

An Assessment of District Early Intervention Centres (DEIC) in selected districts of Karnataka



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An Assessment of District Early Intervention Centres (DEIC) in selected districts of Karnataka

I. Introduction

Children are the future pillars of the nation. It is the responsibility of a country to take measures to ensure good health and environment for each and every child. Any country's future human resource development is determined by indices like infant mortality, morbidity, prevalence of disability, living conditions and education of children, especially the under fives (Ali *et al.*, 2011). According to Dimes (2006), out of every 100 babies born in this country, annually 6 to 7 have a birth defect. This would translate to around 17 lakhs birth defects annually in the country and it accounts for 9.6% of all the newborn deaths. According to the joint report of World Health Organization (WHO) and March of Dimes meeting, birth defects account for 7% of all neonatal mortality and 3.3 million under five deaths. In India, birth defects prevalence varies from 61 to 69.9 per 1000 live births (Sharma, 2013). In 2005, United Nations Children's Fund estimated the number of children with disabilities under age 18 years at 150 million. As per 2011 Census, there are 7,862,921 children with disability below 19 years age group (Nisha, 2017).

Besides, Defects at birth, Deficiencies and Diseases, Developmental Delays including disabilities afflict as many as 10% of our child population, which ultimately impacts the pace of economic growth of the country (Resource Material, 2013). Children also suffer from a variety of deficiencies nearly 47% of all children are malnourished, 43% under weight, and 20% wasted including eight million severely acute malnourished children. Also, there are group of diseases common in children viz. dental caries, rheumatic heart disease, reactive airways diseases etc. Developmental delays are common in early childhood affecting at least 10 percent of the total children. These delays, if not intervened timely, may lead to permanent disabilities like cognition, hearing and vision (Operational Guideline, 2013).

In this context, the Ministry of Health and Family Welfare, Government of India is committed to improve survival outcome of children, through early identification and management of 4 Ds', and assured link to care, support, and treatment to meet these challenges through RBSK. Rashtriya Bal Swasthya Karyakram (RBSK) is a programme aimed at Early Child Health Screening and Early Intervention Services through early

detection and management of 4 Ds i.e. Defects at birth, Diseases, Deficiencies, and Developmental delays including disability.

As per the review report on performance of NHM programme 2015 shows that, an estimated 27 crore children in the age group of zero to eighteen years are expected to be covered across the country in a phased manner. Child Health Screening and Early Intervention Services are to cover 30 common health conditions for early detection, management and free treatment. As on September 2015, a total of 9,800 teams have been recruited. About 6.5 crore children have been screened and 23.8 lakh children have been referred to secondary care / tertiary care / DEIC; 10.6 lakh children have availed management facility at the higher institutions. In total 92 District early intervention centres have been made operational.

1.1 About the DEIC Programme:

“Early intervention is a term, which broadly refers to a wide range of experiences and supports provided to children, parents and families during the pregnancy, infancy and early childhood period of development” DEIC Operational guideline, 2014.

As per the guideline, the early intervention Centres are to be established at the District Hospital level across the Country as District Early Intervention Centres (DEIC). The children within the age group of 0-6 years will be specifically managed at District Early Intervention Centre (DEIC), while for 6-18 years age group management of conditions will be done through existing public health facilities. DEIC will act as referral linkages for both the age groups. The fund has been provided under NHM for management at the tertiary level.

Broad services of DEIC

- Holistic Assessment
- Investigations
- Diagnosis
- Intervention-Medical, Surgical and Curative
- Referral service
- Prevention
- Psycho-Social Interventions
- Maintenance of records
- Follow-up services

1.2 Review of literature

The review of the literature was carried out with limited studies. Because, the DEIC is a new concept, and it has been introduced after implementation of RBSK, hence, very few studies have carried out in India on this topic. However, it seems that, the present study is a new study conducted elaborately on DEICs in Karnataka.

The study conducted by Parmar *et al* (2016) on DEIC in 2 districts of Madhya Pradesh have mentioned that, there was a deficiency of staff and infrastructure in DEICs. The beneficiaries were dissatisfied with the Referral services and service availability, and also behaviour of DEIC staff.

The PIP monitoring study conducted in Vijayapur district of Karnataka found that, DEIC has been sanctioned long back to the district, infrastructure in terms of construction of separate building and staff recruitment process have completed, though service for the referred children by RBSK through DEIC is getting delayed, due to lack of equipments (Hadagalimath *et al*, 2017).

Review of literature showed that, in implementation of DEICs is getting delayed in approved districts. The DEICs are not providing expected services, due to lack of infrastructure, manpower and equipments.

1.3 Objectives

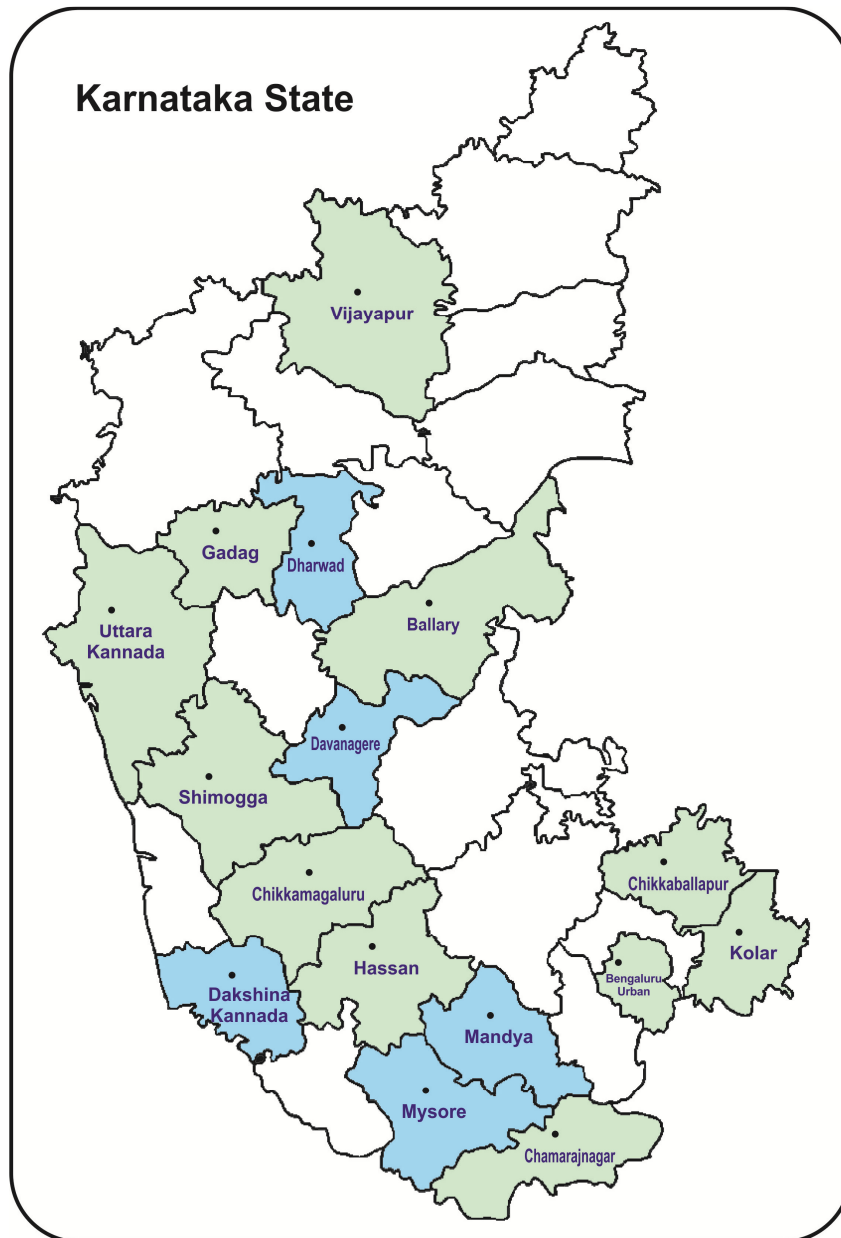
1. To assess the availability of infrastructure, human resource and equipments at DEICs.
2. To assess performance of the DEICs.

1.4 Methodology

1.4.1 Sample design and sample size

In Karnataka 16 district are approved for the establishment of DEIC. The study was conducted in 5 districts of Karnataka namely Dakshina Kannada, Davanagere, Dharwad, Mandya and Mysuru. The districts which have been sanctioned in first phase and functioning with required infrastructure are considered for the study.

Both quantitative and qualitative methodologies have been adopted in this study. At the outset, Principal Investigator conducted in-depth interview with the State RBSK officer, collected the information about the implementation of programme at the State level in terms of availability of infrastructure including building, human resource sanctioned and existing and also procurement of the equipment. In the selected district also, we held an interview with the RCHO/DHO and obtained information about the implementation of DEIC at their respective districts.



1.4.2 Study tools:

- a. In depth Interview guideline was used to assess the implementation, present status and difficulties faced in implementation of the programme in the selected districts.
- b. Checklist was used to collect information about the infrastructure, staff pattern and equipments available in the DEIC.

1.4.3 Information/Data collection: During the field visit the information was obtained on following issues by using in-depth interview guideline and checklist.

- List of DEICs sanctioned in the State
- Availability of Infrastructure, Human Resource and Equipments
- Availability of services
- Obtained service statistics for six months from April to September, 2017.
- Observed the registers/records maintenance
- Measures have been taken in implementation of the programme
- Difficulties experienced by the State and District officials.
- Good practices following
- Had an Informal interaction with child parents to know their perception about the services.

Analysis: Analysis was carried out in Microsoft Excel.

1.5 Limitations of the study

The sample size is less to make any representative claims. There are many health problems among the children. We could not able to analysis each disease wise, all problems are grouped in broad 4Ds categories and analyzed, that can be analyzed in 38 recommended health indicators.

2. Implementation of RBSK and DECI programme

2.1. Implementation of RBSK in the State

DEIC intervention is a part of RBSK programme. School Health Programme has been amalgamated under Rashtriya Bal Swasthya Karyakram (RBSK) and initiated during 2013-14 in the State. Overall, 430 mobile health teams have been sanctioned, and almost teams are functioning. Under this programme, 0 to 18 years children are screened for 38 health conditions which can broadly classified under 4'D's. The main aim of this programme is to conduct health screening so as to identify children with various defects and to refer for appropriate timely treatment. Screening has been done in all rural and urban areas, children studying 1st to 12th standard in Government, Government aided, residential schools and Aganwadi Centres. Children found positive for various heart related condition, neuro problems, Cleft lip palate etc. are being referred to those hospitals which are empanelled under Suvarna Arogya Suraksha Trust (SAST).

2.2 Implementation of DEIC in Karnataka

During the discussion, the State officials expressed that, DEIC is an improved version of District Disability Rehabilitation Centre (DDRC), which started in 1985-1990 and have been functioning at district level for the identical intention, under the Ministry of Social Justice and Empowerment Government of India, for providing comprehensive services to the persons with disabilities at the grass root level. Before initiating the programme at the State, they had many meetings and conversation with the DDRCs and then planned to go for pilot DEIC in some districts. In the beginning they selected only 6 districts, subsequently they executed at other districts in a phase manner. At present overall, 16 districts have been selected and approved for establishment of the DEICs in the state (Table 1).

State officer quoted that: *“DEIC is improved version of District Disability Rehabilitation Centre (DDRC), functioning at district level under the Directorate of differently able and Senior citizen, for the same purpose”.*

2.3 Current status of DEICs in sanctioned districts

To know the present status in terms of availability of separate building, recruitment of man power and procurement of equipments for DEICs, information was obtained from the State

officials. Table 2 shows the present status of infrastructure in the sanctioned districts. Of the total sanctioned, in seven (7) districts, DEICs are functioning with required basic infrastructure. However, in remaining district construction of building or recruitment of manpower and procurement of equipments is under process. The DEICs which have been sanctioned during 2017-18, place for the construction of the building is identified and need to get approval for recruitment of staff and procurement of equipments.

3. Availability of Infrastructure, Human resource and Equipments

To implement the any programme availability of infrastructure, Human resource and availability of equipments are very much crucial.

3.1 Infrastructure

3.1.1 Location and Accessibility of DEICs

As per the guideline, the location of the DEIC should be in a District hospital. Discussion with the State officials revealed that, DH or Medical College (MC) is the ideal place to establish DEIC in the district. But, it is much difficult to get required huge space at DH/MC. Hence, based on availability of space DEICs are established at the different hospital premises. **Table 4** shows initiation, their physical location and accessibility of DEICs. Among the surveyed facilities, Dakshina Kannad, Davanagere and Dharwad DEICs have been started in 2016 and established either at DH or at Medical College. Mandya and Mysuru DEICs inaugurated in 2017. The Mandya DEIC exist at DHO office, and it is just opposite to the Mandya Institute of Medical Sciences (MIMS). However, the Mysuru DEIC is existing at Urban Health Centre (Nachanahalli). Further, except Mysuru DEIC, almost all DEIC are easily accessible.

3.1. 2 Availability and adequacy of space for different sections for the functioning of DEIC

The ideal size of DEIC would be approximate 4900-5000 sq. feet. It indicates that, enormous space and spacious rooms are required to examine, assess and provide therapies to the children identified with various defects. **Table 5** shows, the availability of space for each

section at the studied DEICs. Availability of space for different sections found reasonable in Dakshina Kannada, Mandya and Mysuru. However, it was found that space provided for DEIC at Dharwad in Karnataka Institute of Medical Science (KIMS) is insufficient and only 2 rooms are given for functioning of the DEIC at Davanagere DH. Of that, one room is being used for registration, examination and to provide therapies by most of the DEIC staff, another room is being used as play area and to keep all toys.

The condition of the building found good at Dharwad and Mandya DEICs, in remaining DEICs it is found better. The sound proof room for assessment of hearing impairment, looking mirror at speech room and ECG room are available only at Dakshina Kannada, and looking mirror is found at Mandya DEIC. None of the visited centres have a separate laboratories and sensory integration room. Though, Hydrotherapy area with essential equipments is available only in Dakshina Kannada and Mysuru DEICs.

3.1.3 Availability of Basic Furniture

Basic furniture like examination tables, sitting chairs for staff as well as patients, display boards, Computer with internet and intercom system, racks to keep records have its own importance in functioning at health setup. **Table 6** shows the availability and adequacy of furnitures at DEICs. Almost selected DEICs have computer and internet facility. Television and music system found only at Mandya DEIC. Furthermore, most of the required basic furniture found at Dakshina Kannada, Mandya and Mysuru DEICs. It is surprising to know that, staffs don't have chairs and tables to sit at Davanagere DEIC.

3.2 Human Resource

Good medical care relies on well-trained doctors and staff and on high-quality facilities and equipments. Availability of human resource is crucial for the proper functioning of any health programme. As per the guideline, a DEIC unit should have 14 members team. However, State officials expressed that, considering the cost effectiveness and need of the service provider, only 7 posts are sanctioned for DEIC at the State that includes Pediatrician, Physiotherapist, Speech therapist, Psychologist, Optometrist, Social worker and Manager. Considering the need of staff nurse, separate staff is recruited under this programme.

However, the service of Medical Officer (MO), Dental Doctor, Lab and Dental Technicians are being utilized from existing pool.

3.2.1 Availability of Staff in visited DEICs

Table 8 shows that, almost all posts approved as per the State government, are filled in Dharwad and Mandya DEICs. Psychologist, Manager, Social worker and Staff Nurse Posts have filled in all DEICs. In the visited Davanagere DEIC most of the posts are not yet filled, these include Pediatrician, Optometrist, Audiologist and Speech therapist. Due to lack of above mentioned positions, most of the expected services are not ensured by the Davanagere DEIC. Further, in Dakshina Kannada and Mysuru DEICs, Optometrist and Physiotherapist posts found vacant respectively. However, in these centres, Physiotherapist and Optometrists are coming periodically from the main hospitals to ensure service to the needy.

3.2.2 Visiting Specialists at DEICs

As per the guideline, ENT, Orthopedician, Ophthalmologist, Psychiatrist and Neurologist need to be visited twice in a week to the DEIC. The main purpose behind this is to avoid young children to wait in a long queue and especially to provide service for children from birth to 6 years at DEIC itself. But none of the visited centre ensured these services. The children who need such services are being referred to either main hospital or Empanelled hospital under SAST. In Dakshina Kannada, Nodal officer expressed that, *“previously these specialists used to visit to provide service. But their fee is pending; hence, they stopped to visit the centre”*.

3.2.3 Training

Performance of the staff depends on the quality of training one who receives. According to the guideline, 2 levels of training need to be organized to the staff.

- A.** Basic level of training on generic subject to all staff member of the DEIC.
- B.** Advanced level of training to specific staff on concerned domain.

State officials expressed that, during 2016-17 training sanctioned only for 2 batches. Consequently Dharwad and Dakshina Kannada DEICs staff sent for the training to West

Bengal. As per the conversation with staff of respective DEICs, most of the staff from both centres attended the training, which was conducted by Institute of Post-Graduate Medical Education and Research and Seth Sukhlal Karnani Memorial Hospital (IPGMER), West Bengal, Kolkata. The trained staffs are not much satisfied with the training quality, as almost all trainers were busy in their routine activity, due to overload of patients. **Nodal Officer quoted** *“Staff were very much interested to give training, due to overload of cases they were unable to teach us”*.

3.3 Availability of Equipments

There is a need of different types and different sizes of equipment to the DEICs, to assess the hearing impairment, vision impairment, speech and language disorder and also to provide Physiotherapy, Speech therapy and enhance the physical functioning ability of children identified with the birth defects or developmental delay and disabilities through stimulation and play. During the field visit the information about the availability of equipments in different sections of the DEICs was collected and details about the equipments has given below.

3.3.1 Availability of Physiotherapy/Occupational therapy equipments

To provide service for the children identified with developmental delay and disabilities, Physiotherapist required different types and sizes of equipments it includes, Therapy mats, Therapy balls, Bolster, Prone Wedge Balance Board Kaye-Walker etc. As per the norm 14 equipments are require. Among the visited centres most of the equipments are available in Davanagere (12), followed by Mysuru (10) and Mandya (10) respectively. However, in Dharwad (6) a few equipments are available. Most commonly available equipments in visited centres are big prone wedge, therapy balls and therapy mat. However, special chair with cut-out tray and splints (Ankle foot orthosis) are not available in most of the centre (Annexure I). Further, the available wooden benches with cushion and Rexene cover and therapy balls are not as per the requirement at Mysuru and Davanagere respectively.

3.3.2 Toys for stimulation and play

Toys are required in many sections of the DEIC mainly for physiotherapy, occupational therapy and speech therapy. As per the norm total 29 types of toys such as small rattles, squeaky, puja bell, gaiter, spoons, steel plates and different type of swings should be

available at DEIC. Among the visited centres most of toys and swing are available at Davanagere (21) and Mysuru (17) DEICs. However, a few toys are available at Mandya (5) DEIC. Among the available some of the toys are not as per the requirement at Davanagere unit. Furthermore, Small rattles and local toys are available in all studied centres. Slides, see saw, tricycle, soft toys, balls of different sizes are available in most of the DEICs. However, Gaiters, thick handle bent spoon, plastic spoon with long handle and plastic spoon with rim cut on one side are not available any visited centres (Annexure I).

3.3.3 Hearing impairment assessment equipments

To assess the hearing impairment among the children, 6 types of equipments like OAE screener, ABR screener, Audiometer etc. are required. Some of these equipments are available at Mysuru (3) DEIC. Except Otoscope most of the equipments are lacking in the visited centres. In Davanagere DEIC staff expressed that, except Portable tympanometry instrument and Otoscope remaining equipments are available. These are purchased under National Programme for Prevention and Control of Deafness (NPPCD), given to DEIC and these are kept at Audiology department of the main hospital. In other visited centres, the children who are in need of such screening are being referred to either the main hospital or screen by using the equipments of the main hospital (Annexure II).

3.3.4 Vision impairment testing equipments

To test vision impairment among the children as per the norm 12 types like Lea symbols visual acuity test & conditioning, flash cards, lea puzzle, torch penlight etc are required. Among the visited centres almost all these recommended equipments are available at Dharwad (12) DEIC and most of the equipments are available in Dakshina Kannada (9) and Mysuru (8). But in Davanagere DEIC none of the equipment is available (Annexure II).

3.3.5 Equipments of retinopathy of prematurity

The equipments required to test the retinopathy among the pre term delivery or prematurity neonatal, are not available in any visited DEICs. Such problematic children are being treated at main hospital. If they get such cases they refer to main hospital or empanelled hospital.

3.3.6 Speech and language disorder

To assess the speech and language disorder, receptive expressive emergent language test, and linguistic profile test need to be conducted. These testing tools are available in most of the

DEICs. But, these tools are brought by the concerned staff not purchased under the DEIC fund. In Davanager and Dakshina Kannada DEICs these tools are not available (Annexure II).

3.3.7 Cognition, Intellectual disability and Mental disorder assessment tools

As per the norm to assess the cognition level, intellectual disability and mental disorders 16 types of equipments or tools like social maturity scale, adoptive behavior scale, INCLEN – ASD Indian scale for assessment of Autism, Attention deficit hyperactivity - INCLEN, childhood behavioral checklist and LD-Dyslexi etc are required. In the visited DEICs most of the required tools are available at Dakshina Kannada (12) and Dharwad (10) respectively. However, in Davanagere (5) a very few tools are available. Further, Vineland adoptive behavior scale and Attention deficit hyperactivity - INCLEN is available in almost all centres. But, cerebral palsy and neuro motor impairment INCLEN (INDT-NMI) testing tools are not available in any visited centres. Piagets sensory–motor intelligence scale, piagetian cognitive tasks and NIMHANS battery to assess learning disability are lacking in many visited centres (Annexure III).

3.3.8 Medical equipments

Pediatric stethoscope, direct ophthalmoscope, pediatric autoscore, ear speculum etc. are required to diagnose the health problem among the children. As per the guideline 13 different types equipments need to be available. In visited DEICs Dakshina Kannada and Mysuru have most of the equipments. But, in Mandya (6) some of equipments are available. Further, weighting machine (both baby and adult), infant meter, measuring tape and knee hammer are available in all DEICs. However, Magnifying glass, Pediatric autoscore, direct ophthalmoscope are lacking most of the DEICs (Annexure IV).

3.3.9 Sensory Integration equipments

The children with autism, concentration disorder, sensory impairments, children with mental development or insufficient development problems, speech difficulties, learning disabilities and behavioural problems for such children there is need to enhance the functioning ability of brain through sensory integration therapy. For the therapy 13 types of equipments are required like Pinspot and mirror ball bundle, mirror ball motor, sound activated light, OPTIC fibers, rotating drum etc. Among the visited centre some of the equipments are available at

Davanagere and Dharwad DEICs. However, these equipments are not available in other sampled DEICs (Annexure IV).

Figure 1 presents number of equipments available in the DEICs. Overall, pertaining to the equipment none of the visited centre has all recommended equipments. Among the visited centres Mysuru DEIC (59) has maximum equipments. But, Mandya (37) DEIC is having very less number of equipment. There is shortage of equipments in almost all studied DEICs. Further, in Davanagere centre most of the procured equipments are not in use, due to lack of staff. Further, staff of this centre expressed that, some of the available equipments are not as per the requirements. In Mandya staff are facing problem to provide service to the children, due to lack of equipments, mainly in Speech and Physiotherapy sections. In most of the centres Psychologist brought their own assessment tools to assess cognition or intellectual ability and mental disorders.

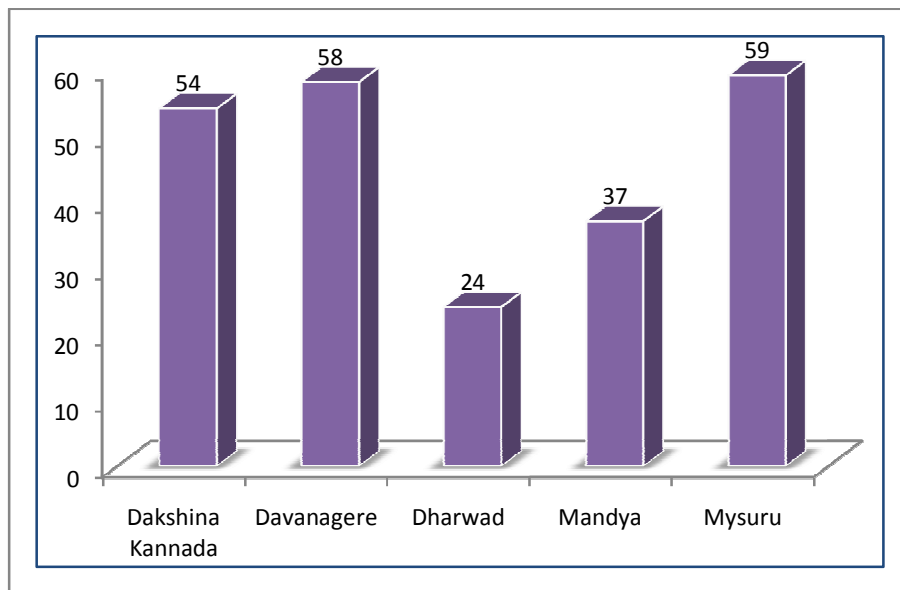


Figure 1 Availability of number of Equipments

4. Service Availability

According to the guideline each DEIC need to ensure core services i.e. Medical and Dental services, Occupational therapy, Physical therapy, Psychological services, Audiology, Speech-language pathology, Vision services, Lab services, Retinopathy of Prematurity services,

Nutritional counseling, Social work services, Special instructions for families, reimbursement of transportation and related costs, Service coordination with other department, referral services and training and enhancing capability building for multi skilled community personnel. **Table 9** shows the services which are available in the studied DEICs.

4.1 Medical services

Almost all DEICs are ensured medical service such as screening the health of children, diagnosing and prescribing medicines and referring to the main hospital for the drugs. However, these services are missing at Davanager DEIC, due to lack of Pediatrician, all children who are in need of medical care are being referred to main hospital.

4.2 Dental services

Separate Dentists are not recruited under this programme. Hence, the children with the problems of teeth, gums and oral hygiene for early childhood caries are being referred to the main hospital at most of the DEICs, where as in Dakshina kannada, separate dental OPD is available at Pediatric ward, main hospital Dentist attending both hospital as well as Pediatric OPDs and providing service. But they expressed that, only 2 Dentists posts are sanctioned for the whole hospital. Of them one Doctor is deputed to other facility. Hence, the working Doctor is overburdened in managing both OPDs.

4.3 Physiotherapy and Occupational Therapy

Physiotherapist need to provide services for the children with developmental delay and disabilities that relate to self-help skills, adaptive behaviour, to prevent or lessen movement difficulties and related functional problems. In most of the visited DEICs these services are ensured for the children, except Mysuru DEIC, as previously appointed Physiotherapist had resigned for the post. Though, the Physiotherapy intern students are coming from the Krishna Rajendra Hospital (KRH) hospital to provide Physiotherapy service on periodically. As per the discussion with the staff it seems that, they needs to stress on Occupational therapy, such

as motivating children to learn basic life skills such as brushing independently, combing and bathing. Some DEICs, heads were expressed that, due to less salary some staff especially Physiotherapist are not staying for long time. Hence, it is being difficult to ensure continued and quality service to the children with developmental delay and disabilities and also it is effecting in the performance of DEIC as parents of such children are losing faith on the Centre.

4.4 Psychological /Cognition services and Special Instruction

Psychological and Cognition services such as understanding psychological problems relating to behaviour, mental health, cognitive delay, and learning problems have to be assessed through administering and interpreting psychological tests and also need to provide therapies, counselling, consultation, behaviour modification services and parents counselling. All these services are ensured in almost all visited DEICs.

4.5 Audiology and Speech-Language pathology

Audiology service and speech therapy for the children identified with hearing loss and delay in communication skills or with motor skills are ensured in most of the DEICs, excluding Davanagere DEIC. Such problematic children are being referred to the local NGO.

4.6 Vision services

Ophthalmic service for the children identified with visual disorders is ensured in other DEICs except Dakshina Kannada and Davanagere, such challenging children are being referred to the main hospital, due to lack of the Optometrist.

4.7 Nutritional counselling

Addressing the nutritional needs of children such as feeding skills, feeding problems, food habits and food preferences there is need of Dietician. But, due to lack of Dietician at DEICs SAM and other children with deficiency are being referred to NRC in Dakshina Kannada and

Davanagere. In other DEICs, either the Social worker or Psychologist is counselling on nutrition.

4.8 Social Supportive services

Social worker has to provide social supportive service it includes assessment of the social and emotional strengths of a child and family need to provide individual as well as group counselling. During the discussion with the staff revealed that, they are counselling for both, but the linkages with the NGOs is lacking in most of the DEICs.

4.9 Lab services

Separate Lab technicians are not appointed under the programme, hence, the children in need of lab investigations are being referred to the main hospital, in case of non availability of any investigation at the main hospital, for such examinations children are being referred to the empanelled hospital in all studied DEICs.

4.10 Retinopathy of Prematurity services

Ophthalmologist and Optometrist need to give this service for the premature and preterm children. In most of the centre's main hospitals are taking care of this service at SNCU. In Dakshina Kannada staff expressed that such babies are being referred to empanelled hospital.

4.11 Service Coordination / Referral services

DEIC manager has to coordinate with other department and empanelled hospitals. Children who are in need of surgeries are being referred to main hospital or empanelled hospital, and after referring children to other hospital they need to do a follow up, however, it was observed that, in most of the centres follow up of referred children is missing. Because of lack of proper address and Phone number of the patients.

4.12 Transportation and related costs

As per the guideline, the travel and other related costs for the children referred to tertiary level services, should be reimburse for the family. But, not any of the DEIC is reimbursing

such expenditure. For this staff expressed that, the cost incurred by the families is being reimbursed by the empanelled hospital.

5. Performance of DEIC

To assess the performance of DEICs, the service statistics from April to September, 2017 was collected and analyzed. The analysis was carried out on number of children registered by demographic characteristics **Table 10**, number of children registered with 4Ds, service provided by different sections of DEIC and referred to other health facilities

Figure 2 shows percentage distribution of number of children registered at DEICs in sampled districts. Total 3,645 children were registered in the studied DEICs during the reference period. Of that nearly one-third (33 percent) of Children were registered in Mandya DEIC followed by Dharwad (27.2 percent) and Mysuru (20.7 percent) DEICs. However, only 6 percent children were registered at Davanagere DEIC for the same period. During the visit it was observed that, due to lack of Pediatrician and other service provider children are referred directly to main hospital or other centres.

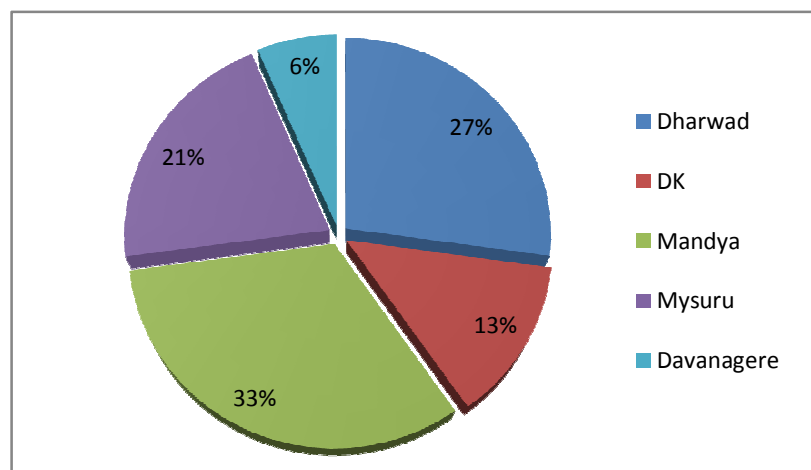


Figure 2 Percent distribution of children registered at DEICs in selected districts

5.1 Distribution of children by Sex

Figure 3 shows the number of male and female children registered at DEICs. Among the total registered, as high as 61 percent of children are male. Among the sampled districts (68 percent) number of male children registered at Dakshina Kannada followed by Davanagere and Mysuru (64 & 63 percent) DEICs respectively. Further, it can be observed that, in all sampled district, number of male children registered at DEIC is more than the female. It is obvious that, male child are more vulnerable than the female child.

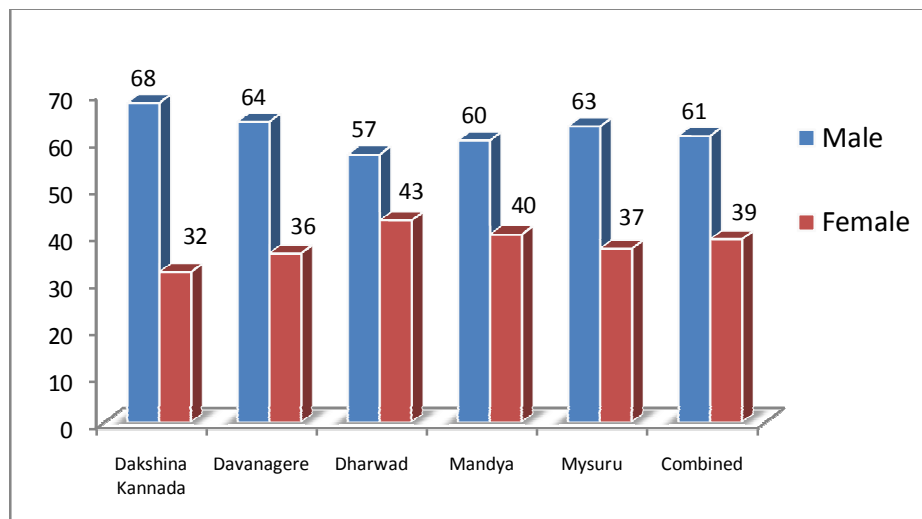


Figure 3 Percent distribution of children by Sex

5.2 Distribution of children by Age

The children within the age group of 0-6 years are more exposed to various diseases. **Figure 4** indicates that, age wise distribution of children registered at DEIC in the sampled districts. Among the total registered more than half (53 percent) of children are within the age group of 0-6 years. Further, it can be observed that majority of children were registered within this age group, is wide at Mysuru (63 percent), followed by Dakshina Kannada (55 percent) and Dharwad (53 percent). However, it is narrow at Davanagere DEIC. It indicates that, the most of the children identified with defects at birth.

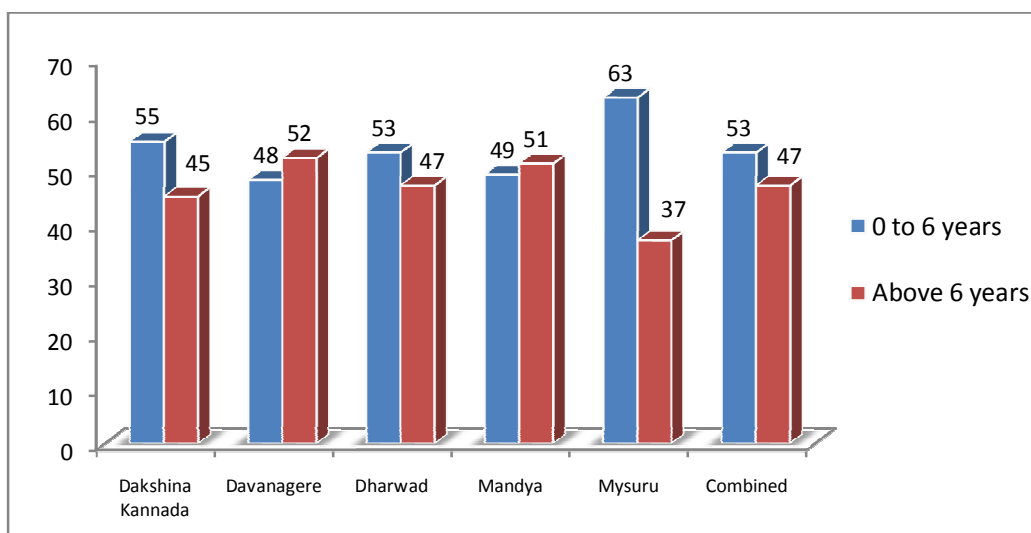


Figure 4 Percent distribution of children by Age

5.3 Distribution of children by place of Residence

The place of residence of children plays vital role on the health of children. The analysis of children registered at DEIC by their residence (**Figure 5**) showed that, of the total registered more than three-fourth (77 percent) of children are from rural area. District wise analysis indicates that, number of children registered from rural area is more in Dhakshina Kannada (91 percent) and Dharwad (83 percent). The present analysis has been carried out only for 4 DEICs, except Mysuru DEIC. Because, information related to place of residence of registered children is not available in the Mysuru DEIC.

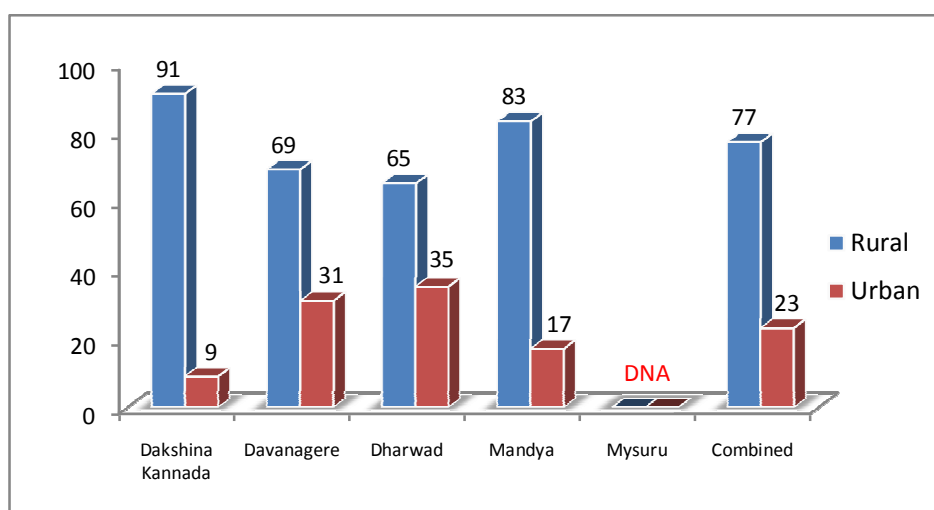


Figure 5 Percent distribution of children by place of Residence

5.4 Distribution of children by Referrals

In all selected districts, RBSK teams are screening the health of children and the children diagnosed with various defects are being referred to the DEICs for further investigation and treatment. **Figure 6** shows distribution of children by source of referrals. Of the total registered in studied districts nearly two third (64 percent) of children were referred from the RBSK teams. Rest of the children were referred either by health staff or identified during camps. District wise analysis indicates that, referral from RBSK teams is high (81 percent) at Dakshina Kannada followed by Mandya (75 percent) and Davanagere (64 percent). However, in Dhawad and Mysuru nearly half of the children are being referred from OPD, during camp, health staff, neighbors and relatives.

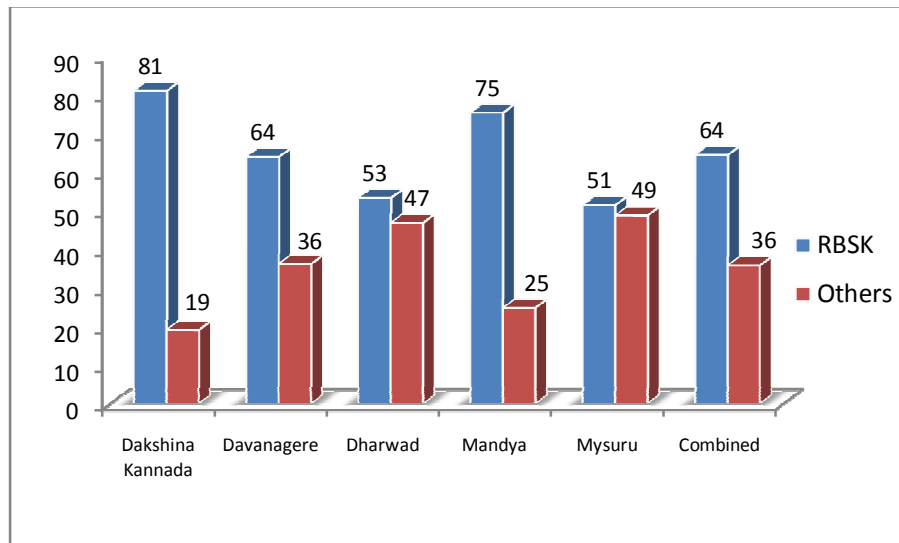


Figure 6 Percentage distribution of children by Referral

5.5 Classification of children by various defects

Early child health screening, early detection and initiation of early treatment and management of 4 Ds i.e. Defects at birth, Diseases, Deficiencies, Development delays including disability is main expected functions of the RBSK teams and DEIC unit. To understand the number of children registered with various defects the information was collected in broad category by the staff of the concerned DEICs (in case of more than one defects, only main defects has considered) and analyzed for 4Ds. **Figure 7** presents the number of cases registered with various defects at DEIC during the reference period. Among the total registered most of the children are registered for Defects at birth, followed by Developmental delay and disabilities, childhood diseases and with deficiencies.

The figure 7 indicates that, of the total registered more number of children diagnosed with birth defects in Mysuru (52 percent) and Dharwad (47 percent). But in Davanagere (43 percent) and Mandya (37 percent) more cases are confirmed for Developmental delay and disabilities (**Table 11**). Very marginal children were registered with other health problem such as fever, head ache and other health problems at DEICs. Discussion with the Pediatricians of the particular DEIC revealed that in Mysuru and Dharwad centres they are receiving more number of children with the Congenital heart disease and other related problem, where as in Mandya most of the referred children have speech and language disorders.

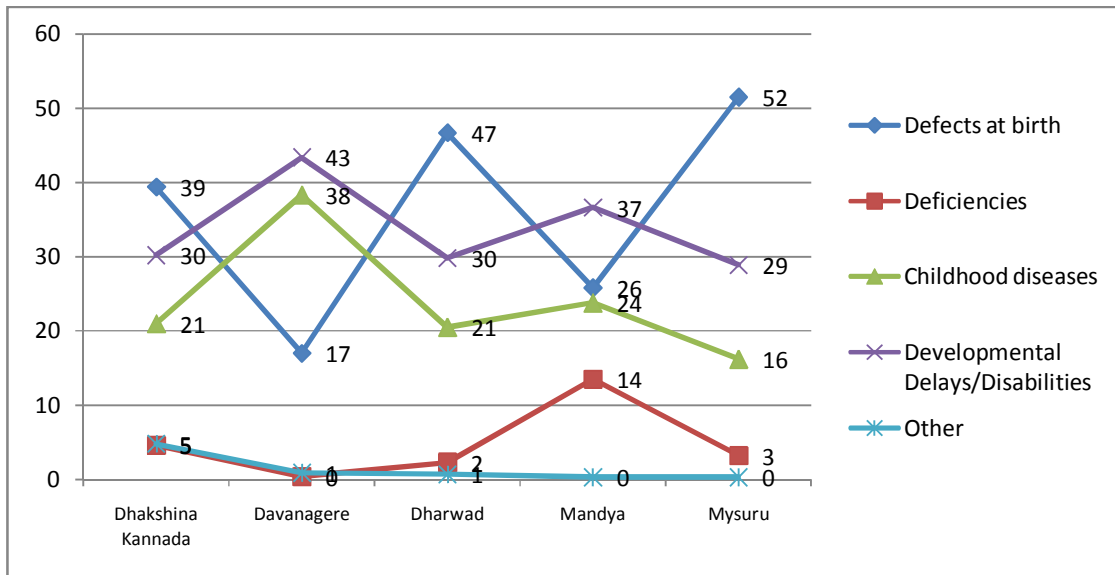


Figure 7 Percent distribution of children registered with various defects at DEIC during April to September, 2017

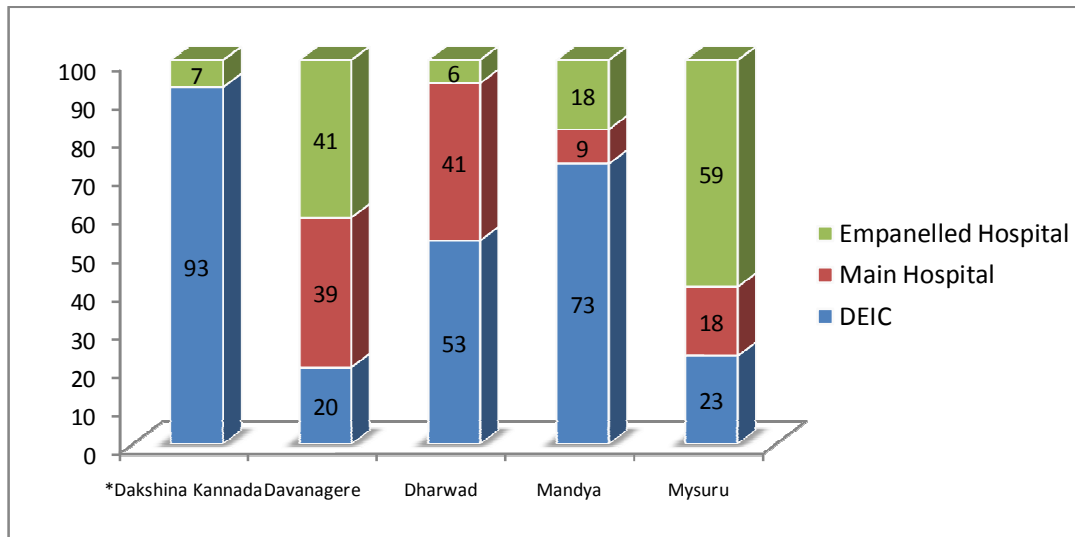
5.6 Services provided by different sections

Physiotherapist, Psychologist, Speech therapist, and Optometrist are playing vital role in providing service for the children confirmed with Neuro motor impairment, developmental delay and disabilities by providing physiotherapy, conducting psychological tests, speech therapy, and counseling to parents. To understand the service provided by various sections of the DEIC information was obtained in each section from OPD register. **Table 12** presents section wise services provided to children (The data includes new and old cases). Of the total registered in the sampled DEICs, more frequently children are attended to Physiotherapy (1977) section corresponding Speech therapy (1524). Majority of children were attended at

Mandya DEIC (2173) to avail service in various sections during the reference period. Very least number of children attended at Davanagere (209) DEIC.

5.7 Service details

All referred children have to be assessed first to determine the course of services in terms of surgical or non surgical, on the bases of screening the children are being referred for treatment to the related department within the attached hospital or empanelled hospitals. State officials expressed that, including secondary and tertiary care facilities total 137 private hospitals, which are registered under SAST are identified to make sure of surgical services. To assess the number of children availed service at DEIC or referred to main attached hospital or to private hospital, the data collected at sampled DEICs is presented in **Figure 8**. The figure illustrates that, as Mandya DEIC getting more cases with developmental delay and with speech problem almost all services are ensured at the DEIC itself, if child need surgeries than they will refer to main hospital or empanelled hospital. As reported by the staff of Dakshina Kannada and Dharwad almost all services including therapeutic and surgical treatments are ensured at the DEIC and main hospital, and a few children are being referred to empanelled hospital. However, in Mysuru DEIC most of the children are being referred to empanelled hospital as it is existing outside the medical college. Similar situation exists at Davanagere DEIC, due to lack of staff.



* Dakshina Kannada DEIC and Main hospital data has combined

Figure 8 Details about the services provided and referred to Empanelled hospitals by DEICs

5.8 Monitoring and Supervision

Monitoring and supervision should be done by RCHO and DHO of the concerned district. During the in-depth interview with the District officials we come to know that, monitoring of DEIC is frequently done at Dakshina Kannada and Mandya DEICs. However, it is lacking in other DEICs. It indicates that, monitoring of DEICs is being done frequently at where the DEICs are exists near to DHO office.

5.9 Maintenance of Registers and Records

Maintenance of accurate and comprehensive registers and records of service provided by the DEIC unit found very essential. It will help in reporting as well as verification by the supervisors and also it is useful to provide follow up services. To understand about the maintenance of registers, the team verified the registers at each section and had an interaction with the staff. Discussion with concerned staff revealed that, there is no any specific guideline or instruction on maintenance of the registers and also there is no clarification about on which elements and what all information needs to be maintained. Monthly reporting format has been provided by the State to each DEIC. On the same data item 2 types of registers are being maintained at each section of DEICs.

1. DEIC main registration register
2. Section wise OPD register

The main patient registration register is being maintained in each DEIC. Each department wise separate OPD registers are being maintained by the service provider as per their convenient. It was observed that, among all studied centres, at Mandya all registers are being maintained in printed forms, along with patient's case sheet at each section. In Mysuru DEIC only main patient's registration register is maintained in printed format. In other DEICs manually written registers are being maintained (**Table 13**). With the observation it seems that, complete demographic information of children and family need to be collected.

Reporting: Almost all visited DEICs are reporting the monthly reports in time to the State RBSK wing.

5.10 Problems faced in implementing the programme and measures taken by the State and District officials

During the discussion the State and District officials and also staff of DEIC were expressed that, getting adequate space for establishment of DEIC at District hospitals or Medical colleges. Another problem is that difficulty in availing Equipments by online bidding, due to lack of sufficient quotations. Initially they faced problem in appointing the specialists specially Pediatrician and clinical Psychologist as per the norm. They also expressed that, in some districts officials are not showing interest in implementing the programme. The following measures have taken by the State officials solve the problems

- The State officials had been to various districts, had conversation with DDRC, Directors and District Surgeons of MC and DH and also with other Departments.
- Visited many time to observe the site of DEIC before approve for construction.
- With the permission of appropriate authority called split quotations to get equipments

State officials said that *“There is no single company to manufacture all equipments required to the DEIC. Hence, they are not getting sufficient quotations in online bidding.”*
“No space, getting equipments, some time district authorities are not serious about the programme and there is no single company to manufacture all equipment”.

RCHO mentioned, *“We advertised for the vacant posts many times, but could not fill up the post, because we did not receive applications from Paediatricians”*

5.11 The difficulties are being faced in discharging services to the patients:

During the discussion staff reported that, empanelled hospitals are providing tertiary care for the referred children without denial, but the secondary care is not ensured with the same interest. Another problem is that, sustainability of the recruited staff for long time at the DEIC, due to less salary. DEICs are facing problem in providing the therapies mainly at Mandya, due to lack of adequate equipments, besides they are facing in calling patients for follow up, due to lack of proper address of the patients.

5.12 Good practices found during the visit at sampled DEICs

Table 14 shows the number of camps organized by the DEIC in the sampled district. Dakshina Kannada, Mysuru and Mandya DEICs are organizing camps at slums or hard to reach areas, total 20 camps were organized by these units, eight hundred twenty (820) children were screened, of the total children screened, 37 percent children were identified with various health problems. Such camps are not organized by Davanagere and Dharwad DEICs.

It was observed that, in Mandya and Dakshina Kannada DEICs, all staff are attending regular monthly meeting with the RBSK teams. Nodal officer and manager are attending sectoral, intersectoral and convergence meeting with other departments in Dakshina Kannada. In Mysuru also they are attending regular monthly meeting and sensitizing about the programme to the private Doctors.

District officials expressed that all RBSK teams are made responsible for the follow up of referred children, hence, they are immediately getting children to the DEICs.

5.13 Perception of Parents on service:

To know the perception about the DEIC, team had an informal discussion with the parents of the children, who were attended to the centres. During the conversation, parents were expressed good opinion about the service received and behavior of the staff.

1. *“Earlier my daughter was unable to speak, now she is speaking few words; she calls me as amma and other a few words”.* (Parent of child who undergone for service at Speech therapy section)
2. *“My son was not able to stand; now he is standing and walking with the help, I am happy and staff likes him and encourages him”* (Parent of child who undergone service at Physiotherapy section)

6. Summary, recommendations and conclusion

Present study was conducted in 5 DEICs in different districts of Karnataka State. The districts which are sanctioned in the same period and started functioning have been considered in this study. The year of establishment of these centres spread across 2 years from 2016 and 2017. As per the observation during the field and discussion with the officials, Dakshina Kannada, Davanagere, Dharwad and Mandya DEICs exist in the ideal place and easily accessible to the beneficiaries. Mysuru DEIC does not exist in the suitable place and it is hard to reach. This is because, of shortage of sufficient space at Mysuru Medical College.

Sufficient space is required to establish DEIC. Each staff of the centre required a separate room to assessment, examination, to provide treatment, services and therapies to the children. Among the studied centres, Dakshina Kannada, Mandya and Mysuru DEICs have reasonable space. However, at Davanagere there is dearth of space, in one room most of the staff are sitting and providing all services. In Dharwad also DEIC is functioning in a limited space. Most of the basic amenities are ensured in Dakshina Kannada, Mysuru and Mandya, except Davanagere and Dharwad DEICs. Special rooms and equipments such as Sound proof room, Looking mirror at speech therapy room and EGC are available only at Dakshina Kannada DEIC.

With a view to optimal utilization of available human resource, of the total sanctioned only half of the posts are sanctioned. The Medical Officer, Dentist and Lab Technician are already available in regular public health system. Hence, the required service is being availed from the existing pool. Dharwad and Mandya DEICs have all sanctioned staff as per the State norms. In Dakshina Kannada and Mysuru districts, a few posts are vacant. However, including Pediatrician most of the key positions are not yet filled at Davanagere. In fact, shortfall of manpower is impacting on the functionality of DEIC.

To treat children within the age group 0-6 years identified with various defects, disabilities and diseases specialists need to attend DEIC twice in a week. But, at none of the DEIC specialists are visiting to provide service at DEIC. Only Dharwad and Dakshina Kannada staff attended training at West Bengal, but the training quality was not good.

To ensure recommended services all essential equipments must be available in each sections of DEIC. However, in most of the DEICs there is shortage of equipment mainly at Mandya. It

is due to lack of list of manufacturing company or local distributors and shortage of fund. All available equipments are not use, due to lack of staff and some available equipments are not as per the requirement at Davanagere. Hence those equipments need to be exchanged. Overall, all equipments which are mentioned in the guideline are need to be made available at DEIC to provide services at each sections.

Availability of service is mainly depends on the accessibility of specifically trained staff. Among the visited centres, Dharwad and Mandya DEICs are providing Physiotherapy, occupational therapy, speech therapy, service for refractive error, psychological services and counseling services. But, for Dental services, diagnostic services and retinopathy for premature children need to depend on main hospital or other empanelled hospitals. In Dakshina Kannada and Mysuru DEICs most of the services are ensured, but vision service and Physiotherapy / Occupational services are not available respectively, due lack of particular staff. However, in Davanagere for most of these services children need to depend either on attached hospital or empanelled hospital. Further, in case of surgical interventions it was observed that in almost all centres tracking of these referred cases is lacking, due to lack of feedback from the parents and proper address of beneficiaries.

The data collected to assess the performance of studied DEIC shows that, majority of children are registered at Mandya DEIC, where as in Davanagere it is less. Of the registered majority of them are male children, from rural community and within the age group of 0-6 years. Of the registered, majority of the children are referred from RBSK teams. Most of the children were registered with the problem to defects at birth in Mysuru and Dharwad, where as in Davanager and Mandya majority of the children registered with developmental delay and disabilities. Service statistics illustrate that, registered children are frequently called for Physiotherapy and Speech therapy.

Existence of the DEIC plays a vital role in ensuring service. Most of the services which including surgical and Therapeutic is ensured in Dharwad, Dakshina Kannada and Mandya DEICs, as these are existing in either at District level hospital or Medical College. A few children are being referred to the empanelled hospital by these centres. However, in Mysuru and Davanagere for most of the services children are being referred to empanelled hospital.

There is no appropriate guidance on maintenance of registers, only Mandya DEIC has maintained main register and OPD wise registers in the printed format using the monthly

reporting format data items. In Mysuru main register is maintained in printed form along with case sheets. In other DEICs manual registers are maintained.

Supervision and Monitoring by district officials is being carried out regularly in the district which are existing near to the DHO office. However, it is being difficult, to monitor those DEICs which are existing far away from the district office. Coordination with RBSK teams and DEIC and coordination with inter department and other departments is lacking in most of the DEICs.

State and district official have major problem in getting space for establishing the DEIC, another problem they experienced is that procurement of equipments, it is due to lack of bidders. Most of the DEIC are conducting camps and coordinating with other departments. However, these are lacking at Dharwad and Davanagere.

During informal discussion with Parents, we come to know that they are happy with the service they received and behavior of the staff. They are finding improvements among their children.

6.1 Recommendations

- 1 Special attentions need to be given in ensuring adequate space and basic amenities in Davanagere and Dharwad DEICs.
- 2 Quick action need to be taken to appoint the vacancy position in visited DEICs, mainly at Davanagere.
- 3 Systematic training need to be organized for all DEIC staff.
- 4 List and address of the company or local distributors need to be provided to each DEIC for procurement of equipments.
- 5 Proper guidance needs to be provided on register and record maintenance to the staff.
- 6 Staff needs to collect proper address of the patients during registration.
- 7 Coordination among DEIC staff, RBSK teams and other departments need to be improved.

6.2 Conclusion:

In general health system, Pediatric departments are functioning at District Hospitals, screening is being done and providing treatment to the all referred cases. However, early identification of children with physical and developmental disabilities is crucial to ensure appropriate interventions to be provided as soon as possible to allow children to develop their full potential, maximize their level of function and prevent further disabilities. But it is getting delayed, due over burden of all type of children at public facilities. With this view, DEIC is a wonderful programme with interdisciplinary approach of a multidisciplinary team placed under one roof. This unit is functioning like an appropriate referring system. Priority based service with the proper referral mechanism has been ensured by DEIC. In case of children with the developmental delay and disabilities, therapies are being provided to improve the physical, cognition and mental ability. In case of surgical intervention, costless and quality service through skilled manpower is ensured at the attached or empanelled facilities.

The success of the programme is lies in the implementation of the programme, quality of the service and the commitment in services providing among concerned authorities and service provider. Also it is depends on the awareness about the programme among the community. In most of the DEICs staff are putting their effort in providing service, and referring the children with the one or other good practices and interventions, like getting prior appointment of the doctors before sending patient to the hospital, sensitizing about the programme among private practitioner, personally taking patients to the concerned sections or hospitals, tracking the patients through follow up cards, coordinating with the other health programmes and NGO to ensure hearing, vision and moving aids and appliances. Proper training, Guidance, Co-ordination and Co-operation among DEICs and other Departments will help in providing effective service and enhancing performance of DEICS.

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Tables:

| Table1: Number of districts approved for the establishment of DEICs in the Karnataka | |
|---|---|
| Year | District approved |
| 2015-16 | Dakshina Kannada, Dharwad, Davanager, Vijayapur, Mysur and Mandya |
| 2016-17 | Bangalore Urban, Hassan, Kolar, Chikkamagalur Bellary |
| 2017-18 | Shimoga, Chikkaballapura, Gadag, Chamarajanagara, Karwar(UK) |

| Table 2: Present Status of basic infrastructure in the sanctioned districts (N=16) | | |
|---|-----------------------|-------------------|
| Sl.No | Status | In numbers |
| 1 | Building | |
| | Available | 8 |
| | Under construction | 3 |
| | Approved | 5 |
| 2 | Human Resource | |
| | Recruited | 8 |
| | Under process | 3 |
| | Need to Approve | 5 |
| 3 | Equipments | |
| | Procured | 7 |
| | Under process | 3 |
| | Not procured | 1 |
| | Need to Approve | 5 |

| Table 3: Districts selected for the study | |
|--|------------------------------|
| Sl. No. | Name of the districts |
| 1 | Dakshina Kannada |
| 2 | Davanagere |
| 3 | Dharwad |
| 4 | Mandya |
| 5 | Mysuru |

| Table 4: Establishment, Location and Accessibility of DEICs in visited districts | | | | | |
|---|----------------------------|----------------------------|----------------------------|------------------------|----------------------------|
| Particulars | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Initiated | April,2016 | Nov, 2016 | July, 2016 | Feb, 2017 | April,2017 |
| Existence | District Hospital | District Hospital | Medical college | District Health office | UHC |
| Space available | Sufficient | Not Sufficient | Not Sufficient | Sufficient | Sufficient |
| Location | Shared with other building | Shared with other building | Shared with other building | Separate building | Shared with other building |
| Condition of the DEIC building | Better | Better | Good | Good | Better |
| Accessibility of DEIC | Easily accessible | Easily accessible | Easily accessible | Easily accessible | Not easily accessible |
| Availability of road head directions | Yes | Yes | Yes | No | No |

| Table 5: Availability and adequacy of space for different sections in DEICs | | | | | |
|--|-------------------------|-------------------|----------------|---------------|---------------|
| Sections | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Waiting area | 1 | 3 | 1 | 1 | 1 |
| Play/ therapy area | 1 | 2 | 2 | 1 | 1 |
| Reception room for Registration | 1 | 2 | 1 | 1 | 1 |
| Pediatrician room | 1 | 1 | 2 | 1 | 1 |
| Dental examination room | 1 | 1 | 3 | 3 | 3 |
| Vision testing room | 1 | 3 | 1 | 1 | 1 |
| Hearing testing room: sound proof room with two partitions. | 1 | 3 | 3 | 3 | 3 |
| Speech room with looking mirror | 1 | 3 | 2 | 1 | 2 |
| Early intervention cum occupational therapy room | 2 | 3 | 2 | 1 | 1 |
| Psychological testing room | 1 | 3 | 2 | 1 | 2 |
| Laboratory | 3 | 3 | 3 | 3 | 3 |
| Nursing /nutrition cum Feeding room | 1 | 3 | 3 | 3 | 3 |
| Sensory integration room | 3 | 3 | 3 | 3 | 3 |
| ECG cum Echo room | 1 | 3 | 3 | 3 | 3 |
| Computer room (Manager/ DEO) including Store | 1 | 3 | 3 | 1 | 1 |
| Pantry and space for drinking water and washing | 1 | 3 | 3 | 1 | 1 |
| Toilets (all equipped with facilities for handicapped) | 1 | 2 | 3 | 1 | 2 |
| Open space/ corridor | 1 | 3 | 3 | 1 | 1 |
| Outer garden (desirable) | 3 | 3 | 3 | 3 | 3 |

Note: 1 Available and adequate, 2 Available but not adequate, 3 Not available

| Table 6: Availability and adequacy of basic Furnitures at DEICs | | | | | |
|--|-----------------------------|-------------------|----------------|---------------|---------------|
| Furniture's | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Tables for consultation /examination | 1 | 3 | 2 | 1 | 1 |
| Chairs | 1 | 3 | 1 | 1 | 1 |
| Cupboards for storage for each room | 1 | 3 | 1 | 3 | 1 |
| Racks for material for each room | 1 | 3 | 1 | 2 | 1 |
| Display boards for each room | 1 | 3 | 3 | 1 | 1 |
| Computer Desktops with internet facility | 1 | 1 | 1 | 1 | 1 |
| Water Dispenser | 1 | 3 | 3 | 1 | 1 |
| Television for the waiting area/ Speaker system | 3 | 3 | 3 | 1 | 3 |
| Intercom system for each sections | 3 | 3 | 3 | 3 | 3 |

Note: 1 Available and adequate, 2 Available but not adequate, 3 Not available

| Table 7: Proposed team composition of District early intervention as per GOI, and State | | |
|--|------------------------------|--------------------------------|
| Designation | Sanctioned as per GOI | Sanctioned as per State |
| Pediatrician | 1 | 1 |
| Physiotherapist | 1 | 1 |
| Audiologist & Speech Therapist | 1 | 1 |
| Psychologist | 1 | 1 |
| Optometrist | 1 | 1 |
| Early Interventionist/ Special Educator /Social Worker | 1 | 1 |
| Manager | 1 | 1 |
| Medical | 1 | NS |
| Dental Doctor | 1 | NS |
| Lab Technician | 2 | NS |
| Dental Technician | 1 | NS |
| Data Entry Operator | 1 | NS |
| Genetic Counselor | 1 | NS |
| Total | 14 | 7 |

NS: Not Sanctioned

| Table 8: District wise details of human resource available in DEICs | | | | | | |
|--|--|-------------------------|-------------------|----------------|---------------|---------------|
| Sl. No | Category | In Position | | | | |
| | | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| 1 | Paediatrician | 1 | 2 | 1 | 1 | 1 |
| 2 | Physiotherapist / Occupational therapist | 1 | 1 | 1 | 1 | 2 |
| 3 | Clinical Psychologist | 1 | 1 | 1 | 1 | 1 |
| 4 | Optometrist | 2 | 2 | 1 | 1 | 1 |
| 5 | Audiologist & Speech therapist | 1 | 2 | 1 | 1 | 1 |
| 6 | Manager | 1 | 1 | 1 | 1 | 1 |
| 7 | Social worker | 1 | 1 | 1 | 1 | 1 |
| 8 | Nurses (from existing pool) | 1 | 1 | 1 | 1 | 1 |
| Total | | 7 | 5 | 8 | 8 | 7 |

Note: 1-YES, 2-NO

| Table 9: Availability of Services in the visited DEICs | | | | | |
|---|-------------------------|-------------------|----------------|---------------|---------------|
| Services | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Medical services | 1 | 2 | 1 | 1 | 1 |
| Dental services | 2 | 2 | 2 | 2 | 2 |
| Occupational therapy | 1 | 1 | 1 | 1 | 2 |
| Physical therapy | 1 | 1 | 1 | 1 | 2 |
| Psychological/Special instruction services | 1 | 1 | 1 | 1 | 1 |
| Audiology | 1 | 2 | 1 | 3 | 1 |
| Speech-language pathology | 1 | 4 | 1 | 1 | 1 |
| Ophthalmic services | 2 | 2 | 1 | 1 | 1 |
| Lab services | 2 | 2 | 2 | 2 | 2 |
| Retinopathy of Prematurity services | 3 | 2 | 2 | 2 | 2 |
| Nutritional counselling services | 2 | 2 | 1 | 1 | 1 |
| Social work services | 1 | 1 | 1 | 1 | 1 |
| Coordination/Referral services | 1 | 1 | 1 | 1 | 1 |

1 Available at DEIC, 2 Refer to main hospital, 3 Refer to Empanelled hospital , 4 Not available

| Table 10: Background characteristics of children registered at DEICs | | | | | | | | | | | | |
|---|-------------------------|-------------|-------------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|-------------|
| Sl. No | Dakshina Kannada | | Davanagere | | Dharwad | | Mandya | | Mysuru | | Total | |
| Particulars | In. No. | In % | In. No. | In % | In. No. | In % | In. No. | In % | In. No. | In % | In. No. | In % |
| Registered | 477 | 13.1 | 235 | 6.4 | 992 | 27.2 | 1187 | 32.6 | 754 | 20.7 | 3645 | 100 |
| Age | | | | | | | | | | | | |
| 0-6 years | 262 | 54.9 | 112 | 47.7 | 526 | 53.0 | 581 | 48.9 | 475 | 63.0 | 1956 | 53.7 |
| 6-18 years | 215 | 45.1 | 123 | 52.3 | 466 | 47.0 | 606 | 51.1 | 279 | 37.0 | 1689 | 46.3 |
| Sex | | | | | | | | | | | | |
| Male | 326 | 68.3 | 150 | 63.8 | 569 | 57.4 | 706 | 59.5 | 475 | 63.0 | 2226 | 61.1 |
| Female | 151 | 31.7 | 85 | 36.2 | 423 | 42.6 | 481 | 40.5 | 279 | 37.0 | 1419 | 38.9 |
| Residence | | | | | | | | | | | | |
| Rural | 433 | 90.8 | 163 | 69.4 | 647 | 65.2 | 989 | 83.3 | DNA | DNA | 2232 | 77.2 |
| Urban | 44 | 9.2 | 75 | 30.6 | 345 | 34.8 | 198 | 16.7 | DNA | DNA | 659 | 22.8 |
| Referral | | | | | | | | | | | | |
| RBSK | 386 | 80.9 | 150 | 63.8 | 528 | 53.2 | 893 | 75.2 | 387 | 51.3 | 2344 | 64.3 |
| Others | 91 | 19.1 | 85 | 36.2 | 464 | 46.8 | 294 | 24.8 | 367 | 48.7 | 1301 | 35.7 |

| Table 11: Percent distribution of children registered at DEIC with various defects from April to September, 2017 | | | | | |
|---|--------------------------------|-------------------------|----------------------|----------------------|---------------------|
| Health conditions | Dhakshina Kannada (477) | Davanagere (235) | Dharwad (992) | Mandya (1187) | Mysuru (754) |
| Defects at birth | 39.4 | 17.0 | 46.7 | 25.8 | 51.5 |
| Deficiencies | 4.6 | 0.4 | 2.3 | 13.5 | 3.2 |
| Childhood diseases | 21 | 38.3 | 20.5 | 23.8 | 16.2 |
| Developmental Delays/Disabilities | 30.2 | 43.4 | 29.8 | 36.6 | 28.9 |
| Other | 4.8 | 0.9 | 0.7 | 0.3 | 0.3 |
| Total | 100 | 100 | 100 | 100 | 100 |

| Table 12: Details about services provided in different sections of DEIC | | | | | |
|--|----------------------|-------------------|-----------------------|----------------------|--------------|
| Districts | Physiotherapy | Psychology | Speech Therapy | Ophthalmology | Total |
| Dakshina Kannada | 959 | 321 | 359 | 0 | 1639 |
| Davanagere | 76 | 133 | SNA | SNA | 209 |
| Dharwad | 118 | 132 | 116 | 216 | 582 |
| Mandya | 561 | 496 | 730 | 386 | 2173 |
| Mysuru | 263 | 213 | 319 | 24 | 819 |
| Total | 1977 | 1295 | 1524 | 410 | 5206 |

SNA: Service not available

| Table 13: Maintenance of Registers in sampled DEICs | | |
|--|---------------------------|----------------------------------|
| Districts | DEIC Main Register | Section wise OPD register |
| Dakshina Kannada | Hand written | Hand written |
| Davanagere | Hand written | Hand written |
| Dharwad | Hand written | Hand written |
| Mandya | Printed | Printed |
| Mysuru | Printed | Hand written |

| Table 14: Number of camps organised by sampled DEICs | | | | | |
|---|--------------------------|-------------------|----------------|---------------|---------------|
| Districts | Dhakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Number of camps organized | 6 | Nil | Nil | 6 | 8 |
| Total number of children screened | 237 | | | 247 | 336 |
| Total number of children identified | 95 | | | 78 | 127 |

Annexure

| Annexure I: Availability of equipments for Physiotherapy/Occupational therapy | | | | | |
|--|-------------------------|-------------------|----------------|---------------|---------------|
| Equipments | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Therapy balls 65cm | 1 | 2 | 1 | 1 | 1 |
| Therapy balls 45cm | 1 | 1 | 3 | 1 | 1 |
| Therapy mats | 1 | 1 | 3 | 1 | 1 |
| Bolster (2ft long, diameter 8 inch& 12 inches) | 1 | 1 | 3 | 1 | 3 |
| Small roll (13 inch long, Diameter-3 inch) | 1 | 1 | 3 | 1 | 1 |
| Prone Wedge Big | 1 | 1 | 1 | 1 | 1 |
| Prone Wedge Small | 1 | 1 | 3 | 3 | 1 |
| Balance Board | 1 | 1 | 1 | 1 | 1 |
| Kaye-Walker (height-48-64 cm) | 3 | 3 | 2 | 1 | 1 |
| Trampoline | 3 | 1 | 1 | 1 | 3 |
| Bolster Swing | 3 | 1 | 1 | 1 | 3 |
| Wooden Benches with cushion and Rexene cover | 1 | 1 | 3 | 3 | 2 |
| Splints (Ankle Foot Orthosis) | 3 | 1 | 3 | 3 | 1 |
| Special chairs with cut-out tray | 3 | 1 | 3 | 3 | 3 |
| Toys for play and stimulation | | | | | |
| Small rattles | 1 | 1 | 1 | 1 | 1 |
| Squeaky | 1 | 1 | 3 | 3 | 1 |
| Puja bell (clapper bell) | 3 | 1 | 3 | 3 | 1 |
| Soft toy | 1 | 1 | 3 | 3 | 1 |
| Brush for tactile stimulation | 3 | 1 | 3 | 3 | 3 |
| Theraputty | 3 | 1 | 3 | 3 | 3 |
| Peg board | 3 | 3 | 1 | 1 | 3 |
| Ball Pool | 1 | 3 | 2 | 3 | 1 |
| Balls of different size | 1 | 2 | 3 | 1 | 1 |
| Gaiters | 3 | 3 | 3 | 3 | 3 |
| Thick handle spoon | 3 | 1 | 3 | 3 | 1 |
| Thick handle bent spoon | 3 | 3 | 3 | 3 | 3 |
| Plastic spoon with long handle (for babies) | 3 | 3 | 3 | 3 | 3 |
| Plastic glass with rim cut on | 3 | 3 | 3 | 3 | 3 |

| | | | | | |
|--------------------------------------|---|---|---|---|---|
| one side | | | | | |
| Stainless steel plates with high rim | 3 | 1 | 3 | 3 | 3 |
| Spouted cups | 3 | 1 | 3 | 3 | 1 |
| Swings | | | | | |
| Bolster swing | 3 | 1 | 3 | 3 | 3 |
| Platform swing | 3 | 1 | 3 | 3 | 3 |
| Tyre tube swing | 3 | 1 | 3 | 3 | 3 |
| Rope ladder swing | 3 | 1 | 3 | 3 | 1 |
| Slides | 1 | 1 | 1 | 3 | 1 |
| See Saw | 1 | 1 | 1 | 3 | 1 |
| Tunnel | 1 | 2 | 3 | 3 | 1 |
| Tricycle | 1 | 1 | 3 | 3 | 1 |
| Any locally suitable toy | 1 | 1 | 1 | 1 | 1 |
| Rhythmic Rocker | 3 | 1 | 3 | 3 | 1 |
| Balance boards | 3 | 2 | 1 | 3 | 1 |
| Bean bags including white ones | 3 | 1 | 3 | 3 | 3 |
| Real size animal | 3 | 3 | 3 | 1 | 1 |

Note: 1- Available, 2 – Available but not as per requirement, 3 – Not available

| Annexure II: Availability of diagnostic equipments/tools for Hearing, Vision, and Speech assessment | | | | | |
|--|-------------------------|-------------------|----------------|---------------|---------------|
| Hearing equipments | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| OAE screener | 3 | 1 | 3 | 3 | 3 |
| ABR screener | 3 | 1 | 3 | 3 | 3 |
| Audiometer | 3 | 1 | 3 | 3 | 1 |
| Portable Tympanometry Instrument | 3 | 3 | 3 | 3 | 1 |
| BERA with ASSR with both insert phone and head phone | 3 | 1 | 3 | 3 | 3 |
| Otoscope | 1 | 3 | 1 | 3 | 1 |
| Vision Impairment testing equipments | | | | | |
| Torch-penlight | 1 | 1 | 2 | 1 | 3 |
| Lea Symbols Visual Acuity Test & Conditioning | 1 | 1 | 3 | 1 | 3 |
| Flash cards | 1 | 1 | 3 | 1 | 3 |
| Lea puzzle | 1 | 1 | 3 | 1 | 3 |
| Plastic colluder with lip | 1 | 1 | 3 | 3 | 3 |
| Lea Grating Paddle | 1 | 3 | 3 | 1 | 3 |
| Lang Fixation Stick or Lea | 1 | 1 | 3 | 3 | 3 |
| Log mart chart or Snellen's chart | 1 | 1 | 1 | 1 | 3 |
| Streak Retinoscope | 1 | 1 | 1 | 3 | 3 |
| Hiding Heidi | 1 | 3 | 3 | 3 | 3 |
| Near Vision Test with Lea symbol (Lea playing card set) and Near Vision Line test | 1 | 3 | 1 | 1 | 3 |
| Distance Vision Test (Leas single symbols book) | 1 | 1 | 1 | 1 | 3 |
| Speech and Language disorder assessment tools | | | | | |
| Receptive-Expressive Emergent Language Test—Third Edition (REEL-3) | 1 | 3 | 1 | 1 | 1 |
| LPT: Linguistic profile test | 3 | 3 | 1 | 1 | 1 |

Note: 1- Available, 2 – Available but not as per requirement, 3 – Not available

| Annexure III: Availability of Cognition, Intellectual disability and Mental disorder assessment tools | | | | | |
|---|-------------------------|-------------------|----------------|---------------|---------------|
| Equipments/Tools | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Development assessment for Indian Infants (DASSI) | 1 | 3 | 3 | 1 | 1 |
| Vineland Social Maturity Scale | 1 | 1 | 1 | 1 | 1 |
| Vineland Adaptive Behaviour Scales | 3 | 3 | 1 | 1 | 1 |
| Bayley-III Screening Test Complete Kit Includes; | 1 | 3 | 3 | 3 | 1 |
| Manual, Stim Book, Picture Book, Record Forms 25 packs | 1 | 3 | 1 | 1 | 3 |
| Developmental Screening Test (DST) by Bharat Raj | 1 | 1 | 1 | 3 | 1 |
| Denver Developmental Screening Test II (DDSTII) | 3 | 1 | 1 | 3 | 3 |
| Stanford Binet (Indian adaptation-Kulshreshta) | 1 | 1 | 1 | 1 | 3 |
| Piagets Sensori-motor Intelligence Scale | 3 | 3 | 3 | 1 | 3 |
| Piagetian Cognitive Tasks | 1 | 3 | 3 | 3 | 3 |
| ASD/Autism: Autism Spectrum disorder diagnostic equipment (INCLIN-ASD or Indian Scale for Assessment of Autism(ISAA)) | 1 | 3 | 1 | 3 | 1 |
| ADHD:Attention Deficit Hyperactivity-INCLIN | 1 | 1 | 1 | 1 | 1 |
| <i>Learning Disability-</i> NIMHANS battery | 1 | 3 | 3 | 3 | 3 |
| LD- Dyslexia- Dyslexia Early Screening Test 4-6 years (DEST) and Dyslexia Screening Test Junior (6-11 years) | 1 | 3 | 1 | 3 | 3 |
| Behavioural Learning (Childhood Behavioural Checklist CBCL) | 1 | 3 | 1 | 3 | 1 |
| Cerebral Palsy and Neuromotor Impairment-INCLIN (INDT-NMI) | 3 | 3 | 3 | 3 | 3 |
| Total | 11 | 5 | 10 | 7 | 7 |

Note: 1- Available, 2 – Available but not as per requirement, 3 – Not available

| Annexure IV: Availability of Medical equipments at visited centers | | | | | |
|---|-------------------------|-------------------|----------------|---------------|---------------|
| Equipments/Tools | Dakshina Kannada | Davanagere | Dharwad | Mandya | Mysuru |
| Pediatric Stethoscope | 1 | 3 | 1 | 1 | 1 |
| Sphygmomanometer with paediatric cuff | 1 | 1 | 1 | 3 | 1 |
| Direct Ophthalmoscope | 1 | 1 | 3 | 3 | 1 |
| Paediatric Autoscope | 1 | 3 | 3 | 3 | 1 |
| Ear speculum | 1 | 3 | 1 | 3 | 3 |
| Magnifying glass | 3 | 1 | 3 | 3 | 3 |
| Weighing machine (both baby and adult) | 1 | 1 | 1 | 1 | 1 |
| Infanto meter | 1 | 1 | 1 | 1 | 1 |
| Stadio meter | 1 | 1 | 3 | 3 | 1 |
| Measuring tape | 1 | 1 | 1 | 1 | 1 |
| Torch | 1 | 3 | 1 | 1 | 1 |
| Knee hammer | 1 | 1 | 1 | 1 | 1 |
| X Ray viewer | 1 | 3 | 1 | 3 | 1 |
| Sensory Integration Equipments | | | | | |
| Pinspot and Mirror Ball Bundle | 3 | 3 | 3 | 1 | 3 |
| Mirror Ball Motor | 3 | 3 | 3 | 3 | 3 |
| LED Mirror Ball | 3 | 1 | 3 | 3 | 3 |
| Fire ball -mounted on the roof | 3 | 3 | 3 | 3 | 3 |
| Sound Activated Light | 3 | 1 | 1 | 3 | 3 |
| LED Bubble Tube | 3 | 1 | 3 | 3 | 3 |
| OPTIC fibers | 3 | 1 | 1 | 3 | 3 |
| Blue LED Lights | 3 | 3 | 1 | 3 | 3 |
| 150 bulb blue LED light chain | 3 | 1 | 3 | 3 | 3 |
| Bubble Tube | 3 | 3 | 1 | 1 | 3 |
| Rotating Drum | 3 | 3 | 1 | 3 | 2 |
| Chime Frame and Beater | 3 | 1 | 1 | 3 | 3 |
| Mirror Chime bout | 3 | 1 | 1 | 3 | 3 |

Note: 1- Available, 2 – Available but not as per requirement, 3 – Not available

Acronyms

| | |
|--------|---|
| DDRC | District Disability Rehabilitation Centre |
| DEIC | District Early Intervention Centre |
| DH | District Hospital |
| DHO | District Health and Family Welfare Officer |
| DPM | District Programme Manager |
| DPMO | District Programme Managing Officer |
| ECG | Electro Cardio Gram |
| ENT | Otorhinolaryngology |
| GOI | Government of India |
| HMIS | Health Management Information System |
| HR | Human Resource |
| IEC | Information Education and Communication |
| IPGMER | Institute of Post-Graduate Medical Education and Research |
| ISSN | International Standard Serial Number |
| KIMS | Karnataka Institute of Medical Science |
| MC | Medical College |
| MO | Medical Officer |
| MoHFW | Ministry of Health and Family Welfare |
| NGO | Non-Government Organization |
| NHM | National Health Mission |
| NRHM | National Rural Health Mission |
| NPPCD | National Programme for Prevention and Control of Deafness |
| OPD | Out Patient Department |
| PIP | Programme Implementation Plan |
| RBSK | Rashtriya Bala Swasthya Karyakram |
| RCHO | Reproductive and Child Health Officer |
| SAM | Severe Acute Malnutrition |
| SAST | Suvarna Arogya Suraksha Trust |
| SN | Staff Nurse |
| SNCU | Sick children Newborn Care Unit |
| UK | Uttar Kannads |
| WHO | World Health Organization |