

**ASSESS PHYSICAL AND PSYCHOLOGICAL PROBLEMS
OF THE CHILDREN WITH CEREBRAL PALSY**



**A DISSERTATION SUBMITTED TO THE TAMILNADU
DR. M.G.R MEDICAL UNIVERSITY, CHENNAI, IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF SCIENCE IN NURSING.**

APRIL 2011

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APPROVED BY THE DISSERTATION COMMITTEE ON: _____

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CERTIFICATE

This is the bonafide work of **Ms. VIMALA, B, M.Sc.**, Nursing II year student from Sacred Heart Nursing college, Ultra Trust, Madurai, submitted in partial fulfillment for the Degree of Master of Science in Nursing, under The Tamilnadu Dr. M.G.R. Medical Univeristy, Chennai.

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“I will bless the lord at all times ; His praise shall continually be in my mouth”

psalms 34:1

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ABSTRACT

This study intended to assess the physical problems and psychological problems of the children with cerebral palsy. The conceptual framework of this study based upon Health promotion model. Research design for this study was descriptive design. Convenience sampling technique was used to selected 40 samples. The study was conducted at Sankalp physiotherapy clinic, Madurai. Observational check list, modified madras developmental system, strengthens difficulties questionnaires were used for collection of data. After conducting pilot study, data were collected for 6 weeks. Descriptive and inferential statistics were used to analyze be data. The study finding shown that 82.5% of the children with cerebral palsy had moderate physical problems. Few (6%) of the children had severe physical problems. 80 % of the children had scissors walking and 2.5% of them had attained bladder control at night time. Mean scores of 97.5 which indicated developmental delay in toileting. Most (90%) of the children with cerebral palsy had abnormal psychological problems. There was significant association between physical problems of the cerebral palsy and birth weight ($\chi^2= 8.01$). There was significant association between psychological problems of the cerebral palsy and birth weight ($\chi^2= 31.48$), place of residence ($\chi^2= 11.40$).

CHAPTER –I

INTRODUCTION

The world is such a happy place;

The children, whether big or small;

Should always have a smiling face;

And never , never suck at all.

- Gabriel setoum

BACKGROUND OF THE STUDY

The child is a greatest gift to every one that you will ever receive, In turn we must give, values and tradition joy in life, self esteem and good health to the child The child 's health depends on the parents care which starts from the time of pregnancy and throughout the life. Mismanagement during antenatal natal post natal and during infancy can result some crippled illness namely cerebral palsy.

Cerebral palsy is a neurodevelopment impairment caused by a non-progressive defect of lesions in the immature brain. In cerebral palsy there is a reduction in the motor repertoire of gestures and also a loss in the quality of movement (Adranio Ferrari, 2002). The impairment of voluntary muscles control and coordination is accompanied by mental retardation of learning disabilities (50-75%), disorders of speech (25%), auditory impairment (25%), seizure disorders (25-35%), and abnormalities of vision (40-50%) (Padmaja 2001).

Cerebral palsy is the commonest motor impairment in childhood. Children with cerebral palsy may also have associated impairments, other than motor, that deserve

particular attention and support at school and work, and which are responsible for lower survival rates. (Christine Cans, 2001). The incidental rate of India has 31, 325 among 1, 065, 070, 607, Pakistan has 4, 682 among 159, 196, 336 and Srilanka has 585 among 19, 905, 165 population.

The prevalence of cerebral palsy, 2 per 1000 children, has remained remarkably stable over the last 30 yrs, particularly for term children who represent half of all children with cerebral palsy (Christine Cans 2001). According to Kleigman et al., (2007) disability refers to the social impact of a condition on a child's ability to participate in expected activities such as school attendance, age appropriate play and sports or community functions. The associated disability was present in all the children with cerebral palsy.

Little says (1843) that occurrence of cerebral palsy has some casual relationship with birth complication. He found out unknown field of injuries developed in the brain during, immediately and, after birth of the child. In 1897, sigmund Freud disagreed his statement. He says that cerebral palsy caused by any defect occurs during brain development in the womb. He identified four types of cerebral palsy – general cerebral stiffness, paraplegic stiffness, bilateral hemiplegia, general chorea and bilateral athetosis.

Kate Himmelann (2006) says that the prevalence rate of cerebral palsy was 1.92 per 1000 live birth. He reported that spastic hemiplegia accounted for 38 %, diplegia for 35%, tetraplegia for 6%, dyskinetic cerebral palsy for 15%, and 6% for ataxia. He showed that etiology of cerebral palsy children who born at term was prenatal in 38%, or neonatal in 35%, and unclassifiable in 27%.

Cerebral palsy is more prevalence in poor socio economic population. Low birth weight intrauterine infection and multiple gestations are high risk factors to cerebral palsy. (odding et al.,2006). In 1980 National Institute of Neurological Disorders and Stroke was found that cerebral palsy caused by lack of oxygen supply to the brain during birth. It was analyzed data from more than 35,000 new born and their mother. It showed only less than 10% infant had natal cause for cerebral palsy. Children with cerebral palsy have varies degrees of disability in physically.

Associated medical problems of cerebral palsy are visual impairment or blindness, hearing loss, food aspiration, gastro esophageal reflux, sleep problems, osteoporosis, and behavior problem. Seizures, speech and communication problems mental retardation are common problems in the severe form of cerebral palsy.

Associated condition included severe mental retardation (40, 100%), seizure (27,67%), contractures requiring surgery, (25,62%) cortical blindness(16,39%), congenital abnormalities(7,17%), and nonverbal communication (37,93%).

Literature says that motor and intellectual disability in cerebral palsy account for majority of childhood disability in the worldwide. They require enormous adjustments to be made by the families who care for these children, and demand vast resources, both financial and emotional support from the family and community. Dramatic innovations in diagnosis using magnetic resonance imaging and new treatment modalities offer improved diagnosis, treatment options, educational opportunities and overall quality of life. (Encyclopedia of infant and early childhood development, 2000).Regular therapy and devices are required to children with cerebral palsy. Early identification of problems helps to reduce disability of the children with cerebral palsy.

In general, it can be stated that as the child with cerebral palsy continues to grow, its demands and needs continue to change and thus the rehabilitation measures need modification. If the child is not cared properly he will develop all the complications and thus the child morbidity and mortality rate will increase. (Padmaja, 2001)

SIGNIFICANCE AND NEED FOR THE STUDY

Children with cerebral palsy have impairment in the area of the brain that controls movement and muscle tone. Many of these youngsters have normal intelligence even though they have difficulty with motor control & movement. The defect or lesion can occur in utero or during or shortly after birth and produces motor impairment and possible sensory defects that are usually evident in early infancy (Scherzer and TSCharnuter, 1990).

Cerebral palsy is a static encephalopathy and excludes all progressive neurological disorders. The risk of cerebral palsy is increased 30 fold in the preterm compared with term infants. The recent medical advances say that survival rates of preterm children are more. It is increased the incidence rates of children affected with cerebral palsy. (Parthasarathy, 2007).

40% - 50% of all children with cerebral palsy were born prematurely. Premature babies are more vulnerable to cerebral palsy, because their organs are not fully developed. These babies have high risk for hypoxic injury to the brain. Etiologies of cerebral palsy are damage to the brain due to inadequate oxygenation, prenatal damage, and premature delivery. But intrapartum asphyxia is not an important cause; it is accountable for less than 10% of cerebral palsy. If mother has any infection during maternal period, it affected womb. This inflammatory response produced cytokines toxin

and it caused damage to the fetal brain. One fifth of the children with cerebral palsy were born before 32 weeks of gestation. (Stanley et al., 2000)

Incidence rate of cerebral palsy in USA is approximately 1 in 500 or 0.20% (US census Bureau 2004). Over 21 million people in India are suffering from one (or) other kind of disability which constitutes of 2.1% population. Among total disabled in our country, 12.6 million are males and 9.3 million are females. The number of disabled in state of Tamilnadu is 1.6 million and this state more disabled females than males (Census of India 2001).

Basic neuromotor development problems of children with cerebral palsy are difficulty with flexion ,extension of body and sitting against gravity. Some factors affecting independence of the children with cerebral palsy which are mental retardation, severity of disability, denial of disability and overprotection of parents. Young adolescent with cerebral palsy had low self concept. It depends on the severity of disability. (Nora shields et al.,2005). Parks (2009) says that common psychological problems of cerebral palsy were conduct and hyperactivity disorders, poor self esteem, peer problems. Boys had more risk for conduct and hyperactivity disorders. The psycho social aspects of the children with cerebral palsy may reflect in the success of the child's independent life.

Cerebral palsy occurs with other problems such as mental retardation 50-75%, seizure 25-33%, hearing and speech problems 15-20%, ocular problems 50-70% and behavioral problems 30-50% (Parthasarathy, 2007).

Anderson et al, (2008) conducted study about prevalence of cerebral palsy in Norway. It was done among 374 children with cerebral palsy. It found that 33% of children had spastic unilateral, 49% spastic bilateral, 6% dyskinetic 5% ataxic and 7%

were not classified. He identified 21 children born per 1000 live birth in their community. Stanley et al.,(2000) described characteristic of cerebral palsy which included, spastic type of cerebral palsy were having stiff and permanently contracted muscles, Athetoid had uncontrolled, slow movement, ataxic had perception and balance disturbance.

The incidence of child abuse and neglect are high in the children with cerebral palsy. Many parents of the cerebral palsy had feeling of guilt, anxiety and anger. Parents may have stress towards diagnosis of the child's lifelong illness, start of schooling, future placement, reaching ultimate attainment and adolescence. Many parents lost their hope that the child's condition will be changed. Parents must be encourage accepting the permanent disability of the child.

Early identification and intervention of children with developmental delay can markedly improve their prognosis. Treatment is focused in symptomatic. No one is proved successful to cure this disorder .Treatment approach of children with cerebral palsy are included physical, pharmacological and surgical intervention. All children with cerebral palsy needed special care and regular followed up in developmental clinic. Based on the review of literature and the researchers identified physical and behavioral problems of children with cerebral palsy and felt that educate the mothers of the children with cerebral palsy is must and importance to develop awareness, health attitude in relation to prevention of further complications and disabilities. The researchers identified less number of researches were done in this area, so this study was designed to assess physical and behavioral problems of children with cerebral palsy.

STATEMENT OF THE PROBLEMS

A study to assess physical and psychological problems of the children with cerebral palsy attending selected physiotherapy clinic in Madurai.

OBJECTIVES:

1. To assess physical problems of the children with cerebral palsy.
2. To identify developmental delay of the children with cerebral palsy
3. To determine psychological problems of the children with cerebral palsy
4. To find out association between physical problems of the children with cerebral palsy and selected demographic variables such as age, sex, birth weight and mode of delivery etc.
5. To find out association between psychological problems of the children with cerebral palsy and selected demographic variables such as age, sex, birth weight and mode of delivery etc.

HYPOTHESIS

1. There will be significant association between the physical problems of children with cerebral palsy and selected demographic variables such as age, sex, birth weight etc.
2. There will be significant association between psychological problems of children with cerebral palsy and selected demographic variables such as age, sex, birth weight etc.

OPERATIONAL DEFINITION

1. Cerebral Palsy

It is a condition in which the child has a motor disability due to brain damage. The children who attend physiotherapy clinic and who are diagnosed and undergoing treatment for cerebral palsy by pediatrician

2. Problems:

It refers to difficulties experienced in body, mind, and social wellbeing of the children with cerebral palsy.

In this study, problem refers to physical and psychological problems of the children with cerebral palsy.

3. Physical Problems:

Physical refers to pertaining to the body.

Physical problems refer to difficulties experienced in body function.

In this study, it refers to alteration of the body function such as swallowing difficulty, difficulties experienced in speech, skeletal abnormalities and poor milestone achievement measured by Observational Check list and Modified Madras Developmental System.

4. Psychological Problems

It refers to abnormal developmental characteristics of the children with cerebral palsy. It is measured by strengthen difficulties questionnaires.

ASSUMPTION

1. Physical problems of children with cerebral palsy vary from one child to another child.
2. Developmental delay is commonly present among children with cerebral palsy
3. Psychological problems of children with cerebral palsy differ from one child to another child.
4. Health assessment promotes understanding of the physical problems, developmental delay and psychological problems of the children with cerebral palsy.
5. Health education promotes early health seeking behavior.

DELIMITATION

1. This study was delimited to children with cerebral palsy aged about 9 months – 5 years.
2. The data collection period was 6 weeks.
3. This study was delimited to children with cerebral palsy attending selected cerebral palsy physiotherapy clinic.

PROJECTED OUTCOME

1. This study will identify the physical problems of the children with cerebral palsy such as abnormalities of the muscle coordination and central nervous system, etc.
2. This study will find out the developmental delay of the children with cerebral palsy include poor milestone achievement.
3. This study will determine psychological problems of the children with cerebral palsy especially difficulties attention, communication and adaptation, learning etc.

4. The result of this study will help the nursing personnel to understand, motivate, and to plan health care more effectively for the children with cerebral palsy.
5. The result will help the health care personnel in doing further research in the area of the children with cerebral palsy.

CONCEPTUAL FRAMEWORK

Based on Health Promotion Model:

This study was based upon Health Promotion Model. It was proposed by Murdargs Parson in 1993, 1996. They defined health is a positive dynamic state not merely absence of disease. This model was proposed as frame work for integrating perspective of nursing and behavior.

This model, disorders multidimensional nature of factors that interact with health.

It includes

- i) Early affecting factors
- ii) Modifying factors
- iii) Participation in health promotion behavior.

In this study, early affecting factors are prenatal factors include threatened abortion, compression of the cord, maternal toxemia, maternal infection (German Measles), Natal factors include asphyxia, sedatives given to mother, difficult labour, breech presentation, LSCS and postnatal factors includes preterm / LBW, hyperbilirubinemia, Trauma, skull factors, infection, meningitis, encephalitis.

Modifying factors are assessment of the physical health and behavioral health of the children with cerebral palsy .Assessment of physical health include anthropometric measurement, swallowing ability, respiratory function, neuromuscular function and

assessment of psychological health include activity, learning, adaptation attention, perception, language / speech, communication. Identified physical problems and psychological problems and done the modify activity to improve health status. Modified activities are primarily by antenatal screening, good care, safe delivery, immunization, avoid exposure to radiation, counseling to risk parents and secondary by Neonatal screening, accident prevention, special care to preterm / LBW baby early detection of physically handicapped children, identify behavioral problems and early intervention early detection of correctable causes.

Participation of health promoting behaviors are included disability limitation of physical problems; provide physical devices to correct the disability, drugs to control psychological problems .

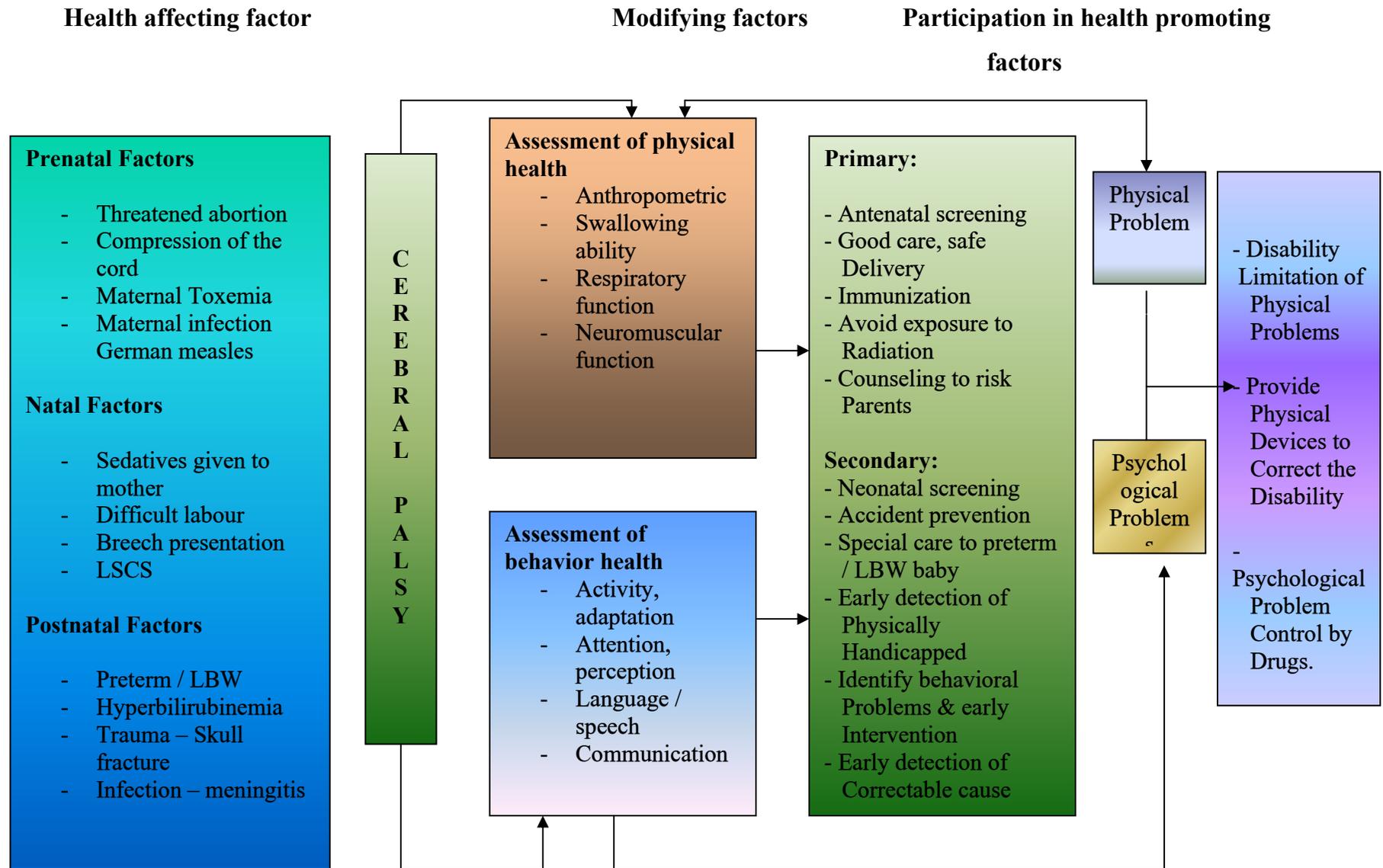


Figure1: Conceptual Framework Based On Health Promotion Model

CHAPTER – II

REVIEW OF LITERATURE

This chapter deals with the literatures focused on physical and psychological problems and care of the children with cerebral palsy. The review of literature is arranged in the following sections.

- I. Overview of cerebral palsy
 - a. Definition
 - b. Incidence
 - c. Classification
- II. Problems of children with cerebral palsy
- III. Management of cerebral palsy

I. Overview of Cerebral Palsy:

a. Definition:

Cerebral palsy describes a group of disorders of the development of movement and posture, causing activity limitation, that are attributed to non – progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbance of sensation, cognition, communication, perception, and behavior, and seizure disorders

Cerebral palsy is described as a group of chronic conditions affecting movement of the body and coordination of the muscles. It is developed by damage to one or more specific areas of the brain during fetal life, or after birth. (United cerebral palsy ,2001)
Cerebral palsy is a non –progressive life long neurological disorder. It has movement,

coordination, and postural abnormalities. Associated deficit may depending on the degree and location of the brain damage. (Jones, morgan, et al., 2007).

b. Incidence:

Premature babies less than 1510 gms have high risk to cerebral palsy than in full term. In united state , prevalence rate of cerebral palsy were 2.4 /1000 children. Among school age , 50% of cases identified etiology. Suzuki says (1991) that the prevalence rate of cerebral palsy were 1.9 / 1000 live birth.

The incidence of cerebral palsy is about 2 / 1000 live births. It is higher in males than in females. Approximately 8000 babies and infants diagnosed and 1200 to1500 preschool children are recognized to have cerebral palsy in every year. 20% children have slight / mild disability and 50% cases have moderate disability. Remaining 30% of the affected children are totally incapacitated and bedridden and they always need care from others (Stephanie, 2008).

In Christian medical college, Vellore during year 2002 to 2003, 557 children with cerebral palsy attended developmental pediatric OPD .In 2003 to 2004, it increased to 620 and 2004-2005 it was 464 and 2005 to 2006 it was 437 attended the OPD.

c. Classification:

Various Classification of cerebral palsy

1. Clinical Classification:

The clinical classification based on tone, and site affected in the brain. The changing nature of symptoms and signs makes the clinical classification to difficult in first year of life (Sharan et al., 2005).

- a. Spastic : lesions in the cortex.
- b. Dyskinetic : basal ganglia extra pyramidal system affected
- c. Ataxic / Hypotonic: lesion in cerebellum.
- d. Mixed type

A study conducted among 317 children with cerebral palsy aged 1 and 15 yrs. The cerebral palsy type distribution was spastic diplegia in 49%, spastic hemiplegia in 33%, spastic tetraplegia in 3%, dyskinesia in 12% and ataxia in 3% of the children (Beckung et al., 2006).

Franco and Andrews (2001) conducted a study revealed that spastic diplegia occurred in 53% of cerebral palsy and was most common clinical type regardless of birth weight and gestational age. Spastic quadriplegia was present in 28% of the children 10% with spastic hemiplegia and other types comprised only 9%.

spastic form of cerebral palsy occurs in 70-80% of cases, dyskinetic in 10-15% of cases, athetoid in 10% - 20% and ataxic in 5% of the cases. (National institute of neurological disease and stroke, 2010)

2. Anatomical Classification:

This type of cerebral palsy based upon distribution of upper and lower extremities.

- a. Hemiplegia - one side of the body , an arm and a leg affected.
- b. Diplegia - both lower extremities involved.
- c. Quadriplegia – four extremities trunk , neck, and face are involved .
- d. Triplegia - three extremities are affected, both legs and an arm are involved .
- e. Monoplegia - rare form, one limb involved.

Spastic disorder, tetraplegia occurs in 10-15% of cases, diplegia in 30-40% cases. Hemiplegia in 20-30% of cases, and monoplegia is rare. Certain types of cerebral palsy are associated with premature birth. More than 40% of diplegia were born in before 33 wks , 25.2 % in spastic hemiplegia , 15 .6 % in quadriplegia and 4.8 % in other types of cerebral palsy.(Stanley et al 2000).

3. Classification based on patients status about therapeutic needs:

Classification based on therapeutic needs of the children with cerebral palsy.

Class I: no need of any treatment.

Class II: requiring minimal bracing and therapy .

Class III: requiring bracing and health services of a cerebral palsy.

Class IV: requiring long term institutionalization and treatment.

4. Classification by degree of severity:

classification based on estimated degree of impairment in the children with cerebral palsy.

Mild - minimal movement impairment

Moderate – impairment in gross and fine motor , speech development.

- able to do usual daily living activities.

Severe - unable to do usual daily living activities adequately and disturbance in walking

Using hands , communicating verbally.

Pharoah et al., (1998) found that 33.4% had severe ambulatory disability , 23.7% had severe manual disability, 23.1% were having severe learning disability, 8.9% had severe visual disability

A study was performed on 100 children with cerebral palsy from Karnataka who attending cerebral palsy clinics to determine associated disabilities and to evaluate whether appropriate intervention had been instituted for these children. It revealed that 82% of children had one (or) more disabilities a part from locomotors disabilities, visual defects being commonest. 54% of the children had more than one disability. 43% of the children with one (or) more associated disabilities had not been recognized by primary care physician. (Bharatia et al., 2001).

II. Problems of Children with Cerebral Palsy:

.Cerebral palsy is a clinical syndrome rather than a specific disease entity. I t is primarily associated with cortical blindness, sensory loss, mental retardation, and epilepsy. Secondary disabilities are motor deficits such as weakness of external eye muscles, swallowing muscles. The surveillance of cerebral palsy in Europe (1990) reported that 31 % of cerebral palsy children had mental retardation (IQ< 50), 21% of the children had active seizures, 11% of them had blindness and only 20% of the children not able to walk with mental retardation (IQ < 50).

The associated disabilities are Seizures, visual impairment , intellectual impairment , learning disabilities, hearing problems, communication problems, oromotor dysfunction, gastrointestinal problems, malnutrition, dental problems, respiratory problems, bladder and bowel problems, social and emotional disturbances.

1. Feeding Problem:

Sephanie. W. smith et al., (1999) examined living with cerebral palsy and tube feeding among 40 children with cerebral palsy. 35 children had spastic , 3 of them had athetoid and 2 of the children had mixed type of cerebral palsy. 86% (32) of the care

givers believed positive impact towards tube feeding on the lives of their children and rest of the family. 22% of the care givers reported improvement in their children mood's with introduction of tube feeding. 28% (11) of families had problems related to family function and stress that attributed to tube feeding. 82% of the care givers had fewer feeding problems, less stress and less time consuming to feeding.

Armagan et al., (2000) stated that children with cerebral palsy frequently manifested oro-ingestive problems from mild to severe. Drooling of saliva, rejection of the solid foods, choking, coughing and spillage during eating might contribute these problems.

Fung et al., (2002) in their study examined feeding dysfunction is associated with growth and health status in their children with cerebral palsy. Moderate to severe cerebral palsy commonly had feeding dysfunction. Severity of feeding dysfunction was strongly associated with poor health and nutritional status. The mean weight z scores were -1.7, -2.5, -3.3 and -1.3 based on none, mild, moderate / severe (largely tube fed) feeding dysfunction. Similar results were obtained for height z scores, triceps z scores and poor global health score. Tube fed children were taller ($p=0.014$) and had greater body fat stores than orally fed children with similar motor impairment. Mild feeding dysfunction had reduced triceps z scores (-0.9) compared with no feeding dysfunction children (-0.3).

Eric et al., (2004) in their study investigated about dysphagia in the cerebral palsy children. It was found that 27% had dysphagia either radiographic or clinical evidence of dysphagia. It also revealed that some factors might cause dysphagia which included presence of tongue thrusting, drooling of saliva, poor head control, seizure.

Jan J W Vander Burg et al., (2006) in their study evaluated the effects of salivary flow reduction on daily life and provision of care in children with cerebral palsy. Parents of children with cerebral palsy were asked to fill in questionnaires on the impact of drooling on the daily life of their children. It revealed that administration of anticholinergic agents reduced salivary flow among 55 children with severe drooling. This agent was diminished flow of saliva and reduced needs of care for this.

Bushra Abdula Malik et al., (2007) determined the 79% (n=114) of the children had oromotor dysfunction which include 79% (n=14) had drooling , 73% (n=83) had dysphagia and gastro esophageal reflux in 66%.

Jeff Brody (2008) stated that feeding problems were difficult to recognize by the parents of the children with cerebral palsy.

Gastro esophageal reflux appeared to be a common, persistent and severe disorder in children with neurological impairment. The estimated incidence of GER in children with cerebral palsy ranged from 32 to 75%. Reflux episodes not only cause gastrointestinal symptoms such as episodes of regurgitation, or vomiting, haematemesis but also respiratory problems such as recurrent respiratory infections, persistent cough (Takeshi Tomomasa et al., 2008).

According to Mariand Caroline morales chavez et al., (2008) , drooling was an unintentional loss of saliva from the mouth and was considered normal in infancy up to 18 months when the oral motor muscles mature.

According to Thomas, stonell and Greenberg – drooling severity classification

Grade I : Dry, no drooling

Grade II Mild : Humid lips only

Grade III Moderate : Humid lips and chin

Grade IV Severe : Clothing begins to be affected

Grade IV Profuse : Clothes, hands and objects are wet.

58% of the children had drooling of saliva which included 44.4% in mild and 27.7% had moderate to severe .

A study conducted by Peter et al., (2009) revealed that children with cerebral palsy had dysphagia Swallowing competency has been analyzed by fiberoptic endoscopically in 54 patients with spastic tetraparesis and more than 60% of all children showed deficits in the swallowing. Among this 39% had aspiration of saliva. 2/3rd of the children who had been tested with food had aspiration of food, more than half of them without airway protection by cough reflex.

Erin M. Wilson et al.,(2009) in their study to investigate early feeding abilities in the children with cerebral palsy. 43%(n=10) of the children with oromotor involvement and 50% (n=3) of them without oromotor involvement who were born prematurely. Oral- motor involvement had significantly more difficulty with self feeding, increased frequency of coughing and choking.

2. Dental Problems:

30% - 60% of the cerebral palsy had enamel hypo mineralization . Enamel hypoplasia attracted calculus, increase straining and it leads to loss of enamel .Parotid flow rates of the cerebral palsy had lower when compared with the general population.(0.6Vs0.63).Hypoplasia was aggravated by bruxism. 30% of the cerebral palsy children had treatment of anticonvulsant medication to control epilepsy. Dilantin / phenytoin developed gingival hyperplasia it called as phenytoin induced gingival

hyperplasia(PIGH).Depakane (valporic acid) induced a bleeding tendency. (southern association of institution dentists).

Thomas et al .,(2000) explained components of a comprehensive oral health care program for cerebral palsy children included personal oral hygiene ,home care regimen , tailored by dentist.. Good oral hygiene , early and regular dental examination treatment are needed for good dental health of the children with cerebral palsy. The development of mechanical tooth brushes, modification of the tooth brush handles or grips, oral anti microbial agents and topical or systemic fluorides are enhanced dental care in home American academy of cerebral palsy and developmental medicine explained factors involved in dental care of the children with cerebral palsy

1. Facial oral and neck muscle dystonias were caused malocclusion exacerbate dysphagia aspiration and abnormal enamel wear.
2. cerebral palsy children had higher incidence of tooth decayed, missing and filled surface . Mostly permanent teeth had more plaque, malocclusion, bruxism, residual food, mouth breathing.
3. Regular Intake of Phenytoin induced exaggeration of gingival over growth .Overgrowth of gingival results from increase in the connective tissue extra cellular matrix It called as Drug induced gingival overgrowth. This overgrowth had some complication such as functional difficulties , disfigurement, increased caries, and delayed eruption of permanent teeth.

Oral – motor dysfunction combined with muscle spasticity of the arm and hands often make oral hygiene a significant challenges for cerebral palsy children and

their care givers. Nurses working with cerebral palsy children and parents need to teach and reinforce good oral hygienic techniques.

A Population based study was conducted by Nallegowda et al., (2005) revealed that abnormal alignment of the tongue, lips and cheeks leads to misalignment of the teeth. Greek children with cerebral palsy had higher incidence of malocclusion. Drooling of saliva was not caused by hyper salivation but it was due to swallowing defect. Transdermal scopolamine used to dry up salivary secretion., Intraglandular injection of Botulinum type A injected into salivary glands with guidance of ultra sonography Parotid duct ligation and submandibular duct diversion were performed in severe form of drooling.

Bushra Abdula Malik et al., (2007) determined that enamel hyperplasia increased risk of the dental caries and malocclusion. He found that 33% (n=66) of the children had dental caries.

A study was conducted by Charles H. Rosenbanum et al., (2011), revealed that 15.1% had ideal occlusion. Spastic cerebral palsy children had higher (52.1%) incidence of neutro occlusion and lowest incidence of (10.1%) mesiocclusion and (22.1%) disoculsion. The average overjet measurement of 119 cerebral palsy children about 4.8 mm and overbite measurement of 109 cerebral palsy children about 2.6 mm. Bruxuism was more frequently found in athetoid (63.3%), less frequently spastic(35.1%). 57% of the children had day or day and night grinder.

3. Malnutrition and Anemia:

Under or over nutrition is a common problems in neurologically impaired children. Insufficient intake of calorie, excessive nutrient losses, and abnormal energy

metabolism are contribute growth failure. Early identification of malnutrition is reduced morbidity. Nutritional support is not only focus on improving nutritional status but also improving quality of life for patients and their family. 17% of the parents of the children with cerebral palsy are perceived poor nutrition status of their children , 34% as satisfactory, and 49% of the parents are not satisfied. More than 35% of their children had severe malnutrition.(Ashutosh Gangil et al., 2001)

Hiroko Ohwada et al.,(2001) conducted a study to determined prevalence of anemia among children with intellectual disability (41.1% male, 4.2% female) cerebral palsy (37.5% male, 4.8% female,) down syndrome (15% male, 0% female), children with severe motor and intellectual disability(61.9% male, 16.7% female). prevalence of anemia was higher in male children than in female participant of each disability category. This study revealed that. 93.8 to 100% of the children had normocytic normochromic anemia.

Feeley et al (2007) conducted a study about body mass index in ambulatory cerebral palsy patients. A common problem in children with cerebral palsy was malnutrition.. Malnutrition was recognized in children with severe cerebral palsy, but it was unrecognized in less severely affected children. The serious effects of malnutrition were included decreased muscle strength, poor immune status and depressed cerebral functioning. Children with quadriplegic cerebral palsy had a significantly lower body mass index than diplegic and hemiplegic's cerebral palsy. It was found that ambulatory cerebral palsy children had high risk for malnutrition. Nearly 44.4% were having malnutrition in quadriplegia 4.8% was a hemiplegic's.

Bushra Abdula Malik et al.,(2007) determined that 85% of the children with cerebral palsy were having malnutrition it contributed growth failure

Jaff broady (2009) explained that most of the parents not perceived their child 's nutritional status. Lack of parental awareness and malnutrition made child's condition worsen. Interview was conducted to parents of children with cerebral palsy. He determined that meal time was stressful and time consuming to both children and parents. Duration of feeding took 4-6 hrs a day and had featured repeated spillage of foods, bouts of cough and regurgitation. The psychological impact of the severe chronic neurological disease may be the reason for the feeding problems.

4. Bowel and Bladder Problems:

Incidental rate of urinary incontinence was influenced by types of cerebral palsy and low intellectual capacity. `

Del Guidice and Enni (1999) in their study to investigate the causes for children with cerebral palsy. Spastic type of cerebral palsy children had prolonged colonic transmits . It revealed that 18.8% of the children had prolonged colonic transmits at the level of left colon, 20% of the children had both left colon and rectum and 20% of them had rectum only This study determined abnormalities of colonic transmit in left colon and rectum involved in chronic constipation and showed pathological mechanism of chronic constipation differ from responsible for functional fecal retention. It was suggested that chronic constipation may be lead to disruption of neural colonic modulation due to severe damage to central structure. Cerebral palsy children frequently suffer from constipation due to many number of factors include lack of exercise, insufficient fiber and liquids in their diet or as a side effects of medications.

Richardson et al., (2009) conducted study to investigate clinical and urodynamic spectrum of bladder function in cerebral palsy. It was done among 31 children in 4.5 to 16.6 yrs old. clean intermittent catheterization for bladder drainage required in 3 children and 28 (90%) voided spontaneously. 21 children (77.4%) were worn diaper. It revealed that 12 children(38.7%) had day time incontinence and enuresis , 11 patients (35.5%) had day time incontinence and enuresis in 1 (3.2%), seven patients (22.6%) were continent day and night.

A common complication of cerebral palsy is incontinence, caused by poor control of the muscles that keep the bladder closed. Incontinence is take the form of bed wetting, uncontrolled urination during physical activities, slow leaking of urine throughout the day. (National Institute of Neurology and Stroke, 2010)

Ebekka Veugelers et al.,(2010) in their study to estimate prevalence of constipation among cerebral palsy children.They found that 57% of the children had constipation 55% used laxatives 27% of them had symptoms of constipation. 87% of the children were having less intake of water and fibers

5. Visual and Hearing Problems:

Ocular abnormalities are also common associated problems to the children with cerebral palsy. A number of visual impairments are more common in people with cerebral palsy than in general population. Strabismus is a condition characterised by differences in the left and right eye muscle often causing eye to be misaligned or cross eyes. Some other problems include nystagmus, cortical blindness, hemianopia, refractory problems etc.

Approximately 40% of cerebral palsy have abnormalities of vision or oculomotor control. Some of the children will have damage to visual cortex; it will cause functional blind because he will be unable to interpret impulses from retina. Optical nerve damage commonly associated in severe cerebral palsy. Nearly half of the children do not have binocular vision.

A study done by Arroyo et al.,(1999) among 140m cerebral palsy about visual problem. It revealed that 70% of the 30 children below 2 yrs of age and 66.3% of the 100 children above 2 years of age had strabismus.

Masaki sanoa et al.,(2005) explained the location of lesion causing hearing loss in cerebral palsy children due to asphyxia and hyperbilirinemia but it was not clear. They suggested that lesions in the organ of corti. causing hearing loss to cerebral palsy children.

Morales Angulo et al.,(2006) states that 60% of the children had sensorineural hearing loss 13 children hearing loss associated with mental retardation. The average age of children diagnosed from 3 months to 7 years. 8 children were treated with hearing aids and 1 with cochlear implant.

Bushra Abdul Malik et al .,(2007) estimated in 45% (n=90) of the cerebral palsy children had visual abnormalities . It revealed 74% of the children had convergent, 26% had divergent squint and found blindness and optic atrophy in 22% (n=20), nystagmus in 6%(n=5) and nystagmus in 72%. Amal . A. Elemenshamy et al., (2010) in their study, revealed that myopia was reported in 41.4% hypermetropia in 20%, and 10% in nystigmatism .

Impaired hearing is also more frequent among cerebral palsy than in the general population (National Institute of Neurology and Stroke 2010)

6. Seizures:

Isac Brunck et al.,(2001) in their study to investigate prevalence of epilepsy in cerebral palsy children. It estimated that 62% of the children had epilepsy . 74.2% had first seizure in their first year of life. Generalised (61.3%) and partial (27.4%) epilepsy were prominent types of epilepsy. 33(53.2%) of the children were having seizure free for atleast 1 year.74% of them had first seizure under 12 months.

A cohort study of 452 children with cerebral palsy, estimated 160 (35.4%) of the children had epilepsy.It showed 66% of them in spastic hemiplegia, followed by diplegia 15.8% and quadriplegia in 42.6%. One third of the children with cerebral palsy had epilepsy.(singhi et al., 2003).

Kulak and sobaniec (2003) in their study to determined 41.4% of the children had epilepsy. 15 -90% of the children was not have well defined epilepsy. Commonly epilepsy was noted in 65.5% of spastic tetraplegia and intractable epilepsy in 51.2%. Controlled epilepsy was observed in 83.3% of the spastic diplegia and 72.7% in spastic hemiplegia.

A study conducted by peduzzi et al.,(2006) among 110 children with cerebral palsy. It revealed that the incidence of epilepsy in cerebral palsy children about 46.4%. Among this 45% of children in spastic tetraplegia, 52% of the children in hemiplegia and 32% of the children in spastic diplegia.

Bushra Abdula Malik et al.,(2007) in their study assessed frequently associated problems of cerebral palsy among 200 cerebral palsy children from 1-12 years. They

mention that seizure was associated in 76% (n= 152) of the cerebral palsy children. 62% (n=94) of the children had generalized tonic clonic seizure,29% (n=43) had complex partial seizure, followed by myoclonic 6% (n=10) and infantile spasm 3% (n=5).

Seizure or convulsion occurs due to recurrent transient attacks of disturbed brain function. It was estimated in 30% of the cerebral palsy children. Half of the children with cerebral palsy have seizure or convulsion. Focal (partial) seizures are less common which is in the form of muscle twitches or mental confusion. (National institution of neurological disease and stroke , 2010) .

7. Pelvic Obliquity and Scoliosis:

Doboson et al.,(2001) explained impacts on the surgical management of spastic hip disease. It showed the incidence of hip displacement is vary from type of cerebra palsy. 1% in spastic diplegia ,upto 75% spastic quatriplegia .The natural progress of the displacement are severe subluxation , secondary acetabular dysplasia, femoral head deformity , dislocation, painful degenerative arthritis. Difficulty with perineal care , personal hygiene, pelvic obliquity, scoliosis, poor sitting balance , loss of ability to stand and walk are mobility problems of cerebral palsy. Surgical management are indicated based on the degree of displacement of the femoral head and acetabular dysplasia.

Hidgkinson et al.,(2001) conducted a study among 234 children with cerebral palsy. It revealed that scoliosis was observed in 66.2% of the children and it was more than 60 degrees in 34.5%. Two basic groups were distinguished: Thoracolumbar scoliosis (41.6%) and lumbar scoliosis (41.6%). The prevalence of oblique pelvis was 59.97.

David Porter Shona Michal et al., (2007) in their study, conducted among 747 children with cerebral palsy (6 – 80 yrs). It showed association between direction of scoliosis and direction of pelvic obliquity and between windswept hip deformity and side hip subluxation or dislocation. It revealed that convexity of the lateral spinal curve was more opposite to the direction of windsweeping. More significant windswept deformities observed in right (p=0.007), hip subluxed on the left (p=0.02), left lateral lumbar or lower thoracic spinal convex (p=0.03).

Donnelly et al., (2007) explained causes of hip instability in the children with cerebral palsy which has included muscle imbalance, strong extensor tone and primitive reflex. Muscle imbalance leads to central rotation of the femoral head, strong extensor tone and primitive reflex developed hips become windswept with one hip adduction and damage to the lateral margin of acetabulum.

Deformities of the spine curvature (Scoliosis), humpback (Kyphosis) and saddle back (lordosis) were associated with cerebral palsy. Spinal deformities can make sitting and walking difficult and cause chronic back pain. (National Institute of Neurology and Stroke, 2010).

8. Respiratory Problems:

Aspiration may lead to pneumonia in children who have swallowing difficulty. Respiratory muscle spasticity develops respiratory problems. Seddon et al., (2002) says that children with severe neurological impairment had a high incidence of respiratory problems which are multifactorial and that related to or dependent on the disability.

Oral motor problems and gastro esophageal reflux are predisposed to aspiration. Absent or impaired gag reflexes and cough are associated in cerebral palsy. Nurses

need to teach parents to seek medical attention to prevent respiratory infection. Etiology of pneumonia in cerebral palsy were included as difficulty in swallowing, weak cough reflux, and seizure are contribute to accidental inhalation of oral secretions , drink and stomach content into the lungs. Some of possible respiratory complication were blocked or obstructed airways, inflammation of the airways, weakened lungs and damage.

9. Growth and Development:

Failure to thrive had several causes, including poor nutrition and damage to the brain centers controlling growth and development. Burns (1996) emphasized the need to be aware of growth and developmental milestones delay in achieving milestone is one of the key indicates of cerebral palsy. Adolescent with cerebral palsy had delayed and prolonged puberty with poor nutrition status. Some of the children had precocious puberty which occurs begins before age of 7 in girls and 8 in boys.

Mustafa (2001) in their study , identified the significant association of weight, height with boys and girls, type of cerebral palsy of children. It was conducted in 32.6% quadriplegia, 44% diplegia and 14% hemiplegia. It showed that there was no significant difference between boys and girls, but it identified boys had more height, weight than in girls.

Ashutosh (2001) in their study determined 31.43% of the children had normal height and weight, 68.27% had impaired height ranging from mild to severe impairment. Height of the children depended on involvement of the body parts and type as cerebral palsy . A syndrome called failure to thrive is common in children with moderate to severe cerebral palsy, especially with spastic quadriparosis . The muscles and limbs affected by cerebral palsy tend to be smaller than normal. In children with spastic hemiplegia have

limbs on the affected side of the body may not grow as those on the normal side (National Institute of Neurology and Stroke, 2010).

10. Problems in Language Development:

Voice of these children have nasal quality / hyper nasal if too much air enter through the nose.

Hannah Deva et al (2004) conducted study about language development of the children. It showed that maximum (70%) had receptive language, 67.1% of the children had impairment in expressive language, and 74.3% of them had impairment in social interaction. These children were responded by eye contact, turning head towards sound as in receptive language and they cannot make appropriate sounds in responses to question.

Dysarthria means speech problems. The children have difficulty producing sound and articulating words. Dysarthria occurs in 40% of the cerebral palsy children. The etiology of dysarthria. are respiratory difficulties due to respiratory muscle involvement and articulation difficulty due to oromotor dysfunction . Dysarthria. Caused by spasticity or athetosis of the muscles of the tongue, mouth and larynx. (Management Guidelines – Developmental Disability, 2005).

Pirila et al., (2007) states that poor speech production related to motor impairment ; it is due to disturbance in neuromuscular control of speech mechanism. Speech and articulation problems leads to abnormal neural control of oral motor mechanism leads to speech and articulation problems .It observed in 44% of the cerebral palsy children. (Bushra Abdula Malik et al ,2007)

11. Psychological Problems:

According to Lindsay et al., (2001) determined causes of disturbances in sensory and cognitive development of cerebral palsy children.. The intelligibility of children's speech, gesture and communication signals ,expressed by body movement reduced children's expression and understanding of language can be delayed.

Helle et al., (2008) conducted a retrospective psychological appraisal of children with cerebral palsy children and eight difference psychological tests were used. IQ was found to vary between less in 55% and 78%. It suggested children with neurological and intellectual defects did not have high degree of IQ stability.

Parks et al., (2009) in their study determined psychological problems of 818 children with cerebral palsy. Quarter of the cerebral palsy had Total difficulties scores > 16 indicated significant psychological problems. The parents were reported that 95% of the children had psychological problems lasted over a year. A significant proportion of children with cerebral palsy had psychological problem. Voice of these children have nasal quality / hyper nasal if too much air enter through the nose.

Two third of the children with cerebral palsy have intellectually impaired. Mental impairment is more common among those with spastic quadriplegia than in those with other types of cerebral palsy and children who have epilepsy and an abnormal ECG or MRI are also more likely to have mental retardation. Some children with cerebral palsy have difficulty feeling simple sensations, such as touch. They have stereognosia, which makes it difficult to perceive and identify objects, using only the sense of touch. (National Institute of Neurological Disorders and Stroke 2010).

III. Management of Cerebral Palsy:

a). Medication:

Oral medication such as diazepam, baclofen, dantrodere sodium and tizanidine are first line treatment to relax stiff, contracted overactive muscles. Some times used alcohol washes injections ; it injected locally into muscles to reduce spasticity . botulinum toxin injected locally for reduce overactive muscles in the children with cerebral palsy. (Food and Drug administrat ion 1990).

Jonegerius et al., (2003) determined that intraglandular BONT injection significantly reduced salivary flow rate in the majority of drooling cerebral palsy children. It showed that submandibular flow rate was reduced by scopolamine(25%) and BONT injections.(42%)

b). Surgical management:

Vaughan et al., (1991) in their study determined effectiveness of rhizotomy and cerebral palsy. It showed improvement in range of motion continued after surgery (between years 1 and 3 years) developed more extended thigh and knee position which indicated a more upright posture. Stride length and speed of walking has improved.

Cerebral palsy is common physical disabilities to children .Crouch gait is commonly associated with cerebral palsy children. It is treated with hamstring lengthening procedure. This surgery has made changes in mechanical property of lower limbs and affected ability of generating force leads to changes in functional activities. (National Taiwan university , 2005).

C). Hyperbaricoxygen therapy:

Muller Bolla et al., (2006) to evaluated side effects of Hyperbaric oxygen therapy in children with cerebral palsy. It was conducted among 111 cerebral palsy children who all received 40 compression of 1 hour (5 day per week) and followed for 8 weeks. Treated group was (n=57) received Hyperbaric oxygen therapy which consisted of an exposure to 100% oxygen and control group received (n=54) air at 1.3 atm abs. Ear examination was conducted prior and immediately following each session. It showed middle ear barotraumas noted 50% of Hyperbaric oxygen therapy in treated group and 27,8% in control group. Short term exposure of Hyperbaric oxygen therapy at medium level of 1.75 atm abs pressure was responsible for a significant increase of middle ear barotraumas.

d). Thera suit and Dosehorse back therapy:

Elizabeth CS Datorre et al., (2003) explained Thera suit with intensive therapy program included aqua therapy hippo therapy which improved a child's functional abilities.

A Quantitative studies were conducted by Sterba (2007) investigated Dose horseback or therapist directed hippotherapy rehabilitation children with cerebral palsy in united states It was found that Dose horseback ridding therapy and hippotherapy were improved gross motor function .It revealed that three dimensional reciprocal movement of the walking produced normalized pelvic movement in the rider, sensation of smooth rhythmical movements made by horse improved co -ordination , joint stability, weight shift.

d) Neuromuscular electrical stimulation:

Kerr et al., (2006) investigated efficacy of Neuromuscular electrical stimulation and threshold electrical stimulation in strengthening quadriceps muscles of both legs in cerebral palsy children. This study was not showed any significant difference between Neuromuscular electrical stimulation and threshold electrical stimulation versus placebo for strength or function. It had statistically significant differences were observed between Neuromuscular electrical stimulation and threshold electrical stimulation and placebo for impact of disability at the end of treatment .

e). color therapy:

Color therapy was based on the fact that physiologic functions respond to specific colors. When child were using a hand grip & exposed to blue light their grip lightened and when muscles were exposed to red light the electrical activity in them increased (Therege , Donnelly, 2006).

f). Aculaser therapy:

Dr. Shahzad Anwar (2003) was conducted study about effectiveness of Aculaser therapy to treatment of cerebral palsy children. It conducted among 81 Cerebral palsy children with spasticity & stiffness and showed (69 children) 85% had markedly improvements in both stiffness & spasticity. 54 Cerebral palsy children with epilepsy were received aculaser therapy; it showed (34 children) 63% had markedly improvements in both frequency & intensity of epileptic fits decreased.

100 Cerebral palsy children with speech disorder, were received aculaser therapy; it showed in 67% improvement rate. 46 Cerebral palsy children with hemiplegia were received aculaser therapy ; it showed (32 children) 69% improvement rate .36 Cerebral

palsy children with quadriplegia were received aculaser therapy ; it showed (25 children) 69% improvement rate. 18 Cerebral palsy children with paraplegia of the lower limbs were received aculaser therapy it showed (12 children) 67% improvement rate.

Aims of Aculaser therapy is improving the blood flow to brain & other affected parts of the body. It is done by stimulating different body acupoints ear points & scalp ears are stimulated blood flow to brain & various affected parts of the body increases (.Chon, 2003).

Low level lasers are applied on skin, this results in biostimulation of the body tissues leads to increased blood flow & rapid healing of the tissues (Tuner 2002). The combined effect of Low Level Laser Therapy in acupoints & scalp areas stimulation results in increased blood flow to brain & different body part thus improving the Cerebral palsy. (Jiao (1997), Zhu Mingoing (1992), Tuner (2002), Pineal (2003), Parkes (2000))

Van-den-Berg –Encons et al., (1998) conducted a study on the physical training of school children with spastic cerebral palsy effects on daily activity,. It suggested that training has a favorable effect on isokinetic muscle strength. No training related effects were found on anaerobic power. It was concluded that aerobic training has a limited effect on physical activity in children with cerebral palsy.

CHAPTER III

METHODOLOGY

This chapter provided a brief description of the method adopted by the investigator. This study was designed to determine the physical problems , developmental delay & psychological problem of the children with cerebral palsy who attended selected cerebral palsy physiotherapy clinic in Madurai.

Research Approach

A survey approach was used for this study. This was a non experimental research that obtains information about prevalence, distribution , interrelations of variables with in the children with cerebral palsy.

Research Design

A descriptive design was used for this study. The purpose of descriptive studies is to observe describe, and document aspects of a situation as it naturally occurs.(polit & Beck, 2008).The study aimed to determine the physical problems, developmental delay and psychological problem of the children with cerebral palsy .

Setting

The study was conducted in selected cerebral palsy physiotherapy clinic where the children with cerebral palsy came for therapy. SANKALP is a physiotherapy clinic providing exercise and physiotherapy for all physically disabled children including children with cerebral palsy. Approximately 150 children with cerebral palsy are taken care by this institution in every year. Nearly 35 -45 children with cerebral palsy are attending per day .More than 10 children

are 9 months – 5 years. This place is situated within 5-6 kms from sacred heart nursing college, Madurai.

Population

The entire set of the children having some common characteristics as a population. The target populations of this study were the children with cerebral palsy 9 months - 5 years who had attended the cerebral palsy physiotherapy clinic in Madurai.

Sample size

The subset of the children with cerebral palsy, selected to participate in a study. The sample comprised of 40 children with cerebral palsy aged between 9 months-5 years.

Sampling technique

The researcher adopted the convenience sampling method to select the samples. Selection of the most readily available children with cerebral palsy as participants in this study.

Criteria for Sample Selection

Inclusion Criteria

1. The children with cerebral palsy aged 9 months -5 years.
2. Both sexes were included.
3. Those who were willing to participate.
4. The children who known and speak Tamil.

Exclusion criteria

1. The children with cerebral palsy who were taken for pilot study.

Description of Tool

The tools were used to assess the physical & psychological problem of the children with cerebral palsy.

The instrument consisted of 4 parts of structured

- i. **Part I-** consists of demographical variables of the children with cerebral palsy
- ii. **Part- II** consists of Observational check list
- iii. **Part- III** Consists of Modified Madras Developmental system
- iv. **Part- IV** consists of strengthen difficulties questionnaires

Part I:

Consists of demographic variables of the children with cerebral palsy and parents. (age, sex, religious, father's occupation, mother's occupation, family income, type of marriage, birth weight, mode of delivery, name of near health institution)

Part II:

Consists of Observation check list to identify physical problems of children with cerebral palsy which consisted of 53 items

It was responded by Yes / No and were given scores such as 1, 0 respectively.

Total score was 62.

The scores were ranged as follows:

- Below 21 – Mild
- 22 to 41 - Moderate
- 42 to 53- Severe

Part III:

Modified madras development system was used to identify development delay of the children with cerebral palsy. It has 9 sections

Section – I has 15 items related to gross motor activities.

Section –II has 13 items related to fine motor activities.

Section –III has 11 items regarding eating skills.

Section- IV has 11 items related to dressing skill.

Section- V has 9 items regarding grooming.

Section – VI has 10 items related to toileting.

Section – VII has 7 items regarding receptive language.

Section – VIII has 8 items regarding expressive language.

Section – XI has 9 items related to social interaction.

Totally it has 93 items.

It consists of 93 items. observation and interview technique were used to mark each items. Scoring was done by making the number of items, the child could complete. Each item has score of 2. Those who scored 90 – 100% was categories as a normal and those who scored 0 – 89 % were categories as children with impaired performance that shows delay development.

Part IV

Strengthen difficulties questionnaires were used to determine psychological problem of children with cerebral palsy. It consisted of 4 categories of items.

- I. Emotional symptoms
- II. Conduct problems

III. Hyperactive

IV. Peer problem

Each category has 5 items. Totally it consisted of 25 items.

Total scores of this tool are 40. It has 5 categories. Each category has different scoring. It has responds of not true, some what true and certainly true. not true responds has 0 score but items 7, 15, 17, 18 has score 2. Some what true responds has score 1. Certainly true responds have scores 2 but 7, 15, 17, 18 has score 0.

I. Emotional symptoms – considered 0 to 3 scores as a normal, 4 as a borderline and 5 to 10 as an abnormal.

II and IV. Conduct problems, Peer problems – considered 0 to 2 as a normal, 3 as a borderline, and 4 to 10 as an abnormal

III. Hyperactivity – considered 0 to 5 scores as a normal, 6 as a borderline and 7 to 10 as an abnormal.

V. Prosocial behavior– considered as a 10 to 6 scores as a normal, 5 as a borderline and 4 to 0 as an abnormal.

Testing of the tool

Validity

The Observational check list was developed by the investigator based on the review of literature. The tool was evaluated by five experts for content validity. Modified madras developmental system and strengthen difficulties questionnaires were standardized tools and it were evaluated by five experts for content validity and feasibility to this study.

RELIABILITY

The reliability was established by the inter-rater method. The items of tools were administrated first for 5 samples and readministrated to the same 5 samples by another evaluator. In both responses were similar for the 5 samples. The Observation check list was found to reliable one ($r=0.85$), Modified madras developmental system tool has $r=0.9$ and it was found as a reliable one. Strengthen difficulties questionnaires were found to reliable one. ($r=0.75$).

PILOT STUDY

A pilot study was conducted in Sankalp physiotherapy clinic on 40 samples . The purpose was to find out feasibility of the study. .Observational check list , Modified madras developmental system and strengthen difficulties questionnaires were found to be feasible. The statistical analysis used frequency distribution, percentage, t – test to test hypothesis. The results showed that the statistical test chosen to test those hypothesis were appropriate and feasible. The pilot study samples didn't show any flow in the study. The study included in pilot study were not included in the final study.

DATA COLLECTION PROCEDURE

The period of data collection was given for 6 weeks. The investigator was explained purpose of the study and got permission from the consultant person of the institution. The data collection timing was 8 am to 5 pm. The mothers came with children from 9 am to 4 pm. Each child stays in 2 hours for exercise. The investigator spent 45 mts for each child. . Initially investigator established

rapport with stated subject .The purpose of health examination was explained to each parents of the subject. First physical problems were assessed by using Observational check list . Modified madras developmental system and Strengthen difficulties questionnaires were used to identify developmental delay, psychological problems of the children with cerebral palsy. During data collection time, adequate privacy was provided, got co-operation from the parents of the child and everyone was assured about confidentiality of this study .Unnecessary explanations were not given to responder, during data collection time.4 children were examined per day.

DATA ANALYSIS

Descriptive statistics (Frequency, percentage) was used to analyze the data distribution. The chi-square was used to determine the association between the physical problems of the children with cerebral palsy & demographical variables includes age, sex, regions etc., psychological problems of the children with cerebral palsy & demographic variables includes age, sex, regions etc.

PROTECTION OF HUMAN RIGHTS

The proposed study was conducted after approval of the Research Committee of the College. Permission was obtained from the Head of the Department of Sacred Heart Nursing College. Oral consult of each individual was obtained before data collection. Assurance was given to the study subjects and their parents regarding the confidentiality of the data collected.

CHAPTER – IV

ANALYSIS & INTERPRETATION OF DATA

This chapter deals with the description of the sample, analysis & interpretation of the data collected & the achievement of the objectives of the study.

Section I:

Distribution of the children with cerebral palsy according to the demographic variables.

Section II:

Assessment of physical problems in children with cerebral palsy.

1. Distribution of samples according to problems in general appearance , head and face of the children with cerebral palsy.
2. Distribution of samples according to problems in eyes, ear and nose of the children with cerebral palsy.
3. Distribution of samples according to problems in mouth and gastrointestinal tract of the children with cerebral palsy.
4. Distribution of samples according to problems in musculoskeletal system and central nervous system of the children with cerebral palsy.
5. Distribution of samples according to problems in genitourinary system and speech / language development of the children with cerebral palsy.
6. Distribution of samples according to their levels of physical problems among children with cerebral palsy.

Section III:

Identification of developmental delay in the children with cerebral palsy children .

1. Distribution of samples according to their developmental achievement of the children with cerebral palsy.
2. Mean score of developmental delay among children with cerebral palsy

Section IV:

Determination of psychological problems in the children with cerebral palsy.

1. Distribution of samples according to emotional and conduct problems of the children with cerebral palsy.
2. Distribution of samples according to hyperactivity peer and prosocial problems of the children with cerebral palsy.
3. Distribution of samples based on psychological problems of the children with cerebral palsy.
4. Distribution of samples based in level of psychological problems among children with cerebral palsy.

Section V:

Association of problems of the children with cerebral palsy and selected demographic variables.

1. Association of physical problems of the children with cerebral palsy and selected demographic variables.
2. Association of psychological problems of the children with cerebral palsy and selected demographic variables.

SECTION- I

Table 1:

Distribution of the children with cerebral palsy according to the demographic variables.

N = 40

Variables	Frequency (n)	Percentage %
Age		
Below 1 year	1	2.5
1-3 year	29	72.5
3-6 year	10	25
Sex		
a. Male	27	67.5
b. Female	13	32.5
Religion		
a. Hindu	39	97.5
b. Christian	1	2.5
c. Muslim	0	0
Types of Marriage		
a. Consanguineous	13	32.5
b. Non Consanguineous	27	67.5
Mode of Delivery		
a. Normal vaginal	22	55
b. LSCS	7	17.5

c. Forceps	11	27.5
Birth Weight		
a. Below 2.5kg	9	22.5
b. Above 2.5 kg	31	77.5
Place of Residence		
a. Rural	11	27.5
b. Urban	29	72.5
Neonatal Jaundice		
a. Present	6	15
b. Absent	34	85
Name of near health Institution		
a. PHC	7	17.5
b. Sub center	1	2.5
c. Govt. / District Hospital	5	12.5
d. Private	27	67.5

Table 1 show that most of the cerebral palsy children (72.5%) were toddler & 25% of them were preschooler. Majority (67.5%) of children with cerebral palsy were males.

The data obtained revealed that 97.5% belonged to Hindu. 67.5% of parents of children with cerebral palsy had non consanguineous marriage.

Majority (55%) of the mothers of children with cerebral palsy had normal vaginal delivery & 11% of them had forceps delivery. Large portion (77.5%) of the children with

cerebral palsy had normal birth weight . 72.5% of the children belonged to urban area.

Neonatal jaundice was present among 15 % of the children.

65% of them had near private hospital facilities near to their home. & 17.5% of them lived near to PHC.

SECTION- II

Assessment of physical problems among children with cerebral palsy.

Table 2:

Distribution of samples according to problem in general appearance, head and face of the children with cerebral palsy. N=40

Items	Present		absent	
	Frequency	%	Frequency	%
General appearance				
Irregular posture	35	87.5	5	12.5
Very stiff/ flopping	36	90	4	10
Head and face				
Microcephaly	24	60	16	40
Small jaw	12	30	28	70

Table 2 show that 87.5% had irregular posture of body, 90% of them were having very stiff or flopping. 60% of the children were having microcephaly, and 30% of the children had small jaw.

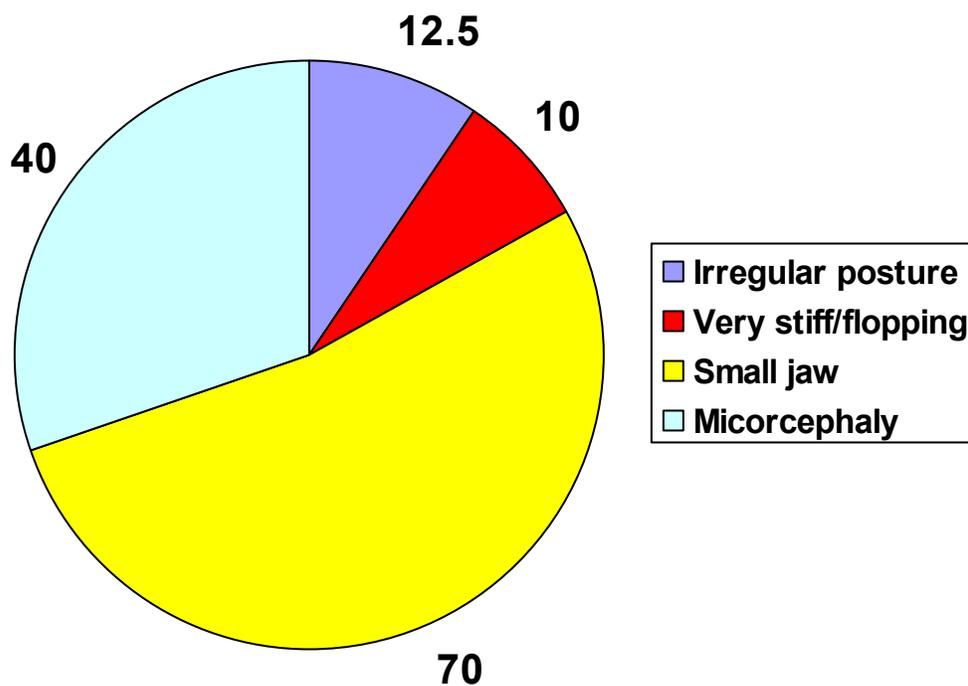


Fig 2: Distribution of samples according to problems in general appearance, head and face of the children with cerebral palsy.

Table 3:

Distribution of samples according to problems in eye, ear and nose of children with cerebral palsy

N=40

Items	Present		Absent	
	Frequency	%	Frequency	%
Eyes:				
a. Strabismus	22	55	18	45
b. Nystagmus	3	7.5	37	92.5
c. Visual impairment	5	12.5	35	87.5
Ear				
a. Low set ears	6	15	34	85
b. Poor hearing acuity	3	7.5	37	92.5
Nose				
a. Nasal obstruction	6	15	34	85
b. Depressed nasal bridge	3	7.5	37	92.5

Table 3 shows that 55% of the children were having strabismus 7.5% of them had nystagmus. 12.5% of them affected visual impairment. 15% of the cerebral palsy children had low set ears and 7.5% of them were having poor hearing acuity. 15% of the cerebral palsy children were having nasal obstruction and 7.5% had depressed nasal bridge.

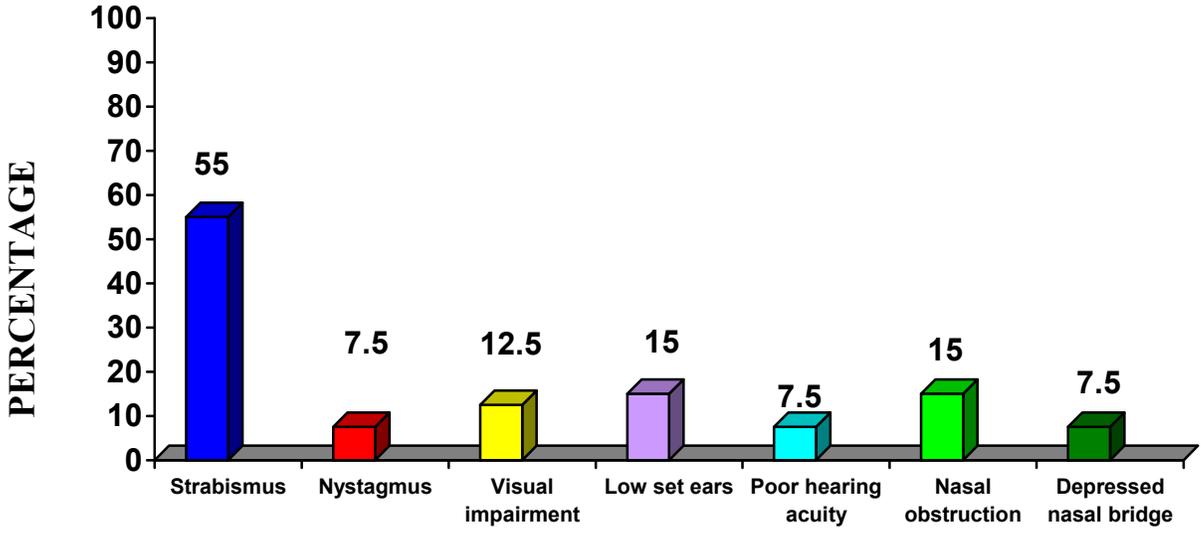


Fig: 3 Distribution of samples according to problems in eye, ear and nose of children with cerebral palsy

Table 4:

Distribution of samples according to problems in mouth & GI tract of children with cerebral palsy.

N=40

Items	Present		Absent	
	Frequency	%	Frequency	%
Mouth				
a. Dysphagia	15	37.5	25	62.5
b. Drooling of saliva	11	27.5	29	72.5
c. Difficulty in closing of the mouth	18	45	22	55
Tongue:				
a. Inappropriate tongue position	3	7.5	37	92.5
b. Tongue thrush	3	7.5	37	92.5
Tooth:				
a. Defect in enamel	37	92.5	3	7.5
b. Dental caries	22	55	18	45
c. Periodontal disease	8	20	32	80
d. Misalignment	14	35	26	65
GI tract:				
a. Regurgitation	12	30	28	70
b. Constipation	2	5	38	95

Table 4 shows that dysphagia presented in 37.5%. Drooling of saliva found in 27.5% and 72.5% of them had difficulty in closing the mouth. 7.5% of the children had

inappropriate tongue position, and tongue thrush. 92.5% of the children had defect in enamel, 55% of them were affected by dental caries. 20% of the children had periodontal disease and 35% of them had misalignment of the tooth.

Regurgitation found in 30% of the children with cerebral palsy and 5% of them had constipation.

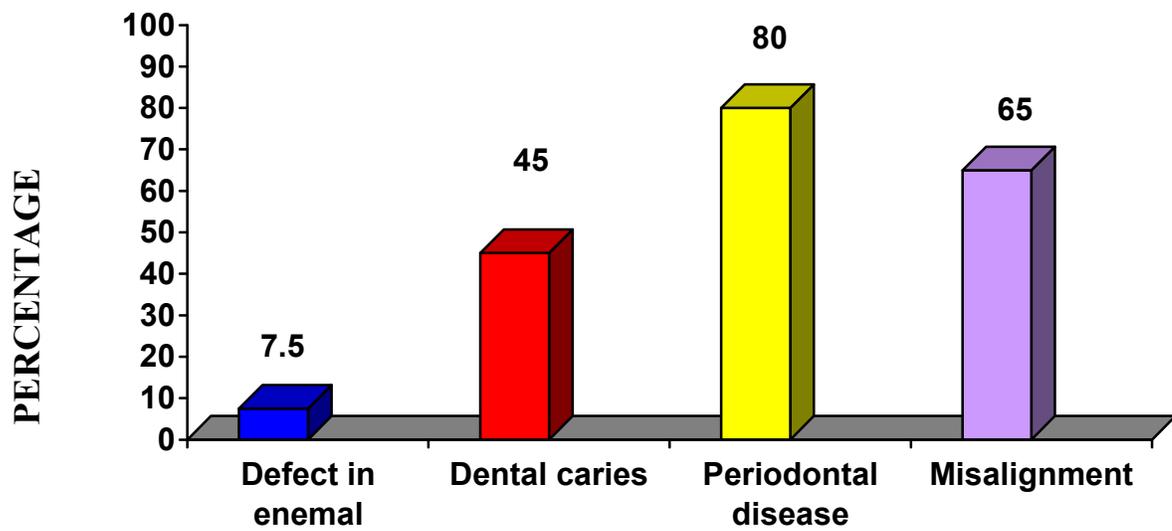


Fig 4: Distribution samples according to problems in Tooth of children with cerebral palsy.

Table 5:

Distribution of the samples according to problems in respiratory tract of the children with cerebral palsy.

N=40

Items	Present		Absent	
	Frequency	%	Frequency	%
Larynx:				
a. Low/weak breathy sounds	5	12.5	35	87.5
Respiratory infection:				
Cough	22	55	18	45
Wheezing	4	10	36	90

Table 5 shows that 12.5% of the children with cerebral palsy had low/ weak breathy sounds, 55% of them had cough and 10% of the children were having wheezing.

Table 6:

Distribution of samples according to problems in musculoskeletal system and central nervous system among the children with cerebral palsy.

N=40

Items	Present		Absent	
	Frequency	%	Frequency	%
Musculoskeletal System				
a. Hypertonic – limbs	23	57.5	17	42.5
b. Hypotonic	22	55	18	45
c. Limited range of motion	36	90	4	10
d. flexed Arms	12	30	28	70
a. Involuntary twisting of trunk, neck / limbs	8	20	32	80
b. Shortened limbs on affected side	7	17.5	33	82.5
c. Toe walking	35	87.5	5	12.5
d. Scissor walking	32	80	8	20
e. Pelvic tilting	8	20	32	80
f. Scoliosis	3	7.5	37	92.5
g. Cortical thumb posture	9	22.5	31	77.5
h. Purposeless Involuntary movement of facial movement.	13	32.5	27	67.5
Both / one side of the limbs:				
a. Hemiplegia	3	7.5	-	-
b. Monoplegia	3	7.5	-	-

c. Diplegia	5	12.5	-	-
d. Quadriplegia	28	70	-	-
e. Paraplegia	1	2.5	-	-
Central Nervous System				
a. Irritability	22	55	18	45
b. Unawareness of the stimuli in the environment	37	92.5	3	7.5
c. Seizure / Epilepsy	25	62.5	15	37.5

Table 6 shows had majority (57.5%) of children with cerebral palsy had hypertonic, 55% of the children had hypotonic. 90% of them had limited range of motion, 30% of them were having flexed arms. Only 20% of children had involuntary twisting of trunk, neck / limbs.

Mostly 80% of the children were having scissor walking, and 32.5% of the children were having purposeless, involuntary facial movement .27.5% of the children had involuntary movement of extremities, 22.5% of them were having cortical thumb posture. 20% of the children had scoliosis, and pelvic tilting. 17.5% of the children were having shortened limbs on affected side and only 7.5% of them had cortical thumb posture.

Mostly 70% of the children were having quadriplegia, 12.5% of them had diplegia. 7.5% of them had hemiplegia, and monoplegia and only 2.5% of the children were having quadriplegia.

Table 7:

Distribution of samples according to problems in genitourinary, speech development of the children with cerebral palsy.

N=40

Items	Present		Absent	
	Frequency	%	Frequency	%
Genitourinary system:				
a. Bladder control failure	34	85	6	15
b. Enuresis	20	50	20	50
c. Infrequent voiding	1	2.5	39	97.5
d. Strong smell urine passing	1	2.5	39	97.5
Speech / Language Development				
i. Irregular articulation	36	90	4	10
j. Distorted vowels	32	80	8	20
k. Slow rate	37	92.5	3	7.5
l. Monoloudness	24	60	16	40
m. Harsh Voice	11	27.5	29	72.5
n. Poor word pronunciation	26	65	14	35
o. Large range of jaw movement	9	22.5	31	77.5
p. Poor lips / tongue / palate coordination	35	87.5	5	12.5

Table 7 shows that 85% of the children were having bladder control failure, 50% of them had enuresis. Only 2.5% of them had infrequent voiding and strong smell urine., Most of (92.5%) the children were having slow rate of speech, 90% of them had irregular articulation and 80% of the children had distorted vowels, 87.5% of the children were having poor lips / tongue/palate coordination, 65% of them had poor word pronunciation and 60% of the children had monoloudness. 27.5% of them children were having poor word pronunciation and only 22.5% of them had large range of jaw movement.

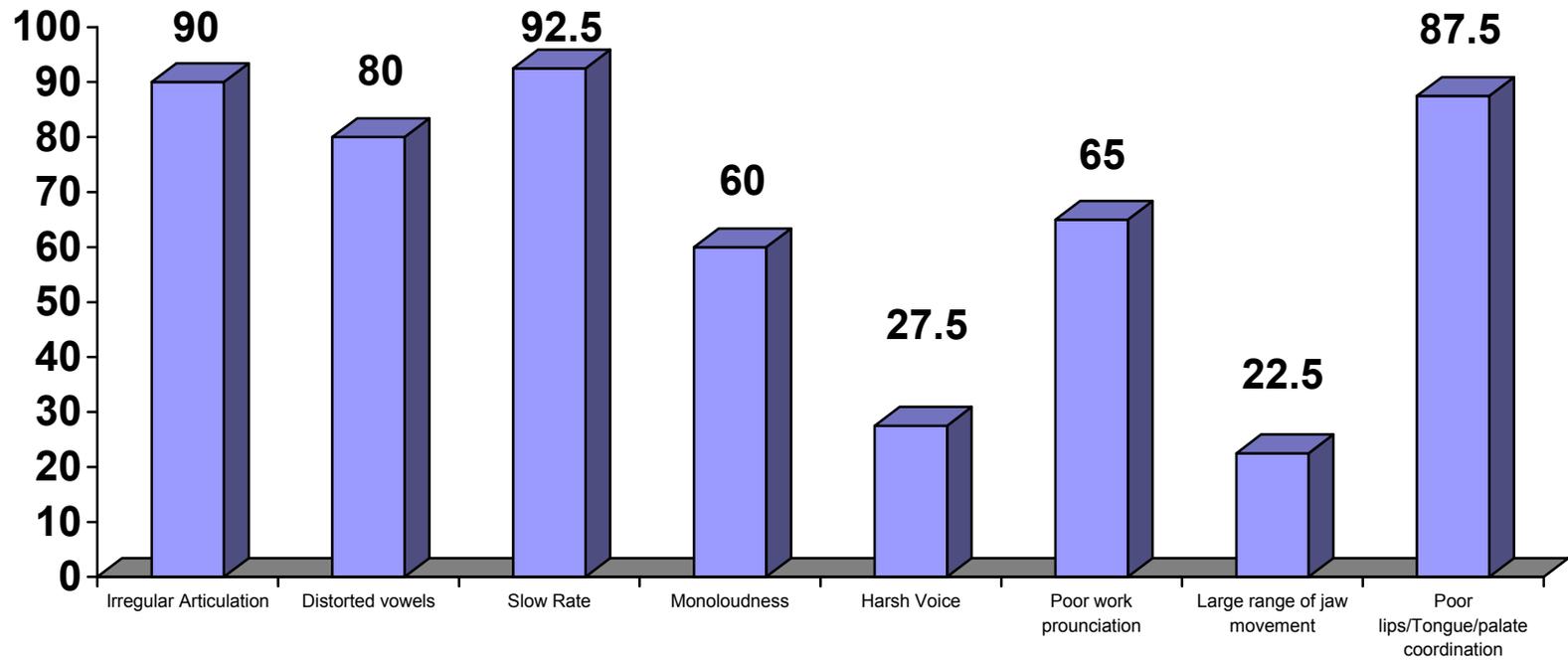


Fig 5: Distribution of samples according to problems in speech development of the children with cerebral palsy

Table 8:

Distribution of samples based on the levels of physical problems among children with cerebral palsy.

N=40

Levels of physical problems	Frequency	Percentage
	n	%
1. Mild (Below 21)	1	2.5
2. Moderate (41-22)	33	82.5
3. Severe (62-42)	6	15

Table 8 portray that 2.5% of the children had a score less than 21, signifying their mild physical problems. Majority (82.5%) of them had a score between 22-41, putting them into moderate physical problems. 15% of the children had score between 62-42) which showed that severe physical problems.

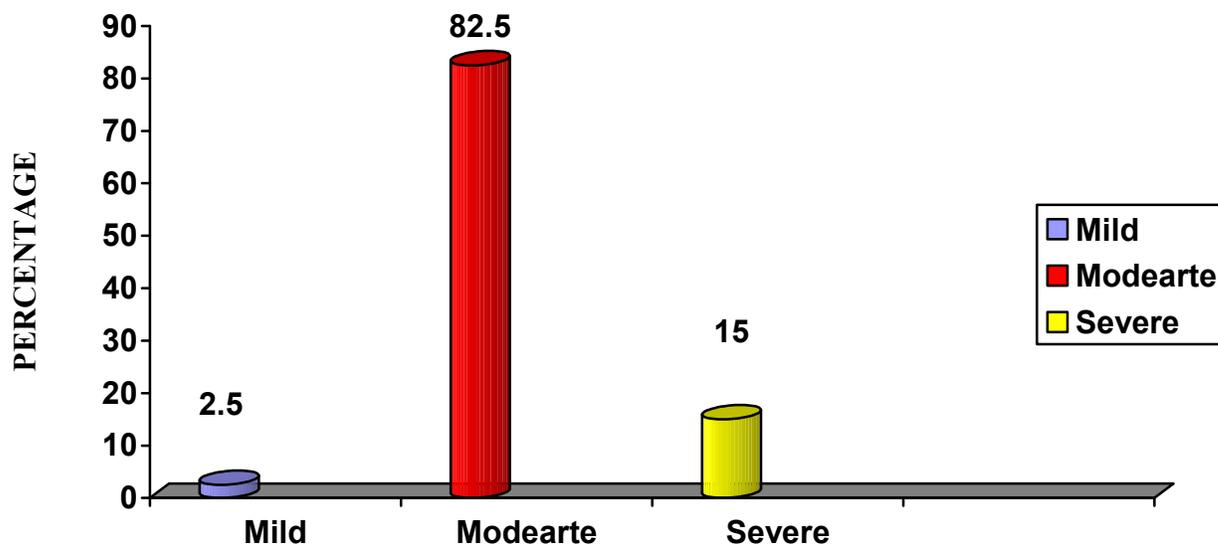


Fig 6: Distribution of samples according to their levels of physical problems among children with cerebral palsy.

SECTION – III

Identification of developmental delay in the children with cerebral children

Table 9:

Distribution of samples according to their developmental achievement of the children with cerebral palsy. N=40

Items	Achieved		Not Achieved	
	f	%	f	%
Fine Motor Skills				
a. Carries the filled paper cup without crushing tipping/spilling	2	5	38	95
Eating skills				
a. Drinks without spelling mouthful from a glass or cup with assistance	2	5	38	95
b. Picks up dry pieces of foods (biscuits) with fingers and puts foods into mouth	1	2.5	39	97.5
c. Chews solid foods	5	12.5	35	87.5
d. Picks up a filled glass and drinks from its without spilling	3	7.5	37	92.5
e. Mixed food and eat with little / no spilling	1	2.5	39	97.5

Dressing Skills:	1	2.5	39	97.5
a. Remove shoes when lace is undone	2	5	38	95
b. Unbuttons (shirt button, press button, hooks)	1	2.5	39	97.5
c. Ties a bow know with a shoe lace				
Toileting:	1	2.5	39	97.5
a. Has bladder control at night	1	2.5	39	97.5
b. Removes clothing, sits on toilet to eliminates	1	2.5	39	97.5
c. Goes to toilet independently				
Receptive Language:	6	15	34	85
a. Identifies different sounds such as bell ringing, hands clapping	2	5	38	95
b. Follows two steps directions	1	2.5	39	97.5
c. Avoids danger when instructed to dose	3	7.5	37	92.5
d. Follows three steps directions				
Expressive Language:				
a. Says name when asked	1	2.5	39	97.5
b. Uses two word phases / gestures	1	2.5	39	97.5
c. Tells / indicates name and occupation often parents.	2	5	38	95

Social Interaction:				
a. Plays alone with toys / objects for 2mts	4	10	36	90
b. Identifies by pointing, naming friends and acquaintances from strangers	1	2.5	39	97.5
c. Receives guests appropriate to acquaintances.	1	2.5	39	97.5

Table 9 shows that from fine motor skills, only 5% of the children with cerebral palsy ability were able to carry the filled paper cup without crushing, tipping / spilling. About eating skills, 5% of the children were able to drink without spilling mouthful from glass (or) assistance. 2.5% of them had ability to pick up dry pieces of foods (biscuits) with fingers and put foods into mouth. 12.5% of the children were having ability to chew solid foods. 7.5% of them had ability to pick up a filled glass and drink from it without spilling. 2.5% of the children could mix foods and eat with little / no spilling.

Dressing skills, portrays that 5% of the children could do unbutton the shirt and 2.5% of them had ability to remove shoes when lace was undone, ties a bow knot with a shoe lace .

Toileting, only 2.5% had achieved the bladder control at night, removes clothing, sits on toilet to eliminate and goes to toilet independently.

Regarding receptive language, mostly 15% had ability to identify different sounds, 7.5% of them had capacity to follow three steps directions .5% of the children

could follow two steps direction and only 2.5% could known avoids danger when instructed to dose.

Expressive language portrays that 5% of the children had ability to tell / indicate name and occupation often parents, only 2.5% of them had ability to says name when asked and used two word phases / gestures .

With regard to Social interaction 10% the children were playing alone with toys/ objects for 2mts. Only 2.5% of had abilities to identify by naming of the friends and receives guests appropriately to acquaintances.

Table 10:**Means score of the developmental delay in cerebral palsy children**

Items	N	Mean Value	
		Normal	Delay
Fine motor skills	40	5	95
Eating skills	40	6	94
Dressing skills	40	3.3	96.6
Toileting	40	2.5	97.5
Receptive language	40	7.5	92.5
Expressive language	40	3.3	96.6
Social interaction	40	5	95

Table 10 shows that mean score of 97.5 which indicates developmental delay in toileting and mean score of 96.6 which infers developmental delay in dressings skills and expressive language. Mean score of 95 indicates delay development in social interaction.

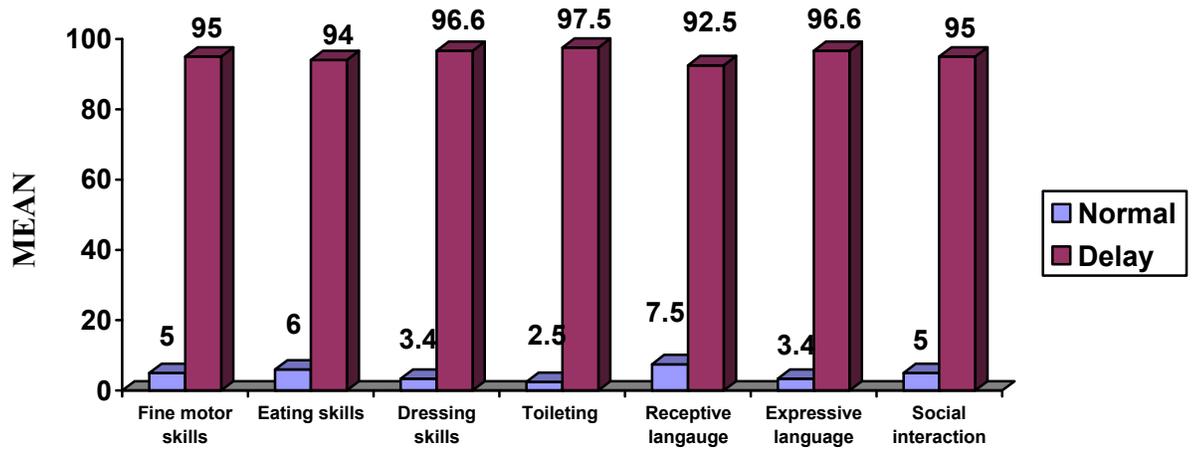


Fig 7: Mean score of the developmental delay in children with cerebral palsy

SECTION IV

Determination of psychological problems in the children with cerebral palsy

Table 11:

Distribution of samples according to emotional and conduct problems among children with cerebral palsy. N=40

Items	Not true		Some what true		Certainly true	
	f	%	f	%	f	%
Emotional Problem						
a. Considerate of other peoples feelings	28	70	-	-	12	30
b. Restless, over active cannot stay still for long	27	67.5	-	-	13	32.5
c. Often complaints of headache stomach aches or sickness	36	90	-	-	4	10
d. Shares readily with other children, for example toys, treats, pencils	36	90	-	-	4	10
e. Often loses temper.	6	15	-	-	34	85
Conduct Problems:						
a. Rather solitary prefers to play done	5	12.5	-	-	35	87.5

b. Generally well behaved usually does what adults request	18	45	-	-	22	55
c. Many worries or often seems worried	38	95	-	-	2	5
d. Helpful if someone is hurt, upset or feeling	38	95	-	-	2	5
e. Constantly fidgeting or squirming	18	45	2	5	20	50

Table 11 shows that 85% of the children had often loses temper, 32.5% of the children had restless, overactive, cannot stay still for long. 30% of them were considerate of other people's feelings and only 10% of the children were having often complains of headaches, stomach aches or sickness and shares readily with other children

87.5% of the children had rather solitary prefers to play alone, 55% of the children were generally well behaved, and usually did what adults request. 50% of the children had constantly fidgeting or squirming; Only 2% of them had many worries or often seemed worried.

Table 12:
Distribution of the samples according hyperactivity peer and prosocial problems
among the children with cerebral palsy. **N=40**

Items	Not true		Some what true		Certainly true	
	f	%	f	%	f	%
III. Hyperactivity						
a. Has at least one good friend	6	15	-	-	34	85
b. Often fights with other children (or) bullies them	32	80	-	-	8	20
c. Often unhappy, depressed or tearful	39	97.5	-	-	1	2.5
d. Generally liked by other children	18	45	-	-	22	55
e. Easily distracted concentration wanders.	20	50	-	-	20	50
IV. Peer Problems						
a. Nervous (or) clingy in new situations, easily loses confidence	15	37.5	-	-	25	62.5
b. Kind to younger	35	87.5	-	-	5	12.5
c. Often child (or) cheats	39	97.5	-	-	1	2.5
d. Picked on or bullied by others	36	90	-	-	4	10

e. Often offers help others.	38	95	-	-	2	5
V. Prosocial Behavior Problem:						
a. Thinks things out before acting	38	95	-	-	2	5
b. Stealing from home, school or elsewhere	38	95	-	-	2	5
c. Gets along better with adults than with other children	28	70	-	-	12	30
d. Many fears, easily scared	7	17.5	-	-	33	82.5
e. Good attention span sees chores or homework through to the end.	38	95	-	-	2	5

Table 12 shows that hyperactivity peer problems and prosocial behavior. Hyperactivity portrays that 85% of the children had at least one good friend, 55% of the children were generally liked by other children and 50% of the children were easily distracted. Less number (20%) of them had fight with other children (or) bullies them.

About peer problems, 62.5% of the children had nervous or clings in new situations, easily loses confidence, and 12.5% of them were kind to younger children. 10% of them had response of picked on or bullied by other children.

About prosocial behavior, 82.5% of the children had many fears easily scared, and 30% of the children were get along better with adults than with other children.

Table 13:

**Distribution of samples based on psychological problems of the children
with cerebral palsy**

N=40

Items	Normal		Borderline		Abnormal	
	f	%	f	%	f	%
Emotional symptoms	11	27.5	20	50	9	22.5
Conduct problems	9	22.5	2	5	27	67.5
Hyperactivity	25	62.5	12	30	3	7.5
Peer problems	1	2.5	2	5	37	92.5
Prosocial problems	0	0	2	5	38	95

Table 13 shows that mostly 95% of children had abnormal prosocial problems. 92.5% of them had abnormal peer problems and 67.5% of the children were having abnormal conductive problems. Only 7.5% of them had abnormal hyperactivity. 50% of the children were having borderline emotional symptoms

Table 14:

Distribution of psychological problem based on level among the children with cerebral palsy.

N=40

Levels of psychological problems	Frequency n	Percentage %
Normal	0	0
Borderline	4	10
Abnormal	36	90

Table 14 shows that 10% of the CP children had borderline psychological problems, 90% of the children were having abnormal psychological problems. None of the children with cerebral palsy had normal behavior.

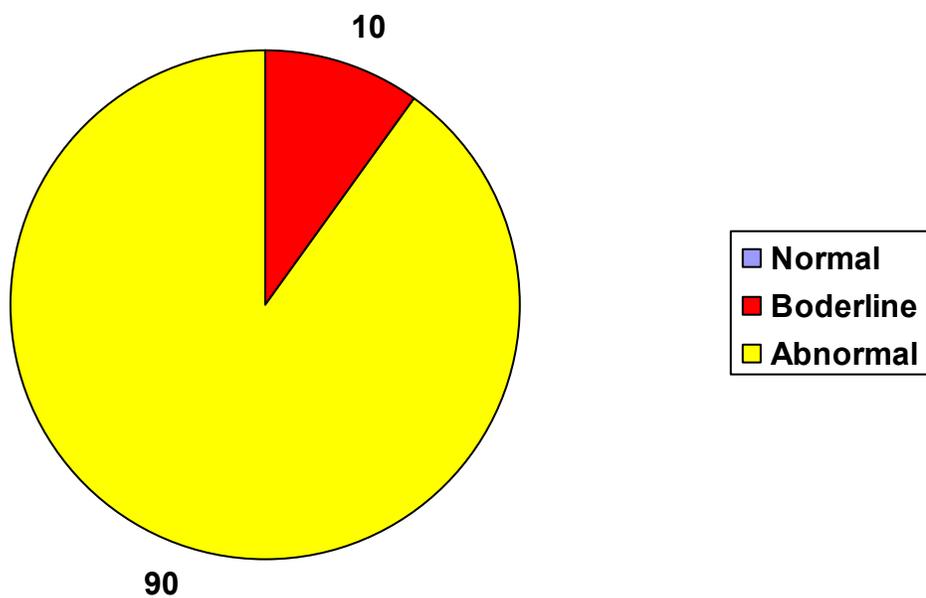


Fig 8: Distribution of samples based on the levels of psychological problems among children with cerebral palsy.

SECTION – V

Table 15:

Association of physical problems with demographic variables among the children with cerebral palsy. N=40

Demographic Variables	Mild	Moderate	Severe	df	Chi-square	5 % of the Chi-square
Age:						
a. Below 1 year	0	0	1			
b. 1-3 years	1	25	3	4	0.897	9.49
c. 3-5 years	0	8	2			
Sex						
a. Male	1	22	4			
b. Female	0	11	2	2	0.165	5.99
Religion						
a. Hindu	1	32	6			
b. Christian	0	1	0	4	0.21661	9.49
c. Muslim	0	0	0			
Types of Marriage						
a. Consanguineous	0	11	2			
b. Non consanguineous	1	22	4	2	0.4934	5.99
Mode of Delivery						
a. Normal vaginal	1	18	3			
b. LSCS	0	6	1	4	5.25	9.49

c. Forceps	0	9	2			
Birth Weight:						
a. Above 2.5 kg	1	28	2			
b. Below 2.5kg	0	5	4	2	8.01	2.99
Neonatal Jaundice						
Present	0	0	0			
Absent	1	1	6	2	1.5017	5.99
Place of Residence						
a. Rural	1	8	2			
b. Urban	0	25	4	2	2.999	5.99
Name of near health Institution						
a. PHC	0	7	0			
b. Sub center	0	1	0			
c. Govt. / District Hospital	0	5	0	6	4.157	12.6
d. Private hospital	1	20	5			

5 % level of significant.

To determine association of physical problems with demographic variables of cerebral palsy, the null hypothesis was stated as follows:

There will be no significant association between physical problems & the demographic variables of children with cerebral palsy.

There was no significant association between psychological problems of the children with cerebral palsy and age ($\chi^2 = 0.897$), sex ($\chi^2 = 0.165$), religion ($\chi^2 = 0.2166$), type of marriage ($\chi^2 = 0.4934$), mode of delivery ($\chi^2 = 5.25$), neonatal jaundice ($\chi^2 = 1.5017$), place of residence ($\chi^2 = 2.999$), near health institution ($\chi^2 = 12.6$). Thus the researcher rejected the reached hypotheses and accepted the null hypotheses for these variables.

Table 14 shows that there was statistically significant association between physical problems of children with cerebral palsy and birth weight ($\chi^2 = 8.01, p < 0.05$). Thus researcher rejects the null hypothesis & accepts the researcher hypothesis for these variable.

Table 16:

Association of psychological problems with demographic variable of the children with cerebral palsy.

N=40

Demographic Variables	Mild	Moderate	Severe	df	Chi-square	5 % of the Chi-square
Age:						
Below 1 year	0	0	1			
1-3 years	0	4	25	4	3.964	9.49
3-5 years	0	0	10			
Sex						
a. Male	0	4	23			
b. Female	0	0	13	2	2.138	5.99
Religion						
Hindu	0	4	35			
Christian	0	0	1	4	0.28	9.49
Muslim	0	0	0			
Types of Marriage						
Consanguineous	0	4	13			
Non consanguineous	0	0	23	2	3.201	5.99
Mode of Delivery						
a. Normal vaginal	0	3	19			
b. LSCS	0	1	6	4	1.384	9.49
c. Forceps	0	0	11			

Birth Weight:						
Above 2.5 kg	0	2	29			
Below 2.5kg	0	2	7	2	31.48	5.99
Neonatal Jaundice						
a. Present	0	2	4			
b. Absent	0	2	32	2	4.26	5.99
Place of Residence						
a. Rural	0	4	7			
b. Urban	0	0	29	2	11.40	5.99
Name of near health Institution						
a. PHC	0	0	7			
b. Sub center	0	0	1	6	6.088	12.6
c. Govt. / District Hospital	0	2	3			
d. Private hospital	0	2	25			

5 % level of significant.

To determine association of psychological problems with demographic variables of cerebral palsy, the null hypothesis was stated as follows

There will be no significant association between psychological problems & demographic variables of children with cerebral palsy

There was no significant association between psychological problems of the children with cerebral palsy and age ($\chi^2 = 3.964$), sex ($\chi^2 = 2.138$), religion ($\chi^2 = 0.28$), type of marriage ($\chi^2 = 3.201$), mode of delivery ($\chi^2 = 1.384$), neonatal jaundice ($\chi^2 = 4.26$), near

health institution ($\chi^2 = 6.088$). Thus the researcher rejected the reach hypotheses and accepted the null hypotheses for these variables.

Table 15 shows that there was statistically significant association between psychological problems of children with cerebral palsy and birth weight ($\chi^2 = 31.48, p < 0.05$), place of residence ($\chi^2 = 11.40, p < 0.05$). Thus researcher rejects the null hypothesis & accepts the researcher hypothesis for these variables.

CHAPTER – V

DISCUSSION

Cerebral palsy describes as an umbrella term covering a group of non progressive but often changes in the motor function. A static brain lesion causes cerebral palsy. This lesion affects multiple functions of the central nervous system. The musculoskeletal and neurological abnormalities are common. Weaknesses of the extremities, mental retardation, seizure, scoliosis, hip dislocation are major problems of the cerebral palsy. It affected child's self confident, individuality. These children have maturation problems such as cryptorchidism, delay puberty and precocious puberty.

The main purpose of this study was to assess physical problems, and psychological problems of the children with cerebral palsy. The results revealed that cerebral palsy children experience more physical problems, and psychological problems.

The study consisted of 40 samples. The tools used for this study were Observation check list, modified madras developmental system, strengthen difficulties questionnaires. The finding of the study are discussed in this chapter with reference to the objectives of the study.

Regarding the Demographic variables of the children with cerebral palsy

Most (72.5%) of children were in the age group of toddler, 67.5% of children were male. Maximum (97.5%) of children belonged to Hindu, and 18% of children had neonatal jaundice in early life. A large proportion (55%) of

children were born in normal vaginal delivery and 77.5% of them had above 2.5 kg birth weight.

The first objective of the study was to assess physical problems of the children with cerebral palsy.

The finding related to this objective are described in tables 2,3,4,5, 6,7 8. Table 8 showed that majority (82.5%) of the children with cerebral palsy were having moderate physical problems, 15% of the children had severe and 2.5% of them had mild physical problems.

Table 2, 3,4,5,6 7, revealed that physical problems of children with cerebral palsy in the current study.

The top ten physical problems experienced by the children with cerebral palsy are as follows:

1. Unawareness of the stimuli in the environment (92.5%)
2. Defect in enamel (92.5%)
3. Slow rate (92.5%)
4. Very stiff/ flopping (90%)
5. Limited range of motion (90%)
6. Irregular articulation (90%)
7. Irregular posture (87.5%)
8. poor lips/ tongue/ palate co-ordination (87.5%)
9. Toe walking (87.5%)
10. Bladder control failure (85%)

Some of other the physical problems experienced by the children with cerebral palsy as followed:

1. Scissor walking (80%)
2. Distorted vowels (80%)
3. Drooling of saliva (72.5%)
4. Seizure (62.5%)
5. Microcephaly (60%)
6. Hypertonic limbs (57.5%)
7. Hypotonic (55%)
8. Irritability (55%)
9. Cough (55%)
10. Difficulty in closing of the mouth (55%)
11. Dental caries (55%)
12. Strabismus (55%)

The present finding clearly reflects the findings of various researchers and findings are as following:

Pharoah et al (1998) found that 33.4% of the cerebral palsy children had severe ambulatory disability, 23.7% had severe manual disability, 23.1% were having severe learning disability, and 8.9% had severe visual disability.

Odding et al (2004) explained that large proportion of the cerebral palsy children were having spastic type, half of them had gastrointestinal and feeding problems. Nearly 80% of them had at least some speech impairment.

Christophere J Newman et al (2006) explained that most of these cerebral palsy children had unusual pre- walking locomotion and mild delay in independent walking. These children did not fit to habitual walking and had features of spastic diplegia or peripheral neuromuscular disease.

The second objective of the study was to find out developmental delay of the children with cerebral palsy.

Table 9 revealed that developmental achievement of the children with cerebral palsy. All children (100%) had developmental delay

Top five developmental achievement of the children with cerebral palsy.

1. Identifies different sounds (15%)
2. Chews solid foods (12.5%)
3. Plays alone with toys / objectives for 2mts (10%)
4. Pick up a filled glass and drinks from it's without spilling (7.5%)
5. Follows three steps directions (7.5%).

Table 10 revealed that mean score of 97.5 indicated developmental delay in Toileting Mean score of 95 indicated developmental delay in social interaction and Fine motor skills.

The present finding clearly reflects the findings of other research as followed Pennington et al (2004) explained that production of speech, language, and communication gesture are affected by cerebral palsy. Communication difficulties depend on motor, intellectual and sensory impairment.

The third objectives of the study determine psychological problems of the children with cerebral palsy

From table 12 , it can be inferred that majority (92.5%) of the children had peer problem, 95% of them had prosocial problems, and 67.5% of the children were having conduct problems.

From table 13 revealed that most (90%) of the children with cerebral palsy had abnormal psychological problems, 10% of the children had borderline psychological problems and none of them had normal behavior. The present finding clearly reflects the findings of various research are as following:

Nora shields et al (2006) in their study determined self concept of cerebral palsy adolescent. It revealed that female cerebral palsy adolescent had low self esteem than in females without disability.

Fourth objective of the study was to find out association between physical problems of the children with cerebral palsy and selected demographic variables.

Birth weight

There was a significant association between birth weight and physical problems of the children with cerebral palsy. The chi-square value 8.01 was significant at 0.05 level. Hence the above finding support researcher hypotheses and null hypotheses had been rejected. There was no significant association between physical problems of the children with cerebral palsy and age, sex, religion, types of marriage, mode of delivery, neonatal jaundice, place of residence, near health institution.

Fifth objective of the study find out association between psychological problems of the children with cerebral palsy and selected demographic variables

Birth weight

There was a significant association between birth weight and psychological problems of the children with cerebral palsy. The chi-square value 31.48 was significant at 0.05 level.

Place of residence:

There was a significant association between place of residence and psychological problems of the children with cerebral palsy .The chi-square value 11.40 was significant at 0.05 level This findings was supported by

Hence the above finding support research hypotheses and null hypotheses had been rejected. There as no significant of association between physical problems of the children with cerebral palsy and age, sex, religion, types of marriage, mode of delivery, neonatal jaundice, place of residence, near health institution

Parkes et al,(2009) in their study revealed significant proportion of children with cerebral palsy had psychological symptoms or social impairment. It revealed that better gross motor function, intellect, more pain had association between Total difficulties score (>16)and disabled or ill siblings, living in a town.

Strengthen of the present study

1. The samples for this study were selected from all zones of Madurai
This stratification strengthen the study.
2. The investigator used highly reliable Observation check list,
modified madras developmental system, strengthen difficulties
questionnaires for determined physical problems, developmental
delay, and psychological problems.

CHAPTER –VI

Summary, Conclusion, Implications and Recommendations

This chapter contains the summary of the study and conclusion drawn. It clarifies the limitations of the study and the implications. The recommendations are given for different areas like nursing education, administration and health care delivery system (nursing practice) and nursing research.

Summary

This study was undertaken to determine physical problems , developmental delay, psychological problems of the children with cerebral palsy. This study was conducted at Sankalp cerebral palsy physiotherapy clinic, Madurai. The population of the study were children with cerebral palsy. The total sample size was 40. Descriptive design was used for this study . The conceptual framework of this study was based on Health promotion model.

The data collection tool consisted Observation check list, modified madras developmental system, strengthen difficulties questionnaires. Observation check list was used to assess physical problems , Modified Madras Developmental System used to find out developmental delay; Strengthen Difficulties Questionnaires were used to determine psychological problem of the children with cerebral palsy. Each tool was evaluated by six experts for validity. The reliability was established by inter rater method.

The Observation check list, had reliability of 0.85, Modified Madras Developmental system had reliability of 0.9, Strengthen Difficulties Questionnaires had reliability of 0.75. Descriptive and inferential statistics (frequency, percentage, chi-square) was used to analyze the data.

Major Findings of the study

1. Majority (72.5%) of the children belonged to the age group of 1-3 yrs. Most (67.5%) of the samples were males.
2. 72.5 % of the children were having drooling of saliva, 30% of the children had regurgitation, 62.5% of them had seizure. Majority (47.5%) of the children were unawareness of the stimuli in the environment.
3. Maximum (47.5%) of the children had quadriplegia. Very few (2.5%, 7.5%,7.5%) of the children had paraplegia, monoplegia.
4. Maximum (82.5%) of the samples had moderate physical problems,2.5% of the children had mild physical problems.
5. The top ten physical problems experience by children with cerebral palsy
 1. Unawareness of the stimuli in the environment
 2. Defect in enamel
 3. slow rate
 4. Very stiff / flopping
 5. Limited range of motion
 6. Irregular articulation
 7. Irregular posture
 8. poor lips/ tongue/ palate co-ordination
 9. Toe walking
 10. Bladder control failure
6. Some of other the physical problems experienced by the children with cerebral palsy as followed :

1. scissor walking
2. Distorted vowels.
3. Drooling of saliva
4. Seizure
5. Microcephaly
6. Hypertonic limbs
7. Hypotonic
8. Irritability
9. cough
10. Difficulty in closing of the mouth
11. Dental caries
12. Strabismus

7. Top five developmental achievement of the children with cerebral palsy.

1. Identifies different sounds
2. chews solid foods
3. plays alone with toys / objectives for 2mts
4. pick up a filled glass and drinks from its without spilling
5. follows three steps directions

8. Toileting had high mean score (97.5) indicated developmental delay to the children.

Mean score of 96.6 indicated developmental delay in dressing skills and expressive language.

8. Majority (95%) of the children were having problems in prosocial behavior and 92.5% of the children had peer problems.

9. Most (90%) of children were found abnormal psychological problems and 10% of them had borderline psychological problems
10. There was statistically significant association between birth weight and physical problems of the children with cerebral palsy. ($\chi^2 = 8.01$, $p < 0.05$)
11. There was a significant association between birth weight, ($\chi^2 = 31.48$, $p < 0.05$), place of residence ($\chi^2 = 11.40$, $p < 0.05$) and psychological problems of the children with cerebral palsy.

Conclusion

The study brought the following conclusion.

1. 82.5% of the Children with cerebral palsy were having moderate physical problems.
2. 10% of the children had Psychological problems among the children with cerebral palsy.
3. Among children with cerebral palsy, there was significant association between physical problems and birth weight only ($\chi^2 = 8.0$).
4. Among children with cerebral palsy, there was significant association between psychological problems and birth weight ($\chi^2 = 31$), place of residence. ($\chi^2 = 11.40$)
5. The finding indicate there is a need to know about management of the children with cerebral palsy.

Implication

The findings of the study have several implications in the following fields.

Implications for nursing practice

1. Health care professionals have major responsibility in determining the physical problems, developmental delay, and psychological problems of the children with cerebral palsy ,focus on prevention of the complication.
2. This study findings revealed the importance of pediatric nurse's role in determining physical problems, developmental delay, and psychological problems of the children with cerebral palsy .
3. The nurse can plan and provide instructional modules about care of the children with cerebral palsy.
4. The nurse can plan to provide counseling session for parents of the children with cerebral palsy.
5. The nursing students can plan and implements necessary intervention..
6. This study findings signify the importance of the rendering care of the children with cerebral palsy.

Implication of nursing education

1. There should be greater emphasize in the nursing curriculum about cerebral palsy and its rehabilitation.
2. The nursing students can be taught to identify physical problems, developmental delay, and psychological problems of the children with cerebral palsy as a routine care both in under graduate and post graduate level.

3. The nursing teacher can motivate the student to conduct the teaching program in the clinical area about care of the children with cerebral palsy.

Implication for nursing research

The findings of the present study have added knowledge to this already existing literature and implications for the nursing research are given in the form of recommendation. This study can be a baseline for future studies to build upon and motivate other researchers to conduct further studies.

Implication for nursing administration

- This study will help administrator in arranging continuing education program to nurses regarding health assessment and care of children with cerebral palsy
- Nurse administrators can encourage nursing staff to make important contribution to care of children with cerebral palsy
- Nurse administrators can organize health education program in the hospital on care of children with cerebral palsy.

Recommendation

The researcher made the following recommendation after study.

1. A similar study can be done in various other setting
2. A similar study can be done with large samples.
3. A comparative study can be done between the cerebral palsy children those who attend the cerebral palsy clinic and those who not attend the cerebral palsy clinic

4. A study can be conducted to find out the factors responsible for causing cerebral palsy
5. The coping strategies of parents related to perception and attitudes towards children with cerebral palsy can be studied.
6. A study can be done regarding the impact of cerebral palsy on families, coping styles and other related variables such as both parents are employed, having one or more than with associated disability.

Limitations

The limitation of the study were as follows

The study was conducted among children with cerebral palsy who visited Sankalp cerebral palsy physiotherapy clinic, Madurai. Therefore generalization must be done with caution only.

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APPENDIX – I
COPY OF LETTER SEEKING PERMISSION
TO CONDUCT THE STUDY IN SELECTED PHYSIOTHERAPY CLINIC AT
MADURAI

Dr. NALINI JEYAVANTHYA SANTHA
 Principal.

4/235, COLLEGE ROAD
 THASILDAR NAGAR
 MADURAI – 625 020
 PHONE: 2534593
 Date: 01.06.2010

Ref. UT: SHNC: 2010

To

Mrs. Umasha B.P.T,
 Sankalp physiotherapy clinic,
 Madurai.

Respected Sir / Madam,

Sub: Sacred Heart Nursing College, Madurai – Project work of
 M. Sc (Nursing) student – permission requested – reg.

We wish to state that Final year M. Sc (Nursing) student of our college has to conduct a Research project, which is to be submitted to The Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of University requirements.

The topic of research project is “*A study to assess physical and psychological problems of the children with cerebral palsy attending selected physiotherapy clinic in Madurai.*”

We therefore request you to kindly permit her to do the research work in selected schools from June 1st to June 26th which is in your control, under your valuable guidance and suggestions.

Thanking you,

Yours faithfully,

Principal
 SACRED HEART NURSING COLLEGE
 ULTRA TRUST, MADURAI – 20.

APPENDIX – II**Letter requesting opinions and suggestions of experts for establishing content validity**

From

Ms. Vimala
IInd Year M.Sc (Nursing),
Sacred Heart College of Nursing,
Madurai – 20.

To,

Respected Sir / Madam,

SUB : Requesting opinions and suggestion of experts for the content validity and validity of tool.

I am a post graduate student (Child Health Nursing) of Sacred Heart Nursing College. I have selected the below mentioned topic for research project submitted to DR. M.G.R. Medical University, Chennai as a fulfillment of Master of Science in Nursing.

TITTLE OF THE TOPIC:

“A study to assess physical and psychological problems of the children with cerebral palsy attending selected physiotherapy clinic in Madurai.”.

With regard to this may I kindly request you to validate my content for its relevancy. I am enclosing the objectives of the study. I would be highly obliged and remain thankful for your great if you could validate and send it as early as possible.

Thanking You.

Place:

Your's faithfully,

Date:

(Vimala.B)

- Encl: 1. Problem Statement
2. Demographic variables
3. Observational checklist
4. Modified Madras Developmental System
5. Strengthen Difficulties questionnaires

CONTENT AND TOOL VALIDITY CERTIFICATE

I here by certify that I have validated the content and research tool (Problem Statement, Demographic variables , Observational checklist, Modified Madras Developmental System, Strengthen Difficulties questionnaires) of Ms. Vimala.B who is undertaking study on “A study to assess physical and psychological problems of the children with cerebral palsy attending selected physiotherapy clinic in Madurai.”.

Name of the Expert:

Designation of the Expert:

Name of the Institution:

Place:

Date:

Signature of the Expert

APPENDIX – III

List of Experts Consulted for the Content Validity

1. **Dr.M.Karthikeyan, M.D., (Psy.)**
Consultant Psychiatrist,
Meenakshi Mission Hospital and Research Centre,
Madurai.
2. **Dr.Suresh kumar,M.D., (Psy.)**
Assitant professor cum clinical psychologist,
Department of psychiatric,
Govt,Rajaji hospital,
Madurai.
3. **Dr. A. Mani, M.Sc, M.A, M.Phil, Ph.D.**
Professor in psychology,
Sara nursing college,
Dharapuram,
Erode District.
3. **Mrs.Devakirubai, M.Sc., (N), Ph.D.,**
Professor,
Sacred Heart Nursing College,
Madurai
4. **Mrs.Sarojni, M.Sc. (N),**
Lecturer,
Sacred Heart Nursing College,
Madurai
5. **Mrs.Jothilakshmi,M.Sc.(N),**
Lecturer,
Sacred Heart Nursing College,
Madurai

APPENDIX – IV

Part – I

DEMOGRAPHIC VARIABLES OF CHILDREN WITH CEREBRAL PALSY

1. Age : a) 9 months
b) 1 – 3 Years
c) 3– 5 Years
2. Sex : a) Male
b) Female
3. Religion : a) Hindu
b) Christian
c) Muslim
4. Type of marriage : a) Consanguineous
b) Non-consanguineous
5. Mode of delivery : a) Normal vaginal delivery
b) LSCS
c) Forceps
6. Birth weight : a) Below 2.5 kg
b) Above 2.5kg
7. Place of residence : a) Rural
b) Urban

8. Neonatal jaundice : a) Present
b) Absent

9. Name of the near health

Institution : a) PHC
b) Subcenter
c) District hospital
d) Private Hospital

PART - II**OBSERVATIONAL CHECK LIST**

Items	Yes / No	Yes = 1, No = 0
<p>I. General Appearance:</p> <p style="padding-left: 40px;">Posture – 1. Irregular</p> <p style="padding-left: 80px;">2. Very stiff / flopping</p> <p>II. Hear & Face:</p> <p style="padding-left: 40px;">1. Microcephaly</p> <p style="padding-left: 40px;">2. Small jaw bone</p> <p>III. Eyes:</p> <p style="padding-left: 40px;">1. Strabismus</p> <p style="padding-left: 40px;">2. Nystagmus</p> <p style="padding-left: 40px;">3. visual impairment</p> <p>IV. Ear:</p> <p style="padding-left: 40px;">1. Low set ears</p> <p style="padding-left: 40px;">2. Poor hearing activity</p> <p>V. Nose:</p> <p style="padding-left: 40px;">1. Nasal obstruction</p> <p style="padding-left: 40px;">2. Depressed nasal bridge.</p> <p>VI. Mouth:</p> <p style="padding-left: 40px;">1. Dysphagia</p> <p style="padding-left: 40px;">2. Drooling of saliva</p>		

<p>3. Difficulty in mouth closure</p> <p>a) Tongue:</p> <ol style="list-style-type: none">1. Inappropriate tongue position2. Tongue thrush <p>b) Tooth:</p> <ol style="list-style-type: none">1. Defect tooth enamel2. Dental caries / plague3. Periodontal disease4. Misalignment <p>VII. Gastro Intestinal System:</p> <ol style="list-style-type: none">1. Regurgitation2. Constipation <p>VIII. Respiratory System:</p> <p>a) Larynx:</p> <ol style="list-style-type: none">1. Low / Weak breathy voice <p>b) Respiratory Infection:</p> <ol style="list-style-type: none">1. Cough2. Wheezing <p>XI. Musculo-Skeletal system:</p> <ol style="list-style-type: none">1. Hypertonia – limbs2. Hypotonia3. limited range of motion4. flexed Arms		
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<p>5. Involuntary twisting of the trunk, neck or limbs</p> <p>6. Shortened limbs on affected side</p> <p>7. Toc walking</p> <p>8. Scissor walking</p> <p>9. Poor muscle lone</p> <p>10. Weakness limited range of motion</p> <p>11. Slowness of movement</p> <p>12. Pelvic tilting</p> <p>13. Scoliosis</p> <p>14. Cortical thumb posture</p> <p>15. Purposeless, involuntary, uncontrollable movement of face</p> <p>16. Both (or) one side of the upper & lower extremities</p> <p style="padding-left: 40px;">a) Hemiplegia</p> <p style="padding-left: 40px;">b) Monoplegia</p> <p style="padding-left: 40px;">c) Diplegia</p> <p style="padding-left: 40px;">d) Quadriplegia</p> <p style="padding-left: 40px;">e) paraplegia</p> <p>X. Central Nervous System:</p> <p>1. Irritability / Listlessness</p> <p>2. Unawareness of the stimuli in the environment</p> <p>3. Seizure / Epilepsy</p> <p>IX: Genitourinary System:</p> <p>1. Bladder control failure</p>		
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<p>2Enuresis</p> <p>3Infrequent voiding</p> <p>4Strong smelling urine</p> <p>XII. Speech / Language Development:</p> <ol style="list-style-type: none"> 1. Irregular articulation 2. Distorted vowels 3. Slow rate 4. Monoloudness 5. Harsh voice 6. Poor word pronunciation 7. Large range of jaw movements 8. Poor lips / tongue / palate co-ordination 		
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Total Score - 53

Mild - below 21

Moderate - 22- 41

Severe - 42-53

Part - III

Modified Madras Development Programming System (MMDPS):

0 – Observation

Q – Questionnaire

1. Gross Motor skills:

Age Limit	O/Q	Items
3 months	O	1. Hold head erect when in sitting position (body may be supported by a person)
2-4 months	O	2. Holds head up for 5 seconds when lying on stomach to look at an objects/person.
5-8 months	O	3. Sit with out support
7 months	O	4. Rolls over on flat surface.
10 months	O	5. Moves from lying on stomach a sitting position
11 months	O	6. Stands with support
10-11 months	O	7. Pulls self to standing position using person for support
11-13 months	O	8. Stands unsupported
12 months	O	9. Walks 5 feet (may use braces (or) crutches)
2 years	Q	10. Walks upstairs & downstairs putting both feet on each step (may use wall (or) handrail for support)
2-2 ½ years	O	11. Runs
2 ½ years	Q	12. Walks upstairs & downstairs alternating feet (may use wall (or) handrail for support)
3 years	Q	13. Jumps across an obstacle (e.g. dirty water, rubbish, any floor decoration)

4 years	Q	14. Runs on tip toe
15 years	Q	15. Walks a balance beam.

2. Fine motor skills:

Age Limit	O/Q	Items
2-4 months	O	1. Closes hand around an object placed in hand
5 months	O	2. Reaches for & grasps objects
4 months	O	3. Uses both hands at the same time when handling an object
9 months	O	4. Picks up small objects using thumb & fingers only
1 ½ years	O	5. Makes a stack of 3 cans or containers (or) wooden blocks
2 years	Q	6. Open the door, operating door knob / latch / handle
2 years	O	7. Screws & unscrews a year (or) bottle lid.
2 ½ years	O	8. Strings 3 one inch beads (or) spools on to a string
3 years	O	9. Uses a spoon to stir sugar / salt to mix the drink
3 years	O	10. Carries the filled paper cup without crushing, tipping (or) spilling
4 years	O	11. Cuts a circular picture using scissors
5 years	O	12. Copies a triangle.
5 years	O	13. Draws a three part man.

3. Eating:

Age Limit	O/Q	Items
3-6 months	Q	1. Swallows soft food that do not require chewing
12 months	Q	2. Drinks with out spelling mouthful from a glass (or) up with assistance.
11 months	Q	3. Bites required amount of food items.
1 ½ years	Q	4. Picks up dry pieces of food (biscuits) with fingers & puts food in to mouth
2 years	Q	5. Differentiate between edible & non edible substance.
2 years	Q	6. Chews solid food.
21 months – 2 years	O	7. Picks up a filled glass & drinks from it without spilling
3 ½ - 4 years	O	8. Uses spoon / hand to pickup & eat mixed food
4 years	Q	9. Mixed food & eat with little (or) no spilling (may use fingers / spoon)
4 years	Q	10. Eats food (cereal preparation such as idli, dosai, puri, roti) fingers to make bits.
5 Years	Q	11. Eats pooridge, paysasam, milk pudding ice cream with little (or) no spilling

4. Dressing:

Age Limit	O/Q	Items
12 months	Q	1. Offer little (or) no resistance while being dressed (or) undressed.
12 months	Q	2. Extends & with draws arms & legs as required while being dressed & undressed.
15-18 months	Q	3. Removes / banyans / dresses when unfastened
1 ½ - 2 years	Q	4. Remove shoes when lace is undone
18-21 months	Q	5. Opens & closes a front zipper.
1 ½ years	O	6. Puts on underpants & pants.
2 ½ years	O	7. Unbuttons (shirt button press button, hooks)
21months – 2 ½ years	O	8. Puts socks & shoes (any foot wear on correct feet)
4 years	Q	9. Puts on kurta / banyan / T-shirt / dress (need not fasten)
4 years	O	10. Buttons clothing (press buttons shirt buttons / hooks)
5 Years	O	11. Ties a bow know with a shoe lace / ribbon.

5. Grooming:

Age Limit	O/Q	Items
1 years	Q	1. Offers little (or) no resistance while washed
15 months	Q	2. Turns head & extends hands as required when being bathed
2 ½ years	Q	3. Dries hands with a towel when told
3 years	Q	4. Begins brushing motion for cleaning teeth (used brush (or) finger)
3 years	Q	5. Washes & dries hands without the help

4 years	Q	6. Soaps & rinse hands
4 years	Q	7. Soaps & rinse face
5 years	O	8. Runs hair with several strokes.
5 years	Q	9. Blows nose, wipes drooling using a hand kerchief.

6. Toileting:

Age Limit	O/Q	Items
6-8 months	Q	1 Stays dry for two hours
15 months	Q	2. Indicates when dry / wet
2 years	Q	3. Eliminates when on the toilet (bowel & Bladder)
2 years	Q	4. Indicates by gestures (or) words when needed, to use the toilet
2 years	Q	5. Removes clothing before sitting on the toilet
2 ½ years	Q	6. Has bladder control at night
2 ½ years	Q	7. Replaces clothing before baring the toilet
4 years	Q	8. Removes clothing, sits on toilet eliminates & replaces clothing after washing (needs help for washing)
4 years	Q	9. Goes to the toilet independently
5 years	Q	10. Flushes toilet after use.

7. Receptive Language:

Age Limit	O/Q	Items
3 months	O	1. Turns head towards the source of sound
9 months	O	2. Responds by eye contact (or) verbal acknowledgement when name is called.
9 months	O	3. Stop an activity upon request such as “no” (or) soon

10 months	O	4. Responds towards, "Looks at me" where is daddy / mummy
15 months	Q	5. Obeys simple instruction such as "come here" & soon
15 months	O	6. Points to any object such as ball, spoon etc upon request
1 ½ years	O	7. Performs the activity when the word "me" is used such as "give the ball".
2 years	O	8. Identifies different sounds such as bell ringing, hands clapping
2 years	O	9. Follows two step directions (get the ball & close the door)
3 years	O	10. Points to pictures of object in a book upon a request
3 years	Q	11. Avoids danger when instructed to dose
4 years	O	12. Follows 3 step directions such as "stand up", open the book & "move the chairs"
5 years	Q	13. Listens to one page stores indicate yes/no to specific questions on it.

8. Expressive Language:

Age Limit	O/Q	Items
4-6 months	O	1. Makes voice sounds
8 months	Q	2. Uses voice sound to get attention
1 year	O	3. Say (or) indicates "yes" or "no" in response to question
2 years	O	4. Says 20 words
3 years	O	5. Says name when asked
3 years	O	6. Names common objects when asked "what is this"?
3 years	O	7 Names 10 object body parts when asked "what is this"?
4 years	O	8. Uses two word phases / gestures, such as, "hello friend", "go

		out”, “eat biscuits”.
5 years	O	9. Tells / indicates name & occupation often parents

9. Social Interaction:

Age Limit	O/Q	Items
8 months	O	1. Responds when touched, by reaching toward (or) moving away.
9 months	O	2. Looks towards (or) other wise, indicate a person in the immediate area.
10 months	O	3. Follows with eyes, a person moving.
10 months	O	4. Imitates arm movements such as clapping hands (or) waving good bye.
1 year	Q	5. Plays alone with toys (or) objects for 2 minutes.
2 years	Q	6. Identifies by pointing, naming friends & acquaintances from strangers.
3 years	Q	7. Greets others upon meeting, either verbally (or) with non-verbal friend by gestures.
4 years	Q	8. Says “please & thank you” & sorry”
5 years	Q	9. Receives guests appropriate to acquaintance (difference in receiving of relatives strangers, gas/electricity men & so on)

Modified Madras Development Programme System

Record Sheet:

S.I.No: Name: Age: Center:

Item No: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

1. Gross motor skills

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2. Fine motor skills

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3. Eating

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4. Dressing

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5. Grooming

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6. Toileting

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7. Receptive Language

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8. Expressive Language

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9. Social interaction

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PART IV

Strengths and Difficulties Questionnaire

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	0	1	2
Restless, overactive, cannot stay still for long	0	1	2
Often complains of headaches, stomach-aches or sickness	0	1	2
Shares readily with other children, for example toys, treats, pencils	0	1	2
Often loses temper	0	1	2
Rather solitary, prefers to play alone	0	1	2
Generally well behaved, usually does what adults request	2	1	0
Many worries often seems worried	0	1	2
Helpful if someone is hurt, upset or feeling ill	0	1	2
Constantly fidgeting or squirming	0	1	2
Has atleast one good friend	0	1	2
Often unhappy, depressed or tearful	0	1	2
Generally liked by other children	2	1	0
Easily distracted, concentration wanders	2	1	0
Nervous or clingy in new situations, easily loses confidence	0	1	2
Kind to younger children	2	1	0
Often argumentative with adults	2	1	0
Picked on or bullied by other children	0	1	2
Often offers to help others (parents, teachers, other children)	0	1	2
Can stop and think things out before acting	0	1	2
Can be spiteful to others	0	1	2
Gets along better with adults than with other children	0	1	2
Many fears, easily scared	0	1	2
Good attention span, sees work through to the end	0	1	2

SDQ Record Sheet

Scale		Normal	Borderline	Abnormal
Total difficulties	P	0 1 2 3 4 5 6 7 8 9 10 11 12 13	14 15 16	17 18 19 20 21 22 23 24 25. 40
Emotional Symptoms	P	0 1 2 3	4	5 6 7 8 9 10
Conduct problems	P	0 1 2	3	4 5 6 7 8 9 10
Hyperactivity	P	0 1 2 3 4 5	6	7 8 9 10
Peer Problems	P	0 1 2	5	4 5 6 7 8 9 10
Prosocial behaviour	P	10 9 8 7 6	5	4 3 2 1 0

APPENDIX – V

பகுதி - 1

ஆய்வுக்கு உட்பட்டவர் குறித்த விவரங்கள்

1.வயது:

அ.18வயதிற்குள்

ஆ.1-3 வயதுக்குள்

இ.3-5வயதிற்குள்

2. பாலினம்

அ. ஆண்

ஆ.பெண்

3. மதம்

அ.இந்து

ஆ.முஸ்லீம்

இ.கிறிஸ்தவர்

4. திருமணத்தின் வகை

அ.உறவிற்குள்

ஆ.அன்னியம்

5. குழந்தை பிறப்பு

அ.சுகப்பிரசவம்

ஆ.அறுவை சிகிச்சை மூலம்

இ.ஆயுதம் மூலம்

6. பிறந்த எடை

அ.2.5 கிலோவிற்குள்

ஆ.2.5 கிலோவிற்கு மேல்

7. வீட்டின் இருப்பிடம்

அ. நகரம்

ஆ.கிராமம்

8. பிறந்த போது மஞ்சள்காமாலை

அ.இருந்தது

ஆ.இல்லை

9. வீட்டின் அருகில் உள்ள மருத்துவ வசதி

அ.ஆரம்ப சுகாதார மையம்

ஆ.துணை ஆரம்ப சுகாதார மையம்

இ.அரசு / மாவட்ட மருத்துவமனை

ஈ. தனியார் மருத்துவமனை

பகுதி - IV

செயல்திறனுக்கும் செயலின்மைக்குமான கேள்விக்கொத்து

	உண்மையல்ல	ஓரளவு உண்மை	நிச்சயமாக உண்மை
பிறர் நலத்தைக் கருத்தில் கொள்ளும் தன்மை			
ஓய்வின்மை, மிகையான சுறுசுறுப்பு, நீண்ட நேரம் ஓரிடத்தில் நிற்க முடியாமை			
அடிக்கடி தலைபிடி, வயிற்றுக்குத்து, வாந்தியென முறையிடுதல்			
பிறபிள்ளைகளுடன் பகிர்ந்துகொள்ளும் தன்மை (உபசரிப்பு, விளையாட்டுப்பொருட்கள், பென்சில் போன்றவற்றை)			
அடிக்கடி கோபமடைதல் அல்லது அதிதீவிர கோபமடைதல்			
தனித்திருத்தல், தனித்து விளையாடுதல்			
பொதுவாக கீழ்படியும் தன்மை, பெரியோர் சொற்படி கீழ்படிந்து நடத்தல்			
அதிக கவலை, அடிக்கடி கவலைப்படல்			
பிறர் புண்படும்போது, குழப்பம் அடையும்போது, துன்பமடையும் போது உதவி செய்தல்			
தொடர்ச்சியாக அமைதியற்ற நிலை அல்லது தன்னடக்க நிலை			
குறைந்தது ஒருவருடனாவது நல்ல சினேகிதமாக இருத்தல்			
அடிக்கடி சகபிள்ளைகளுடன் சண்டையிடுதல் அல்லது கேலி செய்தல்			

அடிக்கடி சந்தோசமின்மை, மனச்சோர்வு, கண்ணீர்விடுதல்			
பொதுவாக சக பிள்ளைகளால் விரும்பப்படுதல்			
சுலபமாக கவனம்,புலன் திசைதிரும்பும் தன்மையிருத்தல்			
புதிய இடமாற்றத்தின் போது, பதட்டமடைதல், அல்லது பிறரைப் பற்றிக்கொள்ளும் தன்மை சுலபமாக மனஉறுதியை இழத்தல்			
சிறு வயதினருக்கு அன்பு காட்டுதல்			
அடிக்கடி பொய் சொல்லுதல் அல்லது ஏமாற்றுதல்			
மற்றபிள்ளைகளால் கேலிசெய்யப்படுதல், சண்டைக்குத் தோந்தெடுக்கப்படுதல்			
அடிக்கடி தன்னலம் கருத்து உதவிசெய்தல், (பெற்றோர், ஆசிரியர், பிற பிள்ளைகள்)			
செயற்படுமுன் ஆய்வு செய்யும் திறன்			
வீட்டிலோ அல்லது பாடசாலையிலோ அல்லது வேறு இடத்திலோ களவு எடுக்கும் இயல்பு			
அனுசரித்துப் பழகும் தன்மையை சகபிள்ளைகளைவிட பெரியர்களிடம் காட்டுதல்			
அதிக அச்சம் கொள்ளுதல், விரைவில் பயப்படுதல்			
கொடுக்கப்பட்ட வேலையில் இறுதிவரை சிறப்பாகக் கவனம் செலுத்தும் தன்மை			

APPENDIX VI

TEACHING PROTOCOL

CARE OF THE CHILDREN WITH CEREBRAL PALSY

1. Feeding
2. Lifting and carrying
3. position
4. Bathing and toileting
5. Dental care
6. Prevention of accidents
7. Prevention of respiratory infection

section – A Feeding

- Provide comfortable positions to the child.
- Provide some special chair
- Encourage finger foods.
- Provide appropriate assistive devices for the children for their feeding like spoon with special handle, plate and glass with holders and vessels with special handles.
- Provide spoon which is fairly flat and round.
- Teach the baby how to hold spoon.
- Encourage self feeding.
- Encourage good chewing and mouth closure.
- Ensure that the child can see spoon coming to the child's mouth.

- Avoid food is left around the child's mouth.

Section B – Lifting and carrying

- First decide how the child will be carried.
- Approach the baby from the front
- Explain to the baby what you are going to do.
- Organize the body so that you and the baby will feel secure.
- Lift the baby.
- Keep a straight back and a wide base of support.
- Bend the knee and hold the child as close to you as possible.
- Enough support should be provided.

Section – C Position and sleeping

- Cerebral palsy children have various positions
- Lying :place the child in supine or prone position while placing on the bed.
- Provide extra pillows under head and shoulders.
- Provide some grip to hold
- Provide some special chair to sit.
- Provide support to the back.
- Make the child to stand for sometime by providing walking sticks or handle hold.
- Hold the foot of the child to prevent falling.
- Provide comfortable position to the child during brushing , bathing and dressing.

Sleeping

- Reading a story
- Slow, comfort talking.
- Don't leave the child in alone
- keep same sleeping keep in time daily .
- provide silent environment.
- Provide some extra pillows on the side of the child while lying on the floor .

Section – D Toileting

- Give sense of security rather than challenge his sense of balance.
- Give introduction during bath time – arm in, water wet.
- Special bath seats available that have straps or belts to aid in trunk support to provide the security.
- Praise the child either success or for patiently on the toilet.
- Meals should give in the regular times
- 30 minutes or so after eating put the child on the toilet or training potty.
- Avoid the distractions during the time.
- Fruits and green leafy vegetables are fiber rich diet to prevent constipation.

Section-E Dental care

- No matter what position using for brushing , remember to always support the head.
- Parents should help to brush teeth every day after each meal. Brush the tongue will help to prevent helatosis.
- Place only a pea sized drop of toothpaste on the tooth brush.

- Children taking any oral medication should cleaned their teeth after each dose of medication.
- Healthy , well balanced diet should be provided

Section- F prevention of accidents

- Provide side rails for the cot
- Do not allow the child to play on the road without supervision.
- While carrying the child always provide a good grip on the child.
- Keep all the harmful objects away from the child's reach.
- Always watch the child's attitude or activity.
- Put shoes for the child whenever starts it activities.
- Provide good support to the child when he tries to sit , stand and walk.
- When ever the physical devices are used , check it for position and tightness.
- Avoid buying easily breakable and sharp edged toys.
- Avoid buying lead coated and too small toys.

Section –G prevention of respiratory infection

- Provide comfortable position while giving feeding the child.
- Maintain good personal hygiene .
- Immunized child properly.

APPENDIX IV(B)
TEACHING PROTOCOL

பராமரிப்பு

முளை வளர்ச்சிக்குறைவு உள்ள குழந்தைகளுக்கு உணவு கொடுக்கும் முறை, அவர்களை எவ்வாறு தூக்க வேண்டும், அவர்களை எந்த நிலையில் அமர்த்த வேண்டும். அந்த குழந்தைகளை காயங்கள் ஏற்படுவதிலிருந்து எவ்வாறு பாதுகாக்க வேண்டும். உடலை சுத்தமாக வைத்துக் கொள்ளுதலின் அவசியம், எவ்வாறு சுவாச பிரச்சனைகளை கையாளுவது மற்றும் தூங்க வைத்தல் என்பதை பற்றி அறிந்து கொள்வது அவசியம்.

1. பிரிவு அ.உணவு கொடுக்கும் முறைகள்:

- ❖ குழந்தைக்கு உணவு கொடுக்கும் போது அதற்கு ஏற்ற நிலையில் அமர வேண்டும்.
- ❖ குழந்தை சிறப்பான முறையில் தயாரிக்கப்பட்ட நாற்காலியில் அமர வைக்கப்படவேண்டும்
- ❖ குழந்தைக்கு தானாக எடுத்து சாப்பிடும் பழக்கத்தை ஏற்படுத்த வேண்டும்.
- ❖ குழந்தையின் கைத் தசைகள் இறுக்கமாக இருந்தால் சிறந்த முறையில் தயாரிக்கப்பட்ட வளைவுகள் கொண்ட சிறிய கரண்டி, கைப்பிடி கொண்ட சிறிய குடிநீர் குவளை, வளைந்து குழிந்த தட்டுகள் போன்றவற்றை உணவு உண்பதற்கு வழங்க வேண்டும்.
- ❖ பாதிக்கப்பட்ட குழந்தைகளை மற்ற குழந்தைகளோடு அமர்ந்து உணவு உண்ணச் செய்ய வேண்டும்.
- ❖ குழிந்து, நேரான சிறிய கரண்டிகளை வழங்க வேண்டும்.
- ❖ கரண்டிகளை எப்படிக் கையாள வேண்டும் என எடுத்துரைக்கவும்.

2. பிரிவு – ஆ குழந்தையைத் தூக்கும் முறைகள்:

- ❖ முதலில் குழந்தையை எப்படித் தூக்க வேண்டும் என யோசிக்கவும்.
- ❖ குழந்தைக்கு முன்புறமாக வந்து குழந்தையைத் தூக்கவும்.
- ❖ குழந்தையிடம் என்ன செய்யப் போகிறோம் என எடுத்துரைக்கவும்.
- ❖ குழந்தையை சரியான முறையில் தூக்கினால் குழந்தைக்கும், உங்களுக்கும் சௌகரியமாய் இருக்கும்.
- ❖ குழந்தையைத் தூக்கும்போது நிமிர்ந்து கால்களை சற்று விலக்கி நின்று தூக்கவும்.
- ❖ முட்டிக்கால்களை மடக்கி குழந்தையை தங்களுடன் அணைத்துக் கொள்ளவும்.
- ❖ குழந்தையின் மேல் போதுமான அளவு பிடிமானம் மற்றும் கவனம் இருக்க வேண்டும். இதனால் குழந்தை பாதுகாப்பாக இருக்கும்.

3. பிரிவு இ குழந்தையின் இருப்பிட நிலை

- ❖ குழந்தையை அமர வைத்தல், படுக்க வைத்தல் போன்றவற்றின் போது குழந்தையின் உடல்நிலை சீராக இருக்க வேண்டும்.

படுக்கை நிலை:

- குழந்தையைப் படுக்க வைக்கும் போது ஒருபுறமுகமாகவோ, முதுகுப்பகுதி நிலையிலோ, அல்லது வயிற்றுப்பகுதி நிலையிலோ படுக்க வைக்க வேண்டும். இது அவரவர்களின் குழந்தையின் குறைபாடுகளைப் பொருத்தது.

- படுக்கவைக்கும் போது குழந்தையின் தோள் பட்டைக்கு கீழே தலையணைகள் உபயோகப்படுத்தப்படவேண்டும்.
- குழந்தை படுக்கையில் இருந்து கீழே விழாமல் பாதுகாப்பாக படுக்க வைக்க வேண்டும்.
- குழந்தை உட்கார்ந்திருக்கும் நிலையில் அதற்கு சில பிடிப்பான கைப்பிடிகளைத் தர வேண்டும். அவர்களின் முதுகுப்பகுதியில் அழுத்தம் கொடுத்து உட்கார வைக்க வேண்டும்.
- பிரத்யோகமாக தயாரிக்கப்பட்ட நாற்காலியில் அமர்த்தலாம்.
- குழந்தை உட்கார்ந்திருக்கும் நிலையில் இருந்து எழுந்து நிற்க உதவி செய்யவும்.
- அவர்களை தினமும் சிறிது நேரம் நிற்க வைக்கவும்.
- குழந்தைகள் நிற்கும் போது பாதங்களை இறுகப்பற்றிக் கொண்டால் அவர்கள் விழுவதிலிருந்து தடுக்கப்படுவார்கள்.
- குழந்தைகள் நிற்கும்போது அவர்களின் கைகளுக்கு ஊன்றுகோல் தரவும்.
- குழந்தைகள் அவர்களின் அன்றாட வேலைகளை செய்யும் போது அவர்களின் உடல்நிலைக்கேற்றவாறு நிலையில் அவர்களை அமர வைக்கவோ, நிற்க வைக்கவோ படுக்க வைக்கவோ வேண்டும்.

தூங்க வைத்தல்:

- ❖ கதைகளை சொல்லுதல்
- ❖ மெதுவாகப் பேசுதல்
- ❖ குழந்தையை தனியாக விட்டுசெல்லக் கூடாது

- ❖ தினமும் சரியான நேரத்தில் குழந்தையை படுக்கையில் தூங்க வைக்க வேண்டும்.
- ❖ குழந்தையை தூங்க வைக்கும் போது போதுமான பிடிமானம் அளிக்கப்பட வேண்டும்.
- ❖ குழந்தையை தரையில் படுக்க வைக்கும் போது அவர்களின் இருபுறமும் தலையணை வைத்து பாதுகாப்புத்தர வேண்டும்.

4.மலம்,ஜலம் கழித்தல்

- ❖ குழந்தை மலம், ஜலம் கழிப்பதற்கு குறிப்பிட்ட நேரத்தை வைத்துக்கொள்ள வேண்டும். அதாவது உணவிற்கு பின் (அல்லது) 30 நிமிடங்கள் குழந்தையை கழிப்பறை இருக்கையில் அமர்ந்திருக்க செய்ய வேண்டும்.
- ❖ மலம், ஜலம் கழித்த பின் குழந்தையை ஊக்குவிக்கும் விதமாக பாராட்டுதல், கட்டிப்பிடித்தல், முத்தம் கொடுத்தல், கை தட்டுதல், போன்ற செயல்களை செய்யலாம்.
- ❖ குழிவறை மற்றும் குளியலறை பழக்க வழக்கங்களை சிறிது, சிறிதாக அறிமுகப்படுத்துங்கள்.
- ❖ புழங்கள், கீரை வகைகள், நார்ச்சத்து நிறைந்த உணவு வகைகளை கொடுக்க வேண்டும்.
- ❖ ஒரு குறிப்பிட்ட சரியான நேரத்தில் தான் உணவு ஊட்ட வேண்டும்.
- ❖ கழிவு வெளியேற்றும் பழக்கங்கள் கற்றுத்தரும் போது புலன்களை சிதறடிக்கும் செயல்களைத் தவிர்க்கவும்.

பல் துலக்கும் முறைகள்:

- ❖ எந்த நிலையிலும் அமர்ந்தும் குழந்தையின் பற்களை துலக்கலாம்.
- ❖ பெற்றோர்கள் குழந்தைக்கு தினமும் உணவிற்கு முன் பல்துலக்குவதற்கு

உதவி செய்ய வேண்டும். நாக்கையும் துலக்க வேண்டும்.

- ❖ சிறிய பட்டாணி அளவு தான் பற்பசையை உபயோகிக்க வேண்டும்.
- ❖ குழந்தை மருந்து ஏதாவது வாய் வழியாக தினமும் உட்கொள்ளுமானால், ஒவ்வொரு முறையும் மருந்து உட்கொண்ட பின் பற்களை சுத்தமாக்க வேண்டும்.
- ❖ ஆரோக்கியமான சரிவிகித உணவை குழந்தைக்குக் கொடுக்க வேண்டும்.
- ❖ அதிகப்படியான நீரை அருந்தக் கொடுக்க வேண்டும்.

பிரிவு ஈ காயத்தடுப்பு முறைகள்:

- ❖ குழந்தையின் கட்டிலின் இருபுறமும் பாதுகாப்புச் சட்டங்கள் இருக்க வேண்டும்.
- ❖ குழந்தையைத் தனியாக சாலைகளில் விளையாட அனுமதிக்கக் கூடாது.
- ❖ குழந்தையை தூக்கும்போது போதுமான அளவு பிடிமானம் அளிக்கப்பட வேண்டும்.
- ❖ அனைத்து வகையான அபாயகரமான பொருட்கள் யாவும் குழந்தையின் கைகளுக்கு கிட்டாத வகையில் வைக்கப்பட வேண்டும்.
- ❖ பாதுகாப்பான சுற்றுப்புற சூழ்நிலை வழங்கப்பட வேண்டும்.
- ❖ குழந்தையை தனியாக இருக்க அனுமதிக்கக் கூடாது.
- ❖ எப்போதும் குழந்தையின் நடவடிக்கைகளை கண்காணித்துக்கொண்டு இருக்க வேண்டும்.
- ❖ குழந்தைகளுக்கு அவர்களின் காலணிகளை வேலை செய்ய ஆரம்பிக்கும் போது அணிவிக்க வேண்டும்.

- ❖ குழந்தை உட்காரும் போது, நிற்கும் போது மற்றும் நடக்கும் போது போதுமான அளவு உதவிகள் செய்ய வேண்டும்.
- ❖ குழந்தைகளுக்கான உபகரணங்களை உபயோகப்படுத்தும்போது அதன் தன்மை மற்றும் உறுதியை நிச்சயித்துக்கொள்ள வேண்டும்.
- ❖ குழந்தையை தரையில் படுக்க வைக்கும் போது அவர்களின் இருபுறமும் தலையணை வைத்து பாதுகாப்புத்தர வேண்டும்.
- ❖ எளிதில் உடையாத, கூர்மையான பாகங்கள் உடைய விளையாட்டுப்பொருட்களை தவிர்க்கவும்.
- ❖ மிகவும், சிறியதான, அபாயகரமான, விஷத்தன்மையுடைய வர்ணப்பூச்சுகள் உடைய விளையாட்டுப்பொருட்களைத் தவிர்க்கவும்.

சுவாச பிரச்சனைகளைத் தடுக்கும் முறைகள்:

- ❖ உணவைக் கொடுக்கும் போது சரியான நிலையில் அமாந்து கொடுக்கவேண்டும்.
- ❖ உடல் சுகாதாரத்தை பராமரிக்க வேண்டும்.
- ❖ சரியாக தடுப்பூசிகளைப் போடவேண்டும்.