

Floods, Earthquakes, Wars





Early Child Development; Identification of Developmental Delays & Intervention

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4th International Conference on Early Childhood Development
22nd-23rd February, 2023



Conflict of Interest

- I have no financial interests or other conflicts of interest related to this presentation

Outline



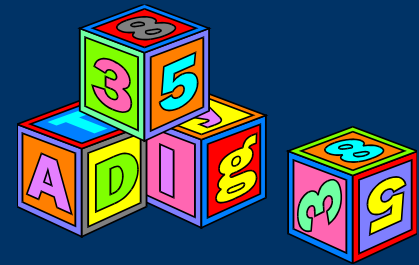
- Early Child Development
- The silent pandemic & risk factors
- Early identification in children at risk for developmental delays
- Construction of ShaMaq Developmental Screening Tool
- Early Intervention
- Developmental-Behavioral Pediatrics Department, UCHS-CH, Lahore

Early Child Development

Early child development refers to the many skills and milestones that children are expected to achieve by the time they reach the age of five years

Influenced by

- Characteristics of the child & the family
- Medical, genetic & environmental factors



In the mid 1970s

- “New morbidity”

King Tracy M et al, Implementing Developmental Screening and Referrals: Lessons Learned From a National Project PEDIATRICS Vol. 125 No. 2 February 2010, pp. 350-360
C Bethell, C.Reuland, E. L. Schor et al., "Rates of Parent-Centered Developmental Screening:Disparities and Links to Services Access," Pediatrics,July 2011 128(1)146-55

Domains of Development

■ Motor

- Gross Motor
- Fine Motor
 - Adaptive

■ Communication

- Speech
- Language
 - Expressive
 - Receptive
- Social Pragmatics

■ Personal-social

- Blend of fine motor, adaptive, communication & cognition

■ Cognition

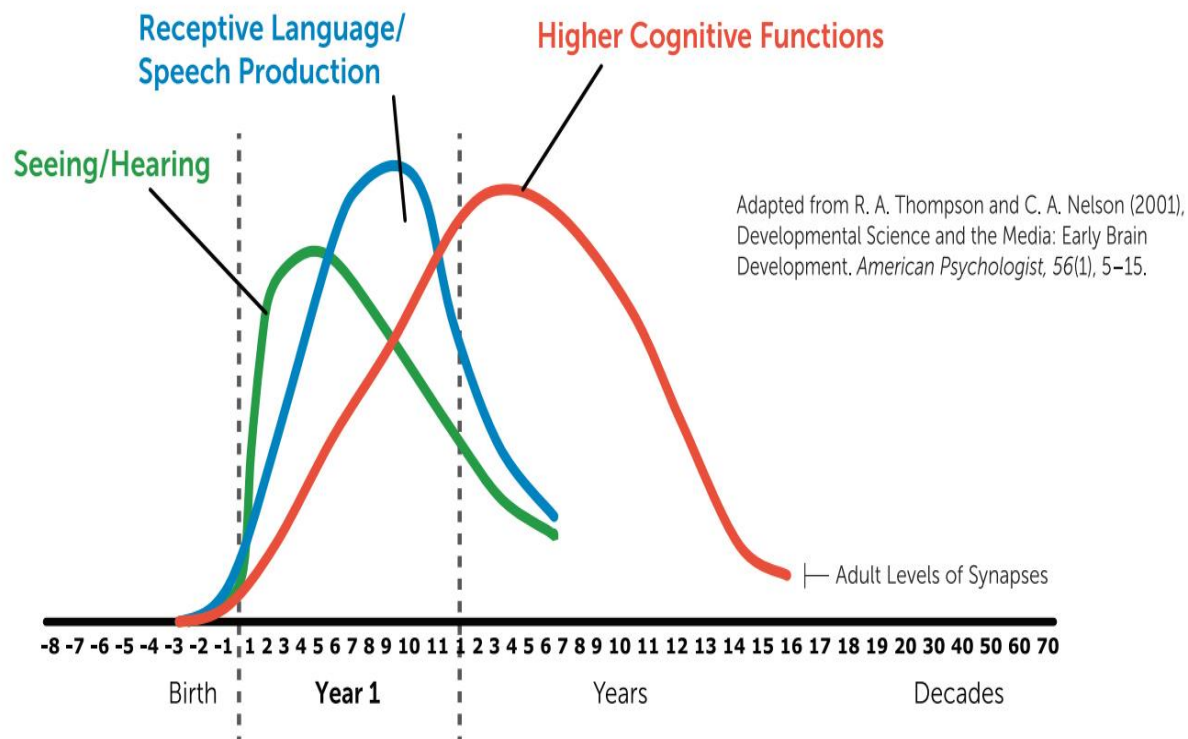
- Language
- Visual-motor & Problem Solving

Synaptogenesis

- Peaking around the time of birth, synaptogenesis is occurring at a rate of 40,000 new synapses per second
- Synaptogenesis is completed at approximately two years
- The synaptic pruning process concludes with the final synapse numbers in late adolescence

Sensitive Period

Development of Neural Connections



The Silent Pandemic & Multifactorial Risk Factors

- Malnutrition, including micronutrient deficiencies
- High rates of infection
- Head Injuries
- Genetic disorders
- Hypothyroidism
- Maternal intake of drugs and alcohol
- Child abuse & neglect
- Poisoning from lead, pesticides, and other toxins
- Prematurity and newborn asphyxia
- Disease like malignancies, sickle cell disease
- Congenital heart defects
- Disasters, poverty
- *Lack of stimulation and education*

This Pandemic is more Serious than all others

- These risk factors adversely affect Child Development
- 250 million children (43%) <5 years are at risk for developmental delays
- It leads to problems in education, employment, economics, politics and reduces the ability of society to address all other health and social issues

Burden of Disease

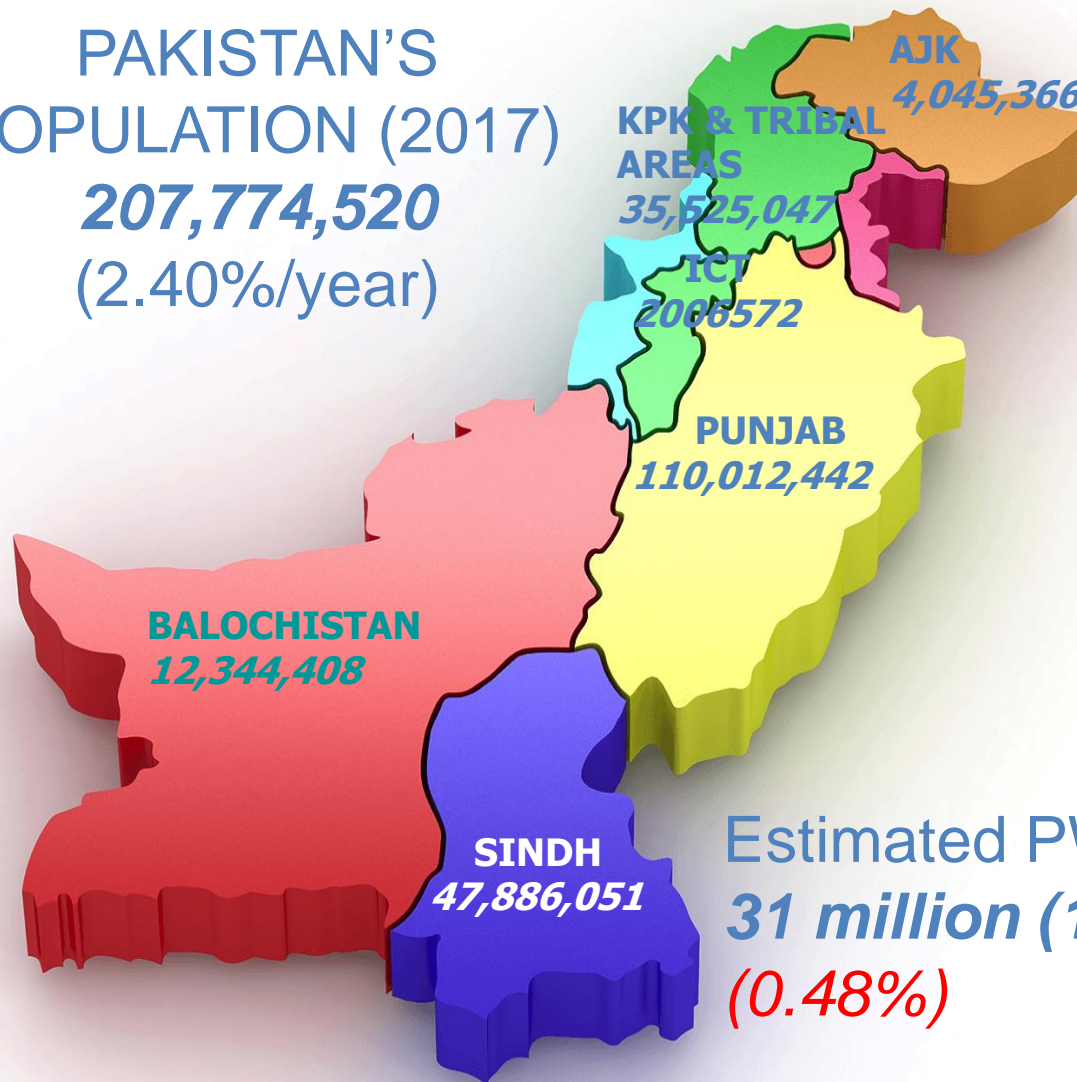
- Increased prevalence of developmental disabilities world wide
- WHO, UNICEF → 15% of the population
- In Pakistan → 15% or more
- In Bangladesh → 15.23%, n = 2974
- Parents → more aware & conscious
- Children → face enormous challenges
- Reflects the over all burden on the society

Lakhan R, Singh A. Early Intervention Tool (EIT) for children with developmental delay: A pilot study, vol 16 (1), 2014

Center for disease control and prevention looks ahead. Public Health Issues, 2013;13

Poon et al. Developmental Delay: Timely Identification and Assessment. Indian Pediatrics, 416, volume 47, 2010

PAKISTAN'S
POPULATION (2017)
207,774,520
(2.40%/year)



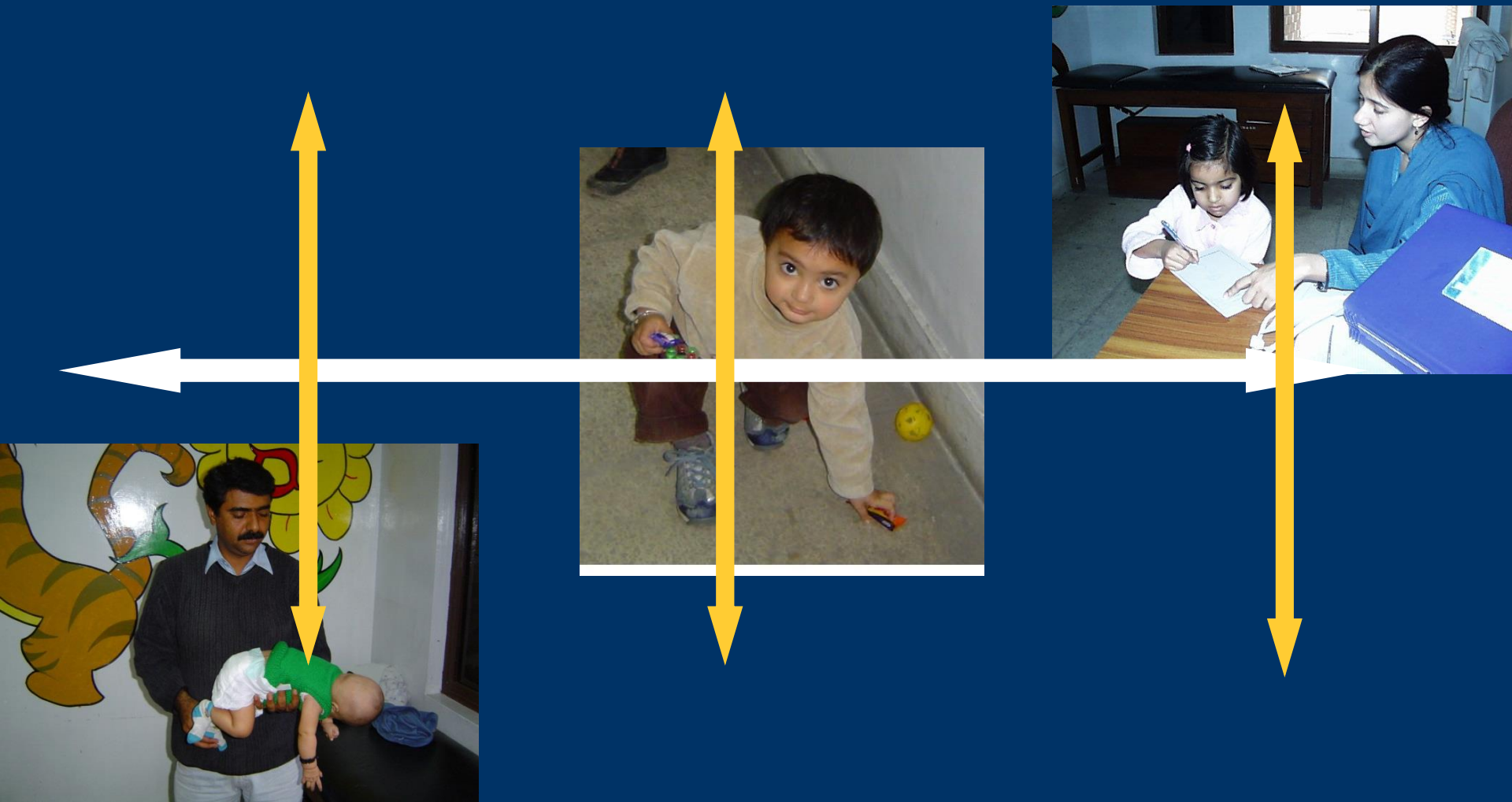
Estimated PWD's:
31 million (15%)
(0.48%)

Early Referral of children at risk

- Health professionals need to be aware of the developmental “Red Flags” that warrant screening and early referral;
 - Screening checklist
 - Complete parent interview
 - Detailed developmental history
- Refer children with any sign of atypical development early for further developmental assessment
- Early identification and intervention significantly improve outcomes

Developmental Screening

Developmental Surveillance



Developmental Screening

- Developmental screening is a snap shot way to tell if a child is learning basic skills when he or she should, or if there are delays
- It can also be done by other professionals in health care, community, or school settings
- Available systems of developmental surveillance have proven to be too specialized
- Need to simplify developmental assessment procedures for countries with limited resources

ShaMaq Developmental Screening Tool (SDST)

- Easy-to-use screening tool to identify children with developmental delays
- Constructed to screen expected developmental milestones in Pakistani children

SHAMAQ DEVELOPMENTAL SCREENING TOOL® (SDST)



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Objective

- Construction of a screening tool for early identification of developmental delays in normal children

Material & Method

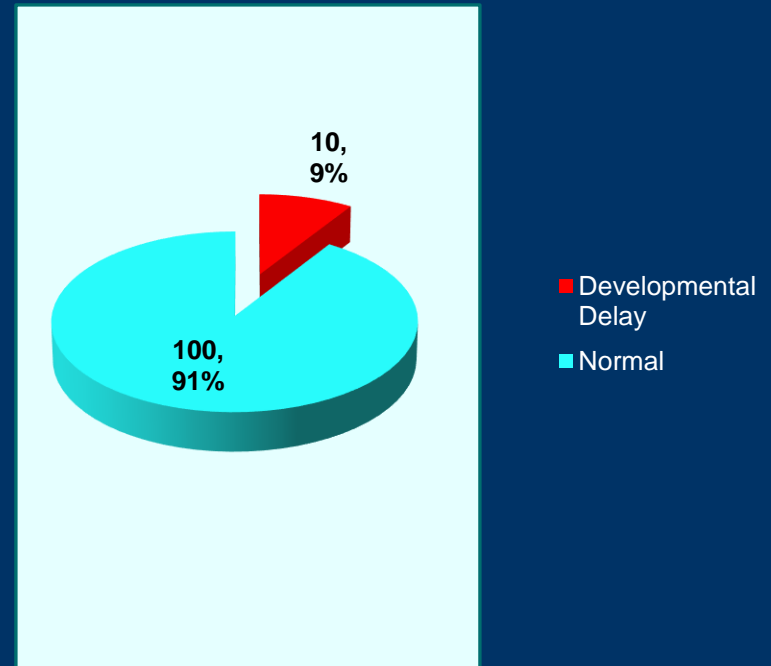
- Type of study → cross sectional descriptive
- Study population → 550 healthy children
- Age range → B/W 6 weeks – 5½ years presenting to immunisation clinics
- Developmental screening tool constructed for indigenous population
- Testers (inter observer reliability)
- Statistical analysis done by SPSS 21

Percentage of Developmental Delay At 6-8 Weeks

Fixing & Following



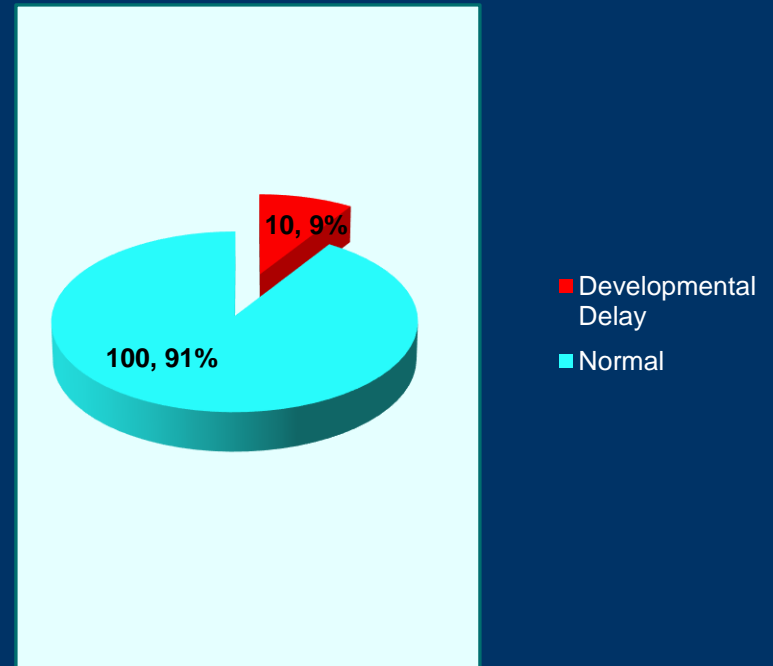
ShaMaq Group 1 N = 110



Percentage of Developmental Delay At 6 - 10 Months

Sitting Independently

ShaMaq Group 2 N = 110

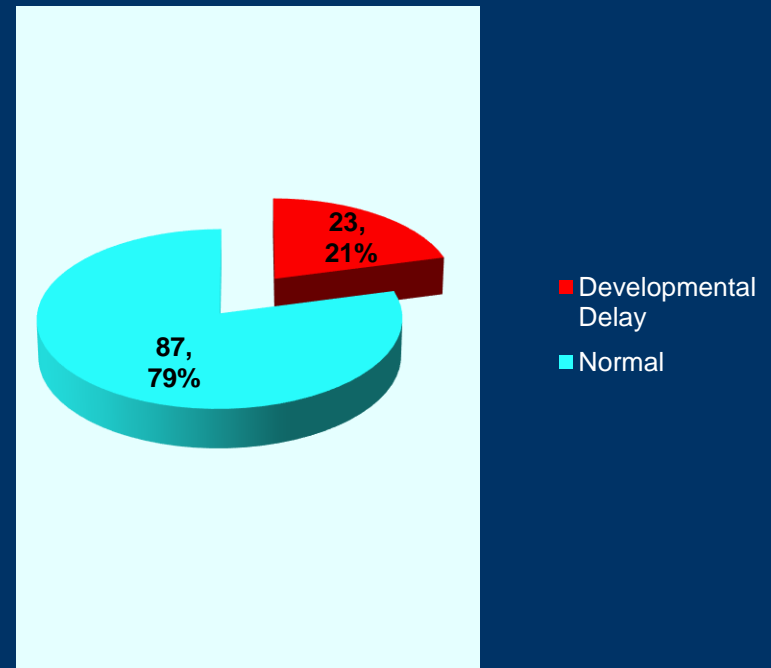


Percentage of Developmental Delay At 18 - 24 Months

Stooping & Recovering



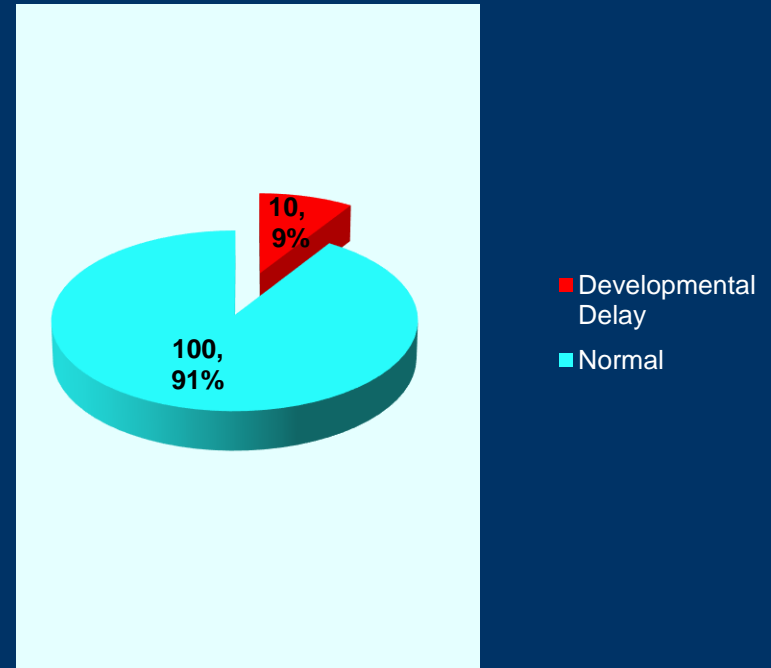
ShaMaq Group 3 N = 110



Percentage of Developmental Delay At 3 – 3 ½ Years

Tower of 3 blocks

ShaMaq Group 4 N = 110

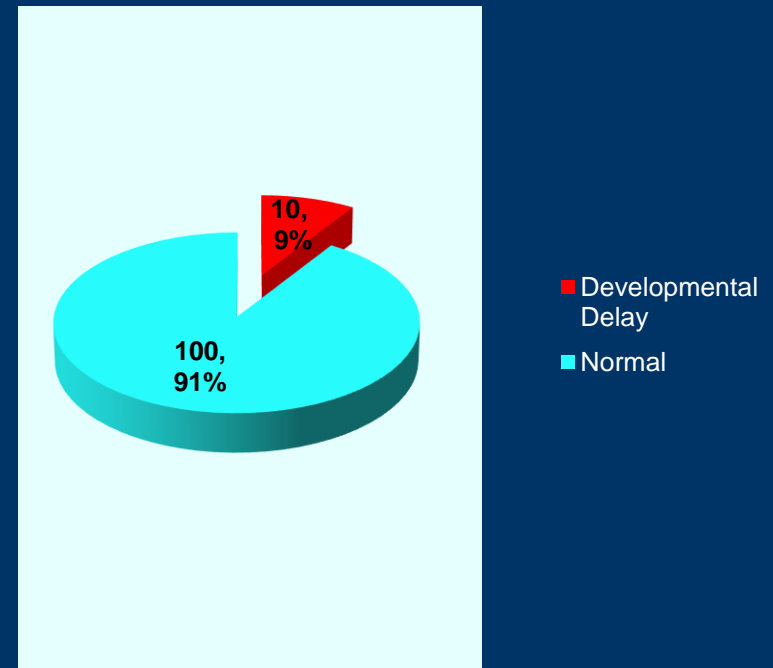


Percentage of Developmental Delay At 4 ½ - 5 ½ Years

School Going



ShaMaq Group 5 N = 110



Gender

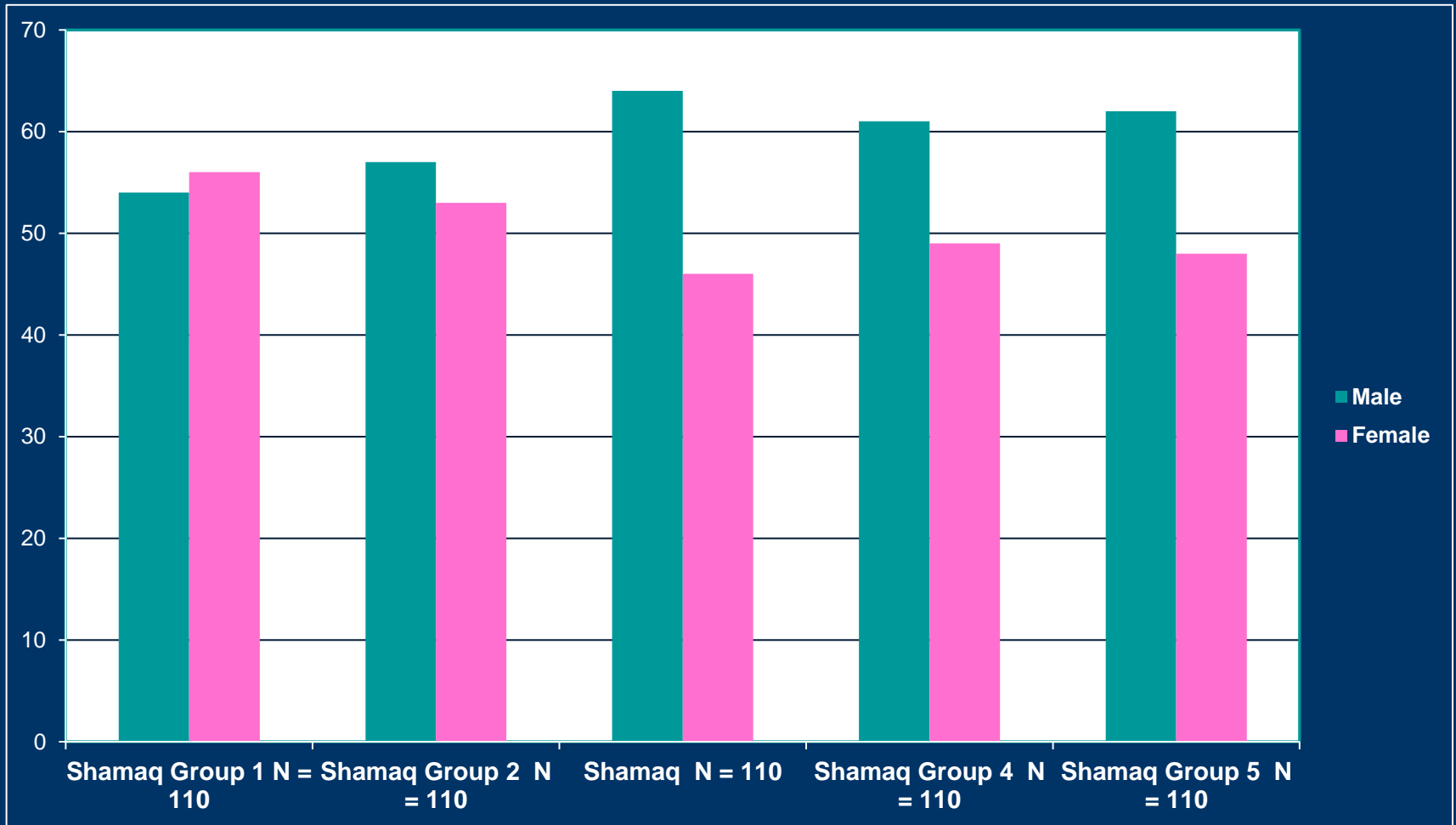


Table 2

Internal Consistency of ShaMaq

Cronbach's alpha				
ShaMaq Group 1	ShaMaq Group 2	ShaMaq Group 3	ShaMaq Group 4	ShaMaq Group 5
0.717	0.683	0.661	0.859	0.713

Table 3

Agreement Between Diagnosis of Clinician and ShaMaq

Kappa				
ShaMaq Group 1	ShaMaq Group 2	ShaMaq Group 3	ShaMaq Group 4	ShaMaq Group 5
1.00	1.00	1.00	1.00	0.737

SDST Application

- Type of Study → Cross Sectional Descriptive
- Study Population → 12372 healthy children
- Age Range → B/W 2 months – 5½ years
across country in different training workshops
- Tool Used → ShaMaq Developmental Screening Tool (SDST)
- Results → 1228 (9.9%) identified with developmental delay

Early Intervention

- Family-centred services and support provided to children with or at high risk for developmental delays from birth to 36 months of age
- Components:
 - Cognitive
 - Physical (Gross/Fine motor, vision & hearing)
 - Communication
 - Social or emotional
 - Adaptive



Advantages of Early intervention in the Child

- Equips children with necessary skills and help develop their potential
- Provides developmental therapy and education support services for infants and young children at risk
- Alters developmental trajectory & improves developmental outcomes
- Prevents behavior problems
- Improves school performance
- Integrated preschool program
- Improves parent-child interaction

Importance of Early Intervention Program for the parents

- Provides emotional support, understanding and information about community services to the parent Provides support for families
- Reduces parental stress
- Families learn effective strategies to advocate for their children
- Provides professional advice, information and support to caregivers
- Counseling services and training in caregiving skills
- Family support group & social support service in community
- Helps integrate an individual into mainstream society

University of Child Health Sciences, The Children's Hospital Lahore



Developmental-Behavioral Pediatrics Department Oct.1998



OPD



Ward

The Developmental Team

Full Professorial Unit

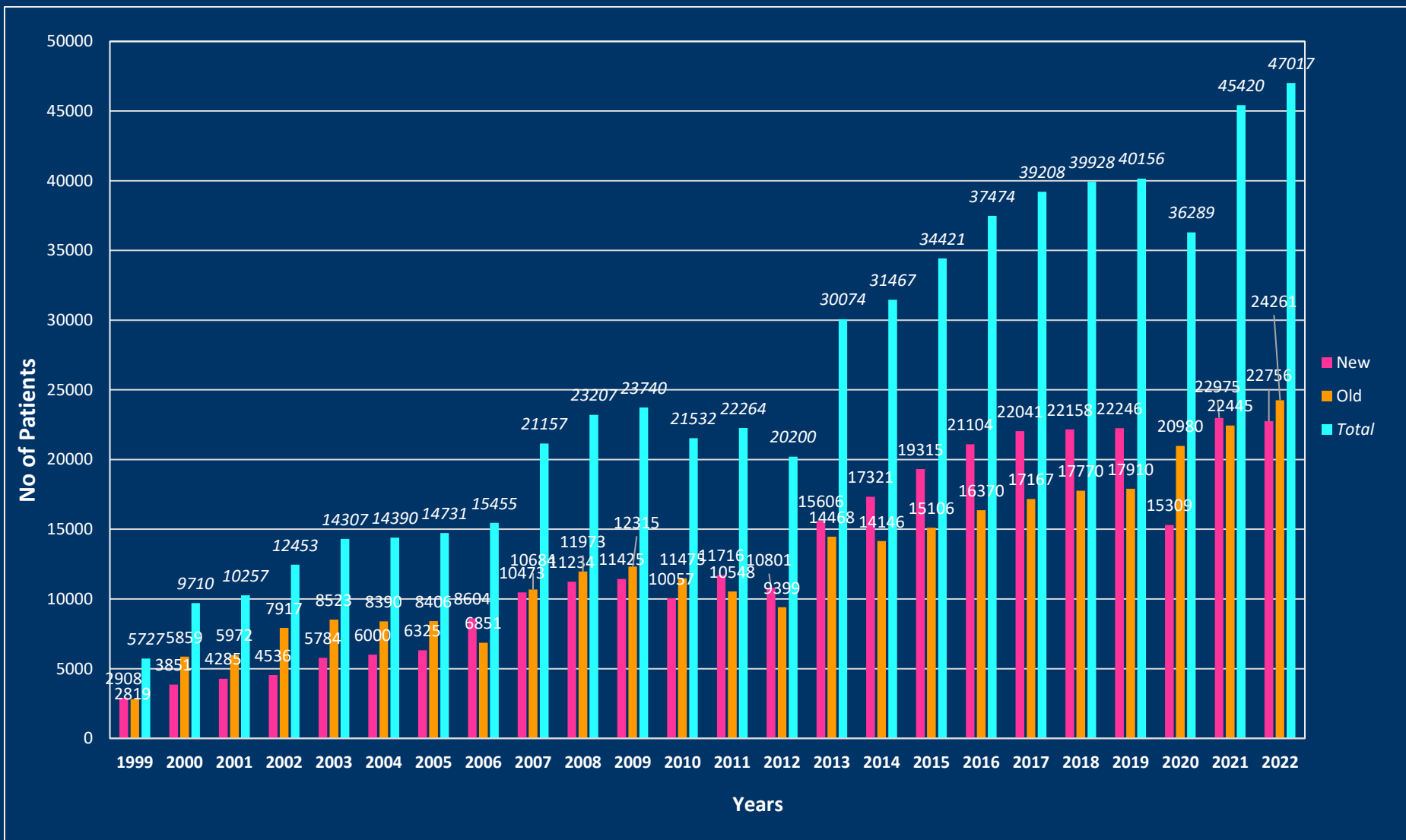
- Developmental paediatricians inc. 1st & 2nd fellows
- Clinical psychologists
- Speech & language pathologists
- Occupational & sensory therapists
- Special needs educationists
- Developmental therapists
- Disability technicians & child care workers
- Staff nurses & KPO
- Children & parents
- Regular liaison with other departments



Developmental-Behavioral Pediatrics Department; Functioning

- Out patient unit
 - Seeing over 250 patients everyday
- 45 beds inpatient unit
 - Children with developmental disabilities with acute medical problems
- Learning center
 - 2-hour program
 - 4-hour program
 - Prepare students for inclusive education and vocational training
- Rigorous post-graduate academic programs for doctors and allied health professionals
 - 2nd FCPS & MD recognized by CPSP & UHS has made it possible to train doctors for this higher degree

Per Annum Rise in Number of OPD Patients 1999-2022



Spectrum of Disease

Group 1 (Education Based Issues)

- Learning Disorders
 - Dyslexia
 - Dyscalculia
 - Dysgraphia
- Educational problems in a school setting
- Developmental Co-ordination Disorder (Dyspraxia)

Group 2

- Cerebral Palsy
- Other physical Impairments
- Fine Motor Impairments
- Nonverbal Learning Difficulties

Group 3

Behavior & Communication Disorders

- Autism Spectrum Disorder
- Attention Deficit Hyperactivity Disorder
- Social Communication Disorder
- Oppositional Defiant Disorder
- Developmental Language Disorder
- Overuse of Screen Media
- Sensory Processing Disorder

Group 4

- Learning Centre
 - Step up for inclusion

Spectrum of Disease

Group 5: Speech Disorders

- Articulation Disorders (Functional)
 - Substitution, Omission, Distortion, Addition
- Dysarthria
- Fluency Disorders
 - Stammering, Cluttering
- Voice Disorders
 - Related to pitch, tone & volume
- Apraxia of Speech
 - Problem with processing of speech
- Hearing Impairment

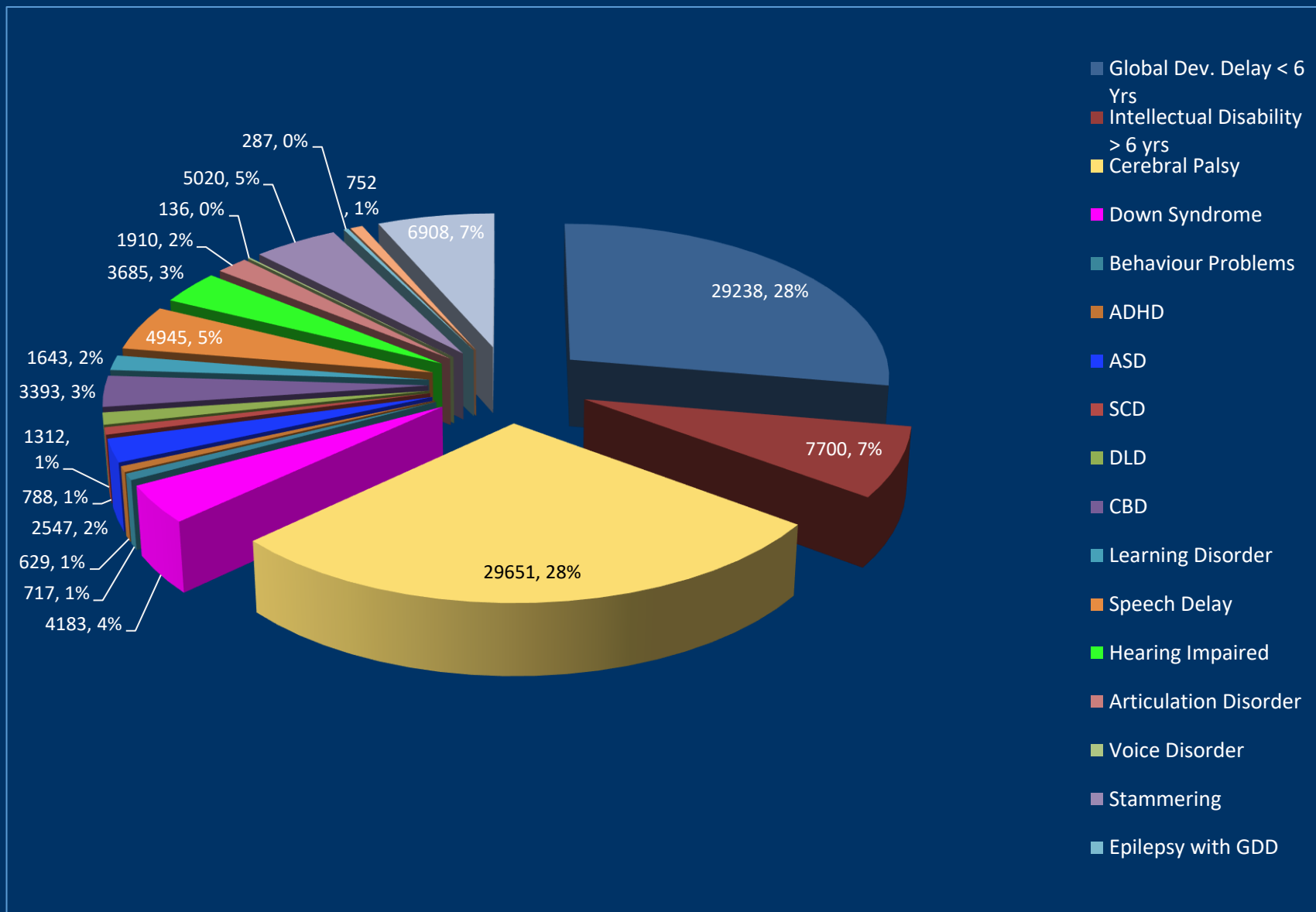
Group 6

- GDD & Intellectual Developmental Disorders
- Malnutrition
- Down Syndrome & other syndromes such as William, Pradder-willi, Fragile X
- Cause Unknown

Group 7: Ward

Children with special needs admitted with acute problems

Disease Breakup New Patients 2018-2022



One Window Model



Offers multidisciplinary services for the diagnosis, management and rehabilitation of all disabilities & screening of developmental-behavioral disorders under one roof



Salient Features

- Screening and early detection of developmental & behavioral delays
- Detailed assessment of different disorders
- Multidisciplinary management & rehabilitation
- Autism & Behavior Disorder Centre
- ECD-Outreach
- Cochlear Implant program
- Learning Centre; 2 hours & 4 hours programs
- Dedicated inpatient
- Teaching & Training; Doctors & Allied Health Professionals
- Research
- International & National Collaborations

Diagnostic Team



Therapeutic Team A (TTA)

CP, HI, Cochlear Implant



Therapeutic Team B (TTB)

GDD, Learning Dis. & Down Syndrome



Therapeutic Team C (TTC)

ASD, ADHD & Behavior Disorders



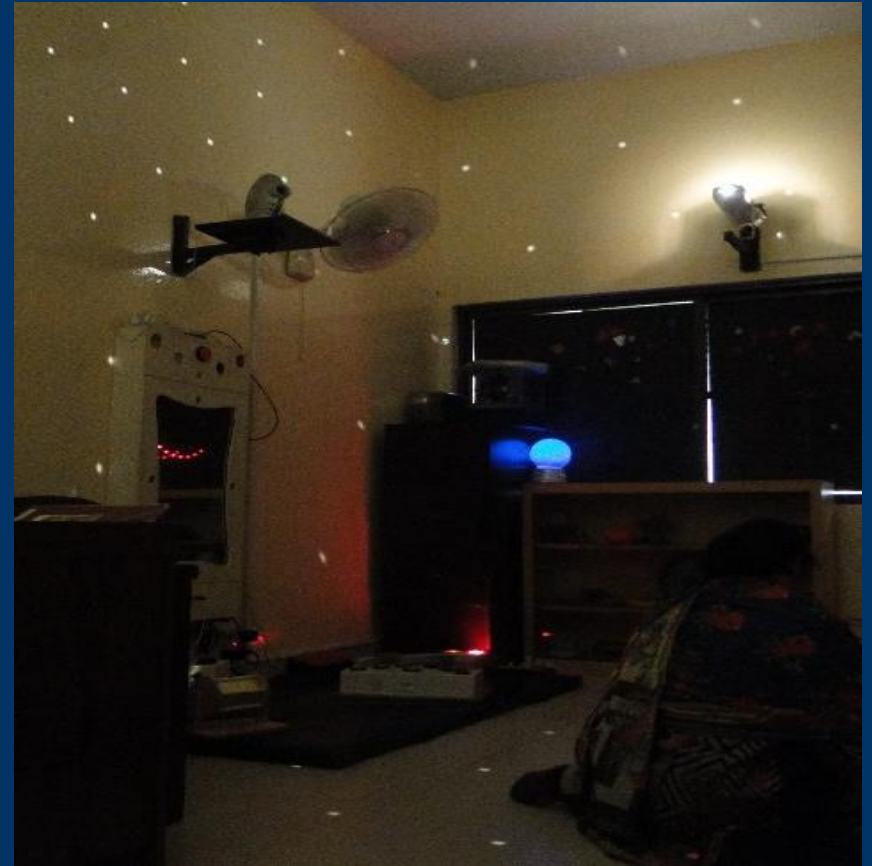
Speech Therapy



Occupational Therapy



Sensory Therapy



Autism & Behavior Disorder Centre at DBP UCHS-CH



ECD-Out Reach

- Outreach Programme established in 2018
- 300 children screened for developmental delays between 2 months to 5 years of age through ShaMaq Developmental Screening Tool in a nearby village as a community outreach pilot project
- Project on hold due to COVID-19

ShaMaq Developmental Screening Tool (SDST)	Frequency (%)
Satisfactory	226 (75.3%)
Unsatisfactory	74 (24.66)
Mild	34 (45.9%)
Moderate	15 (20.2%)
Severe	25 (33.8%)

Cochlear Implant Program

Cochlear Implant Board conducting regular meetings for children with profound hearing loss since 2017

Total cochlear implants done successfully	250
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Follow up

Patients coming to the hospital for audio & mapping

Patients coming to the hospital regularly for speech & developmental therapy

Learning Centre; 2 Hours Program



Shevell M: Developmental and Functional Outcomes at School Age of Preschool Children With Global Developmental Delay, J Child Neurol 2005;20:648—654

Learning Centre; 4 Hours Program



Gegoire, J., & Lucky, L. Evaluating the effectiveness of a public school Prekindergarten program for children with disabilities, 2012

Dedicated Inpatient



Academic, Research & Collaborations



Take Home Message



- Origins of most problems are in early life and are preventable e.g. malnutrition
- All infants and young children should be screened for developmental delays as many children with delays go undetected
- At risk children should be given priority
- Ask parents a fundamental question;
 - How are you doing?
 - What do you need?
 - What does your family need?
- Include positive parenting in anticipatory guidance
- Solutions must involve every family, every community, and all institutions such as government, religious, and international organizations

We are guilty of many errors
and many faults, but our worst
crime is abandoning the
children, neglecting the fountain
of life. Many of the things we
need can wait. The child cannot.
Right now is the time his bones
are being formed, his blood is
being made, and his senses are
being developed. To him we
cannot answer 'Tomorrow,' his
name is today.

Gabriela Mistral

Nobel Prize-winning poet from Chile