**Major CDC Projects**

**1. Evaluation of Welfare Schemes implemented at Attappadi under Department of Women and Child Development, Government of Kerala**.

**Background**

* High rate of infant mortality, maternal and childhood malnutrition in Attappadi
* Infant deaths- 31 in 2013
* Premature delivery and LBW were reported as reasons of infant deaths
* Maternal malnutrition and anemia observed as major risk factors for LBW and IUGR
* Several targeted interventions by WCD

**Objectives**

* To understand the process of implementation of the programmes
* To find out the KAP of mothers regarding maternal & child health
* To assess the impact of first 1000 days program on the health status of children below 24 months
* To assess the growth and development of under 5 children in Attappadi
* Verbal autopsy of newborn and infant deaths occurred during the last five years to confirm the cause of death.
* To evaluate the nutritional status of children enrolled in Jatak-janai program, using secondary data generated by the Jathak Janani scheme

**Major recommendations - First 1000 Days Programme- Jathak & Janani**

1. Continuing of education activities : which was stopped from 2017

2. Real time monitoring of data in Jathak and Janani :. May be given more emphasis in the programs with stress on timely interventions especially in Janani scheme. Voluminous data collected need to be analyzed periodically Janani data not yet analyzed

3.Data transfer in Jathak: To solve problems in IVRS and to improve accuracy of data , IVRS to be converted to mobile application

4. Combating Anemia (40%) among pregnant Women : High LBW (28%)–to improve compliance to Iron Folic Acid by sustained motivation, switching on to tablets which are well tolerated or fortification of food supplementation.

5. Improving facilities at Kottathara multi- specialty hospital:

Inadequate infrastructure facilities and HR -upgrade Kottathara hospital and availability of specialist doctors be ensured, to avoid frequent referral of women to far away hospitals for delivery

6. Training of peripheral staff: Lack of IEC materials - retraining & written IEC materials to be provided

7. Adolescent health : High level of anemeia among mothers and high LBW - Hb level and growth monitoring of adolescent girls may be done and corrected.

8. Community education for behaviour change: Many undesirable behaviours that cause maternal & child morbidity and morality - The educational programs may be in their own dialect considering their dialect and culture and conducted in a de-centralized manner.

9. Addressing Social determinants: Living environment, familial and cultural factors need to be considered for behaviour change.

Many undesirable social practices - consanguineous marriage, tobacco use, etc

Structured tobacco cessation programs are necessary as use of smokeless tobacco products are high among women

**Community Kitchen – Recommendations**

Ensure quality of food : quality of food not up to the mark hence nutrition compromised - needs a rigorous standardization of the quality of food provided to the beneficiaries, adding locally preferred items in the menu.

Limiting the service to the deserving beneficiaries : Food often shared among all family members - the services may be limited to the actual deserving beneficiaries and encouraging them to take food from the venue itself.

Ensure regular and timely service : Irregular services of Community kitchen- Ensure availability of water, fuel and regular payment to operators

Adopting a gradual but clear cut “exit plan’: Other food security measures and financial assistance schemes are available - encouraging traditional agriculture among tribal communities with supportive nutritional interventions along with supportive interventions provided by various departments

**Jalanihi - Recommendations**

Though potable drinking water is available in most of the Anganwadi centres, a system for maintenance of water sources and ensuring quality of water provided needs to be ensured

**2. Autism Management Training Program for DEIC Functionaries of Jammu & Kashmir and development of a handbook on ASD group therapy for functionaries of DEIC.**

As per the request from Children in India Trust, Child Development Centre (CDC), Kerala conducted a training program for District Early Intervention Centre (DEIC) functionaries and Pediatricians in Jammu and Kashmir on Management of Autism Spectrum Disorder (ASD) among children during June – July 2023. The program was delivered in a hybrid mode using online platform and direct hands on training by a team of experts from CDC. For early detection of ASD among children simple validated tools for community screening and trained health workers are needed. For providing early intervention effectively, proven models and trained therapists are needed. CDC, Kerala has developed and validated simple screening tools for early detection of the disorder as well as an effective group therapy model for providing early intervention. 10 online sessions were provided by experts in the field and two day hand on training for the DEIC functionaries and pediatricians was provided by a team of therapists consisting of 2 Developmental therapists, 1 Occupational therapist and 1 Speech pathologist from Child Development Centre and 75 participants attended the program. CDC Kerala prepared a Handbook on CDC Model Group Intervention Program in Autism Spectrum Disorders and shared it to the participants. This program is likely to be conducted in many parts of India as proven effective early intervention programs are the need of the hour across our nation.

**3. Development of a Comprehensive Resource Book on Autism Spectrum Disorder, supported by KSSM.**

The development of the Resource Book included content development workshops, Focused Group discussions (FGD), in-depth interview of experts in the various aspects of ASD with regular interactions, extensive review of national and international literature. We conducted 8 two day workshops covering all aspects of ASD including nearly 60 experts from different specialty. This content was finalized by conducting series of workshops including experts from different specialty under the chief editorialship of Dr MKC Nair, former Vice Chancellor of KUHS and founder Director of CDC and Dr Paul Russel, Professor of Psychiatry, Child and Adolescent Psychiatry Unit Christian Medical College, Vellore.

This resource book on Autism explores and expands on the practical and jargon free information on Autism Spectrum Disorder. The objective is to provide guidance to professionals and care givers involved in the management of ASD, an outline about the problem and the practical guidelines on available intervention. The book is organized in three sections: (1) General information on ASD, (2) Special Information on ASD and (3) Executive summary & way foreword. Key topics addressed in the resource book in the first section include - Introduction, History and Construct of ASD, Epidemiology, Aetiology, Clinical features, Course - Prognosis, Diagnosis, Differential Diagnosis, and Interventions in ASD. In the second section the the outcome of a series of workshops on management of ASD by experts in addressing (i) Communication issues, (ii) Behavioural issues, Neurodevelopmental issues and Comorbid conditions, (iv) Sensory Dysfunction Issues, (v) Biomedical Management, (vi) Educational issues and (vii) Social Development and Parenting in ASD. We take this opportunity to thank Kerala Social Security Mission (KSSM) for entrusting Child Development Centre to formulate this extensive exercise on ASD.

This resource book was developed with input from Dr. Paul Russell, Professor, Department of Child and Adolescent Psychiatry, Christian Medical College, Vellore and Dr. Muhammad Asheel, then Executive Director of KSSM. We appreciate the support of experts from different specialties, without their help we may not be able to come out with the real time experience of professionals who handle these children. We would like to express our sincere thanks to the CMC Vellore team under the leadership of Dr Priya Mammen, Professor & Head of Child Adolescent Psychiatry Unit for their support in the validation of this resource book. We are indebted to Dr MKC Nair, former Vice Chancellor of Kerala University of Health Sciences and Dr Paul Russell for accepting our request as the Editor in Chiefs of this book. We hope that this resource book will make it easier for caregivers to understand both the nature of the services available and the role of each service in supporting the child with ASD. However, the information provided in this resource book is not a recommendation or endorsement of any available resources, therapeutic methods, or service providers and does not replace the advice of medical or special educational or rehabilitation professionals.

**4. Development of resource materials on early detection of developmental delay/disability and provided ToT program for 1250 CDPO’s and ICDS across Kerala.**

Developed a resource material on early developmental screening of children below 6 years as part of ToT program for CDPOs and ICDS Supervisors of Women and Child Development Department.

**5. Prevention of Non-communicable disease risk among higher secondary schools in Kerala in association with General Education Department.**

Directorate of General Education, Higher Secondary wing entrusted Child Development Centre to conduct a program entitled “Prevention of Non Communicable Diseases: Life Style Disease Screening and Intervention Program For Higher Secondary School Students in Kerala in 820 Government Higher Secondary Schools in Kerala. In the first phase, NCD risk screening of the students were done using an online survey portal and 760 schools completed the survey and 1,00,860 students participated in the survey. In the second phase, risk categorization of the students were made and list of students who have risk of elevated Blood Pressure, overweight and obesity, and stress were sent to all schools along with information booklets and health cards for both boys and girls. RBSK nurses from NHM check the BP of all students who had elevated blood pressure and obesity in the initial screening by trained Souhrida Coordinators and issue health cards and provide appropriate referral to all the needy students and ensure 3 months follow of these students. They will also give counselling on healthy lifestyle. Souhrida Coordinators will organize a half day session on non-communicable disease prevention in all Government Higher Secondary schools by Pediatricians/medical officers.

**6. GAP analysis of the District Early Intervention Centres in Kerala in association with UNICEF & NHM.**

As part of the UNICEF initiative of ‘Creating Awareness and Strengthening Systems for Screening, Surveillance and Management of Developmental delays or disorders in Kerala’ done in collaboration with NHM, CDC has been recommended as a “Centre of Excellence/Resource Centre for inclusive early child development” and awaiting for an order from the Government of Kerala. As part of this various research and training programmes has been envisaged. The first one is the “GAP analysis of the District Early Intervention Centres in Kerala”. Aim of this study is to assess whether DEICs are functioning as envisaged in the national guidelines for RBSK, identify potential gaps in early detection and early intervention for developmental delay/disability and obtain suggestions to improve the overall functioning of DEICs in Kerala. As part of this 2 Research Assistants were recruited for 6 months. Training of the research team was done and data collection started.

**7. Early adiposity rebound and incidence of cardiovascular risk factors in a cohort of Low Birth Weight children, supported by ICMR**

The adiposity rebound is the second rise in body mass index that occurs between three and seven years. The mean age at adiposity rebound is about six years, and the earlier it occurs the greater the adiposity in the teens. An early age at adiposity rebound is known to be a risk factor for later obesity. Weight at birth is known to be associated with early adiposity rebound, obesity and metabolic syndrome, especially in children with an early catch up growth. The LBW children are at increased risk for metabolic conditions. Low Birth Weight often leads to Adiposity Rebound which further leads to higher risk for metabolic conditions. Although available data from the cohort indicates that there is adiposity rebound, it is limited to New Delhi setting. Kerala is different from other states in its health indicators and health care services. This study will see the incidence of adiposity rebound among LBW children in Kerala setting.

Objectives

1. To formulate and maintain a low birth weight cohort at CDC

2. To find out the incidence of adiposity rebound among children born low birth weight

3. To assess the association between adiposity rebound and metabolic status and other cardio vascular disease risk factors among low birth weight children at two years.

4. To assess the trajectories of growth and development and age appropriate growth status in different Low Birth Weight phenotypes

Expected outcome

This study will help advance the understanding of the adiposity rebound among low birth weight children and their metabolic risk. It will emphasize the importance of early life intervention for non-communicable diseases.

**8. Adiposity gain, and early adiposity rebound in low-birth-weight children and its association with cardio metabolic risk, cardiac structure, and cardiac function in children at 2- years in Kerala: A birth cohort analysis, supported by ICMR.**

**Background:** Adverse events occurring during early life play crucial role in the development of chronic diseases in future life. This acts as the foundation for the notion of Developmental Origins of Health and Disease (DoHaD).(1). As a result, the first thousand days of life from conception to two years of age act as critical period in an individual’s life.(2)*.* Inadequate nutrition during the early life of an individual could lead to adiposity gain and early adiposity rebound. (3). Further, early adiposity is found to be associated with fat deposition during mid childhood and could affect the cardiac structure and function at midlife(4) and ultimately it could predispose an individual to early onset of cardio metabolic diseases. (5)*.* There are limited Indian studies assessing the impact of early feeding practices on the adiposity gain and the consequences of early adiposity rebound. Furthermore, it is unclear how nutritional practices in the early years of life influence the pattern of epigenetic pathways that promote adiposity rebound in low-birth-weight children. Although the state of Kerala is in an advanced stage of epidemiological transition, low-birth- weight in children is a significant public health problem. The LBW poses to be a burden in Kerala with a prevalence of 11.25%.(11). The availability of a well-characterized cohort of LBW children at the Child Development Centre will help to explore the relationship between early feeding practices, adiposity gain and its cardio metabolic consequences. Early identification and stratification of baseline risk and the mediators of such risk in the first thousand days will help us to elucidate opportunities beyond birth to slow down the progression of cardio metabolic risk in LBW children. This cohort is being followed up at regular intervals to assess growth, development and behavioral status from their birth on regular basis. We propose to conduct a detailed follow-up of this birth cohort at 2-years to assess the impact of early feeding practices on adiposity gain and cardio metabolic health of LBW children during the first two-years of life.

**Objectives**

**Primary Objectives**

* To study the nutritional practices in the first thousand days of life and its influence on cardiovascular health in terms of adiposity, high blood pressure, insulin resistance, dysglycemia, dyslipidemia, and intima media thickness in low-birth-weight children at two-years of age.

**Secondary objectives**

* To study the role of early life nutrition in differential DNA methylation pattern at selected CpG sites according to adiposity rebound at two years.

**Expected outcomes**

This study will help to advance the understanding of the early feeding practices and its influence on DNA methylation pattern of specific obesity associated genes, adiposity pattern, cardiac structure, function and cardio metabolic risk among LBW children. Thus, the study will provide crucial data on the importance of early-life nutrition in maintaining cardio metabolic health. It will also aid in developing appropriate feeding practices for LBW children to preserve optimum cardiovascular health.

**9. Need Assessment of Health Care Counselling for mothers of preterm babies admitted in Neonatal Intensive Care Unit**

Health care counselling (HCC) is a relatively new concept that amalgamates human biology, human psychology and medical sociology principles and applies the same in real time clinical situations. The term ‘Health Care Counselling’ is coined to denote introduction of the science and practice of counselling in health care delivery points, apart from the existing mental health settings. Introduction of health care counselling is expected to bring about palpable changes in the existing communication gap between health care professionals and their clients. In India, there is a real paucity of trained mental health personnel and hence counselling services are restricted mostly to mental health departments alone. Information about how parents of hospitalized high-risk infants perceive NICU, and also an understanding of the needs of such parents may enable NICU staff to identify parents at risk and plan interventions to meet those needs and promote family functioning. In light of this, it is important to identify factors associated with increased parental stress in order to develop effective health care counselling strategies for improving mental health in NICU parents. The present study was an attempt to understand the health care counselling needs for the mothers of preterm babies admitted in NICU.

Methods: This was a descriptive study using qualitative methods. The study participants were; (i) Health care providers: Pediatricians and nurses from NICU, SAT Hospital, Medical College, Thiruvananthapuram, (ii) Health care seekers: Mothers and grandmothers of preterm babies admitted in NICU of SAT Hospital, Medical College, Thiruvananthapuram, and were on newborn follow up at Child Development Centre, Medical College, Thiruvananthapuram. 29 in-depth interviews were conducted among different stakeholders for the qualitative study.

Major needs identified were; (i) Information needs, (ii) Psychosocial support needs, (iii) Communication needs, (iv) Parent participation Needs, (v) Support needs after discharge from NICU, (vi) Need for Health Care Counselling and obtained suggestions to implement health care counselling to parents of preterm babies.

**10. A comparison of Vitamin D levels in children with Autism Spectrum Disorders (ASD) and normal children**

Although studies on Vitamin D status of children with ASD have been conducted, evaluation of vitamin D status of children with ASD is not done in India as of our knowledge. If this study is able to identify a significant Vitamin D deficiency in children with ASD, interventions that can make even a small difference to the lives of children with ASD by reducing their symptoms, the benefits will be considerable in terms of social and emotional well-being and educational achievements can be initiated. This will aid in providing interventions and improving the outcome in those children.

Objectives

1. To assess the Vitamin D levels of children with ASD and to compare it with the vitamin D levels of children without any neuro developmental disorders

2. To find out if there is any relationship between severity of ASD and Vitamin D status

**VITAMIN D AND ASD**

Total: 103 Children

ASD/Non-ASD-58/45

Male/Female (Total): 90/13

**11. Translation to Malayalam Language and Validation of Vanderbilt Assessment Parent Informant Scale for ADHD**

The Vanderbilt Attention Deficit/Hyperactive Disorder Parent Rating Scale (VADPRS) is an ADHD rating scale developed to provide efficient and useful diagnostic assistance. The 55-item VADPRS consists of 18 DSM-IV ADHD symptom items as well as subscales that screen for 8 ODD behaviors, 14 CD behaviors, and 7 anxiety or depression behaviors, all on a 4-point scale of frequency (0 = never, 3 = very often). An additional functioning subscale consists of eight items which examine academic performance and relationships on a 5-point scale (1 = above average performance, 5= problematic performance) to help establish that a child meets diagnostic criteria for ADHD. CDC validated the Malayalam version of this tool and is under publication.

**12. Neurodevelopmental Follow up of Low Birth Weight Babies (<1800 gm) at 6-8 years of Age.**

**Objectives**

1. To assess overall health status (height, weight, BMI, vision, hearing, speech, etc) of these children.

2. To assess the cognitive status of these children through IQ assessment.

3. To assess the adaptive skills of the children using VSMS

4. To assess the behaviour of these children using Child Behaviour Checklist.

5. To screen the neurodevelopmental status of the children using Neuro Developmental Screening Tool (NDST)

5. To offer confirmatory and referral services for the developmental and health related issues

Neurodevelopmental follow up of LBWs (<1800 gms) was done at 6-8 years. 10 NDDs were screened using NDST. Appropriate confirmatory tests were done for the screen positives.

Data collection of this study was completed. On the whole 345 children attended CDC LBW follow up clinic during 2013-14 were included in the study. Unable to contact many children due to change in contact numbers. Recruited 192 LBW babies. Data entry completed. Data analysis and report writing pending.

**13. Translation and validation of Modified Checklist for Autism in Toddlers, revised with follow-up (M-CHAT-R/F)**

Toddler screening for autism spectrum disorders (ASD) has a tremendous impact on reducing the age of diagnosis, thereby increasing the time children with ASD can receive early intervention (EI). In turn, EI improves long-term prognosis in ASD. The American Academy of Pediatrics (AAP) recommends screening all toddlers for ASD at 18 and 24 months, yet implementation is far from universal, in part due to heavy demands during brief pediatric check-ups and other identified barriers. The **Modified Checklist for Autism in Toddlers (M-CHAT)** is a psychological questionnaire that evaluates risk for [autism spectrum disorder](https://en.wikipedia.org/wiki/Autism_spectrum_disorder) in children ages 16–30 months. The checklist is designed so that primary care physicians can interpret it immediately and easily. The M-CHAT R/F is an amended version of the original M-CHAT, a 23-item parent-report measure designed to detect ASD symptoms in toddlers between the ages of 18 and 30 months11,12. M-CHAT-R/F is a two-stage ASD screening instrument intended for parents of 16 to 30 months old children. It contains 20 items for which the parent choses a YES/NO answer. In case the screening proves positive (3 or more positive answers), a structured Follow-Up interview (FUI) is conducted with the parent, in order to attain additional information regarding examples of risk behaviour of the child and to determine the need for further diagnostics, monitoring and evaluation. For children whose scores are 8 and above, it is acceptable to bypass the Follow-Up and refer them immediately for diagnostic evaluation and eligibility evaluation for early intervention13. Stage 2 of screening, the M-CHAT-R/F (follow up), involves a structured follow-up interview over the telephone or in person in which parents of screened positive children are asked questions about items failed and examples of concerning behaviors are solicited. This two-stage screening process yielded a positive predictive value (PPV) for receiving an ASD diagnosis of 0.475 and a PPV of 0.946 for any developmental delay or concern. The M-CHAT-R/F, has been demonstrated to have high [validity](https://en.wikipedia.org/wiki/Validity_(statistics)) and [reliability](https://en.wikipedia.org/wiki/Reliability_(statistics)) for screening toddlers for [autism spectrum disorder](https://en.wikipedia.org/wiki/Autism_spectrum_disorder). A child whose score was greater than 3 at the first screening (18 months) and greater than 2 at the follow up (24 months) had a 47.5% risk of being diagnosed with autism spectrum disorder. The present study conducted to translate the Modified Checklist for Autism in Toddlers (M-CHAT-R/F) to Malayalam and validate it, which may be suitable to clinical and research settings for early detection of symptoms of autism in 18-24 months old children.

**Aim** of this study is translating and validating the Modified Checklist for Autism in Toddlers (M-CHAT-R/F) into Malayalam for effective utilization of it in the clinical setting.

**Objectives**

1. To translate the Modified Checklist for Autism in Toddlers (M-CHAT-R/F) into Malayalam.
2. To validate the Malayalam version of Modified Checklist for Autism in Toddlers (M-CHAT-R/F).

**Completed the validation process and published the article.**

**14. Developmental and behavioral outcome of late preterm babies on CDC model intervention as compared to those without intervention and normal term babies**

1. To study the long term developmental outcome of late preterm babies getting CDC model intervention as compared to those without intervention and normal term babies at 1 and 2 years.

2. To assess the behavioural outcome of late preterm babies with and without intervention and normal term babies

**Ongoing project. Expected to be completed during 2025.**

**14. Assessment of neurodevelopmental status of primary school children (standard 1-4) in Thiruvananthapuram district**

1. Prevalence of neuro- developmental disabilities among lower primary school children in Thiruvananthapuram district.

2. Appropriate referral services and intervention for identified children

**Ongoing project. Started in 2024 September in 10 selected Government primary schools in Thiruvananthapuram district.**

**15. Development and validation of a screening tool for teachers and an assessment tool on Learning Disability for children aged 7-12 years**

1. To develop a screening tool to detect Specific Learning Disability (SLD) in 7-12 year old children by general teachers

2. To develop an assessment tool to detect Specific Learning Disability (SLD) in 7-12 year old children

3. To validate these tools using NIMHANS Battery

**Ongoing project. Developed screening tool for teachers and assessment tool on SLD. Stared data collection in 5 schools in Thiruvananthapuram district.**

**16. Effectiveness of Health Care Counselling (HCC) for Mothers of Preterm Babies in Newborn Intensive Care Unit**

1. To study the knowledge of mothers on essential newborn care

2. To find out the mental health status of mothers of children in NICU

3. To develop an intervention package for providing HCC for mothers of children admitted in NICU.

4. To provide HCC for mothers of children admitted in NICU.

5. To find out the effectiveness HCC in providing care for children in the newborn period.

Developed intervention package. Developmental follow up children ongoing.

**17. Prevalence of Neurodevelopmental Disorders among Siblings of Children Diagnosed as Autism Spectrum Disorders**

**Objectives**

1. To screen the siblings of children with diagnosed ASD for neurodevelopmental disorders.

2. Find out the most common NDD associated with ASD.

3. Find out the recurrence rate of ASD in the sibling population.

4. Give Early Intervention for the siblings in whom NDDs are detected.

**Ongoing project**.

**18. Developmental and behavioural outcome of late preterm babies on CDC model intervention as compared to those without intervention and normal term babies**

**Objectives**

1. To study the long term developmental outcome of late preterm babies getting CDC model intervention as compared to those without intervention and normal term babies at 1 and 2 years.

2. To assess the behavioural outcome of late preterm babies with and without intervention and normal term babies

**Status: Ongoing**

**19. Cardiovascular risk factors among young adults born Low birth weight and a stratified risk prediction score for development of Pre-metabolic syndrome**

This study aims to study the prevalence of metabolic syndrome at 36 years in a cohort of low birth weight babies using the National Cholesterol Education Program's Adult Treatment Panel III (ATP III). The incidence of low birth weight (LBW) in India varies between 25-30%, of which 60-65% are because of intra uterine growth retardation (IUGR) The quartet of diabetes, hypertension, dyslipidaemia and obesity is considered as a risk factor for metabolic syndrome. LBW has been identified as an independent risk factor for these conditions. These diseases together have a tremendous impact on Health Economics in India by causing cardiovascular involvement which is a leading cause of death and disability. Metabolic syndrome adds to the morbidity and mortality of cardiovascular disease. Considering the cost of treating the quartet of metabolic syndrome and its complications and its impact on health economics of the country, preventive strategies of early detections and measures for tight control instituted early in the disease are recommended. A similar study has been done in Pune in a 22-year-old cohort. This study aims to study a 35-year-old LBW cohort, calculate the Global CHD risk and give appropriate life style modification and pharmacological treatment in relevant cases.

Objectives

1. Do a detailed life style evaluation using WHO, STEP wise approach to non-communicable disease risk factor surveillance. (diet and physical activity and tobacco exposure)

2. Evaluate stress using the ‘Perceived Stress Inventory.

3. Diagnose metabolic syndrome and pre metabolic syndrome using the National Cholesterol Education Program's Adult Treatment Panel III (ATP III). South Asian waist circumference cut off will be used.

4. Assess the relationship between anthropometry, physical measurements, biochemical parameters and Echo findings among LBW young adults with pre metabolic syndrome and metabolic syndrome

5. To develop a weighted risk prediction score for development of pre-metabolic syndrome in young adults who were low birth weight.

**Expected outcome:** Incidence of Cardiovascular risk factors among young adults born Low birth weight and development of a risk prediction card for development of Pre-metabolic syndrome among LBW children

**20.** **Assessment of Growth and Developmental trajectories of children aged 0-6 months in children's homes in Thiruvananthapuram district and effectiveness of early stimulation**

Growth and Development of institutionalised children has not been studied extensively. Majority of studies are from high income countries. In India, most of studies focus on mortality and morbidity. Evidence reveals that Institutionalised children have worse developmental outcomes than other children. The opportunity and resources are limited to institutionalised children than others. The identification of developmental outcomes among children before school age will facilitate in the detection of developmental delay. So, there is a necessity in initiating interventions as early as possible to prevent its negative consequences on the scholastic performance and overall development of the children at the school age.

**Objectives**

To assess the Growth using Anthropometry

To assess the development using DDST(0-6Y), LEST and TDSC (0-6Y) and GDT for IQ assessment.

To develop a caregiver’s intervention module to manage the problems related to growth and development among the children

To provide a training programme for the Caregivers at children's Home

**Developed care givers module and provided training for care givers of children’s home.**

**21.** **Neurodevelopmental assessment of extremely low birth weight children (<1000g) at their preschool age (4-6 Years)**

With advancement in neonatal care, survival rate among extremely low birth (ELBW) babies, defined as birth weight <1000 gm has increased. These babies are at increased risk of neurodevelopmental problems. A better insight into the challenges of ELBW babies will aid in regular monitoring of these babies for the probable outcomes and thus timely interventions. Unfortunately, neurodevelopmental profile of these babies at their pre-school age has not been studied extensively. Assessment of neurodevelopmental outcome of these children has a pivotal role in the prevention of disabilities. The study aims to assess neurodevelopmental status of extremely low birth weight children at their pre-school age.

Nearly 69.8% (n=30) of the children were screened positive for one or more of the neurodevelopmental disorders. Speech and Language problems was the most common disability seen among the participant children when screened (44.2%). This was followed by vision (20.9%) and ADHD (18.6%). These children also showed difficulties in Fine motor (34.9%), Gross motor (23.3%) and social skills (53.5%). About 30 % children showed poor growth with their weight and height below 3rd percentile. The results show that the prevalence of NDD among ELBW babies at 4-6 years of age is high even with early stimulation. This data when projected to communities where adequate early interventions are not accessible is alarming.

**22. Development and validation of tools for assessing pre-writing, pre-reading and pre-math skills among preschool children aged 2-5 years**

Developed and validated the Pre-writing Assessment Tool (PAT)

Developed tools for assessment of pre-reading and pre-numeracy skills among 2-5 year old children. Assessment of 605 rural, urban, coastal and slum anganvadies, Govt and private preschools was completed and data analysis is going on. Test- retest and inter-rater reliability assessment have to be completed.

**23. Digital technology enabled health care management information system-Patient centric solution for children with Autism Spectrum Disorder**

Most hospitals in India continue to rely on paper work/file system for data management. The physical mode of data management poses several disadvantages and lead to issues like delayed diagnosis, lack of personalized care for patients, etc. Health care Management Information System (HMIS) with artificial intelligence (AI) integrated algorithms are now being used in developed countries for improving the treatment for patients and providing proper care. CDC Kerala is dealing with children with neurodevelopmental issues using physical file system. Research is being conducted to study the impact of AI integrated HMIS in CDC and how it affects the diagnosis and treatment of patients.

1. To examine the improvement in diagnosis and treatment planning when AI powered HMIS is implemented in CDC.

2. To investigate the ethical considerations and privacy concerns associated with use of AI in CDC.

3. To evaluate the accessibility and user experience of AI based HMIS in CDC

4. To explore attitude and perception of health care providers towards adopting AI technology

5. To identify the barriers and facilitations to successful implementation of AI powered HMIS.

Expected outcome: Improve diagnosis of patients compared to physical data management. Alleviate fears of using new technology among CDC staff. Provide decision support system for doctors, developmental therapists and other care providers while treatment.

**24. The effectiveness of the intervention package based on sensory diet for 3 to 6 years old children with ASD**

Sensory integration is the process of organizing sensations from one’s own body and from the environment and make it possible to use the body effectively within the environment. It is the way the brain receives, organizes and responds to sensory input in order to behave in a meaningful & consistent manner. In this study, sensory processing difficulties will be assessed and scored among ASD children. An intervention package will be developed based on sensory diet. Interventions will be given for a period of 6 months. Clinic based intervention will be offered twice in a month by including parent as co therapist. Along with this parents will be trained to administer sensory diet at home too. This study may help the children who were effected by Autism Spectrum Disorder with sensory processing issues and it also helps in the development of an intervention package that will help caregivers as well the children.

Objectives

1. To assess the sensory processing profile of children diagnosed with ASD using short sensory profile scale.

2. To develop an intervention package based on sensory diet to manage sensory processing issues among ASD children with sensory processing disorder.

3. To intervene the children who are diagnosed Autism spectrum disorder with sensory processing difficulties based on the principles of sensory diet.

4. To test the effectiveness of sensory diet in ASD with SPD

Expected outcome: This study will examine the effectiveness of sensory diet among the ASD diagnosed children. The newly developed intervention package will facilitate in early management of sensory difficulties among these ASD children. Ongoing project.

**25. Non-speaking communicative behaviour in children with Autism Spectrum Disorder (ASD) aged 2 to 4 years at Tertiary care centre**

Non-Speaking communicative behaviours in children with Autism Spectrum disorder (ASD) can vary widely. Profiling the non-speaking communicative behaviour in children with (ASD) Autism Spectrum Disorder between the ages of 2 to 4 years using a Communicative Matrix tool can offer valuable insights into their communication patterns, preferences, and challenges. The study aims to understand and profile the Non-Speaking Communication Behaviours in children with Autism Spectrum Disorders with respect to ages 2 to 4 years.

**Objectives**

1. To describe the non-speaking communicative behaviours in children with Autism Spectrum Disorder (ASD) age group 2 to 4 years using communicative matrix tool.

2. To find out the association between severity of Autism Spectrum Disorder (ASD) as per Childhood Autism Rating Scale and non-speaking communicative behaviours in children with Autism Spectrum Disorder (ASD).

• To find out the association between sociodemographic factor and non-speaking Communicative behaviours in children with ASD.

By profiling non speaking communicative behavior in children with ASD we will be able to describe their communicative strength and weakness. Identifying the distinct communication profile seen in child with ASD will help in early identification and the early intervention of these children.

**Ongoing project**.

**26. Addressing Sexual Reproductive Health Needs of Young Adult girls (15 - 24 years) with Hearing Impairment**

**Objectives**

Phase 1: Assessment of the current level of knowledge about sexual reproductive health issues of young adult girls with hearing impairment

Phase II: To study the prevalence of reproductive health problems including menstrual problems, reproductive tract infections and poly cystic ovary syndrome etc, among young adult girls with hearing impairment.

Phase III: To develop an intervention module in mobile application format using sign language and other appropriate communication modes for addressing sexual reproductive health issues of adolescent girls with hearing impairment.

Phase IV: To implement the intervention package in format as modules suitable for the hearing impaired population, their families and teachers and assess the effectiveness of the intervention module

**Completed Phase 1 & II of the project. Data analysis and report writing pending. Phase III & IV put under pending due to financial constrains. (Mob app development is costly)**

**27. Growth, development and psychosocial outcome of children during childhood years (0-3 years) born after Assisted Reproductive Technology as compared to naturally conceived children**

There is advancement in Assisted Reproductive Technology for more than thirty years. The survival rate of children born through this technology has also increased. However, the long term quality of these children with respect to their growth and development during childhood is not well known.

Objectives:

1. To assess the growth, development and psychosocial outcome of children during childhood years (0-3 years) born after Assisted Reproductive Technology.

2. To study the parenting practices of ART children at regular intervals

Expected outcome: Growth and development of the infants conceived through ART in comparison with normal children at the age 2, 4, 8, and 12 months of age

**Ongoing project**.

**28. Effectiveness of a structured intervention package on core symptoms of ADHD among 6- 9 year old children having ADHD**

**Objectives**

1. To identify children with ADHD using DSM V.

2. To develop a structured intervention package.

3. To assess the effectiveness of intervention after 6 months intervention

Ongoing project. Developed intervention package. Completed intervention for 21 children.

**Ongoing project**

**29. Assessment of co-morbid conditions and parenting issues among children with Attention Deficit Hyper Activity Disorder (6-12 years)**

1. To assess the comorbidities in children with ADHD aged 6 -12 years including, Epilepsy, Sleep problems, Anxiety disorder, Depressive disorder, Bipolar disorder , Conduct disorder, Oppositional defiant disorder, Tic Disorder, ASD and LD

2. To assess the parenting issues faced by parents of children with ADHD using qualitative methodology

3. To assess the risk factors for ADHD among children 6-12 years

4. To develop an intervention package to address the comorbidities among ADHD children

**Ongoing project. Sample size = 200. Completed 158 cases.**