado Home intervention Program in the USA. Following almost a decade of observation, Yoshinago-Itano and her team (2003; 1998) have reported favourable outcomes on a

range of linguistic and social-emotional measures for children with hearing impairment who were diagnosed and visited by the age of 6 months. As it could be observed, most of the research evidence cited here is from developed countries like the United States, while in developing countries like India there has been considerable lack information on this front.

2.5.3.2 Nature and Severity of the Communication Disorder

Even though age of identification has been endorsed as a crucial indicator of better prognosis, researchers like Wake and team (2005) have reported otherwise. Following a study of language skill development in 7 to 8-year olds with hearing impairment, they have reported that more than the age of identification, greater severity of problems like hearing loss has been correlated to poorest language outcomes.

2.5.3.3 Efficiency of Intervention/Education Programmes

The success of early intervention as well as inclusive education programmes to a large extent depends on how comprehensively and systematically the programmes have been conceived and implemented. With regard to early intervention programmes, Moeller (2000) had carried out a study to examine the relationship between **age of enrolment** in intervention and **parental/caregiver involvement** and language outcomes. The study reported that early enrolment, involvement of parents/caregivers and mutual relationship between caregivers and early intervention professionals/personnel have influenced better language outcomes in 112 children with hearing impairment under 5 years of age.

Certain **structural** features are also related to the effectiveness of early intervention, regardless of the curriculum model employed. Successful programmes are reported to be more systematised in terms of utilisation task analysis procedures, exact specification of teacher behaviours and activities, regular assessments and

accumulation of progress data, and frequent monitoring of parent participation. Individualizing instruction and services to meet child's needs is also reported to increase effectiveness (Shonkoff & Hauser-Cram, 1987).

Intensity/duration of early intervention programmes are also said to lead to better rehabilitation prospects in terms of speech-language and academic skill development (Yathiraj, 1994). Guralnick (1981) had also reported that early intervention measures should be comprehensive, intensive/more frequent, extended over time, individualised and delivered directly to the child in need in order to be effective.

Comprehensiveness of the early intervention programmes as well as later special educational services to mainstreamed children with communication disorders are also said to influence the outcomes of these programmes. Comprehensiveness is said to be reflected by the multidisciplinary nature of the services offered and professionals/personnel involved. Early intervention practitioners from across the globe like the Ali Yavar Jung Naitonal Institute for Hearing Handicapped in Mumbai, India (2000); and Early Childhood Services, run by Queensland Government, Australia (Kan, Walsh & Burns, 2008) insist that comprehensive services to children with communication disorders should involve all relevant professional services, beginning with diagnosis for audiological, psychological, motor, socio-emotional and other pertinent abilities/skills; and continuing through relevant therapeutic training among listening training, speech-language training, cognitive training, behaviour training, occupational and/or physiotherapy, sensory integration training, training in AAC, etc.; and culminating with preschool training. Effective early intervention programmes should address diverse needs of the young child with communication disorder with respect to nutrition, physical, sensory, motor, cognitive, communication and language, affective, social, literacy, numeracy and safety; as well as extend guidance and support to parents and families of the children with communication disorders. In similar veins, Wong & Hui (2008) from Hong-Kong endorse the potential for

improvement by means of early interventional, educational and rehabilitative services for children with Autism Spectrum Disorders. Optimal and harmonious inclusion of these services in the early intervention stage are said to lead to better personal, communicational and academic outcomes on the longer run (Walsh, 2008; Byrne, 1986).

2.5.3.4 Participation of Parents/Caregivers

It is a universally accepted fact that parental attitudes and aspirations have a significant say on the development and achievement levels of their children irrespective of whether they have special needs or not. Research evidences are also available to endorse the positive effect of parental attitudes, knowledge and skills on children's positive reciprocation to early intervention for communication disorders (Yathiraj, 1994; Kluwin & Gaustad, 1994; Bodner-Johnson, 1986), besides social class (Conrad, 1979), home language (Harrison, 1986), and ethnicity (Allen, 1986; Schildroth & Hotto, 1995).

Another two most prominent parent/caregiver related factors that are said to draw out the best communication and learning outcomes in children with communication disorders like hearing impairment are said to be their 'adaptation to deafness', that is, acceptance of the condition of hearing impairment in their child, and their ability to 'press for achievement', that is, high occupational and educational achievement (Bodner-Johnson, 1986).

Calderon (1999) following a 5-year long longitudinal study, came to the conclusion that parental involvement in the early intervention programmes for communication disorders brought about better outcomes in terms development of early literacy skills, communication skills as well as later academic achievements. At the same time she also cautions that over reliance on part of parents on support services might turn out to be a detrimental factor on the longer run.

2.5.4 Economic Concerns about Early Intervention Programmes

There is a general notion that such early intervention programmes may be costly for developing economies like India and thus not feasible. However, the available data from around the world emphasize the long-term cost effectiveness, as well as economic and other pay offs from early intervention. The highly specialized, comprehensive services necessary to produce the desired developmental gains are often, on a short-term basis, more costly than traditional school-aged service delivery models. However, there are significant examples of long-term cost savings that result from such early intervention programmes.

A longitudinal study of children who had participated in the Perry Preschool Project (Schweinhart and Weikart, 1980) found that when schools invest about $3,000 for one year of preschool education for a child, they immediately begin to recover their investment through savings in special education services. Benefits included $668 from the mother's released time while the child attended preschool; $3,353 saved by the public schools because children with preschool education had fewer years in grades; and $10,798 in projected lifetime earnings for the child.

Wood (1981) calculated the total cumulative costs to age 18 of special education services to child beginning intervention at: (a) birth ; (b) age 2; (c) age 4; and (d) at age 6 without taking into consideration eventual movement to regular education. She found that the total costs were actually less if begun at birth. Total cost of special services begun at birth was $37,273 and total cost if begun at age 6 was between $46,816 and $53,340. The cost is less when intervention is earlier because of the remediation and prevention of developmental problems which would have required special services later in life.

A 3-year follow-up in Tennessee showed that for every dollar spent on early treatment, $7.00 in savings were realized within 36 months. This savings resulted from deferral of special class placement and institutionalization of children with

severe behaviour disorders (Snider, Sullivan & Manning, 1974). Another recent evaluation of Colorado's state-wide early intervention services reports a cost savings of $4.00 for every dollar spent within a 3-year period (McNulty, Smith & Soper, 1983).

The above-mentioned success stories have been derived from developed countries. But, situations in India can be a picture in contrast from these countries. Even with our limited resources and never-ending needs; similar results could be emulated with meticulous planning and committed implementation. Ultimately it could be said that early identification and prompt intervention for communication disorders not only helps in improving the quality of life of the individual, but also enhances returns to the community.

2.6 Inclusion – the Ultimate Target for all Rehabilitation Interventions for Disabilities

'Inclusion' is a generic social process that intends to include all kinds of marginalized groups of the society into the mainstreams of the community. In the contemporary disability rehabilitation field, the eventual purpose of all endeavours around the globe is to mainstream the marginalised group of persons with disabilities in society.

It is a process based on the belief that as adults, to lead a holistic life with equal opportunities and rights, all people (including persons with disabilities) have to live and work in inclusive communities; with people of different races, religions, aspirations, disabilities. And as a forerunner to this eventuality, marginalised children of all ages should learn and grow in environments with other typically developing children, in environments that resemble the environments that they will grow to live and work in (Etscheidt, 2002, qtd. in CSIE, 2002).

According to *Centre for studies on Inclusive Education*, UK (CSIE, 2002), Inclusive education is a human right. It is a profitable process as there are evidences that mainstreamed children with special needs do academically and socially better than their counterparts from segregated learning environments. It is also a process that that makes good social sense, as it reduces ignorance and fear in children with special needs and helps them build respect and understanding, develop relationships with people around and ultimately prepare them for life in the mainstream.

2.6.1 Measures to Promote Inclusive Education

There have been ample measures at the national and international level to promote inclusive education of children with special needs like communication disorders. At the international level *World Declaration on Education for All* (1990), *Salamanca Statement and Framework for Action on Special Needs Education* (1994) and *Biwako Millennium Framework for Action towards an Inclusive, Barrier-free and Rights-based Society for Persons with Disabilities in Asia and the Pacific* (2002) are some of the collective endeavours on part of the UN agency for education, science and culture and other international welfare organisations in the field to advocate and promote Inclusive Education for children with special needs around the globe.

These international measures were adequately reciprocated at the national level with initiatives at the policy level like *National policy on Education 1986 and Revised Programme of Action 1992*, *Persons with Disabilities Act 1995, National Policy for the Persons with Disabilities 2005* (MSJE, 2005; 1995; NCERT, 1992), and at the programme level like *Integrated Education of Disabled (IED) 1974, Project Integrated Education of Disabled (PIED) 1987–1992, Integrated Education of Disabled Children (IEDC) 1992, District Primary Education Programme (DPEP) 1995-99, Sarva Shiksha Abhiyan* (SSA, 2002; Aggarwal, 2001; NCERT, 1992), *Action Plan for Inclusive Education of Children and Youth with Disabilities, and Inclusive Education of the Disabled at Secondary Stage (IEDSS)* (MHRD, 2005a & b; 2009).

All these endeavours had been undertaken with the premise that inclusive education results in improved social development and academic outcomes for all learners including children with special needs as well as typically developing children, as they get exposed to the real environment in which they have to interact, learn and compete with other learners each one having unique characteristics, interests and abilities. Thus, inclusive education lays the foundation to an inclusive society accepting, respecting and celebrating diversity (MHRD, 2009).

2.6.2 Advantages of Inclusive Education

Making children with special needs learn along with their typically developing peers has multifarious advantages for the individual child, as well as the educational system and the larger community. And these have been discussed herein after.

2.6.2.1 Sense of Self-Efficacy

There are evidences that being included in a regular-paced education setting, has led students with disabilities to become more confident and display qualities of raised self-efficacy. A report of the National Research Centre on Learning Disabilities (2007) in the USA states that children with communication disorders like hearing impairment gain confidence and skills to interact socially in the inclusive classrooms and benefit even from communication that were not directed at them, which in turn led to better academic success.

2.6.2.2 Better Communication Skills

Impact of mainstreaming on development of verbal skills in children with communication disorders is a debatable issue. After studying 100 students with hearing impairment in the age groups of 15 to 18 years Geers and Moog (1989) report that their achievement in reading comprehension is at seventh grade level. There are also other

earlier studies on wider population of students with hearing impairment of this age showing mean reading comprehension scores at the third grade level (Allen,1986), or more recent studies evincing median scores just below the fourth grade level (Traxler, 2000). However, these studies acknowledge that their subjects had performed better compared to their counterparts from segregated learning environments. There are more encouraging reports from the United Kingdom, where Lewis (1996) studied 82 (16-year-old) students with hearing impairment in oral programmes with hearing losses of 65 dB or more and found that "more than 75 % of the…children…read at levels above the functional literacy level of their years".

2.6.2.3 Enhanced Social Skills

Social skills are key to a child's healthy development and later success as an adult (Hall, 2011). Researchers (Stinson & Antia, 1999) assert that with adequate preparation in communication skills, children with communication disorders like hearing impairment might be able to acquire friendships, develop mutually beneficial relationships and smoothly amalgamate into the mainstream environment at school as well as later in adult life. Researchers like Guralnick and team (1996) assert that mainstreaming in an early age at the level of preschool, will help children with communication disorders learn intuitively to cope up with the social demands of the mainstream learning environment irrespective of the initial hiccups they may face in social acceptance. Consistent efforts will help children with special needs like communication disorders to develop a strong sense of belonging in the society, and their typically developing counterparts learn to understand and respect diversity (Queensland DET, 2002).

2.6.2.4 Improved Academic Performances

The crux among all the benefits drawn from inclusive education is better educational opportunities that lead to better life opportunities. Education not only

uplifts the life of an individual, but in modern day society it has an important role in advancing the economic, social and cultural facet of a country.

There are specific evidences to this effect from the report of the National Research Centre on Learning Disabilities (2007) that found graduation rates of all students with disabilities in the USA increase by 14% between 1984 and 1997 following efforts for mainstreaming. Inclusive schools are said to be capable of ensuring that all students acquire necessary skills and knowledge while improving achievement, participation, and retention of marginalised students (Queensland DET, 2002).

2.6.2.5 Increased Job Prospects

Most human aspirations and endeavours in life are directed towards productivity and self-sufficiency in life. And enhancing self-efficacy, sociability and academic achievement are all seen as means towards this end. Saur, Coggiola, Long and Simonson (1986) carried out a long term study with students with hearing impairment which led to the realisation that educational mainstreaming led to better career development in these students.

2.6.2.6 Benefits to Educational System

Apart from the plentiful returns that is provided by inclusive education to the individual learner with special needs like communication disorders; the entire educational system stands to benefit from the process in terms of increased and effective reach of education for all; enhanced quality of education; improved retention rates in schools and elimination of all kinds of discrimination in the learning environments. Such meaningful inclusive education will also add to the cost-effectiveness of the entire educational system, while contributing to the productivity and harmony of the nation (Aggarwal, 2001).

2.6.3 Factors Influencing Better School Performances in Mainstreamed Children

While advantageous influences of inclusive education notwithstanding, there are several decisive factors that determine the feasibility and scope for positive outcomes from inclusive education.

2.6.3.1 Related to Individual Child

At the level of the individual child with communication disorders like hearing loss several factors like degree of hearing loss (Powers, 1998; 2002; Allen, 1986; Wood et al., 1986), causes of hearing loss (Conrad, 1979; Jensema,1975), age at onset of deafness (Fortnum et al., 1996; Allen, 1986; Jensema, 1975), hearing aid use (Moores & Meadows-Orlans, 1990; Quigley & Paul, 1984), intelligence (Lewis,1996; Conrad, 1979), additional difficulties (Allen, 1986; Conrad, 1979), gender (Kluwin, 1992; Wood et al., 1986), age (Luckner & McNeill, 1994), handedness (Conrad, 1979), and use of alternate means of communication (Bodner-Johnson, 1986) have been proved to have an indelible say on their learning outcomes.

2.6.3.2 Related to Communication Skills

More importantly, proficiency in verbal communication in the learners with communication disorders are said to decide the nature and extent of their performances in the mainstream learning environment (Harris & Moreno, 2006; Bunch, 1987). To be more specific children who used more speech tended to perform better than children who leaned on non-verbal means of communication (Yathiraj, 1994). There are also specific indicators among the various components of verbal communication skills associated to hearing impairment like aided hearing ability (Yathiraj, 1994); better speech intelligibility (Tobely et al., 2004); and speech reading ability (Arnold & Kopsel, 1996) among others.

2.6.3.3 Related to Early Identification, Intervention and Preparatory Services

Accomplishment of the above mentioned proficiency in verbal communication is possible only with early identification and intervention for the communication disorder. Early age of commencing intervention services and continuing it for more number of years have been reported to influence the mainstream school performances in children with communication disorders like hearing impairment positively (Yathiraj, 1994). Along with these, receiving special preschool services are also said to show positive effect on children. The speech and hearing abilities as well (pre)academic skills accrued during these years are said to be strong indicators of later school performances in children (School Curriculum & Assessment Authority, 1997).

2.6.3.4 Related to Parents and Family

Concerning environmental factors, first comes the primary social environment of the child that is the family and home. Stephens and Slavin (1992) hint that knowledge in parents of children with special needs and their outlook towards their wards' education were strong indicators of their involvement in their children's education progress and consequent learning outcomes. Kumar and Rao (2009, qtd. in Jha & Malar, 2011) had specifically collected feedback from 30 pairs of parents of children with hearing impairment, and had concluded that better educational status of parents leads to better knowledge and access to information and this in turn leads to better attitudes in parents. They had also recognised influence of traditional mindsets like preference of male over female children in the study.

Fan & Chen (2005) suggest that parental attitudes, aspirations and expectations have strong influence on their involvement in their children's education as well as outcomes. Ritter-Brinton (1993) endorses the role of parent expectations

on academic achievement of learners with communication disorders, and suggests fluency of communication at home as one another crucial indicator.

Epstein (1987) recommends parental participation in the education of their children on three fronts, namely; monitoring home learning, constant interaction with the teacher, and participation in school activities. Parents who are enterprising and regularly interact and collaborate with the teachers of their children with communication disorders in the mainstream learning environments were also said to bring about better learning outcomes in their wards (Yathiraj, 1994).

Family dynamics like socio-economic status, social class, family and home environment are also supposed to influence academic achievement (Kurian, 1978, qtd. in Jha & Malar, 2011). Sharma (1980, qtd. in Alam, 2001) contended that social class which an individual belongs is found to influence his interests, goals and temperamental characteristics. Later researchers like Desjardin (2005) also endorse this fact. Some researchers have even identified family size (Mortimore et al., 1988) as a variable with the potent to influence education in children with special needs like with communication disorders.

2.6.3.4 Related to School

The learning environment, that is, school related factors like type of educational placement, particularly mainstream vs. special school (Holt, 1994; Kluwin, 1992); type of language and communication approach used in the school (Brasel & Quigley, 1977; Geers & Moog, 1989; Lewis, 1996); age of enrolment (Yoshinaga-Itano et al., 1998); attendance of student with special needs; school socioeconomic mix and school ethos or culture; and more importantly students' prior attainment define the nature and extent of school performances of mainstreamed children with special needs (School Curriculum & Assessment Authority, 1997).

Apart from these, systematic measures from the part of the school to help the children with special needs in the form of ongoing multidisciplinary services rendered by a relevant team of professionals like regular and special educators, audiologists, speech-language pathologists, psychologists and physio/occupational therapists among other are said to be essential for a child with communication disorders to survive and succeed in mainstream learning environment (ASHA, 1991).

Further on the academic front, inclusive schools should be prepared to brace the education and all-round school performances of children with special needs like communication disorders with provision of (Debenham, 2010) –

- Entry as well ongoing multidisciplinary assessment services for the purpose of deciding appropriate educational placement, necessary supports and determining ongoing progress,

- Adapting instructional procedures,

- Using special teaching learning materials and providing necessary assistive aids/devices,

- Planning and implementing individualised educational plans,

- Providing other necessary supplementary supports and concessions – like exemption from learning additional languages, more time to perform tasks, etc., and

- Counselling and guidance to parents/caregivers and promoting their participation in the educational planning and process.

Another important factor related to school is the teacher in the inclusive education setting. Inclusive education is concerned with overcoming barriers to full participation that may be experienced by any pupil, which is a never ending process dependent on continuous pedagogical and organizational development within the mainstream (Ainscow, 1999). The educators in the inclusive setting could serve as valuable instruments in meeting these challenges.

2.7 Research Considerations in the Field of Early Intervention and Inclusive Education

The need for in-depth future researches with regards to strengthening early intervention leading to evidence-based inclusive education practices for children with special needs have been widely emphasised (ASHA, 1991).

- Fowler, Schwartz and Atwater (1991), as well as Hanline and Halvorsen (1989) suggest carrying out researches to empower parents/caregivers and study their efficacy not only in supporting education and training of their children, but also in becoming supportive to the training programmes and schools.
- On the education front there are several researches in India (Reddy, 2004; Reddy, 2000; Dharmaraj, 2000; Sarojini, 2000; Selvakani, 2000; Sivakami, 2000) that highlight the need to undertake measures for capacity-building in mainstream educators in terms of awareness, attitudes and competencies and study their efficacy. Similar needs have been echoed in other developing nations in the Afro-Asian region also (Al-Zyoudi, 2006; Mpofu, 1999; Maunganidze & Kasayira, 2002; Mnkandla & Mataruse, 2002; Barnatt & Kabzems, 1992).
- Reid, Robinson and Bunsen (1995) pin down the necessity for investigating the means and outcomes of effectual multidisciplinary practices for children with communication disorders, especially on the role of speech, language and hearing abilities in the inclusive context.

- Cole et al. (1991) state that there is need for developing and incorporating assessment procedures as means for better planning, decision-making and evaluating the intervention / education programmes, as well as beneficiaries.
- ASHA (1991) underlines the need for experimenting with various strategies that could augment inclusive education practices and their outcomes like peer-tutoring, collaborative learning groups, various models of teaming and collaboration, naturalistic and conversation-based approaches, and influences of inclusive practices on literacy and other academic skills.
- Inclusive education research should incorporate a wide range of outcome issues like the use of language for social interaction, peer relationships, academic problem-solving, changes in self-esteem and/or the frequency of negative or challenging behaviours, etc. rather than being unifocal only on academic achievements (ASHA, 1991).
- Several prior researches (Westby & Roman, 1995; Campbell, 1994; Cheng, 1994; Battle, 1993; Ewing & Yong, 1992; Shade, 1989) suggest that researches should cover diverse population with different kinds of special needs, and from varied kinds of socio, economic and cultural backgrounds, which in turn will lead to widely-applicable evidences.
- Finally, long term measures to investigate the efficacy of early intervention and inclusive education practices in the academic, economic and social front are necessary to appraise the practicability and utility of the interventions (ASHA, 1991).

METHOD

METHOD

In the process of studying the impact of multi-disciplinary early intervention and preparatory services offered at AIISH in mainstreaming children with communication disorders, it was decided to carry out a causal–comparative survey among young clients registered since 2003 from whence the preschool curriculum was re-organised and streamlined.

3.1 Participants

The participants in the study included two major groups,

- early intervention clientele at AIISH and their caregivers, and
- educators in mainstream schools.

Participants for both the groups were brought together through purposive sampling including as many as possible. The participants were mostly located through preschool database at AIISH; however there were two participants who had received only therapeutic services. Further details about these two groups have been provided herein after.

3.1.1 Child-Participants and Caregivers

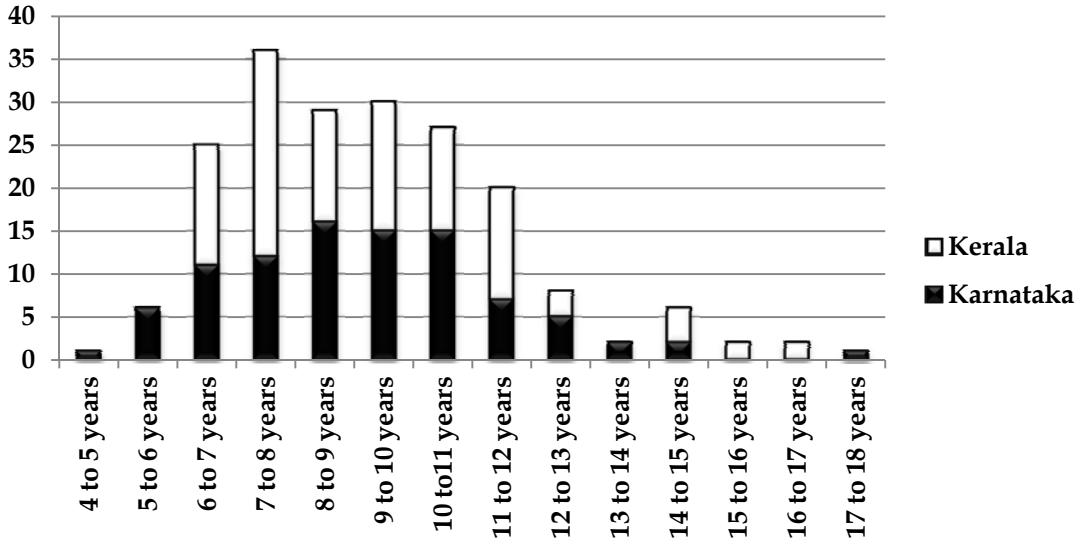
The major source of clientele at AIISH were from the two southern states Karnataka and Kerala. At the time of proposing of this study, 299, 124 and 33 children respectively from Karnataka, Kerala and other Indian states had been targeted to be covered in the survey. However, when planning for data collection it was decided to skip other states, as current residential addresses of all the children could not verified/confirmed. Without which any effort to reach out to these children might turn futile, or pricey. Even in the two states of Karnataka and Kerala, only 205 children in all (93 from Karnataka and 112 from Kerala) could be located. A major reason for this moderate (45.53%) coverage of the target group was improper address and contact numbers provided by the former early intervention clientele of

AIISH, followed by mobility of them from their prior residences and lack of follow-up contacts with the Institute. The situation was better in the state of Kerala, as many of them were located through the systematic networking and coverage provided through the Block-level Resource Centres under the SSA programme. In future such shortcomings could be overcome by collecting authenticated addresses at the time of admission to the services.

Further details of the participants of this study have been provided in the Table 2 with figures:

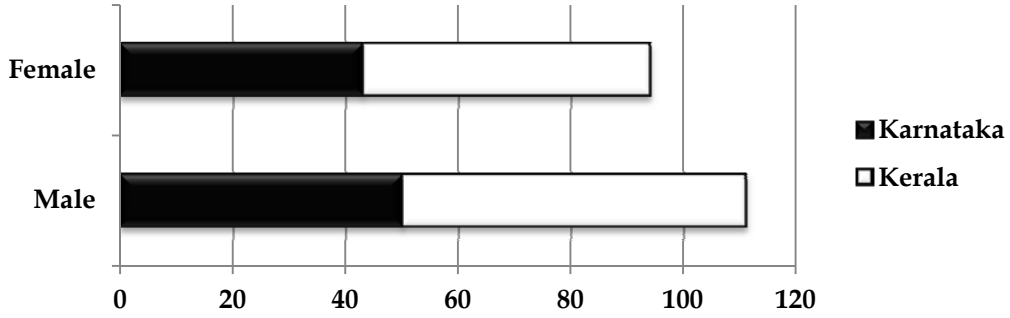
Table 2 (with figures): Details of Child-Participants of the Study

I. AGE				
S. No.	**Age**	**Total**	**Karnataka**	**Kerala**
01.	4 to 5 years	1	1	
02.	5+ to 6 years	6	6	0
03.	6+ to 7 years	25	11	14
04.	7+ to 8 years	36	12	24
05.	8+ to 9 years	29	16	13
06.	9+ to 10 years	30	15	15
07.	10+ to11 years	27	15	12
08.	11+ to 12 years	20	7	13
09.	12+ to 13 years	8	5	3
10.	13+ to 14 years	2	2	0
11.	14+ to 15 years	6	2	4
12.	15+ to 16 years	2	0	2
13.	16+ to 17 years	2	0	2
15.	17+ to 18 years	1	1	0



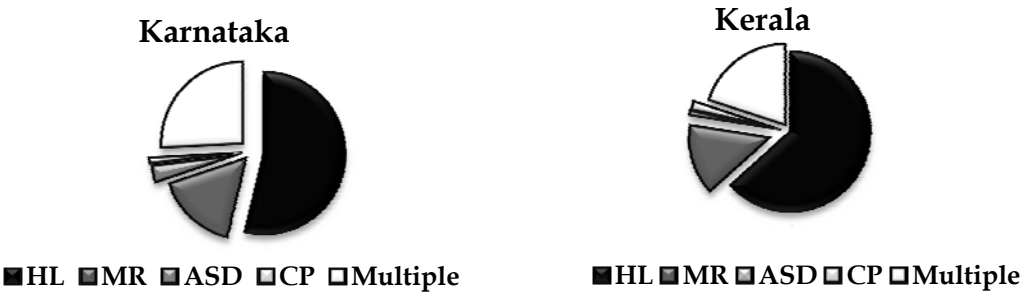
II. GENDER

S. No.	Gender	Total	Karnataka	Kerala
01.	Male	111	50	61
02.	Female	94	43	51



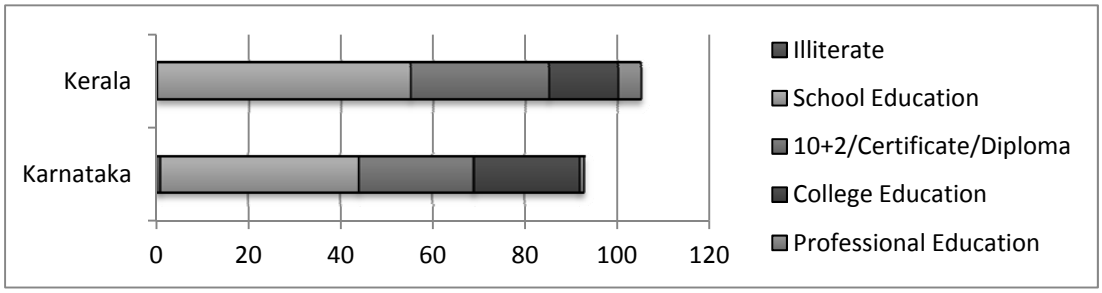
III. NATURE OF SPECIAL NEEDS

S. No.	Special Need	Total	Karnataka	Kerala
01.	Hearing Loss	126	50	76
02.	Mental Retardation	32	15	17
03.	Autism Spectrum Disorders	4	3	1
04.	Cerebral Palsy	3	1	2
05.	Multiple Disorders	40	24	16

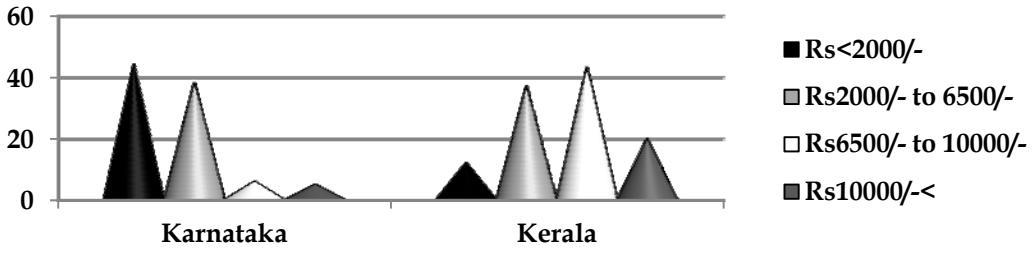


IV. CAREGIVER EDUCATIONAL STATUS

S. No.	Education	Total	Karnataka	Kerala
01.	Illiterate	1	1	0
02.	School Education	105	43	62
03.	10+2 /Post SSLC Certificate / Diploma	55	25	30
04.	College (Graduate / Post Graduate) Education	38	23	15
05.	Professional Education	6	1	5



V. CAREGIVER ECONOMIC STATUS				
S. No.	**Monthly Income**	**Total**	**Karnataka**	**Kerala**
01.	Less than Rs. 2000/- pm	56	44	12
02.	Rs. 2000/- to Rs. 6500/- pm	75	38	37
03.	Rs. 6500/- to Rs. 10000/- pm	49	6	43
04.	More than Rs. 10000/-pm	25	5	20



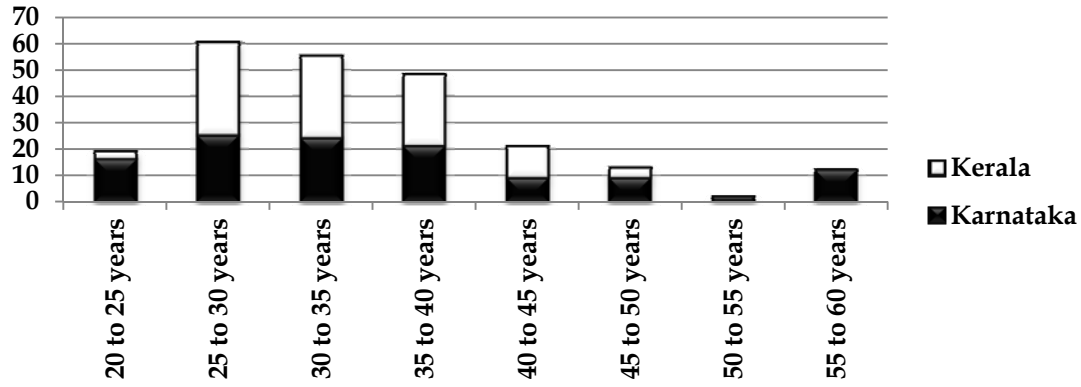
As it may be observed, some of the child-participants include young adolescents also. However considering their developmental stages, they are referred to as children throughout this study.

3.1.2 Mainstream Teacher-Participants

One-hundred and eighteen mainstream teachers were covered in each of the states – Karnataka and Kerala, that is, a total of 236. As aspired at the time of framing the objectives of the study, it was not possible to gain access to any of the resource teachers functioning in the mainstream of education. The details of the teacher-participants has been presented in Table 3 (with figures):

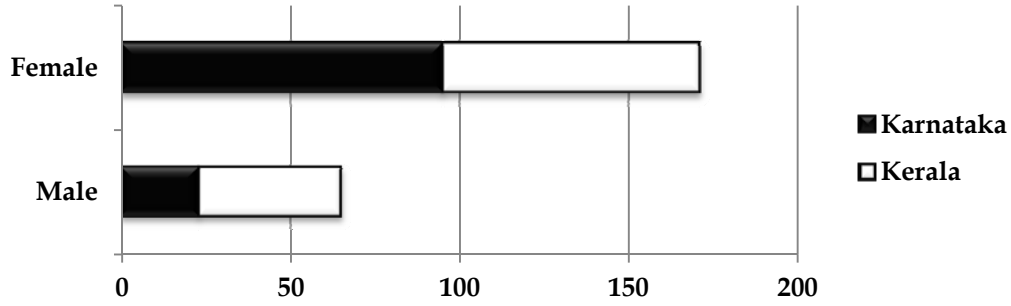
Table 3 (with figures): Details of Teacher-Participants of the Study

I. AGE				
S. No.	**Age**	**Total**	**Karnataka**	**Kerala**
01.	20+ to 25 years	19	16	3
02.	25+ to 30 years	60	25	35
03.	30+ to 35 years	61	24	37
04.	35+ to 40 years	48	21	27
05.	40+ to 45 years	21	9	12
06.	45+ to 50 years	13	9	4
07.	50+ to 55 years	2	2	0
08.	55+ to 60 years	12	12	0



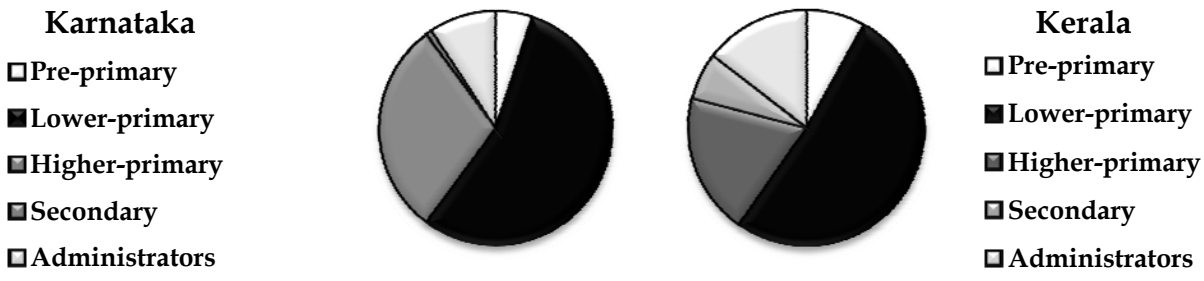
II. GENDER

S. No.	Gender	Total	Karnataka	Kerala
01.	Male	65	23	42
02.	Female	171	95	76



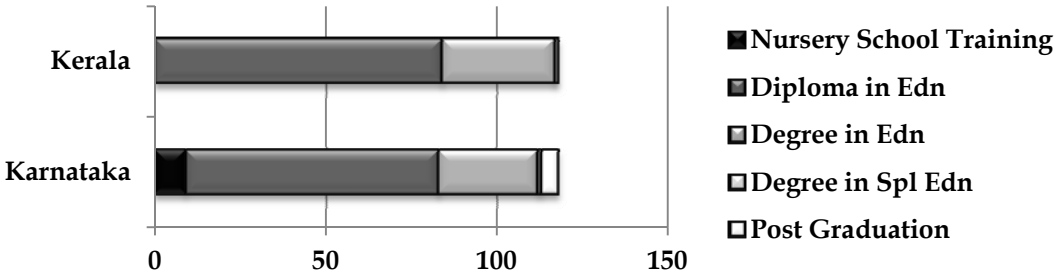
III. LEVEL OF TEACHING

S. No.	Level of Teaching	Total	Karnataka	Kerala
01.	Pre-Primary School	16	6	10
02.	Lower-Primary School	129	65	64
03.	Higher-Primary	59	35	24
04.	Secondary School	3	1	2
05.	Administrative Cadre	29	11	18



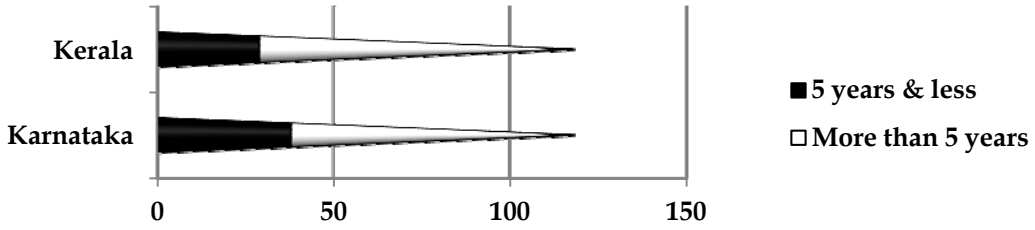
IV. PROFESSIONAL QUALIFICATION

S. No.	Professional Qualification	Total	Karnataka	Kerala
01.	Nursery School Training	9	9	0
02.	Diploma in Education	158	74	84
03.	Degree in Education	62	29	33
04.	Degree in Special Education	1	1	0
05.	Post Graduation	6	5	1



V. PROFESSIONAL EXPERIENCE

S. No.	Professional Experience	Total	Karnataka	Kerala
01.	5 years and less	67	38	29
02.	More than 5 years	169	80	89



3.2 Tools

Two major tools were developed for collecting data necessary for the study. The first was an elaborate checklist type of tool developed by the investigators to collect information about the details of early intervention phase, as well current status of the participants. And the second was a Likert's 5-point rating scale adapted by the investigators to appraise the attitudes of the mainstream educators. Both the tools were validated by 10 expert professionals including 4 from the field of clinical psychology, 3 from the field of speech and hearing, and 3 from the field of education. It was ensured that every component of the tools had 80% consensus among the evaluators. Other corrections suggested by them were incorporated. Details of the tools are as follows:

3.2.1 Tool for Collecting Data from Child-Participants

This tool had 75 items in all which in turn included:

- Demographic information – 14 items with information to be collected through face-to-face interview and/or reference of records
- Antecedent information (about the early intervention phase) – 29 items with information to be collated from records about
  - Identification & diagnosis
  - Nature & duration of early intervention & preschool training
  - Then level of communication and (pre)academic skill development
- Current information – 20 items with information to be collected through face-to-face interview, reference of records and/or direct assessment procedures about
  - Nature & level of school placement
  - School performance (curricular, co-curricular & social behaviours)
  - Current level of communication skills
  - Support services being received
- Information about caregivers – 12 items with information to be collected through face-to-face interview about
  - Nature of training / empowerment received
  - Level of participation in children's education

The brief composition of the tool to collect data on child-participants is represented Figure 1.

Figure 1: Details of the Component Items in Tool to Collect Data on Child-Participants

3.2.2 Tool to Appraise Attitudes and Competencies of Mainstream Educators about Inclusive Education of Children with Communication Disorders

- The tool consisted of 30 statements to appraise attitudes, as well as competencies of teachers; which focused on
  - Teacher perceptions about including children with communication disorders in mainstream educational environment: 3 items
  - Capabilities of children with communication disorders in mainstream educational environment: 10 items
  - Adaptations to be made in the mainstream educational environment: 6 items
  - Social integration of children with communication disorders in the mainstream educational environment: 6 items
  - Teacher and caregiver roles in promoting inclusive education of children with communication disorders: 5 items

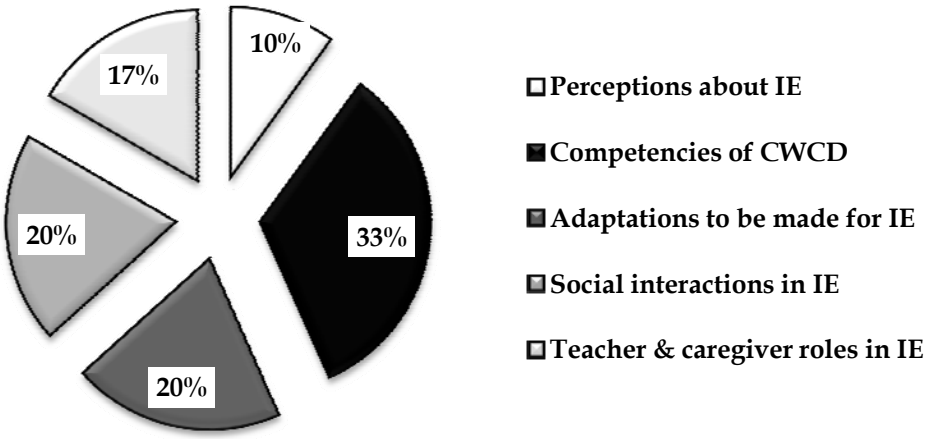


Figure 2: Details of the Component Items in Tool to Collect Data from Teacher-Participants

Items in this tool were validated by the afore-mentioned 10 experts and items that did not received consent from 80% or more of the evaluators were omitted. Other necessary changes in the items of the tool as suggested by the experts were incorporated. Out of the 30 items, 29 were affirmative statements while one lone

statement was disapproving. All the statements were rated on a 5-point rating scale ranging from strong disagreement to strong agreement to it. The affirmative statements were provided a 5-point score ranging from 1 to 5 while the negative statement was provided scores ranging from -1 to -5. The percentage of the scores was computed in order to appraise the attitude trends among the participant teachers. The tool had been adapted from an earlier ARF research on 'Evaluating the Needs for Successful Inclusive Education Programme' carried out by one of the co-investigators (Sreedevi, 2008).

3.3 Procedure

The modus operandi involved in carrying out the study has been described in Table 4:

Table 4: Procedure of the Study

<table>
<tr><td colspan="4">Step I - A: Development & Validation of Tools
Step I - B: Assembly of Evaluation Kit
[Duration: 3 months]</td></tr>
<tr><td colspan="2">Step II – A: Data collection in Karnataka
[Duration: 1 year & 3 months]</td><td colspan="2">Step II – B: Data collection in Kerala
[Duration: 1 year & 3 months]</td></tr>
<tr><td>Data collection on 93 child-participants</td><td>Data collection from 118 teacher-participants</td><td>Data collection on102 child-participants</td><td>Data collection from 118 teacher-participants</td></tr>
<tr><td colspan="4">Step III: Compilation & Analysis of Data [Duration: 6 months]</td></tr>
</table>

3.4 Data collection

A survey type of research-design was adopted to collect data using the above tools. Data on child-participants was gathered from 3 major sources namely; clinical and academic records, interview of caregivers and teachers, and actual testing/screening of the child when recent clinical reports were not available.

Demographic details of the child-participants were mostly collected from records and face-to-face interview with the caregivers of the child participants. Antecedent details about the early intervention and preschool training phase were collected from clinical records, as well as interview with the caregivers and service-providers during that phase. Current details regarding school placement and performance were collected from school records as well as interview with the educators at the school. Details of the current clinical and academic supports received by the child-participants were collected from records (if available) and/or interview with caregivers. Details of the current levels of communication skills were collected from the recent evaluation reports in the clinical records. If the same were not available, then the research staff were oriented to use screening tools like DST, 3D-LAT, etc. An exclusive test-kit was also assembled for the purpose. Information on nature of caregiver empowerment measures undergone at AIISH and the impact were gathered through interview from caregivers.

3.5 Analysis of Data

For data pertaining to mainstream teacher attitudes, printed attitudinal scales were distributed to the teacher-participants after briefing them about the purpose of the study, and procedures for completing the tool. The filled in attitudinal scales were collected after providing convenient time for the participants to fill them. Meanwhile, any other doubts on part of the participants were clarified by the research staff.

The collected data was subjected to appropriate statistical procedures, mostly descriptive statistics like mean, Spearman's rho and when necessary inferential statistics like t-test to find the influence of various antecedent and current factors discussed earlier on the current educational status of child-participants with communication disorders. SPSS version 10.0 software was used for the purpose.

RESULTS & DISCUSSION

RESULTS AND DISCUSSION

Analysis of data involved appraising the nature and effectiveness of multidisciplinary early intervention, as well as current supports in mainstreaming children with communication disorders, as well as teacher perceptions towards Inclusive Education. Before discussing the results it is necessary to clarify that the data concerning the two states of Karnataka and Kerala were considered separately, in order to avoid certain mutually dissimilar attributes leading to mixed results.

4.1 Trends in Early Identification

The analyses of data in this research began with analysis of trends in early identification of children under study, results of which are presented in Table 5:

Table 5: Age of Identification of Special Needs in Child-Participants

S. No.	Age of Identification	Number of Children Identified			
		Karnataka	Kerala	Total	
01.	By birth	04	07	11	61.46%
02.	1 month	00	02	02	
03.	2 months	00	02	02	
04.	3 months	00	03	03	
05.	4 months	00	04	04	
06.	5 months	01	02	03	
07.	6 months	02	13	15	
08.	8 months	01	03	04	
09.	9 months	03	06	09	
10.	1 year	16	23	39	
11.	1 year 6 months	14	20	34	81.46%
12.	1 year 9 months	01	02	03	
13.	2 years	13	11	24	
14.	2 years 6 months	08	06	14	
15.	3 years	09	05	14	
16.	3 years 6 months	02	01	03	
17.	4 years	05	02	07	
18.	5 years	09	00	09	
19.	6 years	03	00	03	
20.	9 years	01	00	01	
21.	10 years	01	00	01	
	Total	93	112	205	

In the field of disability rehabilitation, early age of identification and intervention is considered as the first prerequisite for better rehabilitation prospects (Wake et al., 2005; Martineau et al., 2001; Moeller, 2000). The Morbidity and Mortality Weekly Report (2003) from USA reports that the average age of identification of communication disorders like hearing loss is 1½ to 3 years of age. But the existing trends at AIISH are even better, with a almost 62% of the children being identified by the first year of life, and nearly 82% being identified before the critical age of 2 years. This is a significant accomplishment and could be attributed to the tremendous measures taken by AIISH towards prevention of communication disorders. Informal review of the results led to the realisation that hidden sensory impairments like hearing impairment were prone to be discovered later compared to conspicuous physical and multiple impairments.

To further deliberate the progressive developments in the trend of early identification, the age of identification was correlated with the chronological age of the child-participants and this led to the realisation that there was positive significant correlation ($r = +.161$; $p < 0.05$) between both indicating that the younger the age of child, earlier the identification. In other words it could be stated that the identification of special needs in children is increasingly being done at earlier ages with progress of time.

It could also be observed that among children-participants from Karnataka, hearing impairment had been identified in majority of them (approx. 75%) before 2 years of age; whereas mental retardation was identified in most of the children (approx. 80%) between 1½ and 6 years of age. More severe and visible conditions like cerebral palsy and multiple special needs had been identified by birth or before 2 years of age (80%); while less conspicuous disorders like autism spectrum disorders had been identified after the first year of life. Better trends could be observed in Kerala, where approximately 65% of the incidences of hearing impairment had been identified before the first year and the rest before the fourth year of life. All other special needs in the children (autism, cerebral palsy, mental

retardation and multiple special needs) had been identified before the third year of life.

4.2 Trends in Early Intervention

In the effort to discern the trends in early intervention for communication disorders in comparison to identification, the numbers of children identified and intervened in each of the early years of life were computed. The results are provided in Figure 3.

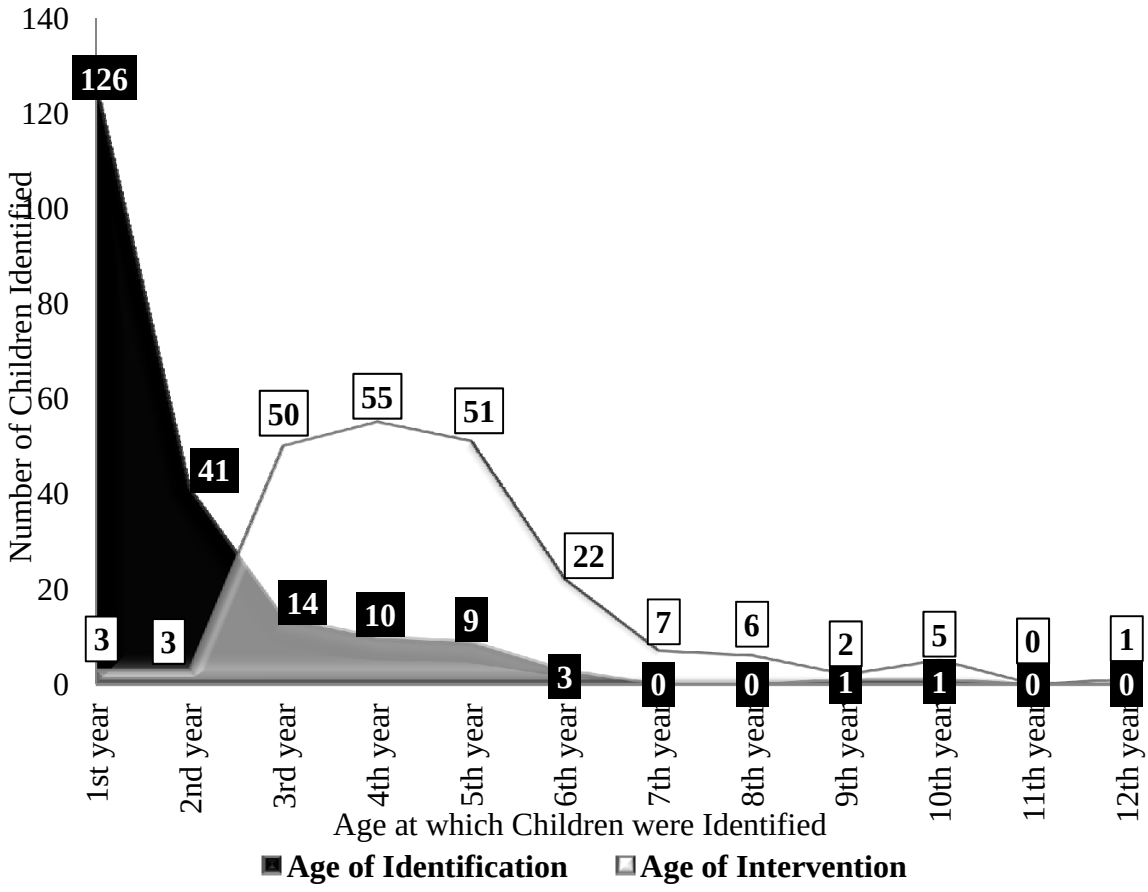


Figure 3: Early Identification versus Timely Intervention

While it is clearly evident from Figure 3, that a whooping majority (around 82%) of children have been identified before the critical age of 2 years, follow-up intervention services are found peaking only between the 3rd and 5th year of life that

is well beyond the critical years. One probable reason for this discrepancy was that this study primarily covered children who were enrolled for preschool services at AIISH. Conversely, off the record observations suggest that there were several young clients of AIISH, who following effective clinical intervention within the first or second year of life were successfully mainstreamed at the preprimary level of education itself without need for special preschool services. Their exception from the population surveyed could have led to this misapprehension.

Nevertheless, without empirical evidence such perspectives cannot be taken for granted. Therefore, more efforts have to be concerted towards eradicating the ignorance and misconceptions that come between the cup of early intervention services and the lips of the young children in need. However, a positive correlation observed between the age of the children under study and the age of intervention ($r = +.534$; $p < 0.001$) indicates that recent, young clients are being intervened even earlier. Thus, the age of intervention is also decreasing for the better.

Table 6: Quantum of Early Intervention Services received by Child-Participants

S. No.	Number of Services	Number of Children		
		Karnataka	Kerala	Total
01.	Three types of services (minimum)	16	08	24
02.	Four types of services	13	22	35
03.	Five types of services	61	80	141
04.	Six types of services	01	01	02
05.	Seven types of services	02	01	03
	Total	93	112	205

Speaking about the nature and quantum of intervention services received, these children had received at least 3 types of early intervention services which included diagnostics, speech-language therapy and special preschool training (which had been provided for all children, except two from Kerala who were ready for mainstreaming by preschool age). Along with these services, the child participants had received listening training, occupational/physiotherapy, behavioural modification therapy, sensory integration training, therapy for autism

spectrum disorders, etc. depending on the nature of their special needs. Certain children with multiple special needs had received a maximum of 7 types of services. As indicated by the results in Table 6, majority of the children covered in this study had received 5 different types of early intervention services. All said, it could be observed that the trends of early identification and intervention in the young clients with communication disorders at AIISH were satisfactory.

4.3 Trends in Mainstreaming

Irrespective of nature or severity of disabilities in individuals, contemporary disability rehabilitation measures are driven towards mainstreaming the individuals in the society, which is understood to lead to holistic enhancement of life and living conditions. They also emphasise that earlier the intervention better the benefits, and recognise mainstream schooling as an essential stepping stone in the process of independent living as well as natural and comprehensive inclusion in the social environment around them (Vohr et al., 2008; Watkin et al., 2000; Yoshinaga-Itano, 1999; Downs & Yoshinaga-Itano, 1999; Yoshinaga-Itano et al., 1998; Odom, DeKlyen & Jenkins, 1984; Gulnaick, 1981; Lowenbraun, Appelman & Callahan, 1980).

The major objective of the present study was to investigate the efficacy of the early intervention and preparatory services provided at AIISH in successfully integrating children with communication disorders in the educational mainstream. An eagle's view of the data showed that majority of the child-participants in the study (70%) were integrated in regular schools, and that these children were exhibiting fairly good curricular, co-curricular and social skills. Details of the same are illustrated in the following Figure 4.

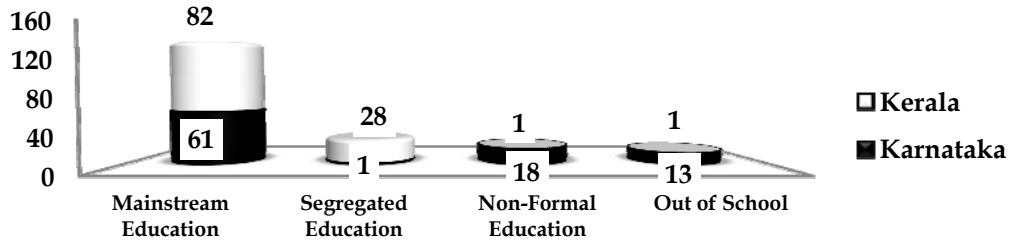


Figure 4: Educational Placement of Child-Participants

Among the child-participants in inclusive and segregated educational settings, 126 children (Karnataka – 46 & Kerala – 80) had been placed in grades appropriate to their age level, while 16 children (Karnataka – 8 & Kerala – 8) had been placed 1-grade below their age level, and another 16 children (Karnataka – 7 & Kerala – 9) had been placed in grades more than 1-year below their chronological age. For further thorough scrutiny, 3 major groups of data were investigated apart from the nature and severity of the disability; one was antecedent data related to the nature of early intervention services received by the children under study, the second was the current factors related to clinical and educational supports received by these children, and the third set of data concerned the family background of the child-participants, including the nature of empowerment their parents/primary caregivers had received at the time of receiving early intervention services, and their level of involvement in their wards' education.

The influence of these 3 clusters of factors on the school performance of the child-participants were investigated. The school performances of children under study were gauged on three dimensions, their curricular performance in the core academic subjects, their participation and performance in the co-curricular areas like sports, cultural and civic club activities, etc., and their social integration and adjustment in the learning environment.

Details about the academic performance in the core academic subjects were collected in terms of their average percentage scores in the annual or tri/semester exams of recent past, and this was in turn graded into 7 levels (40% & below, 41% to 50%, 51% to 60%, 61 to 70%, 71% to 80%, 81% to 90%, and above 90%). Their co-curricular performance and social skill display were appraised on a 5-point rating scale of very good, good, satisfactory, poor and very poor. The results of the analysis of the influence of the above-said factors on these 3 dimensions of school performance have been discussed herein after.

4.3 Factors Influencing Successful Mainstreaming

Efforts were made to identify the factors influencing successful placement of children with communication disorders in mainstream schools, findings of which are provided herein after.

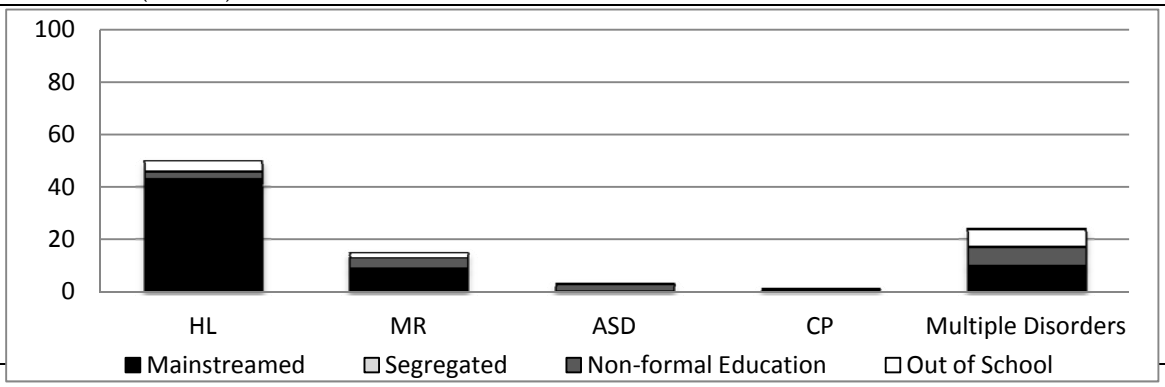
4.3.1 Influence of Nature and Severity of Disabling Conditions on School Performances

The influence of the nature of disability on school performances was first gauged by the number of children with different kinds of special needs enrolled in mainstream schools and other educational settings, details of which are presented in Table 7 (with figures).

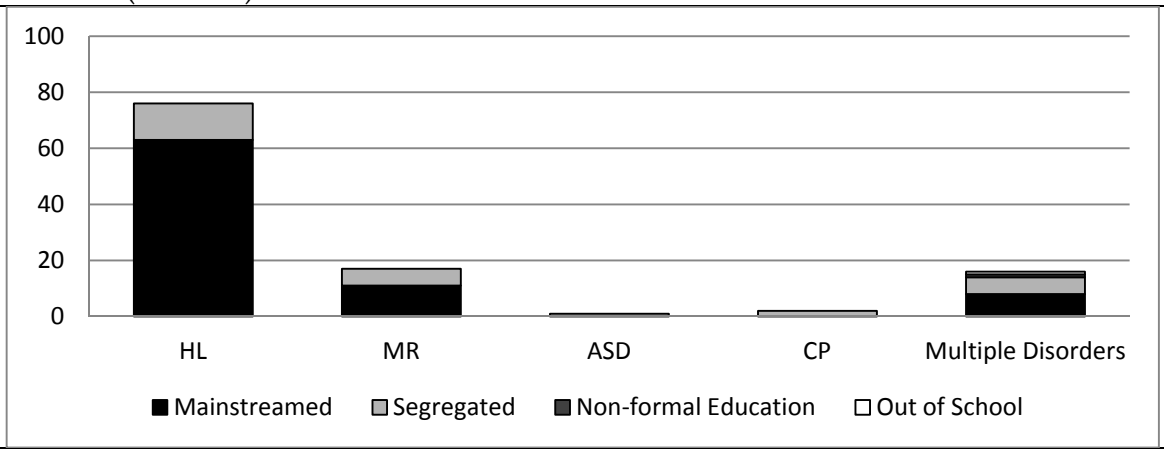
Table 7 (with figures): Details of Children with Different Kinds of Special Needs in Different Educational Settings

Karnataka

S. No.	Nature of Special Needs	Mainstream Schools		Segregated Schools		Non-Formal Education		Out of School	
		No	~%	No	~%	No	~%	No	~%
01.	Hearing loss (N = 50)	42	84	01	2	03	6	04	8
02.	Mental retardation (N = 15)	09	60	00	0	04	27	02	13
03.	Autism spectrum disorders (N = 03)	00	0	00	0	03	100	00	0
04.	Cerebral palsy (N = 01)	00	0	00	0	01	100	00	0
05.	Multiple disorders (N = 24)	10	42	00	0	07	28	07	28
	Total (N = 93)	61	66	01	1	18	19	13	14



Kerala									
S. No	**Nature of Special Needs**	**Mainstream Schools**		**Segregated Schools**		**Non-Formal Education**		**Out of School**	
		No	**~%**	**No**	**~%**	**No**	**~%**	**No**	**~%**
01.	Hearing loss (N = 76)	63	83	13	17	00	0	00	0
02.	Mental retardation (N = 17)	11	65	06	35	00	0	00	0
03.	Autism spectrum disorders (N = 01)	00	0	01	100	00	0	00	0
04.	Cerebral palsy (N = 02)	00	0	02	100	00	0	00	0
05.	Multiple disorders (N = 16)	08	50	06	38	01	6	01	6
	Total (N = 112)	82	73	28	25	01	1	01	1



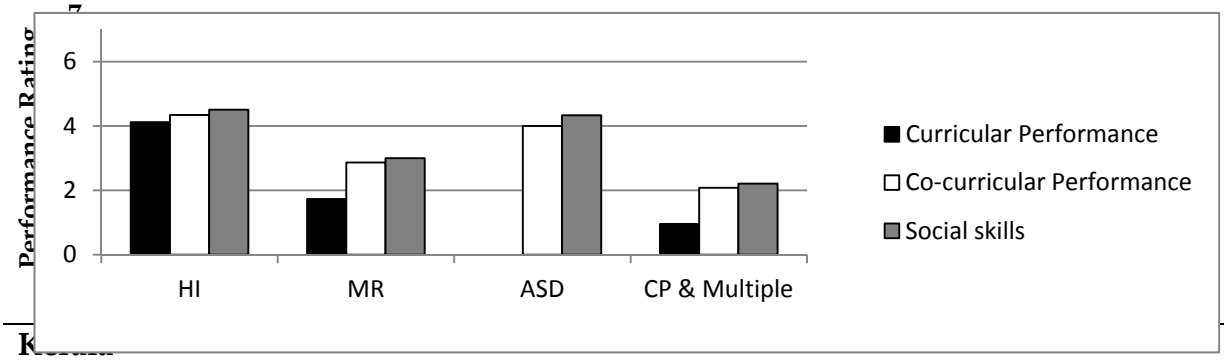
The above results evince that children with sensory impairments like hearing impairment had been more easily amalgamated in to the mainstreams of education as compared to children with psycho-social or multiple problems. Another interesting factor observed was that children who were not mainstreamed in Karnataka increasingly sought services of non-formal educational agencies like Open Schools, while children out of inclusive schools in Kerala were into segregated education. The trend could be attributed to the drive among caregivers of the latter state towards sources of education that are accredited and acknowledged widely.

Table 8 (with figures): Comparative School Performances of Children with Different Kinds of Special Needs

Comparative School Performances in Children with Different Special Needs

Karnataka

S. No.	Educational Status / Type of Special Need	N	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
01.	Hearing loss	50	4.1224	4.3469	4.5102
02.	Mental Retardation	15	1.7333	2.8667	3.000
03.	Autism Spectrum Disorders	03	0.0000	4.000	4.3333
04.	Cerebral Palsy & Multiple Special Needs	25	0.9583	2.0833	2.2083



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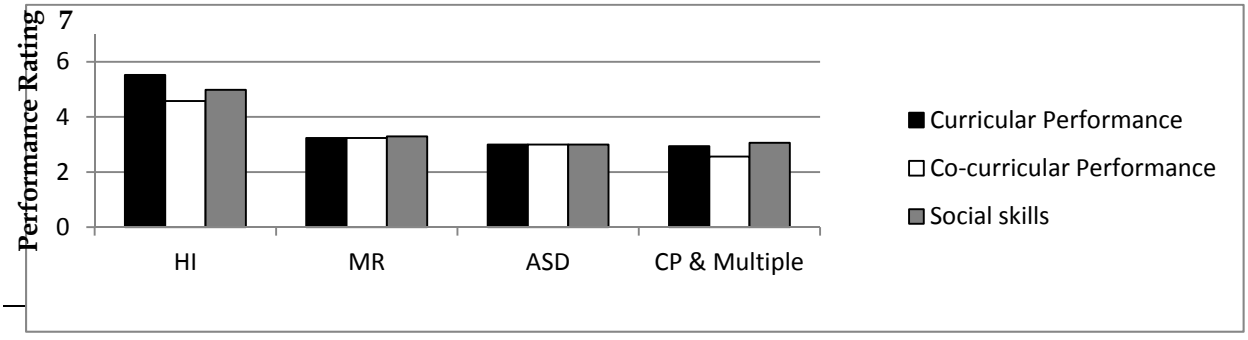
S. No.	Educational Status / Type of Special Need	N	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
01.	Hearing loss	76	5.5263	4.5789	4.9868
02.	Mental retardation	17	3.2353	3.2353	3.2941
03.	Autism spectrum disorders	01	3.0000	3.000	3.000
04.	Cerebral palsy & Multiple special needs	18	2.9375	2.5625	3.0625



From the results on Table 8 (with figures), it is evident that sensory impairments like hearing impairment have milder impact on abilities for academic learning and other school performances in comparison to problems of psychological or manifold nature. The trends in seeking alternate educational services could be explained as consequences of the widespread propagation of the Karnataka State Open School Services in the former state compared to the recent drive towards specialised educational services among the performance-conscious caregivers in the latter state.

Further analysis was carried out to verify whether the severity of the special need had any impact on the nature of the school performances in these children. Correlation between the severity of the special need and the performances at school in terms of academic learning, co-curricular and social skills was determined using Spearman's rho, as all these data had been recorded on relative scales. Moreover, the analysis was carried out separately for children having sensory problems, that is, hearing impairment and other special needs of psychological and/or motor-bases, as the grading of severity were slightly different. The results have been provided in Table 9.

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Table 9: Influence of Severity of Special Need on the School Performances

S. No.	Educational Status / Severity of Special Need	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Karnataka				
01.	Sensory Impairment	–0.020	–0.172	–0.039
02.	Psychological and /or Motor impairment	–0.133	–0.304*	–0.257
Kerala				
01.	Sensory Impairment	–0.147	–0.262	–0.401
02.	Psychological and /or Motor impairment	–0.589***	–0.584***	–0.801***

* - p<0.05; ** - p<0.01; *** - p<0.001; no* - no statistical significance

The severity of the special need is found to negatively correlate with the school performances in the children under study. This implies that the increase in the severity of the impairment/special need has led to poorer school performances. And this impact is more pronounced in children with disorders of psychological and/or motor nature. There have been similar findings from earlier researchers (Wake et al., 2005) that severity of the disabling condition rather than later diagnosis correlated with poor ability levels in children with special needs.

4.3.2 Influence of Early Intervention related Antecedent Factors

The next stage of analysis involved studying the influence of the early intervention related factors on the current school performances.

Table 10: Correlation of Early Intervention (EI) Related Antecedent Factors with School Performances

S. No.	Educational Status / Antecedent Factors	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Karnataka				
01.	Age of identification	–0.117	–0.156	–0.197
02.	Age of fitting assistive aids/devices (only CWHI[@])	–0.491***	–0.372***	–0.318***
03.	Use of assistive aids/devices (only CWHI[@])	+0.573***	+0.485***	+0.450***
04.	No. of EI services received	+0.273**	+0.328**	+0.285**
05.	Duration of EI services	+0.277*	+0.258*	+0.217*
06.	Age of admission to preschool	–0.233*	–0.148	–0.136
07.	Communication abilities at time of receiving EI services	+0.209*	+0.074	+0.057
08.	Performance during preschool years			
	(i) (Pre)Academics	+0.437***	+0.421***	+0.346***
	(ii) Co-curriculum	+0.476***	+0.459***	+0.399***
09.	Additional Services like private tuitions / part-time integration in playschools	+0.134	+0.032	+0.077

S. No.	Educational Status / Antecedent Factors	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Kerala				
01.	Age of identification	–0.062	–0.034	–0.048
02.	Age of fitting assistive aids/devices (only CWHI°)	–0.450***	–0.269***	–0.241***
03.	Use of assistive aids/devices (only CWHI°)	+0.564***	+0.381***	+0.364***
04.	No. of EI services received	+0.179	+0.314**	+0.188*
05.	Duration of EI services	+0.308***	+0.322***	+0.303***
06.	Age of admission to preschool	–0.272**	–0.223*	–0.210*
07.	Communication abilities at time of receiving EI services	+0.218*	+0.049	+0.055
08.	Performance during preschool years			
	(i) (Pre)Academics	+0.695***	+0.625***	+0.720***
	(ii) Co-curriculum	+0.640***	+0.601***	+0.707***
09.	Additional Services like private tuitions / part-time integration in playschools	+0.034	+0.084	+0.061

* - p<0.05; ** - p<0.01; *** - p<0.001; no* - no statistical significance

° CWHI – Children with Hearing Impairment

The results in Table 10 confirm that early identification and intervention do have a positive impact on later academic and school performances of children; as age of identification, age of fitment of assistive devices and age of admission to preschool are found to correlate negatively with the current school performances indicating that if the intervention had been at a younger age there has been better progress at later stages.

Especially, the fact that age of fitting assistive aids and commencement of preschool training have correlated with statistical significance indicating that more than just identification; commencement with intervention is essential for rewarding rehabilitation results. Researchers like Wake et al. (2005) have also hinted that age of identification on its own may not yield significant rehabilitation results without

proper follow-up intervention. Moeller (2000) had generated convincing evidence that age of enrolment of services had a significant positive impact on language learning.

Comprehensiveness of early intervention services had been determined in terms of duration of early intervention and range of services received. It was found that both these facets had positive impact on the current academic performances of the children with communication disorders. The total duration of early intervention services received (including therapeutic and preschool training) was found to have positive and significant all-round influence on the current performances in academic learning, co-curricular participation and social behaviours of children with communication disorders from both Karnataka ($p < 0.05$) and Kerala ($p < 0.001$). These findings reiterate earlier research reports (Vohr et al., 2008; Watkin et al., 2000; Yoshinaga-Itano, 1999; Downs & Yoshinaga-Itano, 1999; Yoshinaga-Itano et al., 1998) that early and comprehensive intervention services for communication disorders like hearing loss in children bring out the best during the school years of these children.

Moreover, the progress made by the children understudy in communication abilities and curricular as well as co-curricular skills during the early intervention years are found to be strong indicators of the advances they were to make in academic, co-curricular and social skills later during school years. Especially, the performances at preschool have been found to have a high and significant relationship with the current school performances. Researchers like Blamey and team (2001) have reported that speech and hearing abilities speech perception scores, speech production, and vocabulary performance during early intervention years had strong relationships with later educational performance than just age and severity of loss.

Another interesting aspect observed was that during early intervention period, several young clients had availed other services outside AIISH like part-time integration in local play/preschools (mostly among children from Karnataka)

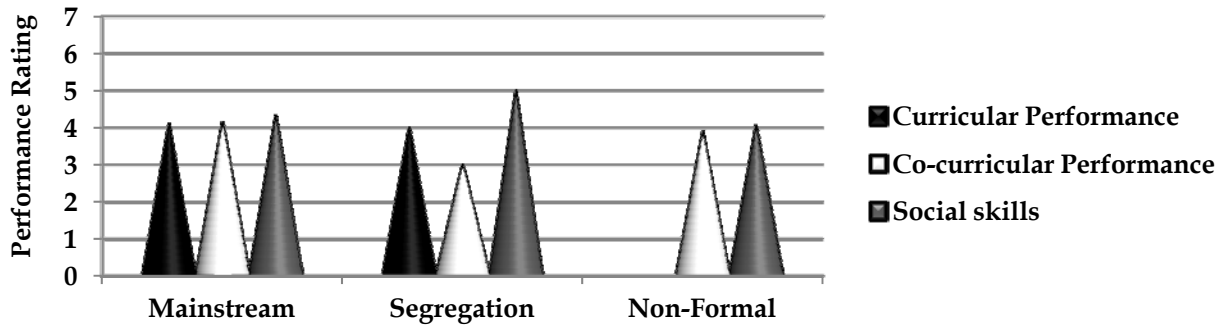
and/or private tuitions (mostly in children from Kerala). These services were also found to have a positive even though insignificant influence on current school performances.

4.3.3 Influence of Nature of Educational Placement

Subsequent to the early intervention and preparatory services at AIISH, the children with communication disorders had been absorbed in to varied educational streams as made possible by their ability-levels as well as other environmental circumstances. As mentioned earlier, the educational streams were varied including regular schools, special schools, and non-formal education. Some children were even left out of schools, 13 in Karnataka and 1 in Kerala. It was important to distinguish the school performances of the children in the different streams in order to perceive the impact of mainstreaming in comparison to other streams. As mentioned herein before, the performance in the core curricular subjects had been graded into 7 levels (40% & below, 41% to 50%, 51% to 60%, 61 to 70%, 71% to 80%, 81% to 90%, and above 90%); and their co-curricular and social skills were graded on a 5-point rating scale of very good, good, satisfactory, poor and very poor. The comparative performances of the children from the different streams have been presented in Table 11 (with figures)

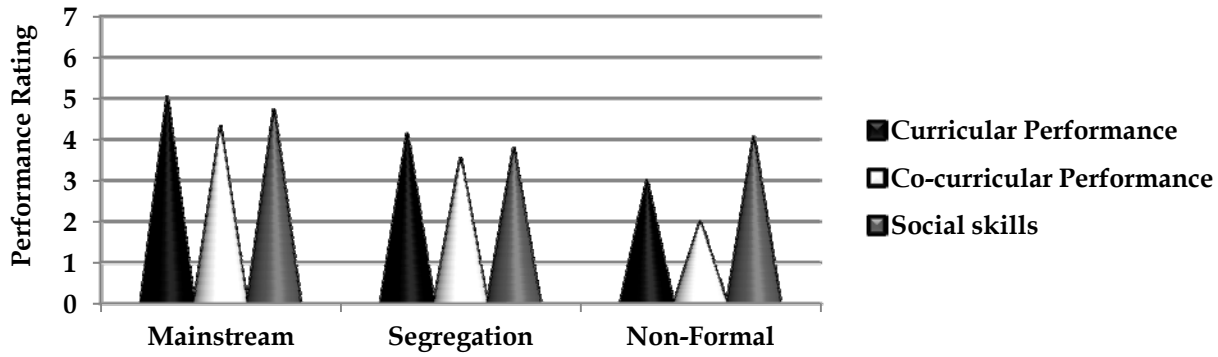
Table 11 (with figures): Comparative School Performances of Children in Different Kinds of Educational Settings

Karnataka					
S. No.	**Educational Status / Type of Special Need**	**N**	**Performance in Core Curricular Subjects**	**Participation & Performance in Co-Curricular Activities**	**Social Skills Exhibited in Learning Environment**
01.	Mainstream Education	61	4.1148	4.1475	4.3279
02.	Segregated Education	01	4.000	3.000	3.000
03.	Non-Formal Education	18	0.000	3.8889	4.0556



Kerala

S. No.	Educational Status / Type of Special Need	N	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
01.	Mainstream Education	82	5.0366	4.3171	4.7195
02.	Segregated Education	28	4.1429	3.5357	3.7857
03.	Non-Formal Education	01	3.000	2.000	3.000



As stated time and again by several earlier researches that mainstreaming helps in enhancing not only personal life skills and social integration in children with special needs, but also their academic learning (Mishra & Malar, 2010; Karsten et al., 2001; Lipsky & Gartner, 1996; Buddoff & Gottileb, 1976); the current study also reiterates the eminence of mainstream education in influencing overall positive progress in all areas of school performance. Segregated educational stream comes second best in influencing better school performances, may be due to the individualised support provided through trained manpower in these centres of education. Though tangible in number, the curricular performances of children

pursuing open school education in the state of Karnataka were found negligible as they are yet to take exams; while the lone child from Kerala has successfully passed his exams. And their co-curricular and social skills have been gauged on the basis of their participation and performances in the non-formal learning centres which help them prepare for the open school exams. The social skills among children from special schools of Kerala are found to be better than the lone child pursuing open schooling. This could be due to skewed population.

4.3.4 Influence of Current Factors like Clinical and Academic Supports

Scanning of the current scenario of inclusive education in our country reveals need for improvement in several areas like capacity building in manpower, infrastructure, etc. (Reddy, 2004; Dharmaraj, 2000; Sarojini, 2000; Selvakani, 2000; Sivakami, 2000). Hence in spite of the best preparatory services availed, children with special needs who are included in the mainstream education require continued supports to survive and succeed in the environment. Supports need to be multifaceted in terms of enhancing communication skills as well as academic performances (Debenham, 2010; ASHA, 1991).

The influence of such ongoing services and resultant abilities on the school performances of the children under study have been provided in Table 12. Before proceeding further, it is essential to clarify that academic supports received by children from the state of Karnataka were mostly curricular support services received outside school, while for children from Kerala had additional access to special educational supports provided through the Block /Cluster Resource Centres of the *Sarva Shiksha Abhiyan* programme, as well as individualised training.

The results in Table 12 make it obvious that supplementary support services, both for speech and hearing abilities as well as academic learning are found to have influenced school performances positively, except for a few exceptions like impact of listening training on social skills.

Table 12: Correlation of Current Clinical/Educational Supports with School Performances

S. No.	Educational Status / Antecedent Factors	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Karnataka				
01.	Current Abilities			
	(i) aided listening abilities (only CWHI°)	+0.527***	+0.420***	+0.399***
	(ii) speech-language abilities	+0.363***	+0.294**	+0.168
	(iii) psychological abilities	+0.279**	+0.268**	+0.206*
02.	Current Clinical Supports			
	(i) listening training (only CWHI°) - duration	+0.131	+0.110	+0.077
	(ii) speech-language training - duration	+0.023	+0.071	+0.045
03.	Current Special Educational Training–			
	(i) Curricular support	+0.160	+0.140	+0.090
Kerala				
01.	Current Abilities			
	(i) aided listening abilities (only CWHI°)	+0.705***	+0.615***	+0.688***
	(ii) speech-language abilities	+0.722***	+0.600***	+0.695***
	(iii) psychological abilities	+0.622**	+0.497**	+0.638**
02.	Clinical Supports			
	(i) listening training (only CWHI°) - duration	+0.081	+0.096	–0.068
	(ii) speech-language training - duration	+0.038	+0.034	+0.029
03.	Special Educational Training – resource room supports / curricular support services			
	(i) Curricular support services	+0.104	+0.139	+0.154
	(ii) Resource room supports	+0.098	+0.072	+0.089

* - p<0.05; ** - p<0.01; *** - p<0.001; no* - no statistical significance

° CWHI – Children with Hearing Impairment

As demonstrated in several other earlier researches (Mishra & Malar, 2010; Paatsch, Blamey, & Sarant, 2001; Serry & Blamey, 1999; Yathiraj, 1994; Bunch, 1987);

in this research also the existing level of listening, speech-language and psychological abilities are found to be unswerving significant indicators of positive school performances in children with communication disorders.

4.3.5 Influence of Family and Parent/Caregiver related Factors

Another significant group of factors that influenced educational progress of children with communication disorders was related to parents/caregivers and family dynamics. Many of the clients who received preschool and other early intervention services at AIISH were not native of Mysore, and had come from other districts in Karnataka and even from neighbouring states like Kerala (who formed a major chunk of the clientele); as well as from other places around the country. These outstation clients had made Mysore their second home during the early childhood phase of the children while they received early intervention services. Once the children returned to their native place for pursuance of school education after being discharged from AIISH, in many instances they did not have access to clinical and special educational supports as described above. In such conditions the onus was on the parents and other significant caregivers to help their wards fare well in school. Keeping this in mind, early intervention services at AIISH include parent/caregiver empowerment measures as an essential aspect with the intention of preparing them for participating in and supporting their children's education at school.

Also, during this brief stay, children with communication disorders are found to be the fulcrum of their caregivers' (mostly mothers) attention with all their time and energies being focused on the rehabilitation efforts. However, these family dynamics seem to change once they return back to their native/original habitats to pursue education after being discharged from early intervention services. Caregivers (read mothers) are found to be weighed down by other mundane family responsibilities, and these children were also found to have additional siblings which consequently pushed up their ordinal position. These conditions in turn were found to affect the caregiver attention received by them. Keeping these in mind,

family and parent/caregiver related factors were included in the analysis for their influence on the current school performances of their wards. Family and parent/caregiver related factors have been studied under 4 dimensions, namely sibling status of the children under study, educational and economic status of their parents/caregivers, various parent/caregiver-empowerment services received by them as part of early intervention services at AIISH, and the outcomes of these efforts in terms of empowered participation in the education of their children with communication disorders

Table 13: Correlation of Family and Parent/Caregiver Related Factors with School Performances

S. No.	Antecedent Factors / Educational Status	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Karnataka				
01.	Ordinal Position of Child	+0.004	+0.113	+0.080
02.	Number of Siblings	+0.041	+0.193	+0.164
03.	Type of Family	–0.116	–0.226	–0.160
04.	Caregiver Education	–0.062	+0.004	–0.087
05.	Caregiver Income	–0.094	+0.065	–0.020
06.	Caregiver Empowerment Measures			
	(i) Counselling & guidance	–0.006	–0.001	–0.116
	(ii) Workshops	+0.187	+0.116	+0.177
	(iii) Formal training programmes	+0.248*	+0.253*	+0.160
07.	Caregiver Participation			
	(i) Home training	+0.476***	+0.511***	+0.451***
	(ii) Preparation of special teaching-learning materials	+0.116	+0.261*	+0.271**
	(iii) Interaction with school teachers	+0.342***	+0.406***	+0.458***
	(iv) Assistance in special programmes at school	+0.178	+0.257*	+0.334**
	(v) Collaborative teaching along with teachers	+0.107	+0.216*	+0.169

S. No.	Educational Status / Antecedent Factors	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Kerala				
01.	Ordinal Position of Child	–0.152	–0.091	–0.078
02.	Number of Siblings	+0.097	+0.157	+0.192
03.	Type of Family	–0.116	–0.226	–0.160
04.	Caregiver Education	–0.012	+0.051	–0.064
05.	Caregiver Income	–0.005	+0.101	–0.045
06.	Caregiver Empowerment Measures			
	(i) Counselling & guidance	+0.047	–0.090	–0.070
	(ii) Workshops	+0.279**	+0.328**	+0.269**
	(iii) Formal training programmes	–0.001	–0.025	–0.084
07.	Caregiver Participation			
	(i) Home training	+0.494**	+0.318**	+0.419**
	(ii) Preparation of special teaching-learning materials	+0.289**	+0.217*	+0.179
	(iii) Interaction with school teachers	+0.034	+0.151	+0.113
	(iv) Assistance in special programmes at school	+0.253**	+0.211*	+0.120
	(v) Collaborative teaching along with teachers	+0.121	+0.077	+0.180

* - p<0.05; ** - p<0.01; *** - p<0.001; no* - no statistical significance

The influence of caregiver and family related factors on the current school performances of the children under study were studied by working out the correlation coefficient using Spearman's rho, the results of which have been presented in Table 13. Contrary to expectations, children with more siblings were found to be faring well at school. This could be interpreted as a fall-out of the companionship and competition extend by the siblings which would have helped them fine tune their social and academic skills necessary for survival at school. The ordinal position of the child seems to have varied impact across the two states. While children down the ordinal line in Karnataka were doing well; elder siblings from Kerala fared better. Not much information had been garnered during the study to interpret reasons for the same. It could be assumed as a fall-out of

differences in child-rearing practices of indulging in younger children, versus instilling responsibility in elder ones.

Also children from joint families, that is, larger families tended to exhibit better school performances, as they might be receiving care from more adults, and have increased opportunities to interact with extended members of the family. It is intriguing to note that educational and economic status of parents has influenced the co-curricular participation and performances in children positively even though insignificantly, but at the same time they seem to adversely affect the development of curricular performances and social skills exhibited in the learning environment. This may be explained as an unfavourable consequence of the performance-oriented drive found in contemporary parents, while better educational and economic status would have created better attitudes and facilities favouring co-curricular skill development.

Next, concerning empowerment measures extended at AIISH (gauged by the number different types of services received), parents/caregivers from Karnataka were found benefitting from formal training programmes, while their counterparts from Kerala were found to gain from participation from workshops. Parents/caregivers from both states who were actively participating in the educational process through various activities were found influencing positive and significant progress in their wards' school performances.

Caregivers from Karnataka were found rousing better performances in their wards through regular home training ($p < 0.001$) and frequent interaction with the school teachers ($p < 0.001$); while their efforts in preparing special teaching learning materials and contributions to special programmes have influenced the children's overall school performances, especially in co-curricular skills ($p < 0.05$) and social skills ($p < 0.01$). Their efforts to collaborate teach with regular teachers were found to be minimal in curricular areas and more in co-curricular areas with fitting rewards in terms of positive performances ($p < 0.05$).

Caregivers from Kerala were also found to influence their children's school performances in all areas through regular home training ($p < 0.001$); while their efforts to prepare special teaching learning materials and assist in special programmes at school have yielded better performances in curricular learning ($p < 0.01$) and co-curricular participation ($p < 0.05$). Thus this research also endorses previous research findings (Martineau et al, 2001; Moeller, 2000; Fowler et al., 1991; Hanline & Halvorsen, 1989) about parental participation in their children's educational process yielding in positive results.

4.3.6 Mutual Relationships between Different Types of School Performances

Finally before winding up with analyses of current school performances of the children understudy, an endeavour was made to look for consistent relationship patterns between the performances of the children under study in the different spheres school life namely, achievement in core curricular subjects, participation and performance in co-curricular activities and social skills for integration in the learning environment. This was done by computing the correlation coefficient between the aggregate performances of all child-participants of the study using Spearman's rho.

The results have been displayed in Table 14. The analysis resulted in an encouraging observation of positive and significant correlation ($p < 0.001$) between the performances in the 3 spheres of school life that were considered for study. And it was also noted that the magnitude of relationship was considerable among children with communication disorders from the state of Karnataka compared to those from Kerala. At the same time it was of concern to note that the relationship between academic and social skills were the least among the other relationships (even though considerable and statistically significant) hinting at the current trend among caregivers giving more impetus to academic learning at the cost of all-round development.

Table 14: Relationship between Various School Performances

Spearman's rho	Performance in Core Curricular Subjects	Participation & Performance in Co-Curricular Activities	Social Skills Exhibited in Learning Environment
Karnataka			
Social Skills Exhibited in Learning Environment	+0.659***	+0.938***	+1.00
Participation & Performance in Co-Curricular Activities	+0.710***	+1.00	
Performance in Core Curricular Subjects	+1.00		
Kerala			
Social Skills Exhibited in Learning Environment	+0.481***	+0.704***	+1.00
Participation & Performance in Co-Curricular Activities	+0.581***	+1.00	
Performance in Core Curricular Subjects	+1.00		

* - p<0.05; ** - p<0.01; *** - p<0.001; no* - no statistical significance

4.4 Preparedness of Mainstream Teachers in Promoting Inclusive Education

Several researches have explicated in the past the inevitable role to be played by regular school teachers in ensuring successful mainstreaming of children with special needs (Gangadharan & Malar, 2010; Reddy, 2004; Dharmaraj, 2000; Sarojini, 2000; Selvakani, 2000; Sivakami, 2000). Hence as second leg of this research, efforts were made to appraise the preparedness of mainstream teachers for managing children with special educational needs in inclusive learning settings. As mentioned under 'Methods', a 30-item attitudinal scale rated on Likert's 5-point scale had been used for the purpose. The responses of the participant-teachers on the rating scale were converted in to percentage scores. Figure 5 provides details of the same.

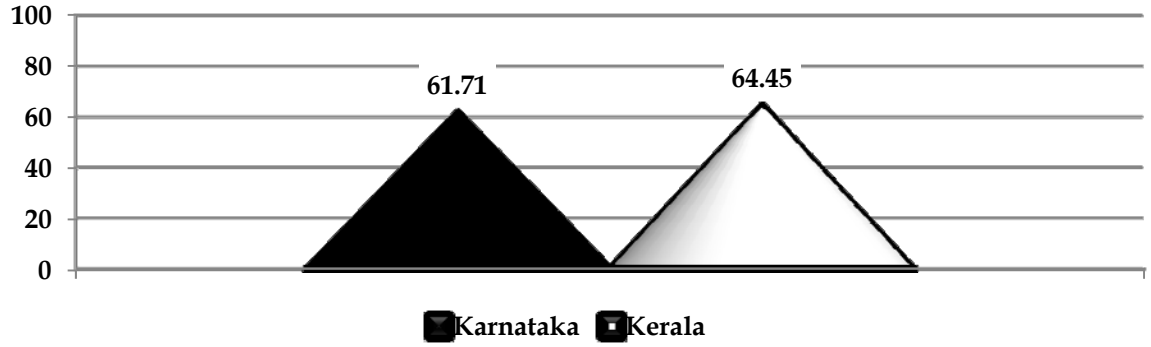


Figure 5: Mean Scores of Attitudes of Mainstream Educators towards / for Mainstreaming Children with Special Needs

Table 15: Percentile Scores of Attitudes of Mainstream Educators towards / for Mainstreaming Children with Special Needs

(i) Percentile scores of teacher-participants		
Percentile	**Karnataka**	**Kerala**
10	52.67	57.33
20	55.33	60.27
25	56.67	62.00
30	58.33	63.33
40	60.67	64.53
50	62.67	65.33
60	64.00	66.13
70	66.00	67.33
75	67.33	68.00
80	68.67	68.67
90	71.00	70.00

In the results in Table 15, the respondent teachers from the schools where the mainstreamed children understudy came from had an approximate mean score of 62% and 65% in the states of Karnataka and Kerala respectively. And the medians were 62.67% and 65.33% respectively. This implied that they had moderately positive attitudes and competencies for including children with communication disorders in the mainstream classrooms. However, there is more scope for improvement.

As mentioned while describing the tool for collecting data from mainstream teachers, teachers' perceptions and opinion about various aspects like the philosophy and process of inclusion (3 items); capabilities for children with communication disorders to function in the class on communicational, academic front; etc. (10 items); adaptations to be made in classroom arrangement and function (6 items); social interaction and behavioural management of these children in the inclusive classroom (6 items); and roles of teachers and caregivers/parents (5 items) were collected. As the varied components had uneven split of items, the percentage-scores of the participant-teachers in each aspect were computed in order to provide even base for comparative analysis. The mean scores on the component areas have been provided in Figure 6.

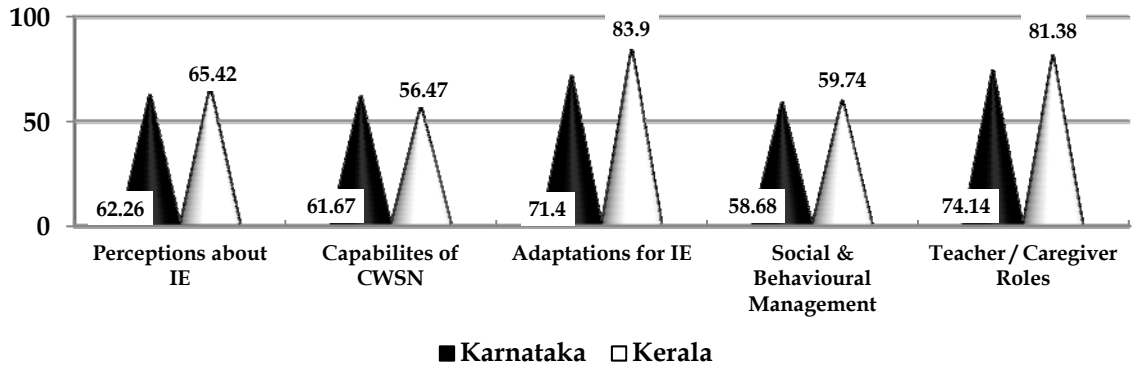


Figure 6: Mean Scores of Attitudes of Mainstream Educators in Component Factors

Results related to the inter-relationship among awareness and attitudes on these component aspects have been presented in Table 16. The results indicate that the participant-teachers had moderately positive perceptions of all aspects related to inclusive education of children with communication disorders; including the philosophy, capabilities of children with special needs, adaptations to be made for them in the inclusive educational setting, their social and behavioural management, and role of teachers and caregivers in promoting inclusive education of these children. However, their perceptions about physical and instructional adaptations to be made in the learning environments are the best of all followed by perceptions about the supportive roles to be played by teachers and caregivers. Their next best

attitudes are about the inclusive process itself and the capabilities of their wards with communication disorders. However, the participant-teachers are found to want more exposure to social and behavioural management of children with communication disorders in the learning environment. Overall, teachers from Kerala are found exhibiting better perceptions compared to their compatriots from Karnataka except for their convictions about the innate abilities of the children with communication disorders.

Table 16: Mutual Influences between Attitudes of Mainstream Educators in Component Factors

Spearman's rho	**Perceptions about IE**	**Capabilities of CWSN**	**Adaptations for IE**	**Social & Behavioural Management**	**Teacher / Caregiver Roles**
Karnataka					
Teacher / Caregiver Roles	+0.013	+0.475***	+0.238*	+0.265**	+1.00
Social & Behavioural Management	+0.325***	+0.489***	+0.071	+1.00	
Adaptations for IE	+0.140	+0.322***	+1.00		
Capabilities of CWSN	+0.150	+1.00			
Perceptions about IE	+1.00				
Spearman's rho	**Perceptions about IE**	**Capabilities of CWSN**	**Adaptations for IE**	**Social & Behavioural Management**	**Teacher / Caregiver Roles**
Kerala					
Teacher / Caregiver Roles	+0.421***	+0.058	+0.554***	+0.005	+1.00
Social & Behavioural Management	+0.161	+0.283**	+0.042	+1.00	
Adaptations for IE	+.0324***	–0.068	+1.00		
Capabilities of CWSN	+.0225*	+1.00			
Perceptions about IE	+1.00				

***p<0.001; **p<0.01; *p<0.05; No* - no statistical significance

Further analysis for relationship between the perceptions about the various aspects was carried out, and these led to the realisation that among teachers from Karnataka positive perceptions about abilities of children with communication disorders and their behavioural and social integration in the learning environment had more positive and significant ($p < 0.001$) correlation with other aspects. Thus, it could be inferred that building positive convictions in the mainstream teachers about the capabilities of children with communication disorders for academic achievement as well as social integration would lead to better confidences necessary to put inclusive education into practice. On the other hand among teachers from Kerala, there were mixed responses. However, perceptions about the inclusive education process exhibited more universal correlation with other aspects and at statistically significant levels.

4.5 Factors Influencing Awareness and Attitudes of Mainstream Teachers

More detailed analysis was carried out to find out the factors influencing the attitudes of the participant-teachers, and results have been presented in Figure 7 and Tables 17 and 18.

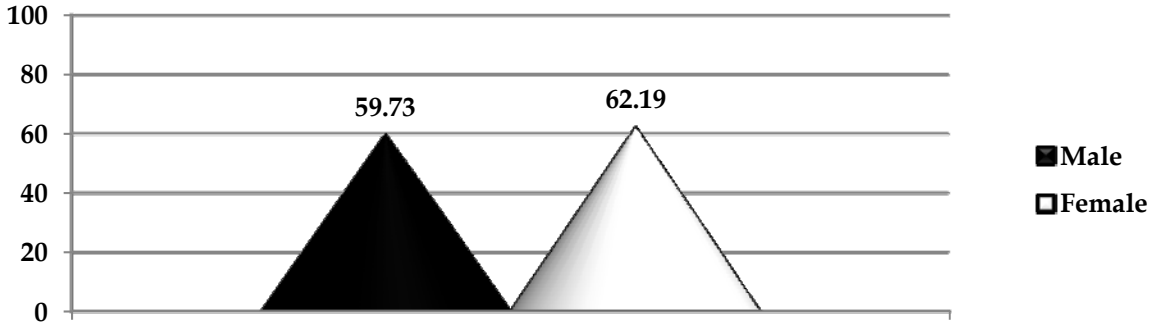


Figure 7: Mean Scores of Attitudes of Male and Female Teachers

Table 17: Differences between Attitudes of Male and Female Teachers

Score	Female (N=171)	Male (N=65)	Mean Difference	*t*
Mean	62.19	59.73	2.46	1.287*
SD	8.23	7.28		

***p<0.001; **p<0.01; *p<0.05; No* - no statistical significance

From results on Figure 7 and Table 17, it is evident that female teachers have a better attitude than their male counterparts towards inclusive education of children with special needs. Even at the time of data collection it could be observed that female teachers were more willing to respond and this resulted in overwhelming participation in the process.

Table 18: Influence of Age and Professional Traits on Mainstream Teacher Attitudes-cum-Competencies

Influence of Age and Professional Traits	
Spearmans's rho	**Teacher attitudes-cum-competencies**
Age	–.048
Professional qualifications	+.071
Professional experience	–.025
Work exposure to special needs	+.051

***p<0.001; **p<0.01; *p<0.05; No* - no statistical significance

Results in Table 18 indicate that among other factors, age and work experience had correlated negatively with the participant teachers' attitudes indicating that young and fresh teachers were positive towards inclusion of children with special needs. On the other hand, educational qualifications and prior exposure to special needs had positive correlation with the attitudes, indicating that teachers with higher levels of qualification and prior experience working with children with special needs had more positive attitudes and confidence for managing special educational needs in children within regular classrooms.

The current research culminated in the following realisations:

(1) Early identification trends at AIISH are satisfactory in that approximately 82% of children had been identified by the second year of life. The trend is on par with developed countries like the USA were the average age of identification of communication disorders like hearing loss is 1 ½ to 3 years of age (Morbidity & Mortality Weekly Report, 2003).

(2) Majority of the children identified early had consequently enrolled for multidisciplinary clinical and educational intervention. Depending on the nature of special needs they had availed a minimum of 3 to a maximum of 7 types of early intervention services, which included speech-language therapy and preschool training along with listening training, occupational /physiotherapy, behavioural modification therapy, sensory integration training, therapy for autism spectrum disorders, etc., apart from diagnostics and fitment of necessary assistive aids/devices. Such undemanding provision of essential services has been suggested as means of optimal rehabilitation outcomes for communication disorders (Kan, Walsh & Burns, 2008).

(3) Seventy percent of children who had received these early intervention services for various kinds of communication disorders had been successfully mainstreamed in the regular schools. Another 14% and 9% were pursuing segregated and non-formal education, respectively. As a second option to mainstreaming, open schooling was more prevalent in Karnataka, while special schooling was preferred in Kerala. Fourteen (7%) out of the total 205 surveyed children were left out of school due to multiplicity of special needs/problems. This finding reinstates the universal conviction that early intervention increases the probability for a child with communication disorders to be mainstreamed (Yoshinaga-Itano, 2003); and increases the educational gains for these children in whatever educational setting they are in (Beckman-Bell, 1981; Cooper, 1981).

(4) Sixty-two percent of these children had been placed in age appropriate grades and mainstreamed children displayed appreciable school performances that were ahead of their counterparts in special and open schools. Among mainstreamed children, 53.15% of them demonstrated above average performances (with 60% & above scores) in the core curricular subjects in comparison to 41.37% among the others. Also around 47% of the children had put up with appreciable performances in the co-curricular activities, and

around 75% of the children had more than satisfactory display of social skills. This finding is in tune with earlier research reports (Vohr et al., 2008; Yoshinaga-Itano, 2003; Watkin et al., 2000; Downs & Yoshinaga-Itano, 1999) that effective early intervention not only prepares the child with communication disorders for enhanced academic achievement, but also fortifies their communication skills and social integration in the learning environment.

(5) Nature and severity of the disability were found to influence the possibility of mainstreaming and consequent school performances in children. More numbers of children among those with sensory impairments like hearing loss were mainstreamed straightaway, to be more specific 84% of them. This was followed by children with mental retardation with 60% among them being mainstreamed. While children with multiple problems found it most difficult to get absorbed into and accepted in the mainstreams of education. The severity of the special need had also correlated negatively with the school performances in these children. In concurrence with earlier findings (Wake et al., 2005), this indicated that the more severe the disabling condition, lower would be the school performances.

(6) Among early intervention related factors, early age of identification as well as admission to preschool, and fitment of assistive aids/devices ($p < 0.001$) as well as regular use of them ($p < 0.01$) had led to better school performances. Comprehensiveness and intensity of early intervention services in terms of number of services ($p < 0.01$) and duration of services ($p < 0.05$) have also positively and significantly influenced the school performances in children with communication disorders. These findings reinstate the time-tested certainty about the beneficial outcomes of early age of identification and intervention (Geers, Nicholas & Sedey, 2003; Yoshinaga- Itano & Gravel, 2001; Moeller, 2000; Yathiraj, 1994; Ling, 1989; Guralnick, 1981; Boothroyd, 1978); and use of hearing aids and other assistive devices (Moores & Meadows-Orlans, 1990; Quigley & Paul, 1984).

(7) Early communication skills attained during early intervention years and performances during preschool years ($p < 0.001$) are found to be strong indicators of later school performances. In similar veins, the School Curriculum and Assessment Authority (1997) in the USA had reported that prior attainment was a crucial pointer to performances in school.

(8) Another interesting observation in this study was that the children have also benefitted from additional services like private tuitions and part-time integration in mainstream play schools outside early intervention services from AIISH.

(9) As suggested by Debenham (2010) and ASHA (1991) availability of multidisciplinary clinical and educational supports during schooling years are found to have positively influenced (even though statistically insignificant) the school performances in children with communication disorders in this study also.

(10) As expected the current level of speech, hearing and cognitive functioning has positively and significantly influenced the school performances in the children with communication disorders.

(11) This study significantly deviates from several earlier researches (Kumar & Rao, 2009, qtd. in Jha & Malar, 2011; Stephens & Slavin, 1992; Sharma, 1980, qtd. in Alam 2001; Conrad, 1979; Kurian, 1978, qtd. in Jha & Malar, 2011) in that parental/caregiver knowledge and socio-economic status are found to have mixed influences on the school performances of their wards with communication disorders. It could also be interpreted that caregivers from the lower rungs of the society were more eager to see their children achieve academically, as a means for better employment and quality of life later.

(12) On the other hand, as predicted by several earlier researchers parental involvement in the education of their wards in various forms like prompt home training (Epstein, 1987), frequent interaction with the teacher (Yathiraj, 1994; Epstein, 1987), and participation in school activities (Epstein, 1987) have positively and significantly influenced the school performances for the better. These better equipped parents in turn were found to have benefited significantly from parent empowerment measures at AIISH like frequent workshops ($p < 0.01$), non-formal and formal training programmes ($p < 0.05$), and counselling and guidance services among others.

(13) As suggested by researchers like Mortimore et al. (1988) type and size of the family and ordinal position of the child in the family were also found to be related to school performances even though statistically insignificant. Children from larger, joint families, and with more number of siblings were found to fare better in all areas of school life. Ordinal position of the children had differing impact in the two states. While younger children were doing well in Karnataka, elder siblings from Kerala were faring well.

(14) School performances of children were found to be significantly ($p < 0.001$) and positively correlated in all component areas; namely in core curricular subjects, co-curricular activities and social skills. However, the correlation between the latter two was found to be high ($r = +0.938$).

(15) The regular teachers from the mainstream schools where these children were studying were found to have moderately positive perceptions about inclusive education of children with communication disorders. This reflected findings of several earlier researches that there was much scope for improvement in mainstream teachers' awareness, attitudes and abilities before they become contributive to the inclusive education process (Gangadharan & Malar, 2010; Sreedevi, 2008; Dharmaraj, 2000)

(16) They were equipped with better knowledge and attitudes towards adaptations to be made in an inclusive educational environment for children with communication disorders and their role in managing special educational needs, while their perceptions about the capabilities of children with communication disorders, and managing their difficult behaviours in the learning environment were cause of concern.

(17) Among the teacher-respondents those who were younger and with less years of professional experience were found to have more positive mindsets than their senior counterparts. While teachers with higher educational qualifications and prior exposure to special needs children in the learning environment were also found to be better informed and more favourable towards inclusive education. Also female teachers were found slightly better disposed compared to their male counterparts. This was visible even at the time of data collection, as more number of female teachers among those approached had willingly participated in the study and responded promptly.

SUMMARY & CONCLUSIONS

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Reports from around the world emphasise that early identification and effective multidisciplinary intervention for communication disorders in children help in improving their speech, language, communication, cognitive and academic skills. Multidisciplinary early intervention models for children with communication disorders are to include services like diagnostic evaluation and multidisciplinary assessment; followed by fitting appropriate assistive aids/devices; intensive training in cognitive, behavioural, motor, listening, speech and language skills; and preschool preparation for inclusive education among others (Vohr et al., 2008; Yoshinaga–Itano, 2003; Watkin et al., 2000; Downs & Yoshinaga–Itano, 1999; Yoshinaga–Itano et al., 1998). Model demonstration programmes around the world for early intervention and preschool training have also proved that early identification followed by intensive 3-year training programme with concerted efforts of professionals and caregivers have resulted in increased ability among the participant children to function and learn in a group setting and for socio-emotional adjustment, auditory language comprehension, and language development (Yoshinaga–Itano, 2003; Betty, 1987).

AIISH as a pioneer institute for rehabilitation for communication disorders in the south Asian region, for more than 4 decades has offered such services to young children with communication disorders like autism spectrum disorders, cerebral palsy, hearing impairment, learning disabilities, mental retardation, and multiple disabilities among others. The services for the young clients under 6-years of age begin with neonatal screening, and proceed through multidisciplinary diagnosis, medical rehabilitation, fitment of necessary assistive aids/devices, multidisciplinary therapeutic training and culminate in comprehensive pre-schooling involving training in self-help, communication and language, cognitive, (pre)academic, and co-curricular skills. Conscious measures to empower parents/caregivers of these children through counselling, guidance and other focused training programmes go hand-in-hand with these child-centred services. There has been constant efforts to

revamp and upgrade the services with the ultimate aim of helping these young clients to mainstream in the learning and social environments.

In the recent years, AIISH caters to nearly 20,000 fresh clients every year of whom around 15% are under 6-years of age; and add to this the bulk of ongoing clientele. With such enormity of clientele over a history of nearly half-a-century, it was time to take stock of the efficacy of these early intervention services in realising the target of mainstreaming in the learning and social environments. This task was accomplished by conducting an extensive survey of children who received early intervention and preschool services for communication disorders in the states of Karnataka and Kerala from where more than 90% of clientele come from. Against a target of 299 and 124 children from Karnataka and Kerala respectively, only 93 and 112 could be accessed due to problems in locating their current habitat. An elaborate questionnaire-cum-interview schedule with 75 items had been developed as part of the study to collect information about the young clients and their caregivers. This tool covered details of the antecedent information related to early intervention, current information related to schooling and ongoing clinical supports, and information related to parents/caregivers and family. Another separate rating scale with 30 items had also been used to record the perceptions of 236 regular educators towards including these children in their mainstream classrooms/schools.

5.1 Major Findings

This study led to the realisation that the multidisciplinary early intervention and preparatory/preschool services provided at AIISH were comprehensive and effective in leading to mainstreaming of around 70% of its young clientele with communication disorders of different types and varying degrees. And majority of them had been placed in age-appropriate grades (<60% of the subjects); and were displaying above-average performances in school (<50% of the subjects). Among these children, those with problems of sensory nature, and of less severity were

found to amalgamate and achieve more easily in the mainstream learning environment.

The early age of identification, and more importantly the immediate commencement of intervention, along with range/number and duration of early intervention services received, all had significantly helped these children prepare for successful mainstreaming. The hearing, speech, language and cognitive abilities of these children attained during the early intervention years, as well as their performance in the special preschool were significant indicators of successful performance during later schooling.

During the early intervention years, AIISH had also provided ample opportunities in the form of guidance services, workshops, training programmes, etc. for the parents/caregivers to empower themselves to support the education of their wards. These were found to have enthused them for better home training and participation in school activities; which in turn have exerted considerable positive influence on the current school performances of their wards. Apart from these, other family dynamics like availability of support from extended members in joint families, and more number of siblings were found to have consistently and positively influenced the education of these children.

Availability of multidisciplinary clinical and special educational services during the school years and consequent strengthening of their communication and academic skills were also found to lead to appreciable school performances. With preparation of mainstream educators yet to attain optimal levels, special educational services to mainstreamed kids mostly involved curricular supports outside schools in Karnataka, and individualised educational services provided in *Sarva Shiksha Abhiyan's* block/cluster resource centres in Kerala. This apart, the mainstream educators from the regular schools where these children were studying were found to have mediocre perceptions about inclusive education. Nevertheless, young, fresh and female teachers were found more eager, and teachers with higher educational

qualifications and prior exposure to special needs in children were found to be better-informed about inclusive education of children with communication disorders.

5.2 Limitations of the Study

The major limitation faced in this study was failure to get through to important target populations. At the time of planning for data collection, it was planned to restrain survey to the two states of Karnataka and Kerala, which host more than 90% of the clientele. As pursuing the miniscule number of clients placed far and wide in the other states would not be cost-effective.

The next hurdle was the inability to locate many of the former clients, mainly due to reasons like improper address provided at the time of early intervention and changes in the place of residences. Apart from these at the time of designing the research itself, the investigators had inadvertently overlooked the very early intervened population of young children who had been directly mainstreamed at preschool level without availing special preschool services at AIISH. By chance, two such clients had been located in Kerala and were included in the study.

One another difficulty faced by the research staff in the process of data collection was reluctance and/or inability of some caregivers to provide complete and correct information in response to queries. Because of incomplete responses from some of the participants, there were constraints in carrying out in-depth analysis of certain parameters considered for the study.

5.3 Implications of the Study

This study, even though implemented with curbed targets, provides tangible feedback on the nature of influence of early intervention services in mainstreaming young AIISH clients with communication disorders. It also provides insight into the

aspects that need to be strengthened for improved efficacy of the programme like early identification followed by prompt enrolment for services, continuous and committed delivery of clinical and preschool services at least for a period of 3 years (depending on the age of admission to services), and extended clinical and curricular support services even after the child with communication disorders gets into to the educational mainstream.

All these child-centred services should be adequately backed up with ample formal and informal measures to empower parents/caregivers and ensure their participation. Already the Special Education and other departments at the Institute are carrying out multifarious activities in this front like organisation of workshops, conduction of non-formal and formal training programmes; involvement in developing special teaching-learning materials; guidance for systematic home training; and partaking in parallel teaching activities at preschool. This research report underlines the need for further streamlining of these activities.

This report about the multifarious early intervention measures at AIISH and consequent outcomes could serve as models for service delivery to other organisations working in the field of clinical and educational rehabilitation for children with communication disorders around the country.

5.4 Recommendations

From the elementary realisations arising out of this research experience, the investigators make the following suggestions in terms of service delivery and further research.

5.4.1 Service Delivery

Efforts could be made to set up a progressively up-dated follow-up information bank of young clients being discharged from early intervention services

with collaborative initiatives from Departments of Clinical Services and Special Education, who happen to be coordinating greater part of the early intervention services. Already the Itinerant Speech Therapist at the Department of Clinical Services is carrying out periodic follow-up of clients. Educational information pertaining to young clients like nature of educational setting, school performances and any felt needs for ongoing supports, etc.; along with feedback from their educators could also incorporated in this compilation. Setting-up an e-database for the purpose with tele- and/or online links will serve versatile purposes in future.

In concomitance to CREDM's future plans for extending and expanding educational guidance services across the country, former school-aged clients who are out of school or facing difficulty in school could be supported through distance/e-mode educational assessments, curricular services, along with counselling, guidance and consultancy to their caregivers and educators. Even in the course of this study, in collaboration with the Itinerant Speech Therapist of Department of Clinical Services, five such former clients who were out of school because of severe and complex special needs were helped with assessment and training services; while their parents/caregivers and home-based itinerant trainers (under SSA) were provided necessary consultancy.

Another major deprivation among the children and caregivers surveyed as part of this study was lack of proper information and ignorance about various welfare measures available for promoting the education of children with special needs. Compiling informational directories, and setting up helpline services for the purpose would be helpful.

5.4.2 Research

In future longitudinal studies with a wider coverage of subjects from AIISH as well as other noteworthy early intervention programmes around the nation can be taken up for generating more credible and useful data that could be instrumental in

upgrading and streamlining early intervention service delivery for children with communication disorders around the country. Such research endeavours should also take care to systematically comprise children at all ages and stages of early intervention.

Focused efforts could also be made to streamline parent/caregiver empowerment measures that are contributory to early intervention services, and systematically investigate their outcomes.

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PROFORMA FOR COLLECTING DATA ABOUT CHILD PARTICIPANTS

I. DEMOGRAPHIC DETAILS

- Name:
- Age (DoB):
- Gender:
- Provisional Diagnosis:
- Contact Address:

- Native State:
- Details of Caregivers

  Father / Guardian Mother

  - Education:
  - Occupation
  - Income:

- No. of Siblings:
- Details of incidence of disabilities in family:

S. No.	Specification of relationship	Nature of disability

II. HISTORY OF DIAGNOSIS & EARLY INTERVENTION

(At / up to the time of joining school / 6 years of age)

A. Diagnosis (fill in which ever applicable)**:**

- Provisional diagnosis:
- Age when the disability was identified / diagnosed:
- Audiological Evaluation Report:
- Aided audiogram:
  - *Within / Partly within / Outside Speech Spectrum* (done on)
- Speech & Language Evaluation Report:
  - *Age appropriate / 1-year age below level / More than 1-year below age level* (Test / tool administered & date:)
- Psychological Reports: (with details of test & date)
  - IQ /MA:
- DQ/DA (using DST):
- Others: (specify details of test & date)

B. Assistive Device

- Are assistive devices being used: YES / NO
- Age when assistive device was fitted:
- Nature of assistive device used by the child

(i) Listening Devices

☐ Body level Hearing Aid ☐ Behind The Ear ☐ Cochlear Implant

(ii) Prosthesis & Orthosis

☐ Upper Limb ☐ Upper Limb

☐ Lower Limb ☐ Lower Limb

(iii) Visual Aids

☐ Conventional Spectacles (for Refractive Error) ☐ Low-vision Spectacles / Aids

(iv) Any other (specify):

- Duration of use of assistive device (at time of early intervention):
  ☐ <6mths ☐ 6 mths to 1 yr ☐ 1 to 2 yrs ☐ 2 to 3 yrs ☐ 2 to 3 yrs ☐ 3 to 4 yrs

  ☐ 4 to 5 yrs ☐ 5 to 6 yrs ☐ 6 yrs<
- Consistency of use of assistive aids/devices (during time of early intervention):
  - At all functional time / Only when acutely necessary / Rarely

C. Therapeutic Training

- Therapeutic Training: YES / NO
- Nature of training

☐ Listening Training ☐ Speech-Language ☐ Occupational Therapy

☐ Physiotherapy ☐ Assistive & Augmentative Communication (AAC)

☐ Training for Autism Spectrum Disorders ☐ Sensory Integration Training

☐ Behavioural therapies ☐ Others (specify):

- Duration of training:

☐ <6mths ☐ 6 mths to 1 yr ☐ 1 to 2 yrs ☐ 2 to 3 yrs ☐ 2 to 3 yrs

☐ 3 to 4 yrs ☐ 4 to 5 yrs ☐ 5 to 6 yrs ☐ 6 yrs<

D. Preschool / Preparatory Training

- Any other preparatory training undergone before coming to AIISH: YES / NO
- Nature of training:

☐ Parent Infant Programme ☐ Special Preschool ☐ Regular Preschool

☐ Home Schooling ☐ Private Training ☐ Play Home ☐ Others (specify):

Duration of training:

☐ <6mths ☐ 6 mths to 1 yr ☐ 1 to 2 yrs ☐ 2 to 3 yrs ☐ 2 to 3 yrs

☐ 3 to 4 yrs ☐ 4 to 5 yrs ☐ 5 to 6 yrs ☐ 6 yrs<

- Specify date/month/year (last received):
- Place of training:

- Age of admission to AIISH preschool:
- Medium of instruction at preschool:
- Duration of preschool training:
- Teacher : Student ratio in the preschool programme:
- Progress made following the preschool programme:
  i. Language:
  ii. Cognitive:
  iii. Academics:
  iv. Co-curriculars:

Criteria for rating performance on items (i) to (iii):

⊙ A+	⊙ A	⊙ B+	⊙ B	⊙ C+	⊙ C	⊙ C-
90%+	81 – 90%	71 – 80%	61 – 70%	51 – 60%	41 – 50%	<40%

Criteria for rating performance on items (iv):

⊙ Very good ⊙ Good ⊙ Satisfactory ⊙Poor ⊙ Very poor

III. CURRENT STATUS

A. Clinical Assessments:

S. No.	Nature of Assessment:	Date of Recent Testing	Results	Remarks (including place of assessment)
1.	**Aided Audiogram**		*Within / Partly within / Outside Speech Spectrum*	
2.	**Speech-Language Evaluation**		*Age appropriate / 1-year below age level / More than 1-year below age level*	
3.	**Psychological Evaluation**		*IQ/MA:* *DQ/DA:*	
4.	**Others (specify details):**			

B. Assistive Devices used Currently:

- Changes in assistive devices used:
- Consistency of use of assistive aids/devices:
  - At all functional time / Only when acutely necessary / Rarely

C. Therapeutic Services Received:

- Nature of training
  - ☐ Listening Training ☐ Speech-Language ☐ Occupational Therapy
  - ☐ Physiotherapy ☐ Assistive & Augmentative Communication (AAC)
  - ☐ Training for Autism Spectrum Disorders ☐ Behavioural therapies
  - ☐ Sensory Integration Training ☐ Others (specify):
- Duration / Specify date/month/year (last received):
- Frequency:

D. Academic Details:

- Current School:

- Nature of educational programme:

- Any Change in Medium of Instruction: Yes / No
  - If YES, mention the change:

- Current grade / standard:

- Teacher : Student ratio at current school:

- Whether the regular school teacher is specially trained: Yes / No

- Whether any supplementary educational services are received within / outside school:
  - If yes,
  - S. No. Nature of Service Resource person Within / Outside School
    - ~ Resource room support
    - ~ IEP
    - ~ Private tuition
    - ~ Any other Curricular Support
    - ~ Other (specify)

- Academic performance at school:

⊙ A+	⊙ A	⊙ B+	⊙ B	⊙ C+	⊙ C	⊙ C-
90%+	81 – 90%	71 – 80%	61 – 70%	51 – 60%	41 – 50%	<40%

- Participation in co-curricular activities in school:
  ⊙ Very good ⊙ Good ⊙ Satisfactory ⊙Poor ⊙ Very poor

- Socio-behavioural adjustments at school:
  ⊙ Very good ⊙ Good ⊙ Satisfactory ⊙Poor ⊙ Very poor

- If following-up with special educational services at AIISH: Yes / No
  - If YES, Nature of services received:

  - Frequency of follow-up:

E. Support Services Received by Caregivers (from AIISH):

- Counselling and Guidance: Yes / No
  - Frequency:
  - Date / Month / Year (last received):
  - Resource persons:

- Orientation Programme / Lectures / Workshops: Yes / No
  - No. of Programmes:
  - Date / Month / Year:
  - Resource persons:

- Skills training programme: Yes / No
  - Nature:
  - Duration:
  - Number of Programmes & Frequency of Training:
  - Date / Month / Year (when received):
  - Resource persons:

- Practical Opportunities in Educational Programmes: Yes / No
  - Nature:
  - Duration
  - Number of Programmes / Frequency:
  - Date / Month / Year (when received):
  - Settings:
  - Resource persons:

- Formal Training Programmes in Disability Rehabilitation: Yes / No

- If Yes, details of the programmes

S. No.	Nature of Programme	Duration	Year	Institution

F. Current Level of Involvement by Caregivers:

- Regular home training: Yes / No
  - If Yes, how frequent:

  Daily / Once or twice-in- a week / Once or twice-in- a month / Only at time of exams / Never

- Regular interaction / consultation with class teacher: Yes / No
  - If Yes, how frequent:

  Daily / Once or twice-in- a week / Once or twice-in- a month / Only on special occasions / Never

- Teaching-Learning Material Preparation: Yes / No
  - If Yes, how frequent:

  Daily / Once or twice-in- a week / Once or twice-in- a month / Only on special occasions / Never

- Assisting teachers in field visits / special occasions: Yes / No
  - If Yes, how frequent: Always / Frequently / Seldom / Rare

- Assistance in the teaching process: Yes / No
  - If Yes, how frequent:

  Daily / Once or twice-in- a week / Once or twice-in- a month / Only on special occasions / Never

- Others (specify nature & duration / frequency): Yes / No

TOOL FOR COLLECTING DATA FROM TEACHER-PARTICIPANTS

Name of the Teacher:

Age:

Gender:

Educational Qualification:

Professional Experience:	Setting	Job Title	Duration
	1.		
	2.		
	3.		
	…		

Details of Exposure to Management of Children with Special Needs in Classrooms:

☐ Yes ☐ No, If Yes

- Nature of special needs catered to:

- Number of children with special needs being handled:

Details of Orientation / Training Received in the Area of Education of Children with Special Needs:

Please read the following statements & indicate your opinion on the 5-point rating scale ranging from strong agreement to strong disagreement.

S. No.	Statements	Strongly Disagree	Disagree	Not Sure	Strongly Agree	Agree
I. Perceptions about Capabilities of Children with Special Needs						
1.	There is no difficulty in understanding what children with hearing impairment or other communication disorders communicate to us					
2.	There is no difficulty for children with hearing impairment and other communication disorders in understanding what others speak					
3.	Children with communication disorders have good copy writing skills, and have no difficulty in copying information written on blackboard					
4.	Children with hearing impairment and other communication disorders are good at writing on dictation also					
5.	Children with hearing impairment and other communication disorders are capable of oral reading with clear articulation					
6.	Children with communication disorders show interest in reading story books and other supplementary reading materials outside lessons					
7.	It is not difficult to teach mathematics to children with communication disorders					
8.	Children with communication disorders are capable of carrying out home assignments with minimal assistance					
9.	Children with communication disorders have exceptional abilities like drawing, athletics, etc. and participate in cultural and other co-curricular activities at school					
10.	Children with communication disorders are on par with their typically developing peers in general knowledge					
II. Perceptions about Inclusive Education						
11.	Children with communication disorders of any severity should be included in the regular classrooms					
12.	Children with communication disorders and other special needs could be provided better education in special schools					
13.	I am satisfied of my work as a mainstream teacher managing children with special needs in inclusive classrooms					
III. Adaptations/Arrangements to be Made for Inclusive Education						
14.	Children with hearing impairment and other communication disorders should be given preferential seating in the classrooms					
15.	Special arrangements have to be made to the physical environment in classrooms in order to accommodate children with communication disorders					

16.	Changes have to be made to the curriculum when teaching children with communication disorders in inclusive classrooms					
17.	The method of teaching should also be adapted when teaching children with communication disorders in inclusive classrooms					
18.	Natural approaches are more effective than structured approaches in teaching children with communication disorders					
19.	Teachers in mainstream schools need a additional training and resources in order to effectively manage special needs in children					
IV.Social & Behavioural Management of Children with Special Needs						
20.	Children with communication disorders do not have major problems in getting along with their typically developing peers					
21.	Typically developing children in inclusive classrooms also do not have problems in adjusting with their peers with special needs					
22.	Peer-orientation in inclusive classrooms will help children with and without special needs adjust better with each other					
23.	Teachers can manage children with communication disorders in inclusive classrooms without much difficulty					
24.	Children with communication disorders do not disturb their typically developing peers during classroom instruction					
25.	Children with communication disorders behave appropriately in the learning environment					
V. Teacher & Caregiver Roles in Inclusive Education						
26.	It is not over-burdening for teachers in inclusive schools to cater to special needs in children with communication disorders					
27.	Mainstream teachers are responsible for monitoring the use of assistive devices like hearing aids in the inclusive classroom					
28.	Teachers managing children with special needs in inclusive classrooms should be paid additional remuneration					
29.	Mainstream school teachers should extend necessary counselling and guidance to caregivers of children with special needs					
30.	Caregivers of children with communication disorders need to meet the teachers of their wards regularly for guidance regarding home training, etc.					

* When the tool was administered to mainstream educators, the statements had been presented in random order without delineation under different heads