ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

Original Research Article

CLINICAL PROFILE OF PAEDIATRIC PATIENTS ATTENDING DISTRICT EARLY INTERVENTION CENTRE (DEIC) ATTACHED TO A TERTIARY CARE HOSPITAL IN SOUTHERN INDIA-A RETROSPECTIVE STUDY

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Received: 27-01-2023 / Revised: 07-02-2023 / Accepted: 03-03-2023

ABSTRACT

Background
A sizable portion of children are negatively impacted by common health issues like hearing loss, vision impairments, respiratory conditions, micronutrient deficiencies, and developmental delays that begin in the early years of life. A fair approach to child health care is introduced by the early intervention of various health issues and the guaranteed link to care, support, and treatment under Rashtriya Bal Swasthya Karyakram (RBSK).

Aims and Objectives
The objective of this study is to find out the clinical profile of children (the pattern of various health conditions screened under the 4D's approach.) attending our DEIC (District early intervention centre).

Materials and Methods
This is a retrospective, observational and descriptive study conducted in our DEIC attached to Government medical college -Anantapur -AP by analysing the data of 0 to 18 years age group children attending for different health conditions for a period of 2 years (April 2018- March 2020).

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

Results

A total of 12636 children between 0 to 18 years were tested and referred to the DEIC over the timeframe of the current investigation. Among all the four types of morbidities (4D's) screened, overall we found 5822(46.1%) cases related to developmental delays including disabilities,3874 /12636 (30.7%) of children with various childhood diseases, 1747/12636 (13.8%) of children with different deficiencies and 9.4% (1193/12636) had birth defects. Congenital heart diseases (517/12636, 4.1%) dominated list among birth defects in our study. Among the developmental delays and disabilities group in the present study we found more of language delay (9.9%, 1246/12636), followed by neuromotor impairment (7%, 885/12636). Out of various childhood diseases diagnosed in our study we found more of reactive airway disease (Respiratory) contributing 15.3% (1931/12636) of total cases. Severe anaemia is found as most common among various deficiencies (899/12636, 7.2%), followed by SAM (Severe acute malnutrition) in 5.14% cases.

Conclusions

Every year, a sizable number of kids were evaluated and sent to the DEIC for assistance. In order to detect morbidities as soon as possible and provide the best centre for intervention, the health sector has to concentrate more on its staff and the frequent training of peripheral health professionals about the various morbidities screened. Currently, as India sincerely works to fortify its health systems for publicly funded healthcare, our goal is to have more easily accessible health facilities with the equipment and resources needed to perform multidisciplinary evaluations and interventions under one roof. It is urgently necessary to bring together skilled specialists from many disciplines who had previously been operating independently in the intervention setting so they could share best practices and address the requirements of the kids.

Key Words

DEIC (District early intervention centre) RBSK (Rashtriya Bal Swasthya Karyakram), Birth defects, Developmental delay, Deficiencies, Diseases, Children.

INTRODUCTION

Through early intervention services and child health screenings, the Rashtriya Bal Swasthya Karyakram (RBSK) programme was introduced by the National Rural Health Mission (NRHM) as a new initiative to offer complete care to all children in the community.[1] The goal of this programme, "Child Health Screening and Early Intervention Services," is to identify and treat children's four main health issues at an early age: birth defects, childhood illnesses, deficiency disorders, and developmental delays, including disabilities. Early intervention aims to reduce handicap by intervening as soon as possible. After a disability has been determined, the intervention would involve promoting the child's growth so that they may realise their full potential and preventing the development of a handicap that could result from activity limitation. It is anticipated that around 27 crore children between the ages of 0 and 18 would receive these programmes.[1]

This effort aims to enhance children's overall quality of life by detecting illnesses, birth defects, deficits, developmental delays, and disabilities at an early age. The high prevalence of

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

childhood illness has a major impact on child mortality, morbidity, and the amount of money impoverished families must pay out-of-pocket. Ensuring the safety and well-being of children is an essential priority. Studies have demonstrated that the first six years of life are the most crucial for every child. This is particularly valid for kids who have developmental delays. Children under six, whether handicapped or not, make up a fast expanding demographic in India. Early intervention aims to reduce handicap by intervening as soon as possible. After a disability has been determined, the intervention would involve promoting the child's growth so that they may realise their full potential and preventing the development of a handicap that could result from activity limitation.[1]

We have more SNCU (Special Neonatal Care Units) survivors who are "at risk" for developmental impairments at this time when India is sincerely working to strengthen its health systems for publicly funded care. Our goal is to have more easily accessible health facilities with the infrastructure and resources needed for interdisciplinary evaluation and interventions to be provided under one roof. A multidisciplinary team working together in an interdisciplinary manner is necessary for developmental intervention. Though there aren't many facilities in India offering these kinds of treatments, the majority of them lack several essential elements needed for comprehensive assessment and intervention. With a holistic approach to providing children with special needs with complete care under one roof, the Rashtriya Bal Swasthya Karyakram (RBSK) was introduced by the Ministry of Health & Family Welfare after taking the whole situation into consideration.

Early intervention facilities at the district level will offer the much-needed early intervention services under RBSK. These centres will be readily approachable, flexible, user-friendly, and most importantly, reasonably priced. Cases reported to DEIC will undergo a complete assessment, investigation, and evaluation process following the screening and detection of any of the 4Ds, namely defects at birth, deficiencies, diseases, and developmental delays including disabilities. Early intervention will then be planned and carried out. It is anticipated that the DEIC will have the necessary supplies, equipment, and committed medical personnel to carry out the tasks. In addition, preparations are being made to implement the intervention in the neighbourhood, ensuring that the services effectively trickle down to the closest community facility.[1]

Six to seven newborns out of every 100 born in our nation each year are born with a birth defect.[2] This implies that 1.7 million birth abnormalities occur every year, and that these problems also represent 9.6% of all neonatal fatalities.[2] abnormalities that are structural or functional and develop during intrauterine life are known as congenital abnormalities. These illnesses, which are also known as birth defects, congenital disorders, or congenital abnormalities, arise during pregnancy and can be detected prior to, during, or after delivery. Approximately 6% of infants globally are born with a congenital defect, leading to hundreds of thousands of fatalities related to these conditions. Stillbirths and aborted pregnancies are not frequently included in statistics, therefore the actual number of occurrences may be significantly higher.

Treatment options for certain congenital defects, such clubfoot, cleft lip and palate, and hernias, can include both surgical and non-surgical procedures. Some can have long-lasting effects, such as down syndrome, heart problems, and neural tube anomalies. One major contributor to the worldwide burden of disease is congenital abnormalities, with low- and

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

middle-income nations bearing a disproportionate share of the burden. Additionally, there is a lower likelihood of treatment facilities for disorders like clubfoot, which can have more severe and enduring impacts.[3,4,5]

In our nation, between 4 and 70% of preschool-aged children suffer from undernutrition or nutritional deficiencies.[6] At least 10% of our kids experience developmental delays in their early years. In children, wasting is the potentially fatal outcome of inadequate nutrition intake and/or illness. Children who experience wasting are more vulnerable to long-term developmental problems, have compromised immune systems, and, in the case of severe wasting, are more likely to die. Indicators of stunting, wasting, severe wasting, and overweight among children under five are covered by the joint UNICEF, WHO, and World Bank global and regional child malnutrition estimates, which were released in March 2019. They also show that not enough progress has been made to meet the targets set by the World Health Assembly for 2025 and the Sustainable Development Goals for 2030.[7] Long-term, multi-sectorial nutrition programming that is both successful and maintained is necessary to improve children's nutrition, and many nations are making progress in this regard. To track and evaluate future national, regional, and worldwide developments, regular data gathering is essential.[7]

Micronutrients are the trace quantities of vitamins and minerals that the body needs. They do, however, have a vital influence on the body's functioning, and deficiencies in any one of them can result in serious, even fatal, illnesses. This may result in worse academic performance, less productivity at work, and a higher chance of contracting other illnesses and ailments. A balanced diet rich in a variety of foods, nutrition education, and, where necessary, food fortification and supplements can help avoid many of these deficiencies. Although these initiatives have significantly reduced micronutrient deficits in recent decades, additional work is still required.[1]

Under the NRHM, children who are diagnosed with diseases are entitled to free follow-up care, which includes tertiary level procedures.[8]

In addition to the administrative personnel, DEICs have access to a variety of experts, including paediatricians, medical officers, early interventionists, speech therapists, optometrists, lab technicians, dentists, and dental hygienists, who are all well-equipped to care for children referred from the community. Children who are diagnosed with any of the thirty mentioned medical problems are entitled to free tertiary level follow-up care, including procedures. In addition to laboratory services, DEIC offers occupational and physical, psychological, cognitive, audiological, language, visual, speech, and nutritional therapy. Additional auxiliary services offered by DEICs include help obtaining disability certifications. The goal of the current study was to evaluate the morbidity profile of children from birth to 18 years old registered in the district early intervention centre (DEIC) Anantapur (Andhra Pradesh) during a two-year study period because evidence is needed regarding the specific morbidities of these screened conditions in our region.[1] This research might aid in concentrating attention where it is needed and fortifying the system as necessary.

MATERIALS AND METHODS:

This descriptive research was conducted at the DEIC in the Andhra Pradesh district of Anantapur using records. Only the instances that were registered were taken into our DEIC. For early intervention, the children who self-reported and were found to have various morbidities at

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

the community health centre, primary health centre, Anganwadi, and subcenter were sent to the DEIC, Anantapur. The health team (medical officer, dentist, physiotherapist, clinical psychologist, audiologist/speech and language pathologist, optometrist, nutritionist, and laboratory technician) that was on hand completed the DEIC comprehensive screening for various morbidities as soon as they approached. Anthropometry, medical examination, developmental and motor assessment, audiological testing, speech therapy, visual assessment, occupational therapy, physiotherapy, play therapy, behavioural modification, and parent education programmes were among the tests that could be performed at this facility with the basic equipment. An interdisciplinary team housed in one location is necessary for the developmental intervention. Given that this DEIC is affiliated with the Medical College, verification following peripheral screening and referral for action is made simpler. Before collecting the data, we took permission from medical officer in charge of DEIC. We collected the data for 2- years from April 2018 to March 2019 and April 2019- March 2020. Microsoft Excel was used to extract the data for the monthly report that was sent to the RBSK. The twelve monthly reports were sent to us, and for examination, they were all combined into a single excel master file. The analysis was carried out using IBM, India Pvt. Ltd.'s SPSS 20.0 version. Data were shown as proportions and frequencies.

RESULTS

Over the course of the research period, 12636 youngsters were screened and sent to our DEIC in the current investigation. Among all the four types of morbidities (4D's) screened, overall we found 5822(46.1%) cases related to developmental delays including disabilities, 3874 /12636 (30.7%) of children with various childhood diseases, 1747/12636 (13.8%) of children with different deficiencies and 9.4% (1193/12636) had birth defects. Congenital heart diseases (517/12636, 4.1%) dominated list among birth defects in our study. Among the developmental delays and disabilities group we found more of language delay (9.9%, 1246/12636), followed by neuromotor impairment (7%, 885/12636) in the present study. Out of various childhood diseases diagnosed in our study we found more of reactive airway disease (Respiratory) contributing 15.3% (1931/12636) of total cases. Severe anaemia is found as most common among various deficiencies (899/12636, 7.2%), followed by SAM (Severe acute malnutrition) in 5.14% cases.

Category	April 2018- March 2019	April 2019- March 2020	Total	%(n=12636)
Birth Defects	573	620	1193	9.4
Disease	2523	1351	3874	30.7
Deficiency	1160	587	1747	13.8
Developmental delay	3525	2297	5822	46.1

Table 1: Distribution of category wise cases of 4 D's diagnosed in our study population

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

Birth Defect	April 2018-March 2019	April 2019-March 2020	Total	%(n=12636)
Neural tube defects	7	7	14	0.11
Cleft lip,Cleft palate	33	47	80	0.63
Club foot	26	42	68	0.54
DDH	1	3	4	0.032
Congenital heart diseases	191	326	517	4.1
Down syndrome	31	28	59	0.47
Congenital cataract	10	9	19	0.15
Congenital deafness	272	157	429	3.4
ROP	2	1	3	0.02
Total	573	620	1193	9.4

Table 2: Distribution of different types of birth defects diagnosed in our study population

Disease	April 2018-March 2019	April 2019-March 2020	Total	%(n=12636)
Skin conditions	389	52	441	3.5
Otitis media	179	62	241	1.91
Rheumatic heart disease	1	0	1	0.008
Reactive airway disease	373	48	421	3.3
Dental conditions	1075	856	1931	15.3
Convulsive disorders	235	185	420	3.32
Others	271	148	419	3.32
Total	2523	1351	3874	30.7

Table 3: Distribution of different childhood diseases diagnosed in our study population

Deficiency	April 2018-March 2019	April 2019-March 2020	Total 899	%(n=12636)
Severe anaemia	580	319	899	7.2
Vit -A-deficiency	63	32	95	0.8
Vit-D-Deficiency	56	27	83	0.7
SAM	461	189	650	5.14
GOITRE	0	0	0	0
Total	1160	587	1747	13.8

Table 4: Distribution of different deficiencies diagnosed in our study population

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

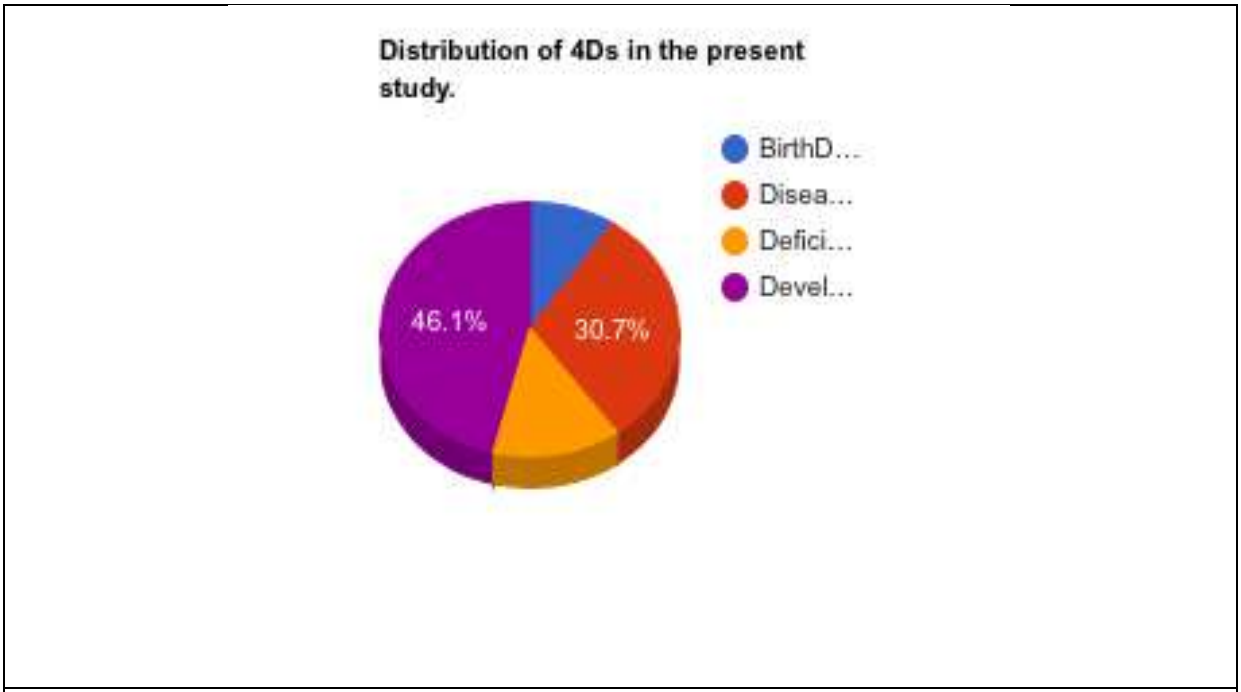

Figure 1: Pie diagram showing the distribution of 4Ds in the present study

Developmental Delays and Disabilities	April 2018-March 2019	April 2019-March 2020	Total	%(n=12636)
Vision impairment	226	221	447	3.5
Hearing impairment	385	273	658	5.2
Neuromotor impairment	631	254	885	7.0
Motor delay	452	222	674	5.3
Cognitive delay	558	300	858	6.8
Language delay	428	818	1246	9.9
Behaviour disorder(Autism)	206	20	226	1.8
Learning disorders	252	49	301	2.4
ADHD	387	140	527	4.2
Total	3525	229	5822	46.1

Table 5: Distribution of different types of developmental delays and disabilities diagnosed in our study population

DISCUSSION

A new initiative from the Government of India, the RBSK project seeks to screen, identify, and treat children from birth to age 18 in terms of their health. The RBSK Programme gave MHTs a useful platform for early screening of children aged 0 to 18 for a variety of health issues, and it also gave DEIC staff members excellent referral assistance and management for children who were identified and sent to them. One of the most innovative initiatives in the world, RBSK aims to decrease impairment in children by providing early screening and treatments for 4Ds. It moves from just existing to surviving healthily.[1] According to estimates from the World Bank and the WHO, over a billion people worldwide—roughly 15% of the total population—live

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

with a handicap.[7] Of these, 110 million individuals (2.2%) to 190 million adults (3.8%) have really serious functional issues.[7]

Only individuals who were tested and found to have any health issues at the peripheral health centres were included in this study. For intervention methods aimed at improving health and quality of life, we referred to our DEIC. Our study showed 9.4 % (1193/ 12636) of birth defects in 2 years period (April 2018 to March 2020) in our district in Andhra Pradesh state.

According to the National Birth Defects Prevention Study,[3] conducted in the United States, 14% of cases have two qualifying birth defects, 9% have three or more eligible birth abnormalities, and 76% of cases have just one eligible birth defect. 18.9 newborns per 1000 had a birth defect, on average. A total of 270,878 births were enrolled in the population-based cohort research (Utah birth defect network) with 5504 (2.03%) babies having significant birth abnormalities. Of the 5661 birth defect patients admitted to a hospital for a descriptive study, 5156 had a single congenital abnormality and 505 had multiple congenital malformations.[4]

7.2% (899/12636) of the severely anaemic children aged 0–18 years were referred to our DEIC during the two-year study period. This percentage was compared to the National Family Health Survey (NFHS) ‑4 (2015–2016) for children aged 6–59 months with anaemia (<11 g/dl) for the state of Andhra Pradesh and for all of India, which was 58.5%. The age range of only 6–59 months was included in NFHS–4, thus it is not possible to compare the results of our study between birth to 18 years old. However, we discovered that 5.14 percent (650/12636) of the children who had severe acute malnutrition (SAM) were sent to our DEIC. According to NFHS-4 statistics, the state's rate of severe stunting was 4.5%, while the national rate was 7.5%. We are only able to display the differences since NFHS-4 was provided with data for the entire nation, but our study just looked at the district.

Of the children in our research, 46.1% (5822/12636) had developmental delays and impairments for which early intervention referrals had been made in the previous year.[5] According to estimates from the World Bank and the WHO, over a billion people worldwide-roughly 15% of the total population-live with a handicap. Of these, between 110 million (2.2%) and 190 million (3.8%) adults struggle to operate at a very high level. The optimal development of linguistic, cognitive, motor, and socio-emotional skills, as well as academic performance, depends on early identification and intervention.[7] However, only about 10% of children with delays are diagnosed and get assistance.[9,10] In comparison to 53 million in 1990, 52.9 million children under the age of five worldwide[11]-54 percent of them were male-had developmental impairments in 2016.

According to a population-based research,[12] the incidence of developmental delays in children under the age of six years exhibited a rising tendency throughout the course of the study, with a range of 7.0 to 16.3/1000 person-years. In the last year, 1.1% of adolescents had health difficulties that were documented, and they were sent to DEIC for early intervention.

Due to its record-based methodology within a single area, the research had some constraints that prevented it from being compared to national data conducted in other contexts. Dropouts from school, nonattendance at Anganwadi canters, lack of screening during health workers' house-to-house visits, and absence from the catchment area would have all occurred. Since they participate in several health programmes as part of their regular employment, the staff members providing peripheral healthcare are overworked. Hence, it's possible that some of the catchment areas-hamlets and remote locations-were overlooked. In order to reduce the

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 03, 2023

number of unreported cases and enhance the timely and accurate identification of all morbidities, health care personnel must get training, or a specialised mobile team must be periodically enlisted for peripheral screening.

CONCLUSIONS

A sizable portion of children are negatively impacted by common health issues like hearing loss, vision impairments, respiratory conditions, micronutrient deficiencies, and developmental delays that begin in the early years of life. Establishing an early intervention facility is intended to offer referral assistance to kids whose health screening results reveal health issues. Consequently, it makes sense that early detection and intervention services can greatly enhance the quality of their lives. Proof of the unique morbidities of these screening disorders in the relevant geographic area is needed. It is urgently necessary to bring together skilled specialists from many disciplines who had previously been operating independently in the intervention setting so they could share best practices and address the requirements of the kids.

We have more SCNU survivors who are "at-risk" for developmental impairments at this time when India is sincerely working to strengthen its health systems for publicly provided care. Our goal is to have more easily accessible health facilities with the infrastructure and resources necessary for multidisciplinary evaluation and interventions to be provided under one roof. The RBSK provides an equitable approach to child health care through DEICs and assigns sufficient priority to effectively address the "4 Ds" of children's health: defects at birth, diseases, deficiencies, developmental delays, and disabilities. Early identification of various health conditions and an assured link to care, support, and treatment are key components of this approach. The ultimate goal is to optimise the health outcomes of this country.

to develop evidence-based strategies, policies, and comprehensive programmes by gathering population-based data on health and long-term care needs, including those that assistive technology may be able to meet; to encourage or invest in research, development, innovation, and product design in order to lower the cost of currently available assistive products; and to develop a new generation of products, including high-end or advanced assistive technology, by utilising new evidence-based technologies and universal design in collaboration with academia, civil society organisations, particularly those that represent older adults and people with disabilities, and the private sector as needed;

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