EFFECT OF HAND ACTIVITIES GROUP THERAPY PROGRAM ON ADL PERFORMANCE OF CHILDREN WITH CEREBRAL PALSY AT CENTRE FOR THE REHABILITATION OF THE PARALYSED (CRP)

By

Zahra Tahsin

February, 2019

This thesis is submitted in total fulfillment of the requirements for the subject RESEARCH 2 & 3 and partial fulfillment of the requirements for degree

Bachelor of Science in Occupational Therapy
Bangladesh Health Professions Institute (BHPI)
Faculty of Medicine
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Statement of Authorship

Except where is made in the text of the thesis, this thesis contains no materials published elsewhere or extracted in whole or in part form a thesis presented by me for any other degree or diploma or seminar.

No others person's work has been used without due acknowledgement in the main text of the thesis.

This thesis has not been submitted for the aware of any other degree or diploma in any other tertiary institution.

The ethical issues of the study have been strictly considered and protected. In case of dissemination the finding of this project for future publication, research supervisor will highly concern and it will be duly acknowledged as undergraduate thesis.

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Above all I would like to thank all of the participants of the study for their cooperation.

Dedication

Dedicated to my honorable & beloved parents, my respected all teachers of

Bangladesh Health Professions Institute (BHPI).

Declaration

*I am **Zahra Tahsin** declare that, the study will not be harmful for the participatory. Then I would like to ensure that all the data and literature were stated correctly. In that case all discussion of this research project is mine and I am only responsible for any mistake in whole study.*

Signature

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List of Abbreviations

WHO- World Health Organization

BHPI- Bangladesh Health Professions Institute

CRP- Centre for the Rehabilitation of the Paralysed

CP- Cerebral Palsy

ADL- Activities of daily living

SPSS- Statistical Package for Social Science

ICF- International Classification of Functioning, Disability and Health

UK- United Kingdom

NGOs- Non- government organization

Abstract

Background: Cerebral palsy is considered a neurological disorder that is characterized by non-progressive abnormalities in the brain that occurs while the child's brain is under development. Children with Cerebral Palsy show a significant difficulty in hand skills performance. Cerebral Palsy children has an impairment which affect all kinds of motor activities, including activities of daily living (ADL), which are essential for children's daily functioning.

Objectives: The objectives of this study to identify the socio-demographic factors & to evaluate the effect of hand activities group therapy program on ADL performance of Children with Cerebral Palsy at CRP.

Methodology: Effect hand activities group therapy program & child's ADL performance were assessed through pre & post test program by using questionnaire & hand tools materials (Pediatric Evaluation of disability Inventory, Caregivers Assistant Scale). Data were obtained from 32 mother & children with cerebral palsy.

Result & Discussion: A total of 32 samples (children) were studied. Among them 21 respondents were boys & 11 respondents were girls. Most of the children of this study appeared to be 4-5 years (46.9%) old. Cerebral Palsy children get more improvement in reach, carry, release rather than grasp, in hand manipulation & bilateral integration by taking part in the 2 weeks' hand activities group therapy program. The study revealed that Cerebral Palsy children participate in leisure activities rather than self-care & productivity depends on child's severity on condition & deformity after receiving the treatment.

Conclusion: This study experienced that CRP program is highly effective for improvement of child's capacities & skills. Researcher found that it is very difficult to change the daily activities of the child in such a short time that's why children should continue therapy for a long period of time in order to get marked outcome. So, these finding will help the occupational therapists for building up new strategies for better improvement in child's hand function & also in ADL's performance. Overall the program is really effective for the children with cerebral palsy.

Key words: *Cerebral palsy, Hand function, ADLs performance & Indoor pediatric unit.*

Chapter 1: Introduction

1.1 Background:

Bangladesh officially the People's Republic of Bangladesh is a country in South Asia. Bangladesh is one of least developed countries in the world situated in the South Asia which is measured in terms of average income, calories consumed per person, high infant mortality (Hosain et al., 2002). According to the provisional results of 2011 Population and Housing Census, the numbered population on 15th March, 2011 was near about 142,319 thousand. Disability is a universal element in the human condition to which no one is protected (Haider, Country Report: Bangladesh). Disability is a part of human state. Almost everyone will be temporarily or permanently impaired at some point in life (World Health Organization, 2011). According to WHO (2011), Worldwide there are 15.3% people are living with different kind of disability. Globally, in developing countries 85% of children live with disabilities, but less than 5 % receive rehabilitation services (Maloni et al.,2010).

The International Classification of Functioning, Disability and Health (ICF) defines disability as an umbrella term for impairments, activity limitations and participation restrictions. Disability is the interaction between individuals with a health condition (e.g. cerebral palsy, Down syndrome and depression) and personal and environmental factors (e.g. negative attitudes, inaccessible transportation and public buildings, and limited social supports) (WHO, 2018)

Approximately 15% people with disability are accounted for worldwide population. i.e. more than one billion people. In developing countries there are 80% of people with disabilities (Handicap International,2012). According to World Health Organization (WHO) 10% of total population in Bangladesh are disabled (Akter & Rahman, 2006). According to World Health Organization (2018) stated that,110 million people (2.2-3.8% of the global population) have very severe functional difficulties. Furthermore, the rates of disability are increasing in part due to ageing populations and an increase in chronic health conditions. At present no empirical comprehensive study has been conducted to determine the prevalence and incidence of disabilities in Bangladesh. (WHO,2018). In few studies

state that have been conducted reflect a medical rather than a social model of disability, and they are also limited in geographical coverage. They suggested the disability prevalence rate of between 5 to 12 per cent (Asia- Pacific Human Rights Information center,2009). Disability is a major concern in Bangladesh as well as all over the world (Alam, K.J.,2012). Disability does not just affect an individual but the whole family and community around the individual. It is estimated that the lives and livelihoods of about 800 million people or about 25% of the population in the Asia-Pacific region are affected by disability in the family. The children with severe disability are 8.2% from total disability and among them about 36% cognitive, 27% speech, 18% hearing, 9% movement, 7% vision and 2% epilepsy (The Danish Bilharziasis Labortary for the World Bank People's Republic of Bangladesh, 2004) . Amongst all disability, Cerebral Palsy (CP) is the most common form of chronic disabling condition in children (Kavcic P & Perat M., 1998). Besides handicapping a child, it causes considerable social trauma and psychological to the parents and may cause financial burden to family and community (Makwana M et al., 2017). Although it is estimated that CP is 5 to 10 times more common in underprivileged parts of the world, the exact burden is unknown in most low- and middle-income countries (LMIC) (Golam et al., 2015). Generally, it is agreed that cognitive development is not critical to the development of gross motor. The relationship between cognitive & fine motor development seems to be more important because reciprocity between cognitive hand skills generally appears to occur in normal development (Smith, 2010). Besides Annett & Kilshaw (1983) stated that, cognitive function has a relationship with to assess hand function and to examine the hand skills pattern.

Globally, CP is one of the major causes of disability among childhood with a prevalence & estimate it is ranging from 1.5 to more than 4 per 1000 live birth (Stavsky et al., 2017). The world incidence of CP was estimated between 2 to 2.5 cases per 1000/live births (kumara & Joseph, 2014) and the life expectancy is 20 years (Baltor & Dupas, 2013). According to Cerebral palsy guidance (2018), each year 8,000 to 10,000 infants are diagnosed with cerebral palsy & around 764,000 people currently live with cerebral palsy, with 500,000 of those being children and teens. Besides it is estimated that 5000 infants & 1200 to 1500 pre-school children are diagnosed with cp each year (Smith,2010). Raina (2005) described in his study that CP can be considered as a unique type of disability in

childhood. In developing counties, the prevalence is much higher because of large numbers of children born at home, malnutrition, dehydration, poor disease management and poor antenatal care (Delialioglu et al. 2009). According to CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network (2018), it is estimated that about 1 in 323 children has been identified with CP. Around 15-20% of children with disability are diagnosed with CP in India. The incidence of CP in India is about 3 per 1000 live birth (Vyas, Kori, Rajagopala & Patel, 2013). According to the data stated by the National Institute for Health and Care Excellence (2018), it is estimated that 1 in 400 babies are born with cerebral palsy in UK. Approximately each year its stated that 1,800 children diagnosed with CP. In UK, every 1000 children around 2-2.5 are born with cerebral palsy (Cerebral Palsy Sport, n.d.). According to the Cerebral Palsy Guidance (2018), each year in UK around 10,000 babies are born with cerebral palsy. Each particular year the number of people with cerebral palsy incidence can also fall in. In a developing country around 85% of children are live with disabilities & also cited that CP is one of prominent cause of disabilities in children (Khandaker et al., 2015). In Bangladesh it is allotted that 233 514 children with CP. The appearance of Cerebral palsy 233 514 among 167,297,416 person & the quantity is 3.4 per 1000 children (95%) among the whole population in Bangladesh (Khandaker et al., 2018). In Bangladesh, the accountability of CP is high, and diagnosis is considerably delayed, opportunities is limited for early intervention. CP is one of the most common causes among childhood disability & it's not an uncommon disability. In rural Bangladesh, there is a lack of available services for children with CP (Khandaker, 2018).

It is assumed that after autism and mental retardation cerebral palsy (CP) is the most common severe physical disability among children and the 3rd most common major developmental disability (Begum and Desai, 2010 and Al-Gamal, 2013). Although motor function is impaired & this is the hallmark of the CP, many children also faces health, sensory and perceptual difficulties and they may have complex limitations in self-care functions, such as feeding, dressing, bathing, brushing and mobility (Baltor and Dupas, 2013). Children with CP present a variety of clinical presentations and a range of motor impairments and activity limitations. Due to lack of appropriate treatment, children with CP face difficulty in engaging in occupational performance areas such as self-care, productivity and leisure (Johnson, n.d.).

Hand functioning, the ability of the hands to perform properly in various contexts, requires the integrity of the central nervous system and, therefore, may be disturbed by different brain disorders. Almost 50% of CP children present an arm–hand dysfunction. Children with CP seldomly use their paretic hand in daily activities. For these reasons, it is necessary to increase attention hand functioning of children with CP (Arnould et.al, 2014). In developmental age, normally children represent different hand skills pattern. So, this hand impairment includes weakness, uncoordinated movement, slowness, incomplete finger fractionation and spasticity (Eliasson et al. 2011). Cerebral palsy is a neurodevelopmental condition where the children face developmental delay through their hand skills (Chol & Hunglo, 2011). According to Smith (2010), Hand skills are critical to interaction with the environment. Hands are the tools which mostly often used to accomplish play & work & also help to perform activities of daily living. But the child who has a disability generally affecting their hand skills which decrease their ability to engage in their activities of daily living. Occupational therapist provides treatment for children with disability to develop motor skills. In some places occupational therapy services are insufficient because only 12% of CP children are authorized by educational and therapy services and 26% do not even take any services (Chol & Hunglo, 2011). During childhood and adolescence, it is increasingly worsened to accomplish task to learn how to handle and adjust our hand with objects and finger movements. So, in developmental stages hand function is fundamental for the children (Holmstrom, L 2011).

In Bangladesh, there are many Non- government organization (NGOs) & Government organization. Centre for the Rehabilitation of the Paralysed (CRP) is one them & is a non-government organization which provide inpatient & outpatient pediatric therapy services of children with different conditions. Meanwhile, CRP offers Physiotherapy, Occupational therapy & Speech and Language therapy programs for CP children according to their needs & requirements. Each treatment session run about 45 minutes. Different age level CP child is attending in CRP with their parent everyday & majority of the CP child are within the age of two to twelve years. Hence therapy is essential to minimize the severity of CP & functioning of the child. In the inpatient pediatric unit, Children with Cerebral Palsy & other neuro- developmental disorders are eligible for admission. They are admitted for two-week residential program to get comprehensive treatment & rehabilitation. Different kinds

of children with disability are eligible for Outpatient unit. CRP has run different groups including hand therapy group activity just for two weeks in indoor Pediatric unit. However, there is scarcity of evidence about the outcome of hand therapy group activity through changes in Child's ADL performance. During hand therapy sessions, researcher has found that the children who are diagnosis as CP have major or minor problem in their hand skills pattern. They cannot perform activities of daily living due to their major hand skills problem. When therapists worked with CP children most of the cases are representing hyper tonicity on upper extremity. So, they cannot perform the patterns (Reach, grasp, carry, release, bilateral hand using and in hand manipulation) sequentially.

Various methodologies have been used for the evaluation of hand functions in children with CP. Some methods are oriented towards daily-life activities. For instance, parents might complete questionnaires, with lists of daily activities which is related to the hands (dressing, eating, bathing, writing, playing etc.).Investigator test the hand function by the help of self- development hand function scale with pre-post & will be made hand function materials like (ball ,bottle, strings, pencil, beads etc.) which are mention in the scale because it will help to get the excellent result & it may show the difference before & after participate in hand therapy group activity.

Researcher is confused about the outcome of hand activities group therapy and by participating in this group how can it improve & help the children to perform in ADLs. So, researcher is curious to find out the outcome of hand therapy group activity which can change the child performance in ADLs. Till now no researcher has been conducted to find out outcome of hand therapy group activity to change in ADL performance of the child with CP having problem in hand skills.

1.2 Justification of the study:

The aim of this study is to find out the effect of hand activities group therapy program which can brings change in ADL performance of cerebral palsy child after completing two-weeks at CRP.

Hand therapy is a part of occupation therapy intervention to promote hand skills pattern. Generally, hand skills develop sequentially in childhood & to perform any ADL hand skills

develop is necessary. If the child can participate in each hand skills, then they can engage themselves in any kind of ADL activity. Because of the developmental delay & present abnormal tone of CP child in extremity they could not perform in ADL activity. They also have complication in their hand skills.

In CRP careers mainly mother & their children admitted in indoor program for 14 days & they take treatment from occupational therapy along with other professions. Every morning occupational therapists run hand therapy group activity to improve child's hand skills pattern so that they engage in ADL as much as possible. After providing any treatment or education, it is necessary to know the importance of the specific strategy for a particular group, as success of the treatment session will depend on the level of understanding of an individual. That's why, Occupational therapists will also remain concentrate on hand skills during hand therapy group activity & they also clarify the caregivers understanding about before & after taking & participating in hand therapy group activity which can facilitate their child to engage in their functional activity after completing 2- weeks inpatient program.

Furthermore, caregivers are not known by participating in hand therapy group activity have any changes in cerebral palsy child's ADL performance. So that, caregiver also need to identify the changes in functional activity after participating in hand therapy group activity. So, the studies outcome will motivate the caregivers to receive hand therapy group activity services. That will help the child to improve hand skills which facilitate their children to participate in ADL activities. They will also understand the intervention & can continue those therapies in home. So, caregivers & their children will be benefited by this study. Besides, it is necessary for Occupational therapists to identify mothers understanding about this hand therapy group activity because if they think that there are no improvements in their child's hand by participating in hand therapy group activity after 2 weeks then therapist would be change or modify their hand therapy session that will enhance the mother to take preparation for further therapy from Occupational therapist. Since this research has not been done in Bangladesh previously that's why researcher felt interest to do this study to know the outcome of hand activities group therapy & ADL performance of CP child at CRP.

With the permission of authority, the results of the study can be shared with the pediatric occupational therapists, so that may help the therapists to promote their confidence about their intervention in those challenging health care professions. So other Occupational therapists who worked with another pediatric rehabilitation center could be benefited by this study after sharing this information. This study may be helpful for service providers to continue good rapport with the caregivers by sharing and understanding their feelings. Additionally, caregivers of children with CP may become motivated to take occupational therapy treatment because they feel that occupational therapists are giving value to their opinions. After returning home, they may motivate other clients to take treatment from occupational therapists.

1.3 Research question:

Effect of Hand Activities Group Therapy Program on ADL Performance of Children with Cerebral Palsy at Centre for the Rehabilitation of the Paralysed (CRP).

1.4 Aim of the Study:

Effect of Hand Activities Group Therapy Program on ADL Performance of Children with Cerebral Palsy at Centre for the Rehabilitation of the Paralysed (CRP).

Objectives:

The following objectives are to-

- To evaluate the effect of hand activities group therapy program on ADL performance.
- To identify the socio-demographic factors.

1.5 Operational definition:

Cerebral Palsy (CP): Cerebral palsy is the most common motor disability in childhood (Moshe, 2017). Cerebral palsy (CP) is an umbrella term ascribe to a nonprogressive disease of the brain occurring during the prenatal, neonatal, or early postnatal period when brain neuronal conjunction is still disclosing. Secondary convenience of spasticity on

enhancement may however be progressive. CP is also known as Little disease (William & Oppenheim, 2018). According to the time of influence, causes of cerebral palsy can be divided into prenatal, perinatal and postnatal. Children can experience CP from brain injury that occurs before the cerebral development is completed. The continuous development of brain occurs until the first two years of life (Krigger, 2006). Prematurity is the commonest risk factor for developing CP (Mohammed, 2006). In general, Cerebral Palsy causes delays in reaching motor skills milestones, stiff muscles and exaggerated reflexes (spasticity), stiff or too floppy, stiff muscles with normal reflexes (rigidity), abnormal posture, involuntary movements difficulty with precise motions, such as picking up a crayon or spoon or some combination of these. (Miller, 2018).

Hand therapy: Hand therapy is the art and science of evaluating and treating injuries and conditions of the upper extremity (shoulder, arm, elbow, forearm, wrist and hand). It uses a number of therapeutic interventions to help return a person to their highest level of function (American Society for Surgery of the Hand, 2018).

Hand therapy group: CRP is a non-government organization & they are admitted mother & child in- patient program for two weeks. In this two-week program they provide individual treatment & run different types of group activity. All of these group therapy hand therapy group activities are one them. In hand therapy group children are engaging in different activities based on their age appropriate & their needs & also helps the child to improve their hand skills as much as possible. Hand skills is an important part to complete task in everyday life. Though hand skills problems are associated with abnormal tone, balance & co-ordination in upper extremity that's why children with cerebral palsy faces difficulty in their hand skills pattern.

ADL performance: Activities of daily living (ADL) have been defined as the right and responsibility to take care of physical, emotional and spiritual well-being. It is the things that we normally do in our everyday life such as feeding ourselves, bathing, dressing, grooming, work, home making and leisure. activities of daily living have described in three performance area like- Self -care, Productivity and Leisure. The children will CP face problem in their daily living activities due to abnormal muscle tone and body coordination (Shepherd, 2005).

Two-week In-patient Program: This the regular basis service for treatment of children with cerebral palsy at CRP. In every two weeks, 40 children with their mothers get chance to admit in this program. These programs are based on individual treatment & group activity & provide education to the parents about the child's condition, treatment & how to take care their child at home.

Chapter 2: Literature Review

2.1 Cerebral Palsy (CP):

Cerebral palsy is considered a neurological disorder that is characterized by non-progressive abnormalities in the brain that occurs while the child's brain is under development. It creates neurologic, motor & postural deficits in the developing child (Smith,2010) Cerebral palsy occurs in the prenatal, perinatal, and postnatal time period & it is the major developmental disability affecting function in children. This condition occurs early in life & is present throughout a person's lifetime (Jones,2007). Cerebral palsy affects motion, muscle strength, balance, and coordination. These problems are first noted in infancy and continue into adult life. The muscles of speech, swallowing, and breathing may be involved. Intellectual disabilities (mental retardation) and seizures can also occur, but these problems are not always present (Tropy, 2010).

"Cerebral" means "brain" and "palsy" means "a physical disorder". So, CP means "brain paralysis." (Mushtaq and Suman, 2014).

CP is a group of permanent disorders of the development of posture & movement That may cause activity limitation, that are attributed to non-progressive disturbances which occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by cognition, communication behavior, epilepsy, disturbances of sensation, perception and secondary musculoskeletal problems (Rosenbum, 2007). Mandal found that (2018), Actual brain damage of CP child does not change but their symptoms can become more severe over time. As a result, as the child grows up their functional impairment or limitation may change. That's why, in each case the ability to live independently with CP varies widely depending on the severity. Some individuals with CP will require personal assistant for doing all activities of daily living. Others can lead semi -independent lives, needing support only for doing certain activities. Still others can live in complete independence without the help of others (Mobarak, 2000). Children with CP may need assistance to participate in occupational performance, well-being, in everyday activities,

overall health, and they also need personal assistance which depends on age and functional limitation. (Thomas KS,) Children with different types of cerebral palsy faces difficulty in their hand skills (Uvebrant, 1998).

There is no single cause of cerebral palsy (Cerebral Palsy Alliance Research Foundation 2018). Cerebral palsy is a term that is used to describe a set of neurological conditions that affect movement (Gill, 2017). For most babies born with cerebral palsy, the cause remains unknown. now Researchers know that only a very small percentage of cases of cerebral palsy are due to complications at birth (e.g. asphyxia or lack of oxygen) (Cerebral Palsy Alliance Research Foundation 2018). According to Sanker and Mundkur (2005), the etiology of CP is very diverse & the causes are congenital, genetic, infectious, traumatic anoxic, inflammatory, and metabolic. According to the time of influence, cerebral palsy causes can be divided into prenatal, perinatal and postnatal. Almost 70-80% of the CP cases occurred due to prenatal period such as insufficient nutrition, mother age, hereditary factors, psychological trauma, intoxication of the mother, smoking, (Svedberg, 2010). The study also found that 10–15% of cp cases began in the perinatal period which are responsible for approximately problems in during labour and delivery and risk factors are infections, seizures, intracranial hemorrhage, hypoglycemia and significant birth asphyxia (Sanker and Mundkur, 2005). Post neonatal period began after 28 days of life are responsible for about 10% of all cases of CP and include infections such as meningitis, accidental and non-accidental injuries. (Reddihough).

Clinical types of CP are classified into three major types according to neuro-physiologically: spastic, athetoid, and ataxic. About 70% to 80% of the cases of CP are spastic type, 10% to 20% cases are athetoid and 5% to 10% cases are ataxic type of CP. Spasticity is characterized by hypertonicity, slow and firm movements, combined reactions etc. & about 70% to 80% of the cases of CP are spastic type (Reddihough, 2011). Spasticity pattern in upper limb includes elbow flexion, pronation of the forearm, ulnar deviation and flexion of the wrist with thumb in palm deformity. Due to showing this type of hand skill pattern CP children face intensity in their activities of daily living (Gershon, 2016). In addition, spastic cp is categorized according to the region of the body affected. These are including: Spastic hemiplegic (One part of the body is affected), Spastic diplegia (usually

consider the legs more than the arms) (Gershon, 2016). Spastic Quadriplegia: Quadriplegia is a kind of Cerebral Palsy (CP) in which all four limbs are affected, Spastic Monoplegia: include one limb; condition is uncommon (Brashear, 2007). Athetoid type is distinguish by involuntary & uncontrolled movements, unnecessary movements, especially in the face, arms, and trunk (Cerebral palsy group, 2009). Due to involuntary movements they are also facing complexity during reaching and carrying any object. Due to work hard Children face emotional embarrassment to fetch their hand to carry out anything but after a heavy try they can accomplish (Gershon, 2016). Ataxic type is distinguished by low muscle tone, unsteadiness and poor coordination of movements and difficulties with balance, particularly when ambulating. These children have no power in hand to grasp any object and faces difficulties in functional movement, especially when they are trying to hold or handle a small object such as a pen. This child takes a long time to complete a certain task such as writing a sentence (Sheldon & Zisook, n.d.)

2.2 Connection between cerebral palsy children with gross motor skills and fine motor skills:

Depending on the severity, location, and extent of the injury a child's development can be impacted in numerous ways which is the reason to cause cerebral palsy. Generally, cerebral palsy developmental categories can be impacted by gross motor movement and fine motor coordination (Corey, S., 2017). Besides children with CP often have difficulty in performing tasks that involve fine & gross motor skills including, forming letters when they write, throwing or catching balls & buttoning the dress (Smith,2010). There are different types of motor system refer in our bodies parts which combinedly work together to enable us to act and move & helped to complete our activities of daily living (Park, 2017).

Gross motor (physical) skills are those which require whole body movement and which involve the large (core stabilizing) muscles of the body to perform everyday functions, such as standing and walking, running and jumping, and sitting upright at the table. They also include eye-hand coordination skills such as ball skills (throwing, catching, kicking) as well as riding a bike or a scooter and swimming. (Kid Sense, 2018). In a population-based study, Himmelmann et al., (2007), reported about half of the children

motor function have mainly affected, whereas also accompanying with the major impairments adding to the disability, which affected several areas of activity and participation. The children with CP have a major problem in gross motor skills. Gross motor skills are important to enable children to perform every day functions, such as walking and running, playground skills (e.g. climbing) and sporting skills (e.g. catching, throwing and hitting a ball with a bat (Kid Sense, 2018). However, these are crucial for everyday self- care skills like dressing and climbing into and out of a car or even getting into and out of bed (Kid Sense, 2018). Gross motor capacity can be considered an important basis for movement activities of daily living or daily-life mobility (Smith, 2010). They cannot control some or all of their movements, sometime increased/decreased muscle tone in large muscle group, some will have difficulty to use their hands, some will be unable to sit up without support and will need help to do most everyday tasks. Gross motor abilities also have an influence on other everyday functions. For example, a child's ability to maintain appropriate table top posture (upper body support) will affect their ability to participate in fine motor skills (e.g. writing, drawing and cutting) and sitting upright to attend to class instruction, which then impacts on their academic learning. (Kid Sense, 2018). Therapeutic intervention has traditionally focused on improving gross motor capacity and, by this, on improving a child's daily life mobility in terms of capability and performance (Smits, 2010). That's why, Therapeutic intervention is provide to focus on improving gross motor capacity and, by this, child's daily life mobility will improve in terms of capability and performance. To perform any functional task gross motor skills facilitates the child's fine motor skills to perform (Smits, 2010)

Fine motor skill is related to the use of small muscles involved in movement to manipulate objects (Gallahue, 2006). It is associated with various aspects of physical activities such as eating, getting dressed and writing, picking up an object or holding a pencil correctly, beads, cutting and buttoning, blocks and drawing etc (Marr,2003). It is easy to see how important fine motor skills are to every area of a child's life! For children with CP, deficit in fine motor skills may negatively impact their education especially learning arithmetic. In academic achievement (learn to count and solve addition task), fingers can play a key role. Children with cerebral palsy have less muscle tone, which impacts their fine motor skills (Park,2017). Fine motor skills can directly affect a child's self-esteem and success at

school. In this instances, Cerebral palsy has an underdevelopment of the small muscles in the hand. So, when the children enter school, they face handwriting difficulties because of underdevelopment of hand muscles (Palisano,2007). Regardless of the nature of the disability, Cerebral palsy child is likely to have impaired in hand skills. Impairment of basic hand function (reach, grasp, carry & release) in early childhood & impossible emergence of more advanced hand skill & bilateral hand use (Smith,2010).

2.3 Cerebral palsy children and their hand skills performance:

Children with Cerebral Palsy show a significant difficulty in hand skills performance. Hand skills problems that reflect motor co-ordination difficulties have been identified in children CP (Smith,2010). This child faces difficulty in hand skills problem because of abnormal tone in upper & lower extremity. Both extremities show abnormal tone in each type of CP child. To maintain a good hand function, the muscles of shoulder & upper body & arms must be strong. When the muscles are weakening, it is difficult for a child for sustaining any activity (Arnould ,2014). The CP children face functional limitation of the impaired side which influenced by abnormal patterns of muscle tone and movement, increased fatigue, spasticity, reduced speed of movement, decreased power, poor hand skills like reach, grasp, carry, release, reduced speed of movement and poor pinch functions (Dubois, et al. 2004). Hanna et.al (2003), found in longitudinal study that hand function in children with CP generally improved in early childhood & then began to decline. They found somewhat different patterns of development in CP children who had mild, moderate & severe impairments. The children with CP face hand skills problems including uncoordinated movements, weakness, spasticity, incomplete finger fractionation and slowness (Eliasson, AC et al. 2006, p. 1227). For this reason, they have faces difficulties in hand skills performance.

2.4 Children with cerebral palsy & Occupational performance:

Activities of daily living encompass some of the most important occupations children learn as they mature (Smith, 2010). According to American Occupational Therapy Association (AOTA), Child's occupational performance areas are divided in three parts, self- care, productivity and leisure. (Shepherd, 2012). ADL's are defined as we do in our everyday

life such as toilet hygiene, bowel & bladder management, bathing, dressing, grooming, brushing, feeding, personal hygiene, eating, functional mobility, writing & playing (Smith,2010). But Cerebral Palsy children has an impairment which affect all kinds of motor activities, including activities of daily living (ADL), which are essential for children's daily functioning (Berdien et al., 2015). Besides specific child factors (body structures & functions), performance skills, performance patterns will affect ADL performance (Smith, 2010). Depending on the type of CP, their impairment affects nearly all of the body functions, also depend on the severity of the condition, and presence of associated disorders. The child who have mild CP may have little impact on occupational performance. Some individuals will claim physical assistance, additional training, or assistive technology to take part fully in occupational performance areas, while individuals who have acute forms of CP will be restricted in their performance of all areas of occupation (Yamamoto, 2012). In Bangladeshi perspective, Children's are highly depending on their mothers for doing any activity. Mothers helps their children to perform in ADL like dressing, eating, writing, brushing, bathing etc. that's why they don't try to engage themselves at their own wish So, they fully depended on their mother (Shepherd, 2012). But Cerebral palsy child faces difficulty in their daily living performance because of abnormal muscle tone & body co-ordination (Smith, 2010). Cermak (2015) reported that if cerebral palsy is compared with their peers with typical development, they are poor performance in ADL, delays in learning of ADL, and less frequent participation in ADL.

2.4.1 Self-care:

Self-care may define how to take care of one's body including physical, emotional and spiritual well-being. Self -care tasks are the most important occupations in which child's learn as they mature (Smith, 2010). As the child' mature he or she is learning to perform in socially appropriate ways so that he or she can engage in the other occupations within the family unit &the community such as education, play, leisure, rest, sleep, social participation & instrumental activities of daily living (IADL) (Smith, 2010). According to Ann & Robert H. Lurie Children's Hospital of Chicago (2019), child is able to independently hold bottle at 4-6 months of age & Grasps small items with thumb against side of pointed index finger & self – finger

feeds at 8-9 months. But the children with CP suffer with delay developmental process. So, they face difficulty to engage them in that performance. On the other hand, hand skills components are related with self - care task. Such as:

Dressing. (Example: Symmetric/ Asymmetric hand using)

Feeding. (Example: Lateral pinch, for pick up the spoon)

Grooming. (Example: Power grip, griping the handle of the brush/ comb)

2.4.2 Productivity:

Occupation refers the ordinary & familiar things that people do every day (Christiansen et al,2006). The definition of Canadian Association of Occupational Therapist (CAOT, 1997) states that, occupation refers to a group of activities & tasks of everyday life, named, organization & given value & meaning by individual & a culture. Such as: student (gripping the pencil). Children are able to draw a cross, circle, line within 3-5 years of old and within 5-6 years of old able to Grasp the pencil & can draw a basic picture (Kid sense, 2017). Though CP child suffer from developmental delay so that they are unable to perform age appropriate behavior & face difficulty in hand writing skills.

2.4.3 Leisure:

Leisure & play activities are the discretionary, spontaneous & organized activities that provide enjoyment, entertainment or diversion in social environment that may be different to school & work settings (Parham, 2008). It is an essential part of human lives. In an occupational therapy study, teens reported that leisure provided enjoyment, freedom of choice, & time -out. They seem "time out" but it can have a significant role in the development. It helps to develop skills, self-identity, self-esteem, self-confidence, facilitate problem solving, patterns of behavior & promote skills acquisition & competency (Passmore, 2003). It helps us enjoy challenges adventures, new experiences & to stay healthy (Austin Health Victoria 2011). Such as: Playing with ball/ marble/ doll/, hide& seek with peers etc. Normally children start play within 1 year. They will predominantly point and vocalize to express their intentions. Within the age of 2 years children typically engage in parallel play this

means that they play next to instead of with each other like share toys and after one year more they learn to Dress-up, pretend play & another creative activities & paddle tricycle (Smith,2010). In where the CP children faces difficulty to perform those tasks due to abnormal posture, tone, involuntary movement and some time for cognitive delay.

2.5 Relationship between hand skills and ADLs performance:

Children with Cerebral palsy are likely to have difficulties in hand function. As Mendich et al., (2003) noted that, this incompetency has a serious negative impact on child's everyday activities. During performing any activity, the children need normal hand skills pattern. When this skill develops sequentially then the children can perform normal function. Children with Cerebral Palsy have limitation in hand skills & also have functional limitation in ADLs performance (Eliassion et al., 2006). Functional limitation is one of the major impairments of children with CP. During daily living activities performance like feeding children need to grip the spoon, for grooming need to hold the brush/ comb, for writing children need to grip the pencil and for playing children need to grip the ball (Damiano, 2009). By accomplish all the full activity in those small task's child might be able to perform in ADLs. So, when the child needs to effectively performing this task, they need hand skills otherwise they are unable to perform this task.

2.6 Occupational therapy role to improve child's hand skills:

Occupational Therapists envelope a comprehensive diversity of rehabilitative practice. This includes but is not limited to exercises that improve motor skills. Some exercises an Occupational Therapist provides may seem like they wouldn't be beneficial, however, these seemingly non-functional tasks can produce a greatly functional outcome (AOTA, 2018). Performing these activities will better prepare a person to physically participate in everyday life. occupational therapist is specialized in improving the development of the small muscles of the body, such as the hands, feet, face, fingers and toes (Smith,2010). In the case of fine motor skills, Occupational Therapist teaches daily living activities like getting dressed or preparing a meal will be made much easier with exercises as well as to make sure children are entirely positioned in wheelchairs. Occupational therapy enhances

the child's functional performance by acquiring gross & fine motor skills (My child at Cerebral Org.2019). The goal of occupational therapy is to improve a child's capability to perform daily functions and activities in a way that will improve their quality of life and make probable the enjoyment of independent living. Occupational therapy intervention has been exhibited to have a positive impact on CP child with fine motor inflexibility by fascinating the child on fun-filled games (Eliassion et al., 2006). The occupational therapist assesses a child's hand skills when the record is adequate to suppose that problems with performance of occupational skills are at least partially distinguishable to the child's problems with hand skills (Smith,2010). Child engage in different types of activities for developing gross motor skills, fine motor skills, enhance directionality, increase balance and right/left discrimination & these activities are helpful for skills development in preschoolers and early childhood (Cerebral palsy alliance, 2009). Occupational therapy facilitates the CP child to work on fine motor skills according to their needs so that child's can reach the hand to grasp and then release the toys and develop good handwriting skills. Occupational therapist also give intervention to improve eye-hand co ordination by engaging the child in different activities like hitting the bottle by using the ball, ball passing, string beads, pegboard. They also help children who has severe developmental learning delays in some basic tasks, such as feeding themselves, getting dressed, brushing their teeth and bathing (Cerebral Palsy Source ,2005).

2.7 Treatment facilities for children with cerebral palsy in Bangladesh

Commonly Cerebral Palsy children may face difficulties to participate in ADLs & many child can live long, quality lives & happy. Therefore, many children lead to enjoy their lives as like normal adult's if their disabilities are properly managed. The earlier treatment begins with better improvement & development of new skills which is necessary for accomplishing everyday task. Traditionally, treatment of CP has focused on influencing the primary impairments such as spasticity, or the secondary impairments such as joint contractures. Many strategies are used for children with CP like pharmacological interventions, conservative interventions, surgical interventions & neuro physiological interventions etc. (Smits, 2011). Admittedly, their care may involve require therapy, medications, visits to health care practitioners & perhaps surgery at some point. Recently,

treatment of CP increasingly focusing on influencing child's on activities, such as ambulation & ADL's. Treatment strategies involve task-oriented intervention and environmental modification for facilitating independence. (Rosenbaum, Paneth & Leviton, 2007). For this purpose, in Bangladesh, there are many Government Organization (GO) & Non-Government Organization (NGO) working, where treatment for children with CP is available. CRP is a NGO, which has been working for the last 37 years to provide treatment, training, education, and rehabilitation for the disable people in Bangladesh. CRP initiate as the Rehabilitation Centre for Paralyzed Patient (RCPP) and was established on December 11, 1979 by abandoned British woman by the name of Valerie A Taylor (Ahmed, 2006). The vision of CRP is to ensure the inclusion of disabled people into mainstream society and the mission is to promote an environment where all disabled people can have equal access to health, rehabilitation, education, information, and employment. The Pediatric unit is a section of CRP which is well equipped to provide standard services for all children with disabilities particularly for the children with CP (Ahmed, 2006). The CRP Pediatric unit provides two services - an inpatient service and an outpatient service.

2.8 In- patient Pediatric unit

The Centre for the Rehabilitation of the Paralyzed, ordinarily known as CRP, was established in 1979 by a small group of Bangladeshis and a British physiotherapist, Valerie Taylor. Miss Taylor came to Bangladesh (then known as East Pakistan) in 1969 as a volunteer physiotherapist, and was appalled at the lack of facilities for the disabled. The hospital is situated at Savar & it is the only hospital in Bangladesh that is specialized in the treatment of spinal cord injuries. Beside this CRP have outdoor unit facilities for Person with Disabilities (PWD) like- pediatric unit, neuro -musculo skeletal unit, stroke rehabilitation unit, sports injury unit and hand therapy unit etc. (Paediatric unit, 2010).

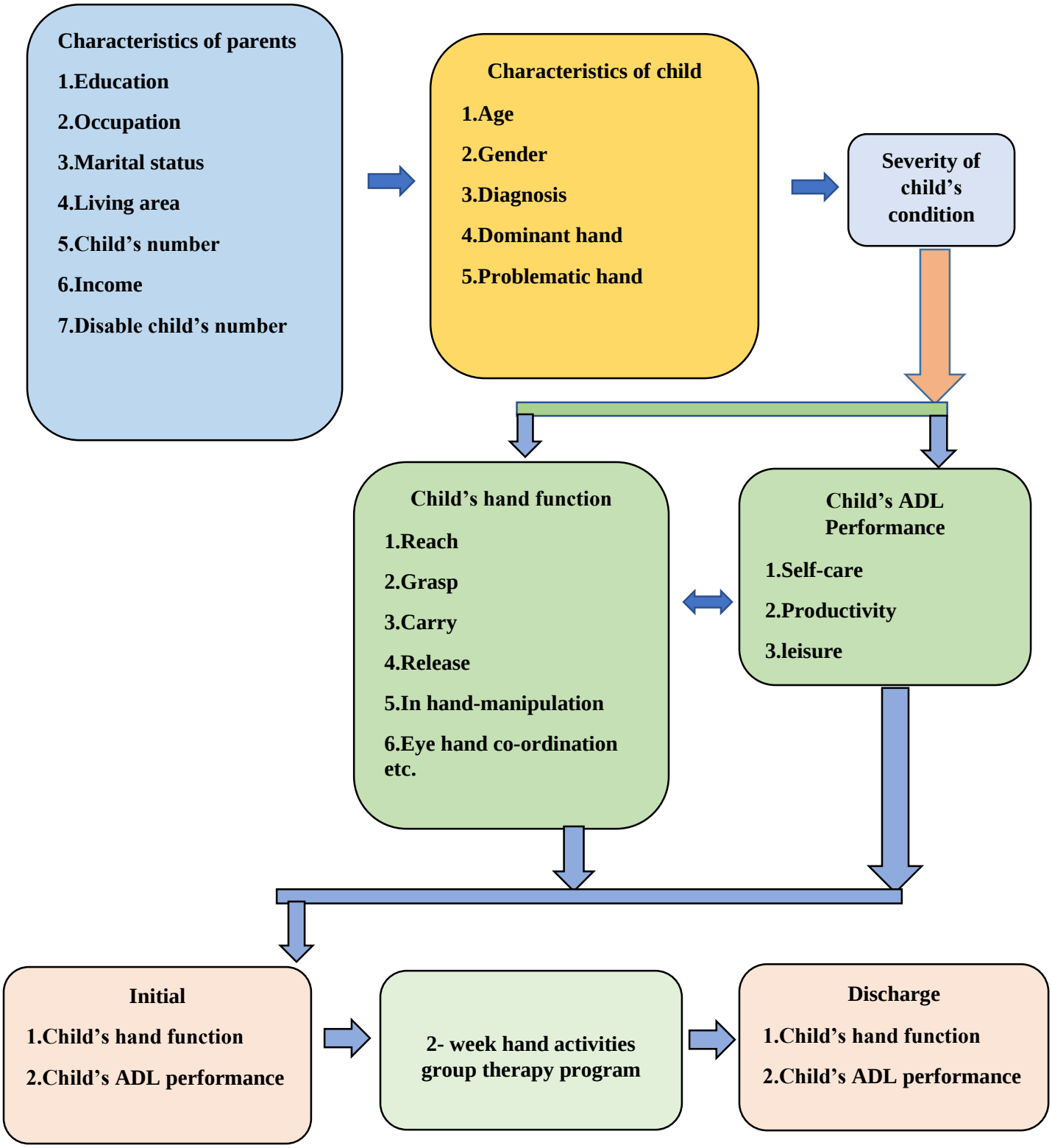
This residential program run two weeks' intensive services for children with Cerebral palsy & caregivers so that the child can integrate into family & community life. Mainly the children with cerebral palsy with his/her mothers or any female caregivers are allowed to get admission as inpatient of pediatric unit. Maximum 40 children (in successive groups 20) get admission per 2 weeks' program. Program is on protocol therapist provides therapeutic interventions both in individual & group session. The aim of the therapists is

to maximize the child's ability to attain independence in everyday living & to improve quality of life. For achieving this, child's participate in physical & psychosocial therapy & also provide education to the caregivers about the child's condition & teaches different techniques which are told & shown by the individual therapy session & also in group therapy. After admission the children are assessed in order to find out proper diagnosis & individual treatment plan.

The occupational therapists work with a MDT approach with different professions. Some of the occupational therapy programs include; morning group therapy, hand therapy, feeding, dressing and toileting classes, hydrotherapy, balance & coordination class, back care education, parents meeting, play therapy, and sensory integration therapy. All of this therapy hand therapy is one of them. Every morning occupational therapist run a hand therapy session & an individual session. In hand therapy group occupational therapist work with the child to improve hand function. At 1st day after admission therapist asses the child hand function (reach, grasp, carry, in hand manipulation, bilateral hand use, release, transfer, eye-hand co-ordination) by engaging in different activities. If the child unable to perform this task then therapist provides maximum, moderate or minimum support & noted the document of child's problem. After provide intervention, during evaluate period therapist re assesses the child hand skills performance to find out the changes. If the therapist shows any changes through the hand skills by participating in hand therapy group activity, then the child's may show some changes in their functional activities. At the last day of two weeks' program therapists provide home plan to the caregiver or mother. On discharge patients was return to outpatients to follow up. Therapist's advices to the parents for continue follow-up session at CRP once a month.

Chapter 3: Methodology

3.1 Conceptual framework:



3.2 Study design:

One group pre-test & post –test experimental study design, which is also known as quasi-experimental design (Kowalczyk, 2016), was chosen for this study. The pre-test was being collected from the participants at the time of admission & post-test data was collected during discharge. In this study, the design was used to measure the degree of change occurring after completing two-week In-patient program of hand group activity therapy at CRP. Here researcher does not manipulate the study environment with any type of intervention.

3.3 Study population:

Both mother & children with cerebral palsy are population of the study those who participate in the two –weeks hand activities group therapy program at Centre for the Rehabilitation of the Paralysed (CRP) , Savar, Dhaka.

3.4 Study setting:

The investigator has chosen the pediatric indoor unit of Centre for the rehabilitation of the Paralysed (CRP). CRP is a non –profit, non –government organization, which treats and rehabilitates people with disabilities regardless of their socio -economic status and aims to improve the quality of life of Person with Disabilities (PWD) in Bangladesh. In addition, CRP at Savar is specializes in the treatment for the person with spinal cord injury. The pediatric unit consists of inpatient and outpatient areas. The inpatient pediatric unit of CRP at Savar is residential programs which provide two weeks of intensive service for only children with cerebral palsy and their primary caregivers. Usually the two week's residential program begins on Saturday, then after having a weekend on Friday & the whole program finishes on next Thursday. Most of the children in inpatient and outpatient are children with CP. Here the therapist main focus is to educate the primary caregiver about

basic treatment & management of the child's functional ADL's. The treatment program desire to accomplish the CP child into their family & community life. One group stays for two-weeks then the next group stays for another two-weeks. As mothers of children with CP stay in the inpatient pediatric unit for two weeks so, it was easy for the researcher to get participants and collect data at the same time from the same place.

3.5 Study period:

The research study has been done as the part of the academic education of B.Sc. in Occupational Therapy. The period of this study was from September 2018 to April 2019. The study was included data collection, data analysis & overall thesis writing. In particular, data collection was conducted from January to February, 2019.

3.6 Sample size:

Sample size depends on some factors such as; the quality of data, the scope of the study, the nature of the topic, the amount of useful information obtained from each participant, the number of interviews per participant, and the Quantitative method and study design used. A sample size should be as large as the researcher obtains with a reasonable expenditure of time and energy. For conducting the study, investigator took sample according calculated numbers. Sample size could be large or small. Amount of sample size depends on study population and their participants (Bailey, 1997).

According to standard formula, sample size will be-

$$n= \frac{z^2 \times p\,(1-p)}{\alpha^2}$$

Here, n= sample size

z= 1.96 (Z-value) (e.g. 1.96 for 95 percent confidence level)

p= 0.14 (Prevalence of cerebral palsy survivors in Bangladesh)

α= 0.05 (Level of significance / margin of error)

Putting these values in formula get n= 185

Here sample size is 185. Although, it is an academic research, data collection period was 2 months. Though this research was conducting by pre & post-test that's why it is

impossible for investigator to take all samples in the limited time frame as well as it depended on the availability of sample. That's why investigator took 32 samples.

3.7 Inclusion criteria:

- Both boy & girl children with cerebral palsy selected for hand activities group therapy.
- Willing mothers of cerebral palsy who has attend in hand activities group therapy program at pediatric unit of CRP within the data collection period.
- In this research the age range of cerebral palsy children is 4 to 8 above because the complex hand skills pattern could not develop before 4 years.
- Researcher has selected those mothers who are having children with proper rolling ability, head and neck control, eye hand coordination, can sit with minimum support almost needed to follow the instructions.

Exclusion criteria:

- Children who were not diagnosed as cerebral palsy.
- Age below 4 years.
- Mothers who were not interested to participate.
- Mothers who were not able to complete two-weeks hand activities group therapy program during the data collection period.

3.8 Sampling techniques:

Researcher selected the participants by purposive sampling techniques to collect the data. "Purposive Sampling means that a researcher does not simply study whoever is available, but uses judgment to select a sample that they believe, based on prior information, will provide the data they need" (Fraenkle, 2000). In –patient program patient is selected for hand activities group therapy who have the capacity to sit with minimum support & can maintain proper body stability to perform hand activities. So the researcher selects the patient from the hand activities group therapy based on the inclusion criteria of the study. This method comprised some inclusion criteria to select the participant as to find out the

actual snapshot of the situation. The sample also reflects the characteristics of the population from which it is drawn.

3.9 Data collection tools/materials:

The data were collected by using (self- constructed) English & Bangla version of hand function & child's ADL's performance scale questionnaire to judge the child's hand skills & ADL's performance skills after completing two weeks' hand activities group therapy. For measuring the hand function researcher developed different hand function materials based on the scale so that to easily comparison with pre & post- test. The wide known standard Paediatric Evaluation of Disability Inventory (PEDI) caregiver's assistant scale were used as research instrument to evaluate the hand function & child's ADL performance scale. Besides this, investigator used an information sheet to inform about study & aims & rights of the participant. A consent form was also attached to take written consent from the participants.

3.10 Data collection methods:

At first, researcher took permission from the in-charge of pediatrics unit of CRP at Savar for collecting data. The investigator collected data from both mother & children with cerebral palsy who were participate in hand group activity therapy. The investigator used face-to-face interview with a structured questionnaire for data gathering. Face-to-face interview are more intimate and allow the interviewee to interact directly in the interview and develop it. The investigator collected the data by own self. At first, the investigator arranged a quiet place by communicating with the regarding authority, and spent some time building rapport and a trusting therapeutic relationship with participants. Before collecting data, time and place were confirmed with participants and the study aim and purpose were explained to all participants. All the participants were given consent form for taking permission from them to participate in this study and they were given opportunity to ask any types of study related questions. The participants who could not read the consent form, researcher read the consent form in front of the participants. After getting written consent, researcher started to collect data. All questionnaires and information sheets were translated into Bangla. At first, the researcher collected general information using self-developed

socio-demographic questionnaire then conducted face to face interview by using structured questionnaire named self -development hand function & child ADL's performance skills scale. During hand function measurement investigator using different hand function materials based on the scale then after completing this scale investigator then asked the mother about child's ADL activity. This test was being done by pre & post –test to find out the outcome of attending hand group activity therapy after completing two –week in –patient program. After successfully collecting data, researcher leaves the participants by giving thanks to all participants to be a part of study willingly. Duration of interview was approximately 30 minutes for each participant. Appointment of interview time was the last two days (Sunday and Thursday) of the two -week program (hand group activity therapy in both weeks) during the data collection period of the study.

3.11 Data Management and Analysis:

Data was being managed in Statistical Package for the Social Sciences (SPSS), version 20 to analyze the raw data.

3.12 Quality Control and Quality Assurance:

Prior to starting the data collection, the investigator completed a field test with three participants. Investigator collected data from these participants used all mentioned data collection instruments and following whole data collection procedure. This field test was done for checking participants understood the questions or not and how participants responded to questionnaire. It helped the investigator to prove the validity of the questionnaire in this study. By finding any difficulties, the investigator had to retool the questionnaire to make it more understandable, clear & enough for the participants to conduct the study.

3.13 Ethical Consideration:

At first researcher approved the selected study proposal by the supervisor and head of the department of occupational therapy of Bangladesh Health Professions Institute (BHPI) which is the academic institute of CRP. After getting the permission for doing this study

from the academic institute of CRP then researcher started to do it. Then permission was taken from the In-charge of pediatric unit for data collection from the mothers. The investigator was taken information sheet & consent from in Bangla to the participants who were interested to participate in the study and informed verbally about topic and purpose of study. The investigator ensures that the pediatric department will not hamper by this study. The participants did not deprive from any therapy session by this study. It was being informed that there would be no risk or direct benefit to participate in the study. The investigator has promised the participants that all information provided will be kept strictly confidentially and would not expose their identity. Each participant had the right to refuse to answer any question or withdraw from the study. Information that was provided by the participants was being confidential only investigator & supervisor have access to them.

Chapter 4: Results

This section provides statistical analysis in a systematic way and interpretation of analyzed findings with the aim and objectives of the study. The aim of the study was to find out to evaluate the outcome of hand activities group therapy program & child's ADL performance. I have gathered data from 32 mothers & their children. Findings of the study are presented by table and bar chart.

4.1 Socio demographic characteristics:

In this study the researcher used many socio-demographic characteristics of the participants these are age of the child, educational status, living area, marital status, living area, child's number, siblings, other child have any disability, occupation, approximately income in each month, source of income generation, family size, diagnosis, dominant hand & problematic hand. The researcher categorized all the demographic characteristics.

Table 1: Distribution of respondents by child's age, educational status, occupation, marital status & living area of mothers.

Age	Frequency (n)	Percentage (%)
4- 5 years	15	46.9
6-7 years	6	18.8
>8 years	11	34.4
Mean	7.50	
Educational status of mother		
Less than primary	1	2.9
Primary completed	5	14.7
Less than secondary	10	29.4
Secondary completed	7	20.6
Higher secondary completed	3	8.8
Above graduation	2	5.9
Illiterate	4	11.8
Occupation of mother		
Housewife	29	85.3
Student	3	8.8
Marital status		
Married	31	91.2
Divorced	1	2.9
Living area		
Rural	2	5.9
Urban	10	29.4
Semi-rural	20	58.8

Table 1 shows that among those 32 participants about 46.9 % (n=15) were 4-5 years' age group, 18.8 % (n=6) respondents were 6-7 years' age group, 34.4% (n=11) were > 8 years' age group. This table also shows that among those 32 participants about 2.9% (n=1) were educated to less than primary, 14.7% (n=5) had educated to primary completed, 29.4% (n=10) were less than secondary completed, 20.6% (n=7) were secondary completed, 8.8% (n= 3) were higher secondary completed, 5.9% (n=2) were above graduation & 11.8%

(n=4) were illiterate. Most of the respondents 85.3% (n= 29) were housewives & 8.8% (n=3) respondents were student. Among 5.9% (n= 2) respondents lived in rural area, 29.4% (n= 10) lived in urban area & 58.8% respondents were living in a semi-rural area. In addition, 31% (n=31) were married & 2.9% (n= 1) were divorced.

Table 2: Distribution of respondents by monthly income, income generation, family size, siblings of child, child's number, number of children with disability.

Socio demographic characteristics of the respondents	**N=32**	
Approximate income in each month	**Frequency (n)**	**Percentage (%)**
5,000 or below the 5,000	12	35.3
10,000	11	32.4
15,000	3	8.8
20,000	4	11.8
25,000	1	2.9
30,000 and above 30,000	1	2.9
Source of income generation of the family		
Father	25	73.5
Mother	1	2.9
Both	3	8.8
Others	3	8.8
Family size		
1-5	21	61.8
6-8	6	17.6
>8	32	94.1
Siblings of child		
Yes	22	64.7
No	10	29.4
Child's number		
First	18	52.9
Second	7	20.6
Third	4	11.8
Fourth	2	5.9
More	1	2.9

Number of children with disability		
Yes	3	8.8
No	29	85.3
Dominant hand		
Right	11	32.4
Left	21	61.8

Table 2 shows that of the participant's monthly income 35.3% (n=12) had 5,000 or below the 5,000 taka, 32.4% (n=11) had 10,000 taka, 8.8% (n=3) had 15,000 taka, 11.8% (n= 4) had 20,000 taka, 2.9% (n= 1) had 25,000 taka and 2.9% (n=1) had 30,000 & above 30,000 taka. Mostly 73.5% (n=25) of the respondent's source of income generation of the family were father, 2.9% (n=1) were mother, 8.8% (n=3) were both & others. Almost 94.1% (n=32) had family size of 8 persons & above, 61.8% (n=21) had 1-5 persons & 17.6% (n=6) had 6-8 persons. Overall participants are 64.7% (n=22) had siblings and 29.4% (n=10) had no siblings. From 32 participant's child's number 52.9% (n=18) were first, second 20.7% (n=7), 11.8% (n=4) were third, 5.9% (n=2) were fifth & 2.9% (n= 1) were more child's. Among those 32 participants 85.3% (n=29) other child had no any disability & 8.8% (n=3) other child had any disability. It also shows that almost 61.8% (n=21) of the children dominant hand were left hand & 32.4% (n= 11) were right hand.

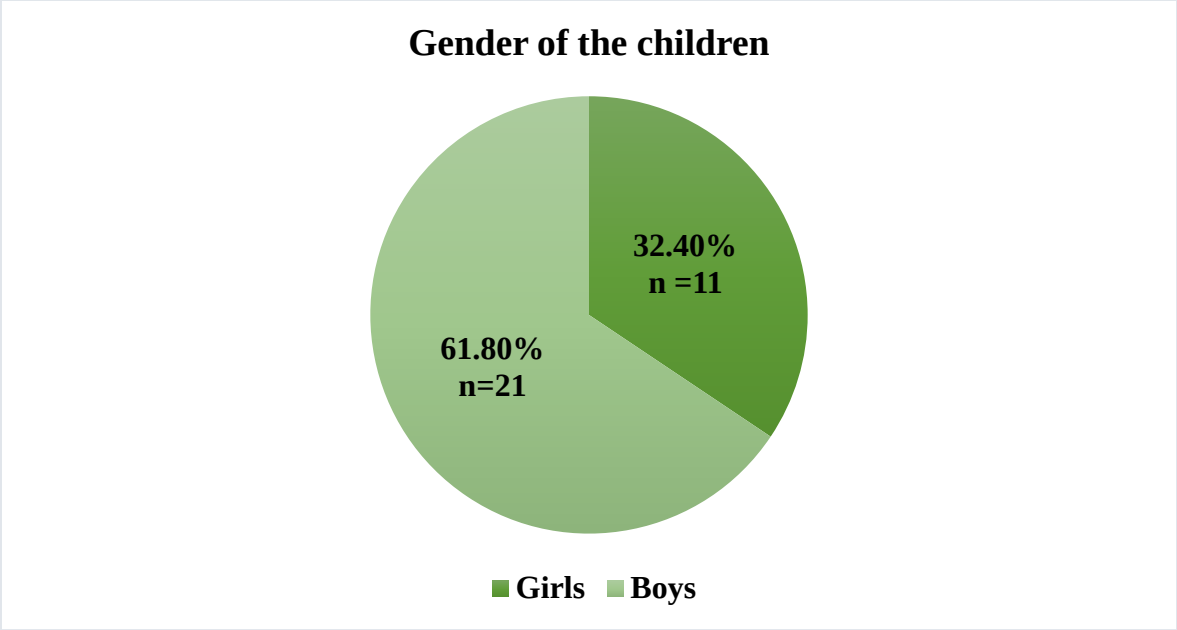


Figure 1: Distribution of respondents by child's gender

Figure 1 shows that among these 32 participants about 61.8% (n=21) were boy & 32.4% (n=11) were girl.

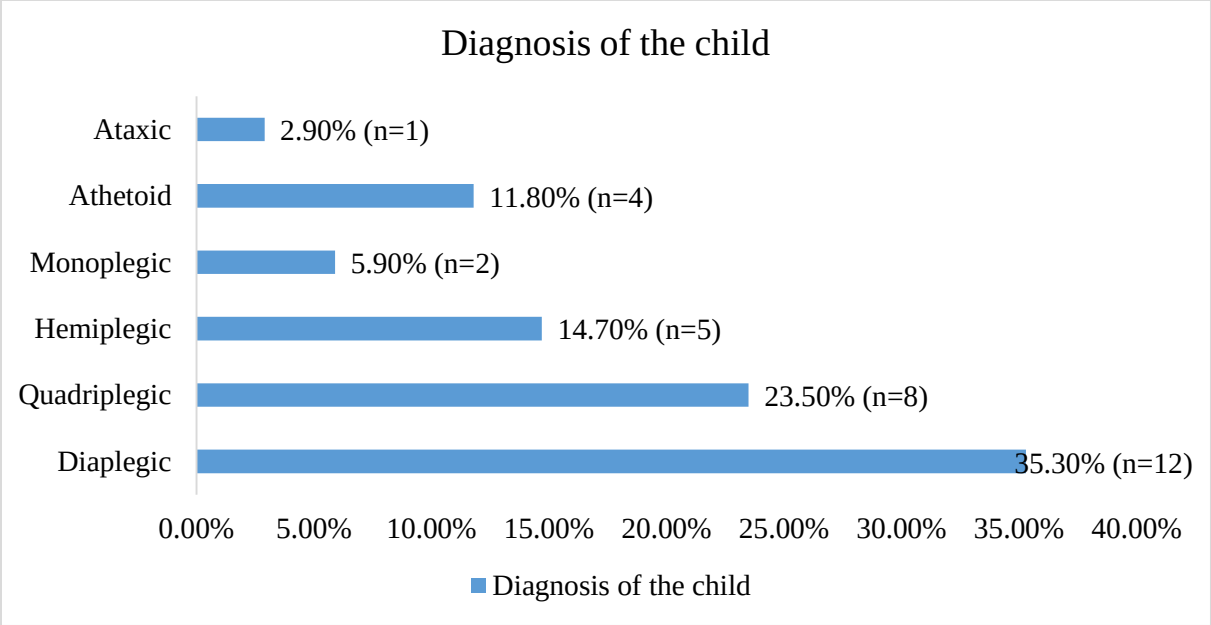


Figure 2: Distribution of respondents by child's diagnosis

Among these 32 participants 35.3% (n= 12) were diagnosed diplegic, 23.5% (n= 8) were quadriplegic, 14.7% (n= 5) were hemiplegic, 5.9% (n= 2) were monoplegia, 11.8% (n= 4) were athetoid & 2.9% (n=1) were diagnosed ataxic shows in figure 2.

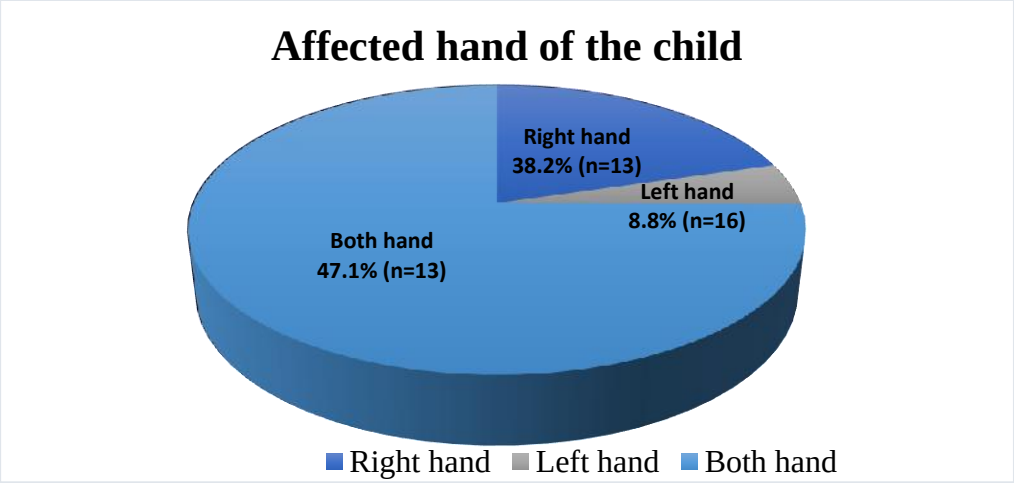


Figure 3: Distribution of respondents by child's affected hand

Among 32 participants 47.1% (n= 16) were problem in their both hand, 38.2% (n= 13) were problem in right hand & 8.8% (n=16) were problem in left hand shows in figure 3.

4.2 Hand function of the child:

Table 1: Reach before & after Participate in hand activities group therapy program

Variable	Pre-test	Post-test	Difference	Mean
	N=32			
Reach (To extend the hand for reaching something like ball, bottle)	60	71	11	0.34

This table (1) shows that reach among cerebral palsy children (n=32), pretest & posttest are 60 & 71, difference of between pre & post –test is 11 & mean of differences are 0.34.

Table 2: Grasp before & after participate in hand activities group therapy program

Variable	Pre-test	Post-test	Difference	Mean
	N=32			
Cylindrical grasp(pick up & hold large object like grasping bottle**)**	57	67	10	0.31
Spherical grasp(rapid first closer & release like griping the tennis ball**)**	60	68	8	0.25
Power grasp(carrying or grasping task where the fingers flex towards the palm like griping the stick**)**	63	70	7	0.22
Precision grasp (manipulate objects with opposition by using fingers like picking up salt**)**	47	51	4	0.13
Hook grip (carrying the bag**)**	60	66	6	0.19
Disk grasp (holding the object according to the size like holding the container coverage**)**	60	68	8	0.25
Tip pinch (pinch between the index finger & thumb like grip the marble, button**)**	47	52	5	0.16
Tripod pinch (pinch between the pads of thumb, the pad of the index & middle fingers like grip the pencil**)**	43	48	5	0.16
Lateral pinch (as like as holding the key**)**	45	48	3	0.09

This table (2) shows that cylindrical grasp among cerebral palsy children (n=32), pretest & posttest are 57 & 67, difference of between pre & post –test is 10 & mean of differences

are 0.31. In spherical grasp pretest & posttest are 60 & 68, difference of between pre & post –test is 8 & mean of differences are 0.25. Power grasp among (n=32) participants, pretest & posttest are 63 & 70, difference of between pre & post –test is 7 & mean of differences are 0.22. In precision grip, pretest & posttest are 47 & 51, difference of between pre & post –test is 4 & mean of differences are 0.13. In hook grip participants had need 60 & 66 in pre & post-test, difference of between pre & post –test is 6 & mean of differences are 0.19. In disk grasp among (n=32) participants, pretest & posttest are 60 & 68, difference of between pre & post –test is 8 & mean of differences are 0.25. In tip pinch, pre & post -test among 32 participants had need 47 & 52, difference of between pre & post –test is 5 & mean of differences are 0.16. In tripod pinch, pre & post-test are 43 & 48, difference of between pre & post –test is 5 & mean of differences are 0.16. Lateral pinch, pre & post-test among (n=32) participants had need 45 & 48, difference of between pre & post –test is 3 & mean of differences are 0.09.

Table 3: Opposition, carry, release, in hand manipulation, bilateral integration, transfer, symmetrical hand use & eye-hand co-ordination before & after participate in hand activities group therapy program

Variable	Pre-test	Post-test	Difference	Mean
	N=32			
Opposition (Child can touch all finger tips by thumb tip like picking up beads)	46	51	5	0.05
Carry (Carrying something from one place to another like carrying the pencil bag)	61	68	7	0.23
Release (Release the object from hand like throwing ball)	59	69	10	0.31
In hand manipulation (Moving objects from finger to palm like opening the cork)	43	46	3	0.09
Bilateral integration (Ability to co-ordinate both side of the body at the same time like string beads)	48	52	4	0.13
Transfer (Transferring the object from one hand to another like transferring bottle from hand to another)	61	68	7	0.22

Symmetrical hand use (The quality of having parts that match each other like throwing a ball, hold the bottle by both hands)	61	70	9	0.28
Eye- hand co-ordination (Coordinated control of eye movement with hand movement like throwing a ball into the basket, string beads)	48	52	4	0.13

This table (3) shows that opposition among cerebral palsy children (n=32), pretest & posttest are 46 & 51, difference of between pre & post –test is 5 & mean of differences are 0.05. In carry pretest & posttest are 61 & 68, difference of between pre & post –test is 7 & mean of differences are 0.23. Release among (n=32) participants, pretest & posttest are 59 & 69, difference of between pre & post –test is 10 & mean of differences are 0.31. In hand manipulation, pretest & posttest are 43 & 46, difference of between pre & post –test is 3 & mean of differences are 0.09. In bilateral integration participants had need 48 & 52 in pre & post-test, difference of between pre & post –test is 4 & mean of differences are 0.13. In transfer among (n=32) participants, pretest & posttest are 61 & 68, difference of between pre & post –test is 7 & mean of differences are 0.22. In symmetrical hand use, pre & post -test among 32 participants had need 61 & 70, difference of between pre & post –test is 9 & mean of differences are 0.28. In eye- hand co-ordination, pre & post-test are 48 & 52, difference of between pre & post –test is 4 & mean of differences are 0.13.

4.3 ADL performance of the child:

Table 1: Child's ADL performance skills before & after participant in hand activities group therapy program

Variable	Pre-test	Post-test	Difference	Mean
Self-care		**N=32**		
1. Feed self-finger foods	54	56	2	0.06
2. Feed self with spoon	54	56	2	0.06
3.Drink from a bottle or cup	56	61	5	0.16
4. Dress upper body	45	48	3	0.09
5. Dress lower body	45	47	2	0.06
6. Brushing teeth	51	53	2	0.06
7. Bathe / clean and tidy self	44	46	2	0.06
8. Use the potty or toilet	44	45	1	0.03
Productivity				
1. Holding a pen/pencil	43	48	5	0.16
2. Draws a line by pencil	41	44	3	0.09
3. Draws a circle by pencil	41	44	3	0.09
4. Writes some alphabet like A, B, C, D	41	44	3	0.09
Leisure				
1. Engage in indoor/outdoor play with toys like throwing ball towards bottle, playing Para suit by using ball, string beads, make some blocks or Legos, can do some arts.	57	65	8	0.25

This table (1) shows that Self-care among cerebral palsy children (n=32), pretest & posttest of feed self-finger foods are 54 & 56, difference of between pre & post –test is 2 & mean of differences are 0.06. In feed self with spoon pretest & posttest are 54 & 56, difference of between pre & post –test is 2 & mean of differences are 0.06. Drink from a bottle or cup among (n=32) participants, pretest & posttest are 56 & 61, difference of between pre & post –test is 5 & mean of differences are 0.16. Dress upper body, pretest & posttest are 45 & 48, difference of between pre & post –test is 3 & mean of differences are 0.09. Dress lower body, pretest & posttest are 45 & 47, difference of between pre & post –test is 2 & mean of differences are 0.06. In bathe / clean and tidy self-participants had need 44 & 46 in pre & post-test, difference of between pre & post –test is 2 & mean of differences are

0.06. In use the potty or toilet among (n=32) participants, pretest & posttest are 44 & 45, difference of between pre & post –test is 1 & mean of differences are 0.03.

Productivity among cerebral palsy children (n=32), pretest & posttest of holding a pen/pencil are 43 & 48, difference of between pre & post –test is 5 & mean of differences are 0.16. In draws a line by pencil pretest & posttest are 41 & 44, difference of between pre & post –test is 3 & mean of differences are 0.09. In draws a circle by pencil pretest & posttest are 41 & 44, difference of between pre & post –test is 3 & mean of differences are 0.09. Writes some alphabet, pretest & posttest are 41 & 44, difference of between pre & post –test is 3 & mean of differences are 0.09.

Leisure among cerebral palsy children (n=32), pretest & posttest are 57 & 65, difference of between pre & post –test is 8 & mean of differences are 0.25.

4.4 Overall result of hand function & ADL performance:

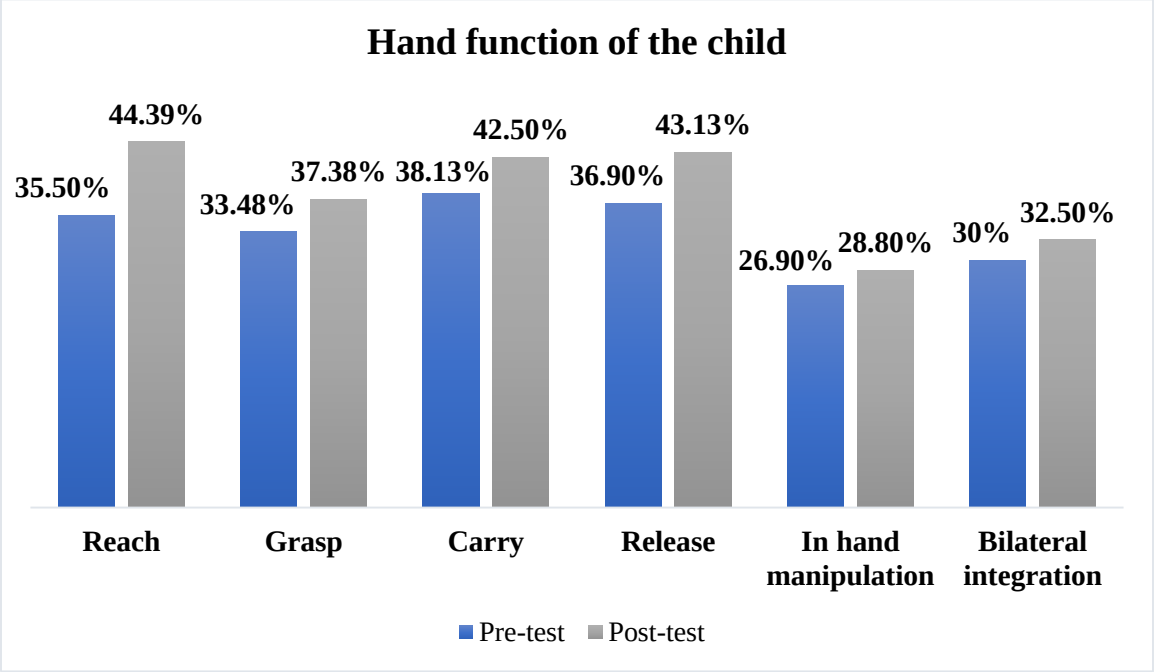


Figure 1: Overall hand function of the child

Figure 1 shows overall result of hand function of the cerebral palsy child. Here, frequency of reach in pre & post- test are 35.50% & 44.39%, grasp in pre & post-test are 33.48% & 37.38%, carry in pre & post-test are 38.13% & 42.50%, release in pre & post-test are 36.90% & 43.13%, in hand manipulation of pre & post-test are 26.90% & 28.80% & bilateral integration of pre & post-test are 30% & 32.50%. Though this figure shows that, Cerebral Palsy children get more improvement in reach, carry, release rather than grasp, in hand manipulation & bilateral integration by taking part in the 2 weeks' hand activities group therapy program.

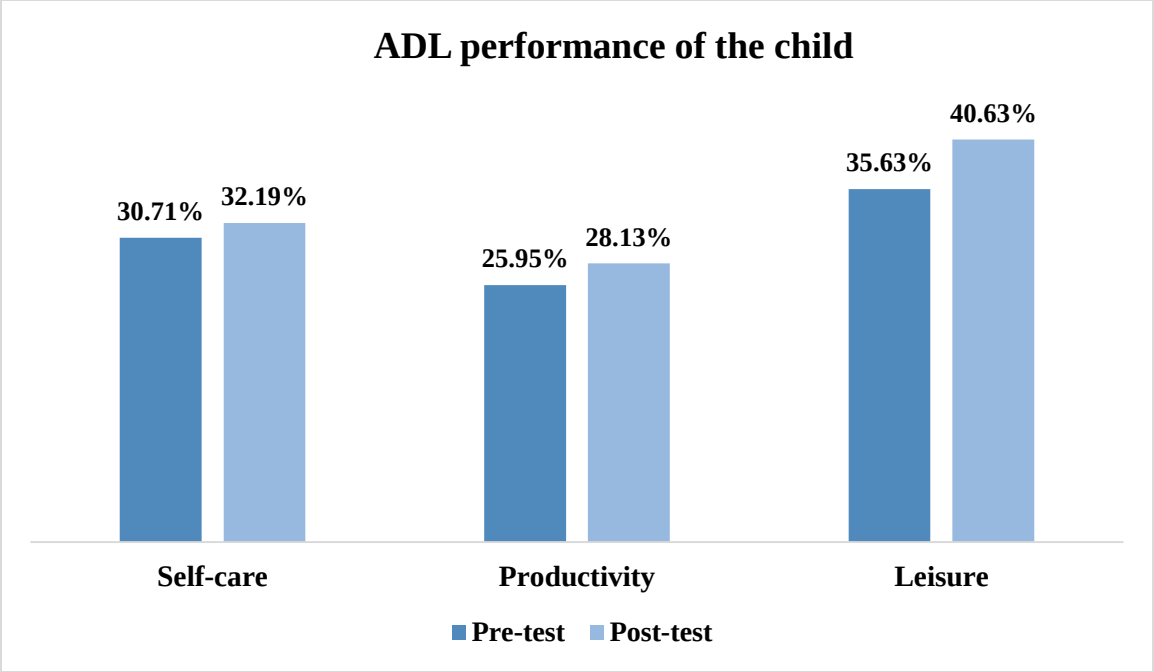


Figure 2: Overall ADL performance of the child

Figure 2 shows overall result of ADL performance of the cerebral palsy child. Here, frequency of self-care in pre & post- test are 30.71% & 32.19%, productivity in pre & post-test are 25.95% & 28.13%, leisure in pre & post-test are 35.63% & 40.63%. Though this figure shows that, Cerebral Palsy children participate in leisure activities rather than self-care & productivity by taking part in the 2 weeks' hand activities group therapy program.

Chapter 5: Discussion and conclusion

5.1 Discussion:

The purpose of this study is to explore the effect of hand activities group therapy program on ADL performance of children with cerebral palsy at Centre for the Rehabilitation of the Paralysed (CRP). Hand activities group therapy was targeted in eight sessions with a 2 - weeks program. Outcome variables were in child's hand function & child's performance. A total of 32 samples were studied, among them 21 respondents were boys & 11 respondents were girls. Besides among 32 samples, 12 respondents were diagnosed as diaplgic,8 were quadriplegic, 5 were hemiplegic, 2 were monoplegia, 4 were athetoid & 1 were ataxic.

To start with the weak points of the study, as this study is center-based, data were collected only from those who have completed the two-week program from the Centre for the Rehabilitation of the Paralysed pediatric unit in a certain time period. The study also didn't reach the children with cerebral palsy treated in other institutions, if there were other treatments in Bangladesh.

After this being mentioned, this study plays a new & unique light on the Bangladesh who have a child with cerebral palsy. Most of the children of this study appeared to be 4-6 (50%) years old. It is important to be able to distinguish between development as an effect of age and development as an effect of treatment. Unfortunately, the knowledge about the natural history of development of hand function in children with cerebral palsy limited, as is the effect of treatment (Eliasson, 2005). Development depended on the severity of hand dysfunction. Children with mild impairment had a fairly good development, while the children with severe impairment had at early age a negative trend in the development measured with the Peabody Developmental test, a norm referenced test describing the overall fine motor development. While the calculation was based on QUEST (Quality of Upper Extremity Skills Test) an impairment based measure of quality of movement there was only minor improvement up to 2-4-year dependent on severity of hand function (Eliasson, 2005).

Reaching is an important pattern for perform daily activities. The children with CP have quiet difficulty in reaching pattern. Reach in pretest & posttest are 60 & 71, difference of between pre & post –test is 11 & mean of differences are 0.34. By using Melbourne Assessment of the Unilateral Upper Limb Function Test (MAULF) and Functional Hand Grip Test (FHGT) assessed hand function & found that hemiplegic patient performed best in the upper limb function test, then diplegic, & lastly quadriplegic (Law et al., 2008). The degree of deformity, spasticity, sensory deficit, and motor control affected the hand function of a cerebral palsy patient significantly.

Grasp is a component of hand skill which is essential for performing any functions. cylindrical grasp of pretest & posttest is 57 & 67, difference of between pre & post –test is 10 & mean of differences are 0.31. In spherical grasp pretest & posttest are 60 & 68, difference of between pre & post –test is 8 & mean of differences are 0.25. Power grasp among (n=32) participants, pretest & posttest are 63 & 70, difference of between pre & post –test is 7 & mean of differences are 0.22. In precision grip, pretest & posttest are 47 & 51, difference of between pre & post –test is 4 & mean of differences are 0.13. In hook grip participants had need 60 & 66 in pre & post-test, difference of between pre & post –test is 6 & mean of differences are 0.19. In disk grasp among (n=32) participants, pretest & posttest are 60 & 68, difference of between pre & post –test is 8 & mean of differences are 0.25. In tip pinch, pre & post -test among 32 participants had need 47 & 52, difference of between pre & post –test is 5 & mean of differences are 0.16. In tripod pinch, pre & post-test are 43 & 48, difference of between pre & post –test is 5 & mean of differences are 0.16. Lateral pinch, pre & post- test among (n=32) participants had need 45 & 48, difference of between pre & post –test is 3 & mean of differences are 0.09.

Carry is an important part when we perform our daily activities like eating, without carrying it is not possible to perform that activity independently. So, only reaching and griping patterns could not ensure the independent performance. In carry pretest & posttest are 61 & 68, difference of between pre & post –test is 7 & mean of differences are 0.23. Release & transfer is one of the components of hand skills which are necessary at the ending of the task. Release in pretest & posttest are 59 & 69, difference of between pre & post –test is 10 & mean of differences are 0.31. In transfer in pretest & posttest are 61 &

68, difference of between pre & post –test is 7 & mean of differences are 0.22. Opposition of pretest & posttest are 46 & 51, difference of between pre & post –test is 5 & mean of differences are 0.05. In hand manipulation, pretest & posttest are 43 & 46, difference of between pre & post –test is 3 & mean of differences are 0.09. In bilateral integration participants had need 48 & 52 in pre & post-test, difference of between pre & post –test is 4 & mean of differences are 0.13. In symmetrical hand use, pre & post -test had need 61 & 70, difference of between pre & post –test is 9 & mean of differences are 0.28. In eye- hand co-ordination, pre & post-test are 48 & 52, difference of between pre & post –test is 4 & mean of differences are 0.13. Wichers, (2009) said that a CP child has a limitation in functional movement; during movements carry is very important part for performing any task.

Self-care pretest & posttest of feed self-finger foods are 54 & 56, difference of between pre & post –test is 2 & mean of differences are 0.06. In feed self with spoon pretest & posttest are 54 & 56, difference of between pre & post –test is 2 & mean of differences are 0.06. Drink from a bottle or cup of pretest & posttest are 56 & 61, difference of between pre & post –test is 5 & mean of differences are 0.16. Dress upper body of pretest & posttest are 45 & 48, difference of between pre & post –test is 3 & mean of differences are 0.09. Dress lower body of pretest & posttest are 45 & 47, difference of between pre & post –test is 2 & mean of differences are 0.06. In bathe / clean and tidy of self-participants had need 44 & 46 in pre & post-test, difference of between pre & post –test is 2 & mean of differences are 0.06. In use the potty or toilet of pretest & posttest are 44 & 45, difference of between pre & post –test is 1 & mean of differences are 0.03.

Productivity of pretest & posttest of holding a pen/pencil are 43 & 48, difference of between pre & post –test is 5 & mean of differences are 0.16. In draws a line by pencil pretest & posttest are 41 & 44, difference of between pre & post –test is 3 & mean of differences are 0.09. In draws a circle by pencil pretest & posttest are 41 & 44, difference of between pre & post –test is 3 & mean of differences are 0.09. Writes some alphabet, pretest & posttest are 41 & 44, difference of between pre & post –test is 3 & mean of differences are 0.09.

Leisure of pretest & posttest are 57 & 65, difference of between pre & post –test is 8 & mean of differences are 0.25.

CP children coordinate their bimanual coordination by compensation with affected hand where non affected hand involved more (Hung et al., 2004). There was not massive change in bilateral integration & eye hand co-ordination during pre & post program. Slight change occurred in symmetrical hand use which was the first need moderate assistance 43.8% (n=14) for some patients & in post- test it was need minimum assistance 37.5% (n=12).

However, early diagnosis & treatment of children with CP is important to optimize the child's potential for development & to prevent secondary disabilities (Smith, 2001). Caregivers plays an important role to provide excessive time & effort in their child's daily care & support in adherence to advice & recommendations for exercising at home from e.g. Occupational, physical & speech therapists (Hwang, et al. 2011). The development of gross motor function in children in CP has only recently been documented. Even less is known about development of fine motor skills in these children. Children with CP have limited potential for improvement of movement patterns (Eliasson,2019). Age is an important determinant of hand function. Normally, hand function develops until the age of 14 then plateaus. Accommodation and fine motor skills improve with age, and then deteriorate during old age. hand function was not dependent on development of fine motor skills alone. Any deformity, spasticity, sensory deficit and impairment in motor control would significantly affect hand function (Law et al., 2008).

Impaired upper limb function affects almost 50% of children with cerebral palsy (CP)1 and is considered the main factor contributing to decreased activity and participation in everyday activities of daily living (ADL). Impairment begins early in life and has the potential to limit activity and participation, causing considerable distress to children with CP, their parents, and carers (Russo, 2006).

overall result of hand function & ADL performance of the cerebral palsy child showed in figure 1 & 2. Here, frequency of reach in pre & post- test are 35.50% & 44.39%, grasp in pre & post-test are 33.48% & 37.38%, carry in pre & post-test are 38.13% & 42.50%,

release in pre & post-test are 36.90% & 43.13%, in hand manipulation of pre & post-test are 26.90% & 28.80% & bilateral integration of pre & post-test are 30% & 32.50%.

In ADL performance, frequency of self-care in pre & post- test are 30.71% & 32.19%, productivity in pre & post-test are 25.95% & 28.13%, leisure in pre & post-test are 35.63% & 40.63%.

The study revealed that Cerebral Palsy children get more improvement in reach, carry, release rather than grasp, in hand manipulation & bilateral integration. In ADL performance children participate in leisure activities rather than self-care & productivity by taking part in the 2 weeks' hand activities group therapy program. Case-Smith found that in-hand manipulation speed, grasp strength, motor accuracy & tool handling was each significantly co related with self-care skills.

Participation in leisure activities has emerged as an important 'outcome' for children with disabilities, with benefits that include fostering friendships, enhancing skill competencies, and developing personal interests and identity. Canadian group found that children with CP exhibited important disruptions in their participation in life situations, particularly in recreational and community-based activities. Little evidence exists as to which attributes are facilitators or barriers to involvement in and enjoyment of leisure activities. Identification of these attributes is important in guiding future programs, services, and policies aimed at enhancing participation. Variables that are emerging as possible determinants are the following: child factors, such as severity of disability; personal factors, such as age, sex, and socioeconomic status; and environmental factors that include parents' education, family preferences, social supports, and environmental resources (Majnemer et. al., 2008).

5.2 Limitation of the study:

Every research has some limitation. In this study also have some limitation & barrier during conducting research work. These are follows:

- A limited study has been conducted outcome of hand group activities therapy & ADL performance for CP children on Bangladeshi perspective, so there is limited information from books, Google search, journal, Pubmed, Hinari and annual reports. Researcher had tried heart and soul to relate the information with the research study like hand function and functional performance.
- The sample size was really very small based on 32 participants, so that result is difficult to generalize among whole population.
- As it is center based study data were collected only those who have completed the two-week program in hand activities group therapy from Centre for the Rehabilitation of the Paralaysed (CRP) pediatric unit but this research does not reach the children with cerebral palsy treated in other institutions.
- Many times patient has not completed the 2 week in –patient program that's why during taking post data patient was not found that's why sample size automatically decreased.
- There was large gap between two sessions that's why researcher get few times to build rapport with patient & caregiver.

5.3 Conclusion:

Now a day, disability is a major concern in Bangladesh. In Bangladesh, there have limited literature on effect of hand activities on ADL performance for CP child. Where this study was aimed to find out the effect of hand activities group therapy program of Cerebral Palsy children through changes in ADL performance after completing two-weeks at CRP. In Bangladesh, only Centre for the Rehabilitation of the Paralysed is providing an In-patient program for children with CP & their caregivers. This study experienced that CRP program is highly effective for improvement of child's capacities & skills. Researcher found that there is a slight change in child's hand function like Reach, grasp (cylindrical, spherical & power grasp), carry, release & transfer after receiving the program. But in some case the

manipulating works (like buttoning and opening cork) have no change in their performance after ending of the program. Also, child's level of ADL's performance like self-care, productivity was bringing slight change depends on child's severity on condition & deformity & also change in child's leisure activities after receiving the treatment. That's why researcher understood that it is very difficult to change the daily activities of the child in such a short time that's why children should continue therapy for a long period of time in order to get marked outcome. So, these finding will help the occupational therapists for building up new strategies for better improvement in child's hand function & also in ADL's performance. Overall the program is really effective for the children with cerebral pals

5.4 Recommendation:

- In further research of the area, the researcher should maintain the study is large samples where more respondents will be involved.
- In further research of the area, the researcher should maintain predetermined data collection schedule consider with another therapist's schedule with mothers of cerebral palsy children.
- Also develop specific hand function scale with related to child's ADL performance scale.
- It is further needed to study the comparison with other CP program like comparison with CRP pediatric outpatient services.
- In collaboration initiative with government & non –government organization for further action for expanding the program for cerebral palsy welfare.

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Appendix -1 (A)

Consent form & Information sheet (English)

BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)

Department of Occupational Therapy

CRP- Chapain, Savar, Dhaka-1343. Tel: 02-7745464-5, 7741404, Fax: 02-774506

Code No:

Participants' Information and Consent sheet

Research Topic: 'Effect of Hand Activities Group Therapy Program on ADL Performance of Children with Cerebral Palsy at Centre for the Rehabilitation of the Paralysed (CRP)'.

Researcher: Zahra Tahsin, BSc. in Occupational Therapy (4th Year), Session 2014-2015, Bangladesh Health Professions Institute (BHPI), Savar, Dhaka-1343.

Supervisor: SK. Moniruzzaman, Associate Professor, Department of Occupational Therapy, Bangladesh Health Professions Institute.

Place of Research: Indoor Paediatric unit, Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343, Bangladesh

Part 1- Information Sheet:

Introduction:

I am Zahra Tahsin studying under the Medical Department of Dhaka University in Bangladesh Health Professions Institute as a student of Honors (2014-2015) 4th year in the Department of Occupational Therapy. To complete BSc in Occupational Therapy from BHPI conduct a research project is mandatory. This research project will be done under the supervision of Sk. Moniruzzaman, Associate Professor of Occupational Therapy. The purpose of the research project is the collection of data and how it will be related to the research and this will be presented to you in detail through this participant paper. If you are willing to participate in this research, in that case the clear idea about the research topic will be easier for decision making. Of course, you do not have to make sure you participate now. Before taking any decision, you can discuss with your relatives, friends or guardian about this. On the other hand, after reading the information sheet if the participant has problem to understand the content or if you need to know more about something, you can freely ask.

Research background and objectives:

You are being invited to be a part of this research because Hand therapy is a part of occupational therapy intervention for improving hand skills pattern. Hand skills pattern develop sequentially in childhood and it is necessary to develop hand skills pattern for performing any ADL. Children with CP whose have developmental delay and also present abnormal tone in extremity could not perform ADLs. They have difficulties in hand skills pattern. The general purpose of the study is to know the effect of hand activities group therapy program of Cerebral Palsy children on ADL performance at CRP. We are hopeful that your effective participation will help to meet the objective of the research.

Let's know about the topic related to participation in this research work:

Before signing the license from you, the details of managing the research project will be presented to you in detail through this participation note. If you want to participate in this study, you will have to sign the agreement. If you do not complete literacy knowledge, or if you fail to provide a signature for another reason, then your thumb impression will be taken in a consent sheet in presence of a witness. If you ensure the participation, a copy of your consent will be given. After a representative of collection data team by the researcher will go to you. At any given time taken from you by a question paper information will be collected. Your participation in this research project is optional. If you do not agree then you do not have to participate. Despite your consent, you can withdraw your participation at any time without giving any explanation to the researcher.

What are the benefits and risks of participation?

You will not get any benefit directly to participate in the research project. Participation in this study can lead to many difficulties in your daily work. However, we are hopeful that the benefits derived from the results of this research will remove the disadvantages. Do not worry about the questions that others may know about your identity, it's a request. Patients name, address will not be included in the data analysis software to reduce the risk of uncover identity.

Confidentiality of information:

By signing this agreement, you are allowing the research staff to study this research project to collect and use your personal resources. Any information gathered for this research project, which can identify you, will be confidential. The information collected about you will be mentioned in a symbolic way. Only the concerned researchers and their supervisor will be able to access this information directly. Symbolic ways identified data will be used for the next data analysis. Information sheets will be kept into a locked drawer. Electronic version of data will be collected in BHPI's Occupational Therapy department and researcher's personal laptop. It is expected that the results of this research project will be published and presented in different forums. In any publication and presentation, the information will be provided in such a way that you cannot be identified in any way without your consent. Data will be initially collected in papers.

Information about promotional results:

The results of this study will be published in various social media, websites, conferences, discussions and reviewed journals.

Participants' fees:

There is no stimulus and remuneration arrangement for participation in this study.

Source of funding to manage research:

The cost of this research will be spent entirely by researchers own funds. This study will be done in small areas and no money will come from external source

Information about withdrawal from participation:

Despite your consent, you can withdraw your participation at any time without giving any explanation to the researcher. If the information can be used after the cancellation, its permission will be mentioned in the participant's withdrawal letter (Applicable only for voluntary withdrawal).

Contact address with the researcher:

If you have any questions about the research project or if you have any questions about the research project, you can ask it anytime now or later. In that case, you can contact the number assigned to the researcher 01689967127 (Zahra Tahsin).

Complaint:

If there is any complaint regarding the conduct of this research project, contact this number with the Association of Ethics (7745464-5). This research project has been reviewed and approved by the CRP-BHPI/IRB/10/18/1266 from the Bangladesh Health Professions Institute, Savar's Educational Ethics Council.

Participant's Withdrawal letter

(Applicable only for voluntary withdrawal)

Participant's Name:

Reason for Withdrawal:

Whether permission to previous information is used?

Yes/Not

Participant's Name:

Participant's Signature & Date:

*If illiterate

Participant fingerprint

Witness's Name:

Witness's Signature & Date:

Part 2- Consent form:

I have been invited to participate in the research titled Effect of Hand Activities Group Therapy Program on ADL Performance of Children with Cerebral Palsy at Centre for the Rehabilitation of the Paralysed (CRP). I have read the previous letter or it has been read to me. There was an opportunity to ask my questions about this and I got a satisfactory answer to all the questions. I voluntarily agree to be a participant in this study.

Participant Name:

Participant Signature: Date:

*If illiterate

Participant fingerprint

Witness's Name:

Witness's Signature: Date:

Researcher & Consenting person's statement:

I have read the participant's information form to the participant and according to my maximum capacity; the participants understand that the following topics will be done:

1) All the information will be used in research work
2) Information will be totally confidential
3) Participant's name and identity will not be published

I am sure that the participant has been given the opportunity to ask questions about this topic and the accurate answer to these questions has been given as per my maximum capacity. I am convinced that no person has been compelled to give consent. He or she has freely or voluntarily agreed.

A copy of Participant's information and consent sheet has given to the participant

Researcher Name:

Researcher Signature: Date

Appendix -1 (B)

Consent form & Information sheet (Bangla)

বাংলাদেশ হেল্‌থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)

অকুপেশনাল থেরাপি বিভাগ

সিআরপি– চাপাইন, সাভার, ঢাকা–১৩৪৩. টেলি: ০২-৭৭৪৫৪৬৪–৫,৭৭৪১৪০৪, ফ্যাক্স: ০২-৭৭৪৫০৬

কোড নং:

অংশগ্রহণকারীদের তথ্য এবং সম্মতিপত্র

গবেষনার বিষয়: "সেরিব্রাল পালসি বাচ্চাদের দৈনন্দিন জীবনে কার্যক্রম করতে হ্যান্ড থেরাপির কার্যকারিতা পরিমাপ করা।"

গবেষক: জাহরা তাহছিন, বি.এস.সি ইন অকুপেশনাল থেরাপি (৪র্থ বর্ষ), সেশন: ২০১৪-২০১৫ ইং, বাংলাদেশ হেলথ্ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই), সাভার, ঢাকা- ১৩৪৩

তত্ত্বাবধায়ক: এস. কে মনিরুজ্জামান, সহকারী অধ্যাপক, অকুপেশনাল থেরাপি বিভাগ, বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট।

গবেষনার স্থান: অন্তঃশিশু বিভাগ, পক্ষাঘাতগ্রস্থদের পুনর্বাসন কেন্দ্র (সিআরপি), সাভার, ঢাকা-১৩৪৩, বাংলাদেশ।

পর্ব ১ তথ্যপত্র:

ভূমিকা:

আমি জাহরা তাহছিন , ঢাকা বিশ্ববিদ্যালয়ে চিকিৎসা অনুষদের অধীনে বাংলাদেশ হেল্‌থ প্রফেশনস ইনস্টিটিউটে বি.এস.সি.ইন অকুপেশনাল থেরাপি বিভাগে ৪র্থ বর্ষের ছাত্রী হিসেবে স্নাতক শিক্ষাকার্যক্রম (২০১৪-২০১৫ ইং) সেশনে অধ্যয়নরত আছি। বিএইচপিআই থেকে অকুপেশনাল থেরাপি বি.এস.সি শিক্ষাকার্যক্রমটি সম্পন্ন করার জন্য একটি গবেষনা প্রকল্প পরিচালনা করা বাধ্যতামূলক। এই গবেষণা প্রকল্পটি অকুপেশনাল থেরাপি বিভাগের সহকারী অধ্যাপক এস.কে মনিরুজ্জামান এর তত্ত্বাবধায়নে সম্পন্ন করা হবে। এই অংশগ্রহনকারী তথ্যপত্রের মাধ্যমে গবেষণার প্রকল্পটির উদ্দেশ্য, উপাত্ত সংগহের প্রণালী ও গবেষণাটির সাথে সংশ্লিস্ট বিষয় কিভাবে রক্ষিত হবে তা বিস্তারিতভাবে আপনার কাছে উপস্থাপন করা হবে। যদি এই গবেষণায় অংশগ্রহন করতে আপনি ইচ্ছুক থাকেন, সেক্ষেত্রে এই গবেষণার সম্পৃক্ত বিষয় সম্পর্কে স্বচ্ছ ধারনা থাকলে সিদ্ধান্ত গ্রহন সহজতর হবে। অবশ্য এখন আপনার অংশগ্রহন আমাদের নিশ্চিত করতে হবে না। যে কোন সিদ্ধান্ত গ্রহনের পূর্বে, যদি চান তাহলে আপনার আত্মীয়-স্বজন, বন্ধু অথবা আস্থাভাজন যেকারো সাথে এই ব্যাপারে আলোচনা করে নিতে পারেন। অপরপক্ষে, অংশগ্রহনকারী তথ্যপত্রটি পড়ে, যদি কোন বিষয়বস্তু বুঝতে সমস্যা হয় অথবা যদি কোন কিছু সম্পর্কে আরো বেশি জানার প্রয়োজন হয়, তবে নির্দ্বিধায় প্রশ্ন করতে পারেন।

গবেষনার প্রেক্ষাপট ও উদ্দেশ্যঃ

এই গবেষনাতে পক্ষাঘাতগ্রস্থদের পুনর্বাসন কেন্দ্রে চিকিৎসাধীন হ্যান্ড থেরাপিতে অংশগ্রহণকারী সেরিব্রাল পালসি বাচ্চা ও তার মায়েদের অন্তর্ভুক্ত হবার জন্য আমন্ত্রন জানানো হবে। এর অংশ হিসেবে , আপনাকেও উক্ত গবেষণা প্রকল্পে অংশগ্রহনের জন্য আমন্ত্রন জানানো হলো। কারন, আপনি নিশ্চয়ই অবগত আছেন যে, হ্যান্ড থেরাপি হচ্ছে অকুপেশনাল থেরাপির চিকিৎসার একটি অংশ যা হাতের কাজের দক্ষতার উন্নতি করে থাকে। হাতের কাজের দক্ষতা শৈশবকাল হতেই ক্রমানুসারে বিকাশ হয়ে থাকে যা দৈনন্দিন জীবনে কার্যক্রম সম্পাদনের জন্য যথাযথ ভুমিকা পালন করে থাকে। সেরিব্রাল পালসি বাচ্চাদের যাদের শারীরিক ও মানসিক বাধাগ্রস্ততা থাকে এবং অস্বাভাবিক শারীরিক দৃঢ়তা রয়েছে তারা দৈনন্দিন জিবনে কার্যক্রম সম্পাদন করতে পারে না। তাদের হাতের কাজের দক্ষতাতেও অসুবিধা হয়ে থাকে। গবেষণার উদ্দেশ্য হল-সেরিব্রাল পালসি বাচ্চাদের দৈনন্দিন জীবনে কার্যক্রম করতে হ্যান্ড থেরাপির কার্যকারিতা পরিমাপ করা। আপনার কার্যকর অঅংশগ্রহণ গবেষণার উদ্দেশ্য পূরণে সহায়তা করবে বলে আমরা আশাবাদি।

এই গবেষনা কর্মটিতে অংশগ্রহনের সাথে সম্পৃক্ত বিষয়সমূহ কি সে সম্পর্কে জানা যাক।

আপনার থেকে অনুমতিপত্রে স্বাক্ষর নেবার আগে, এই অংশগ্রহনকারী তথ্যপত্রের মাধ্যমে গবেষনা প্রকল্পটির পরিচালনা করার তথ্যসমূহ বিস্তারিত ভাবে আপনার কাছে উপস্থাপন করা হবে। আপনি যদি এই গবেষনায় অংশগ্রহন করতে চান, তাহলে সম্মতিপত্রে আপনাকে স্বাক্ষর করতে হবে। আপনি যদি সাক্ষর জ্ঞান সম্পন্ন না হন বা অন্য কোন কারনে স্বাক্ষর প্রদানে ব্যর্থ হন, সেক্ষেত্রে আপনার কাছ থেকে একজন স্বাক্ষীর উপস্থিতিতে বৃদ্ধাঙ্গুলির ছাপ সম্মতি পত্রে নেওয়া হবে। আপনি অংশগ্রহন নিশ্চিত করলে, আপনার সংরক্ষনের জন্য সম্মতিপত্রটির একটি অনুলিপি দিয়ে দেয়া হবে। পরবর্তীতে গবেষক কর্তৃক গঠিত তথ্য-উপাত্ত সংগ্রহের একটি দলের প্রতিনিধি আপনার কাছে যাবে। আপনার থেকে চেয়ে নেওয়া যে কোন একটি নির্দিষ্ট সময়ে একটি প্রশ্নপত্রের মাধ্যমে তথ্য সংগ্রহ করা হবে। এই গবেষনার প্রকল্পে আপনার অংশগ্রহণ ঐচ্ছিক। যদি আপনি সম্মতি প্রদান না করেন তবে আপনাকে অংশগ্রহন করতে হবে না। আপনি সম্মতি প্রদান করা স্বত্ত্বেও যে কোন সময় গবেষককে কোন ব্যাখ্যা প্রদান করা ছাড়াই নিজের অংশগ্রহন প্রত্যাহার করতে পারবেন।

অংশগ্রহনের সুবিধা ও ঝুঁকিসমূহ কি ?

গবেষনা প্রকল্পটিতে অংশগ্রহনের জন্য আপনি কিংবা আপনার বাচ্চা সরাসরি কোন সুবিধা পাবেন না।এই গবেষণায় অংশগ্রহনে আপনার দৈনন্দিন কাজে সাময়িক অসুবিধা হতে পারে। তবে আমরা আশাবাদী যে, এই গবেষণার ফলাফল থেকে প্রাপ্ত উপকারিতা এই অসুবিধাকে অতিক্রম করবে। যেসমস্ত প্রশ্নের মাধ্যমে আপনার পরিচয় বা আপনার বাচ্চার সর্ম্পকে অন্যরা জানতে পারে, সেই বিষয়ে উদ্বিগ্ন না হবার জন্য অনুরোধ করা হচ্ছে। অংশগ্রহণকারীর নাম, ঠিকানা উপাত্ত বিশ্লেষণের সফটওয়্যারে উল্লেখ না করে পরিচয় উন্মুক্ত হবার ঝুঁকি কমানো হবে।

তথ্যের গোপনীয়তা কি নিশ্চিত থাকবে?

এই সম্মতিপত্রে স্বাক্ষর করার মধ্য দিয়ে, আপনি এই গবেষনা প্রকল্পে অধ্যয়নরত গবেষনা কর্মীকে আপনার এবং আপনার বাচ্চার ব্যক্তিগত তথ্য সংগ্রহ ও ব্যবহার করার অনুমতি দিয়েছেন। এই গবেষনা প্রকল্পের জন্য সংগৃহীত যেকোন তথ্য, যা আপনাকে ও আপনার বাচ্চাকে সনাক্ত করতে পারে তা গোপনীয় থাকবে। আপনার বাচ্চার সম্পর্কে সংগৃহীত তথ্যসমূহ সাংকেতিক উপায়ে উল্লেখ থাকবে। শুধুমাত্র এর সাথে সরাসরি

সংশ্লিষ্ট গবেষক ও তার তত্ত্বাবধায়ক এই তথ্যসমূহে প্রবেশাধিকার পাবেন। সাংকেতিক উপায়ে চিহ্নিত উপাত্ত সমূহ পরবর্তী উপাত্ত বিশ্লেষনের কাজে ব্যবহৃত হবে। তথ্যপত্রগুলো তালাবদ্ধ ড্রয়ারে রাখা হবে। বিএইচপিআই এর অকুপেশনাল থেরাপি বিভাগে ও গবেষকের ব্যক্তিগত ল্যাপটপে উপাত্তসমূহের ইলেকট্রনিক ভার্সন সংগৃহীত থাকবে।

প্রত্যাশা করা হচ্ছে যে, এই গবেষণা প্রকল্পের ফলাফল বিভিন্ন ফোরামে প্রকাশিত এবং উপস্থাপিত হবে। যে কোন ধরনের প্রকাশনা ও উপস্থাপনার ক্ষেত্রে তথ্যসমূহ এমন ভাবে সরবরাহ করা হবে, যেন আপনার সম্মতি ছাড়া আপনার বাচ্চাকে কোন ভাবেই সনাক্ত করা না যায়। তথ্য-উপাত্ত প্রাথমিক ভাবে কাগজপত্র সংগ্রহ করা হবে ।

ফলাফল প্রচার সর্ম্পকিত তথ্য

এই গবেষনার ফলাফল বিভিন্ন সামাজিক মাধ্যম, ওয়েবসাইট, সম্মেলন, আলোচনাসভায় এবং পর্যালেচিত জার্নালে প্রকাশ করা হবে।

অংশগ্রণকারীর পারিশ্রমিক

এই গবেষণায় অংশগ্রহনের জন্য কোন উদ্দীপনা ও পারিশ্রমিক দেবার ব্যবস্থা নেই।

গবেষণা পরিচালনার ব্যয়কৃত অর্থের উৎস

এই গবেষণাটির খরচ সম্পূর্ণ গবেষকের নিজস্ব তহবিল থেকে ব্যয় করা হবে। এই গবেষণাটি ছোট পরিসরে করা হবে এবং এখানে কোন অর্থ বহিরাগত উৎস থেকে আসবে না।

অংশগ্রহণ থেকে প্রত্যাহার সর্ম্পকিত তথ্যসমূহ

আপনি সম্মতি প্রদান করা স্বত্তেও যে কোন সময় গবেষককে কোন ব্যাখ্যা প্রদান করা ছাড়াই নিজের অংশগ্রহন প্রত্যাহার করতে পারবেন। বাতিল করার পর তথ্যসমূহ কি ব্যবহার করা যাবে কি যাবেনা তার অনুমতি অংশগ্রহণকারীর প্রত্যাহারপত্রে (শুধুমাত্র স্বেচ্ছায় প্রত্যাহারকারীর জন্য প্রযোজ্য) উল্লেখ করা থাকবে।

গবেষকের সাথে যোগাযোগের ঠিকানা

গবেষনা প্রকল্পটির বিষয়ে যোগাযোগ করতে চাইলে অথবা গবেষনা প্রকল্পটির সর্ম্পকে কোন প্রশ্ন থাকলে,এখন অথবা পরবর্তীতে যে কোন সময়ে তা জিজ্ঞাসা করা যাবে। সেক্ষেত্রে আপনি গবেষকের সাথে উল্লেখিত ০১৬৮৯৯৬৭১২৭ (জাহরা তাহছিন) নাম্বারে যোগাযোগ করতে পারেন।

অভিযোগ

এই গবেষনা প্রকল্প পরিচালনা প্রসঙ্গে যেকোন অভিযোগ থাকলে প্রাতিষ্ঠানিক নৈতিকতা পরিষদের সাথে এই নাম্বারে (৭৭৪৫৪৬৪-৫) যোগাযোগ করবেন। এই গবেষনা প্রকল্পটি বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট, সাভারের প্রাতিষ্ঠানিক নৈতিকতা পরিষদ থেকে সিআরপি-বিএইচপিআই/আইআরবি/১০/১৮/১২৬৬ পর্যালোচিত ও অনুমোদিত হয়েছে।

অংশগ্রহণকারীর প্রত্যাহার পত্র

(শুধুমাত্র স্বেচ্ছায় প্রত্যাহারকারীর জন্য প্রযোজ্য)

অংশগ্রহনকারীর নাম: .....

প্রত্যাহার করার কারন:

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পূর্ববর্তী তথ্য ব্যবহারের অনুমতি থাকবে কিনা?

হ্যাঁ/না

অংশগ্রহনকারীর নাম:

অংশগ্রহনকারীর স্বাক্ষর: তারিখ:

যদি নিরক্ষর হয়-

অংশগ্রহণকারীর আঙ্গুলের ছাপ

স্বাক্ষীর নাম:

স্বাক্ষীর স্বাক্ষর: তারিখ:

কোড নংঃ

পর্ব :০২ সম্মতি পত্র

"সেরিব্রাল পালসি বাচ্চাদের দৈনন্দিন জীবনে কার্যক্রম করতে হ্যান্ড থেরাপির কার্যকারিতা পরিমাপ করা।"- শীর্ষক গবেষনায় অংশগ্রহনের জন্য আমাকে আমন্ত্রন জানানো হয়েছে। আমি পূর্বলিখিত তথ্য পত্রটি পড়েছি বা এটা আমাকে পড়ে শোনানো হয়েছে। এই বিষয়ে আমার প্রশ্ন জিজ্ঞাসা করার সুযোগ ছিল এবং যে কোন প্রশ্নের আমি সন্তুষ্টজনক উত্তর পেয়েছি। এই গবেষনায় একজন অংশগ্রহনকারী হবার জন্য আমি স্বেচ্ছায় সম্মতি দিচ্ছি।

অংশগ্রহনকারীর নাম:
অংশগ্রহনকারীর স্বাক্ষর: তারিখ:

যদি নিরক্ষর হয়-

অংশগ্রহণকারীর আঙ্গুলের ছাপ

স্বাক্ষীর নাম:
স্বাক্ষীর স্বাক্ষর: তারিখ:

গবেষক ও সম্মতিকারীর বিবৃতিঃ

আমি অংশগ্রহনকারীকে অংশগ্রহনকারীর তথ্যপত্রটি পড়ে শুনিয়েছি এবং আমার সর্বোচ্চ সামর্থ অনুযায়ী নিশ্চিত করেছি যে, অংশগ্রহনকারীর বোধগম্য হয়েছে যে, নিম্নোক্ত বিষয়সমূহ করা হবে।

১) সকল তথ্য গবেষণার কাজে ব্যবহৃত হবে।
২) তথ্যসমূহ সম্পূর্ণভাবে গোপনীয় করা হবে।
৩) অংশগ্রহনকারীর নাম ও পরিচয় প্রকাশ করা হবে না।

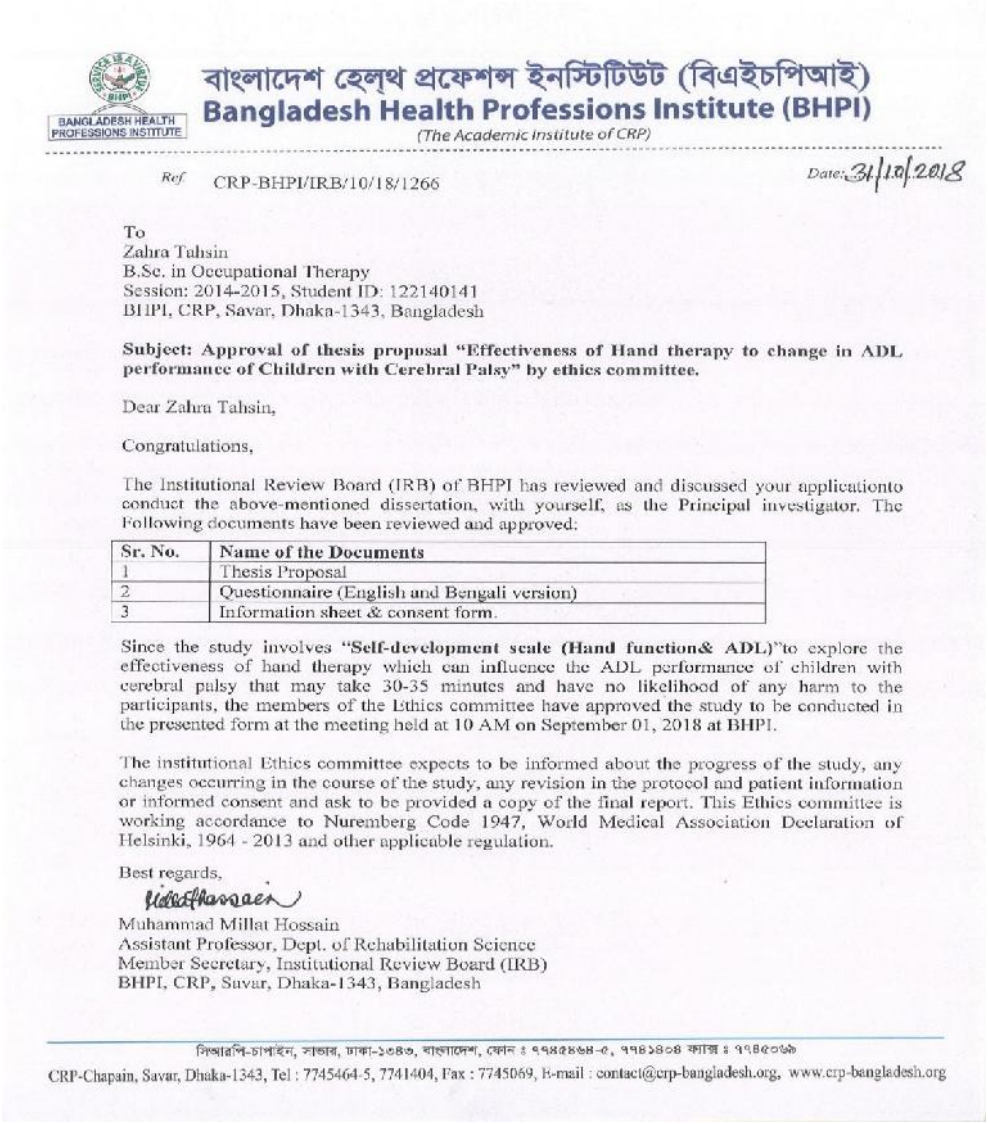
আমি নিশ্চিত করেছি যে, এই বিষয় সর্ম্পকে অংশগ্রহনকারীকে প্রশ্ন জিজ্ঞাসা করার সুযোগ দেয়া হয়েছে এবং অংশগ্রহনকারী যে সকল প্রশ্ন জিজ্ঞাসা আমার সর্বোচ্চ সামর্থ অনুযায়ী, সেগুলোর সঠিক উত্তর প্রদান করা সম্ভব হয়েছে। আমি নিশ্চিত করেছি যে, কোন ব্যক্তিকে সম্মতি দান করতে বাধ্য করা হয়নি। তিনি অবাধে অথবা স্বেচ্ছায় সম্মতি দিয়েছেন।

অংশগ্রহনকারীকে অংশগ্রহনকারীর তথ্য ও সম্মতিপত্রের একটি অনুলিপি দেওয়া হয়েছে।

গবেষকের নাম:
গবেষকের স্বাক্ষর : তারিখ:

Appendix-2

Approval latter of Institutional Review Board (IRB)



বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
Bangladesh Health Professions Institute (BHPI)
(The Academic Institute of CRP)

Ref CRP-BHPI/IRB/10/18/1266

Date: 31.10.2018

To
Zahra Tahsin
B.Sc. in Occupational Therapy
Session: 2014-2015, Student ID: 122140141
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of thesis proposal "Effectiveness of Hand therapy to change in ADL performance of Children with Cerebral Palsy" by ethics committee.

Dear Zahra Tahsin,

Congratulations,

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your applicationto conduct the above-mentioned dissertation, with yourself, as the Principal investigator. The Following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Thesis Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form.

Since the study involves **"Self-development scale (Hand function& ADL)"**to explore the effectiveness of hand therapy which can influence the ADL performance of children with cerebral palsy that may take 30-35 minutes and have no likelihood of any harm to the participants, the members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 10 AM on September 01, 2018 at BHPI.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain
Assistant Professor, Dept. of Rehabilitation Science
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ, ফোন : ৭৭৪৫৪৬৪-৫, ৭৭৪১৪০৪ ফ্যাক্স : ৭৭৪৫০৬৯
CRP-Chapain, Savar, Dhaka-1343, Tel : 7745464-5, 7741404, Fax : 7745069, E-mail : contact@crp-bangladesh.org, www.crp-bangladesh.org

Appendix -3

Permission later for conducting study

October 31,2018
The Chairman
Institutional Review Board (IRB)
Bangladesh Health Professions Institute (BHPI)
CRP- Chapain, Savar, Dhaka- 1343, Bangladesh

Subject: Application for review and ethical approval

Sir,

With due respect I would like to draw your kind attention that I am a student of 4th year B.Sc. in Occupational Therapy course at Bangladesh Health Professions Institute. For the requirement of my course curriculum I have to conduct a research project. My research title is **"Effectiveness of Hand therapy to change in ADL performance of Children with Cerebral Palsy"** that will be supervised by Sk. Moniruzzaman , Assistant Professor, Department of Occupational Therapy, BHPI, CRP. The purpose of the study is to explore the effectiveness of hand therapy which can influence the ADL performance of children with cerebral palsy. **"Self-development scale (Hand function & ADL)"** will be used by face to face and/or telephone interview. That will take about 30-45 minutes. Related information will be collected from the participant. The study will not be cause of any harm to the participant. Data collectors will receive informed consents from all participants as written record. Any kind of collected data will be kept confidential.

Therefore, I look forward to having your kind approval for the research proposal and to data collection. I also assure you that I will maintain all the requirements for study.

Sincerely yours,
Zahra
.....
Zahra Tahsin
Session: 2014-2015
Student ID: 122140141
4th Year Student of B. Sc in Occupational Therapy,
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

Recommendation from the thesis supervisor:
Sk. Moniruzzaman 31/10/2018
Assistant Professor
Dept. of Occupational Therapy,
BHPI, CRP- Chapain, Savar, Dhaka- 1343

Appendix -4 (A)

Socio-demographic questionnaire (English)

1. General questions & Observation checklist:

Participant name: **Date of data collection:** | | | | | | |

Participant code | | | | **no:**

Name of admitted child:

Address: Village: **Zilla:** **Thana:** **Post office:**

S. N	Questions	Coding categories	Code
1.1	How old is your child?	4 years=1 5 years=2 6 years=3 7 years=4 8 years=5 9 years=6 10 years=7	☐
1.2	Gender	Boy=1 Girl=2	☐
1.3	Educational status of mother-	Less than primary=1 Primary completed=2 Less than secondary=3 Secondary completed=4 Higher secondary completed=5 Graduation completed=6 Above graduation=7 Illiterate=8	☐
1.4	Occupation of mother	Housewife=1 Student=2 Employee=3 Business=4	☐
1.5	Marital status	Married=1 Divorced=2 Widow=3	☐

1.6	Educational status of father	Less than primary=1 Primary completed=2 Less than secondary=3 Secondary completed=4 Higher secondary completed=5 Graduation completed=6 Above graduation=7 Illiterate=8	
1.7	Occupation of father	Farmer=1 Employee=2 Day laborer=3 Businessman=4	
1.8	Living area	Rural=1 Urban=2 Semi-rural=3	
1.9	Does he/she have any siblings?	Yes=1 No=2	
1.10	What is your child's number?	First=1 Second=2 Third=3 Fourth=4 More =5	
2.1	Does your other child's have any disability?	Yes=1 No=2	
2.2	Number of family members	1-5=1 6-8=2 >8=3	

2.3	Source of income generation of the family	Father =1 Mother=2 Both=3 Others=4	
2.4	Approximate income in each month-	5,000 or below the 5,000 =1 10,000 =2 15,000=3 20,000=4 25,000=5 30,000 and above 30,000=6	
2.5	Diagnosis	Quadriplegic=1 Diplegic=2 Hemiplegic=3 Monoplegia=4 Athetoid=5 Ataxic=6	
2.6	Which hand does your child use more?	Right=1 Left=2	
2.7	In which hand your child face difficulty?	Right=1 Left=2 Both=3	

Appendix -4 (B)

Socio-demographic questionnaire (Bangla)

অংশগ্রহণকারীর তথ্য

১। প্রাথমিক প্রশ্নাবলী ও পর্যবেক্ষণ চেকলিস্ট:

অংশগ্রহণকারীর নামঃ **তথ্য নেয়ার তারিখঃ** | | | | | | |

অংশগ্রহণকারীর কোড | | | | **নাম্বারঃ**

ভর্তি শিশুর নামঃ

ঠিকানাঃ গ্রামঃ **জেলাঃ** **থানাঃ** **পোস্ট অফিসঃ**

সিরিয়াল নম্বর	প্রশ্ন	সংকেতবদ্ধ ক্যাটাগরি	সংকেত
১.১	আপনার বাচ্চার বয়স কত?	৪ বছর =১ ৫ বছর=২ ৬ বছর =৩ ৭ বছর =৪ ৮বছর=৫ ৯বছর=৬ ১০ বছর=৭	☐
১.২	লিঙ্গ	ছেলে=১ মেয়ে =২	☐

১.৩	মায়ের শিক্ষাগত যোগ্যতা	প্রাথমিক থেকে কম=১ প্রাথমিক সম্পন্ন=২ মাধ্যমিকের থেকে কম সম্পন্ন=৩ মাধ্যমিক সম্পন্ন=৪ উচ্চ মাধ্যমিক সম্পন্ন=৫ স্নাতক সম্পন্ন=৬ স্নাকত্তর=৭ অশিক্ষিত=৮	
১.৪	পেশা	গৃহিণী=১ কর্মজীবী=২ শিক্ষার্থী=৩ ব্যবসা=৪	
১.৫	বৈবাহিক অবস্থা	বিবাহিত =১ তালাকপ্রাপ্ত=২ বিধবা=৩	
১.৬	বাবার শিক্ষাগত যোগ্যতা	প্রাথমিক থেকে কম=১ প্রাথমিক সম্পন্ন=২ মাধ্যমিকের থেকে কম সম্পন্ন=৩ মাধ্যমিক সম্পন্ন=৪ উচ্চ মাধ্যমিক সম্পন্ন=৫ স্নাতক সম্পন্ন=৬ স্নাকত্তর=৭ অশিক্ষিত=৮	
১.৭	বাবার পেশা	কৃষক=১ কর্মজীবী=২ দিনমজুর=৩ ব্যবসা=৪	

১.৮	বসবাসের স্থান	শহর=১ অর্ধ- শহর/ ছোট শহর=২ গ্রাম=৩	
১.৯	তার কি কোন ভাই/বোন আছে?	হ্যাঁ=১ না=২	
১.১০	আপনার এটা কততম বাচ্চা?	প্রথম=১ দ্বিতীয়=২ তৃতীয়=৩ চতুর্থ=৪ আরও অধিক=৫	
২.১	আপনার অন্য কোন বাচ্চার কি অক্ষমতা আছে?	হ্যাঁ=১ না=২	
২.২	পরিবারে সদস্য সংখ্যা	১-৫=১ ৬-৮=২ ৮ এর বেশী=৩	
২.৩	পরিবারে উপার্জনকারী কে?	বাবা=১ মা=২ দুজনই=৩ অন্যান্য=৪	

২.৪	পরিবারের মাসিক আয়	৫,০০০/- অথবা তার থেকে কম =১ ১০,০০০/-=২ ১৫,০০০/-=৩ ২০,০০০/-=৪ ২৫,০০০/-=৫ ৩০,০০০/- অথবা তার থেকে বেশী =৬	☐
২.৫	পরীক্ষণ	কোয়াড্রিপ্লেজিক =১ ডায়াপ্লেজিক =২ হেমিপ্লেজিক=৩ মনোপ্লেজিক =৪ এথেটয়েড =৫ এটাক্সিক =৬	☐
২.৬	আপনার বাচ্চা কোন হাত বেশি ব্যবহার করে?	ডান=১ বাম=২	☐
২.৭	আপনার বাচ্চার কোন হাতে সমস্যা?	ডান=১ বাম=২ উভয়ই=৩	☐

Appendix -5 (A)

Self- development hand function & Child's ADL performance scale (English)

Caregiver assistance scale score:

Reach	Coding categories	1st ax	2nd ax
To extend the hand for reaching something like ball, bottle	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Grasp			
Cylindrical grasp (pick up & hold large object like grasping bottle**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Spherical (rapid first closer & release like griping the tennis ball**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Power grasp (carrying or grasping task where the fingers flex towards the palm like griping the stick**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Precision grasp (manipulate objects with opposition by using fingers like picking up salt**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Hook grip (carrying the bag**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Disk grasp (holding the object according to the size like holding the container coverage**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐

Pinch			
Tip pinch (pinch between the index finger & thumb like grip the marble, button**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Palmar pinch (pinch between the pads of thumb, the pad of the index & middle fingers like grip the pencil**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Lateral pinch (as like as holding the key**)**	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Opposition			
Child can touch all finger tips by thumb tip like picking up beads.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Carry			
Carrying something from one place to another like carrying the pencil bag.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Release			
Release the object from hand like throwing ball.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
In hand manipulation			
Moving objects from finger to palm like opening the cork.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐

Bilateral integration			
Ability to co-ordinate both side of the body at the same time like string beads.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Transfer			
Transferring the object from one hand to another like transferring bottle from hand to another.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Symmetrical hand use			
The quality of having parts that match each other like throwing a ball, hold the bottle by both hands.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Eye- hand co-ordination			
Coordinated control of eye movement with hand movement like throwing a ball into the basket, string beads.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Score			

Child's ADL performance scale (English)

Does the child	Coding categories	1st ax	2nd ax
1. Feed self-finger foods	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
2.Feed self with spoon	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
3.Drink from a bottle or cup	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
4.Dress upper body	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
5.Dress lower body	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
6.Brushing teeth	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
7.Bathe / clean and tidy self	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
8.Use the potty or toilet	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
9.Holding a pen/pencil	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
10.Draws a line by pencil	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
11.Draws a circle by pencil	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
12.Writes some alphabet like A, B, C, D,	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐

Does the child	**Coding categories**	**1st ax**	**2nd ax**
13.Engage in indoor/outdoor play with toys like throwing ball towards bottle, playing Para suit by using ball, string beads, make some blocks or Legos, can do some arts.	Independent = **5,** Supervision = **4,** Minimum assistance = **3,** Moderate assistance =**2,** Maximum assistance = **1,** Total assistance = **0**	☐	☐
Score			

Appendix -5 (B):

Self- development hand function & Child's performance scale (Bangla)

স্ব -উন্নত হ্যান্ড ফাংশন এবং বাচ্চার দৈনন্দিন জীবনের অংশগ্রহন পরিমাপক

কেয়ার গিভার এ্যাসিসটেন্সস স্কেল স্কোর:

নাগালে পাওয়া	সংকেতবদ্ধ ক্যাটাগরি	১ম মূল্যায়ন	২য় মূল্যায়ন
কোন জিনিস ধরার জন্য যেমন বোতল, বল ধরার জন্য হাত বাড়ানো।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
মুষ্টি করা			
সিলিন্ডার আকৃতির ন্যায় মুষ্টি করা-কোনো বড় বস্তু যেমন বোতল তোলা এবং ধরে রাখা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
গোল মুষ্টি- টেনিস বল ধরার ন্যায় দ্রুত হাত মুষ্টি করা এবং হাত খোলা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
শক্তিশালী মুষ্টি - কোনো কিছু বহন বা মুষ্টিবদ্ধ করা যেখানে আঙ্গুলগুলো হাতের তালুর দিকে ভাঁজ হয়ে থাকে যেমন লাঠি ধরা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
সূক্ষ্ম-স্পষ্ট মুষ্টি- চিমটি দিয়ে তোলার ন্যায় কোনো বস্তু ধরা যেমন লবন তোলা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐

আঙটার ন্যায় মুষ্টি- ব্যাগ বহন করা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
চাকতির ন্যায় মুষ্টি- কোনো বস্তুর আকার অনুযায়ী ধরা যেমনটা একটি পাত্রের সাইজের ঢাকনা ধরা হয়।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
চিমটির ন্যায়	**সংকেতবদ্ধ ক্যাটাগরি**		
আঙ্গুলের ডগা দিয়ে চিমটির ন্যায়- মার্বেল, বোতাম ধরার মত করে তর্জনী এবং বৃদ্ধাঙ্গুলি দিয়ে ধরা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
তালু /আঙ্গুলের চিমটির ন্যায়- বৃদ্ধাঙ্গুলি এবং তর্জনীর তল এবং মধ্যমার তলের মাঝখানে রেখে কোনো বস্তু ধরা যেমন পেন্সিল ধরা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
ল্যাটেরাল চিমটির ন্যায়- যেমনটা, আমরা চাবি ধরার ক্ষেত্রে ব্যবহার করে থাকি।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
অপজিশন	**সংকেতবদ্ধ ক্যাটাগরি**		
বাচ্চা যেকোন আঙ্গুল দিয়েই বৃদ্ধাঙ্গুলির ডগা ধরতে পারবে যেমন পুঁতি তোলা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
বহন করা	**সংকেতবদ্ধ ক্যাটাগরি**		
একজায়গা থেকে অন্য জায়গায় কিছু বহন করা যেমন পেন্সিল ব্যাগ বহন করা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐

ছেড়ে দেয়া			
হাত থেকে কোনো কিছু ছেড়ে দেয়া যেমন হাত থেকে বল ছুঁড়ে দেয়া।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
হাতে ম্যানিপুলেশন করা			
আঙ্গুল থেকে তালুতে বস্তু স্থানান্তর করা যেমন বোতলের মুখ খোলা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
দ্বিপক্ষীয় সমন্বয়			
একই সময়ে দেহের উভয় পাশ সমন্বয় করে কাজ করা যেমন মালা গাঁথা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
স্থানান্তর করা			
কোনো বস্তু এক হাত থেকে অন্য হাতে স্থানান্তরিত করা যেমন বোতল স্থানান্তরিত করা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
দুই হাত সমানভাবে ব্যবহার করা	**সংকেতবদ্ধ ক্যাটাগরি**		
কোনো কাজ সম্পন্ন করার জন্য দুই হাত ভারসাম্য করে সমানভাবে ব্যবহার করে কোনো কাজ করা যেমন দুই হাত দিয়ে, বল ছোঁড়া, বোতল ধরা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐

চোখ-হাতের সমন্বয়			
হাত এবং চোখের নড়াচড়ার সমন্বয়ের মাধ্যমে কাজ সম্পন্ন করা যেমন ঝুড়িতে বল ছুঁড়ে দেয়া,মালা গাঁথা।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
স্কোর		☐	☐

বাচ্চার দৈনন্দিন জীবনের অংশগ্রহন পরিমাপক

আপনার বাচ্চা কি-	সংকেতবদ্ধ ক্যাটাগরি	১ম মূল্যায়ন	২য় মূল্যায়ন
১। নিজের আঙ্গুল দিয়ে খাবার খেতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
২। চামচ দিয়ে খাবার খেতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৩। বোতল বা কাপ থেকে পানি পান করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৪। শরীরের উপরের অংশে পোশাক পরিধান করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৫। শরীরের নিচের অংশে পোশাক পরিধান করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৬। দাঁত ব্রাশ করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৭। স্নান / গোসল করা / পরিষ্কার থাকা/ পরিপাটি থাকতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৮। পটি/ টয়লেট ব্যবহার করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐
৯। পেন্সিল/কলম ধরতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0	☐	☐

১০। পেন্সিল দ্বারা সোজা দাগ দিতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0		
১১। পেন্সিল দ্বারা গোল করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0		
১২। অক্ষর লিখতে পারে যেমন A, B, C, D, অ, আ।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0		
১৪। বাড়ির ভিতরে /বাহিরে খেলনা দিয়ে খেলাধুলা করতে পারে যেমন- বোতলের দিকে বল নিক্ষেপ করা, বল দিয়ে প্যারসুট খেলা, মালা গাঁথা, লেগু এবং ব্লক দ্বারা খেলনা তৈরি করা, কোনো কিছু আঁকতে পারা/রং করতে পারে।	Independent = 5, Supervision = 4, Minimum assistance = 3, Moderate assistance =2, Maximum assistance = 1, Total assistance = 0		
স্কোর			

Appendix- 6

Hand function of the child before & after participant in hand activities group therapy program

Reach:

Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
To extend the hand for reaching something like ball, bottle	0	0	11 34.4%	10 31.2%	15 46.9%	8 25.0%	4 12.5%	11 34.4%	2 6.2%	3 9.4%	0	0

Carry, release & transfer:

Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
Carry	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Carrying something from one place to another like carrying the pencil bag.	0	0	11 34.4%	10 31.2%	13 40.6%	9 28.1%	7 21.9%	11 34.4%	1 3.1%	2 6.2%	0	0
Release												
Release the object from hand like throwing ball.	0	0	14 43.8%	12 37.5%	11 34.4%	6 18.8%	6 18.8%	12 37.5%	1 3.1%	2 6.2%	0	0
Transfer												
Transferring the object from one hand to another like transferring bottle from hand to another.	0	0	12 37.5%	11 34.4%	12 37.5%	8 25.0%	7 21.9%	11 34.4%	1 3.1%	2 6.2%	0	0

Grasp:

Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
Cylindrical grasp	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
pick up & hold large object like grasping bottle	0	0	15 49.6%	13 31.2%	11 34.4%	8 25.0%	4 12.5%	11 34.4%	2 6.2%	3 9.4%	0	0
Spherical grasp												
rapid first closer & release like griping the tennis ball	0	0	13 40.6%	12 37.5%	13 40.6%	8 25.0%	4 12.5%	9 28.1%	2 6.2%	3 9.4%	0	0
Power grasp												
carrying or grasping task where the fingers flex towards the palm like griping the stick	0	0	12 37.5%	11 34.4%	11 34.4%	8 25.0%	7 21.9%	9 28.1%	2 6.2%	4 12.5%	0	0
Precision grip												
manipulate objects with opposition by using fingers like picking up salt	0	0	21 65.6%	20 62.5%	7 21.9%	6 18.8%	4 12.5%	5 15.6%	0	0	0	0
Hook grip												
carrying the bag	0	0	13 40.6%	13 40.6%	11 34.4%	6 18.8%	7 21.9%	11 34.4%	1 3.1%	2 6.2%	0	0
Disk grasp												
holding the object according to the size like holding the container coverage	0	0	13 40.6%	12 37.5%	11 34.4%	6 18.8%	7 21.9%	12 37.5%	1 3.1%	2 6.2%	0	0

Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
Tip pinch	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
pinch between the index finger & thumb like grip the marble, button	0	0	21 65.6%	20 62.5%	7 21.9%	5 15.6%	4 12.5%	6 18.8%	0	1 3.1%	0	0
Tripod pinch pinch between the pads of thumb, the pad of the index & middle fingers like grip the pencil	0	0	26 81.2%	23 71.9%	3 9.4%	4 12.5%	1 3.1%	3 9.4%	2 6.2%	2 6.2%	0	0
Lateral pinch as like as holding the key	0	0	22 68.8%	22 68.8%	7 21.9%	5 15.6%	3 9.4%	4 12.5%	0	1 3.1%	0	0

Opposition & In-hand manipulation:

Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
Opposition	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
Child can touch all finger tips by thumb tip like picking up beads.	0	0	21 65.6%	20 62.5%	8 25.0%	6 18.8%	3 9.4%	5 15.6%	0	1 3.1%	0	0
In-hand manipulation Moving objects from finger to palm like opening the cork.	0	0	22 68.8%	22 68.8%	9 28.1%	6 18.8%	1 3.1%	4 12.5%	0	0	0	0

Bilateral integration, Symmetrical hand use & Eye-hand co-ordination:

Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
Bilateral integration	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
Ability to co-ordinate both side of the body at the same time like string beads. .	0	0	21 65.6%	20 62.5%	6 18.8%	5 15.6%	5 15.6%	6 18.8%	0	1 3.1%	0	0
Symmetrical hand use The quality of having parts that match each other like throwing a ball, hold the bottle by both hands	0	0	11 34.4%	10 31.2%	14 43.8%	8 25.0%	6 18.8%	12 37.5%	1 3.1%	2 6.2%	0	0
Eye-hand co-ordination Coordinated control of eye movement with hand movement like throwing a ball into the basket, string beads.	0	0	21 65.6%	20 62.5%	6 18.8%	5 15.6%	5 15.6%	6 18.8%	0	1 3.1%	0	0

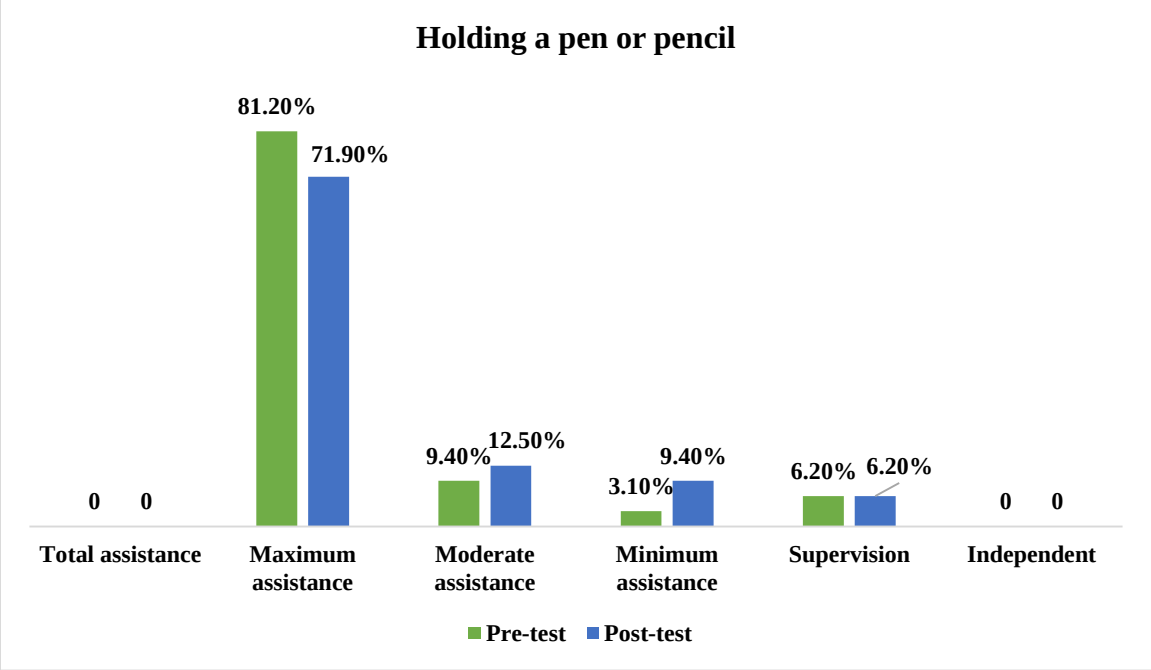
Child's ADL's performance skills before & after participant in hand activities group therapy program:

Self-care:

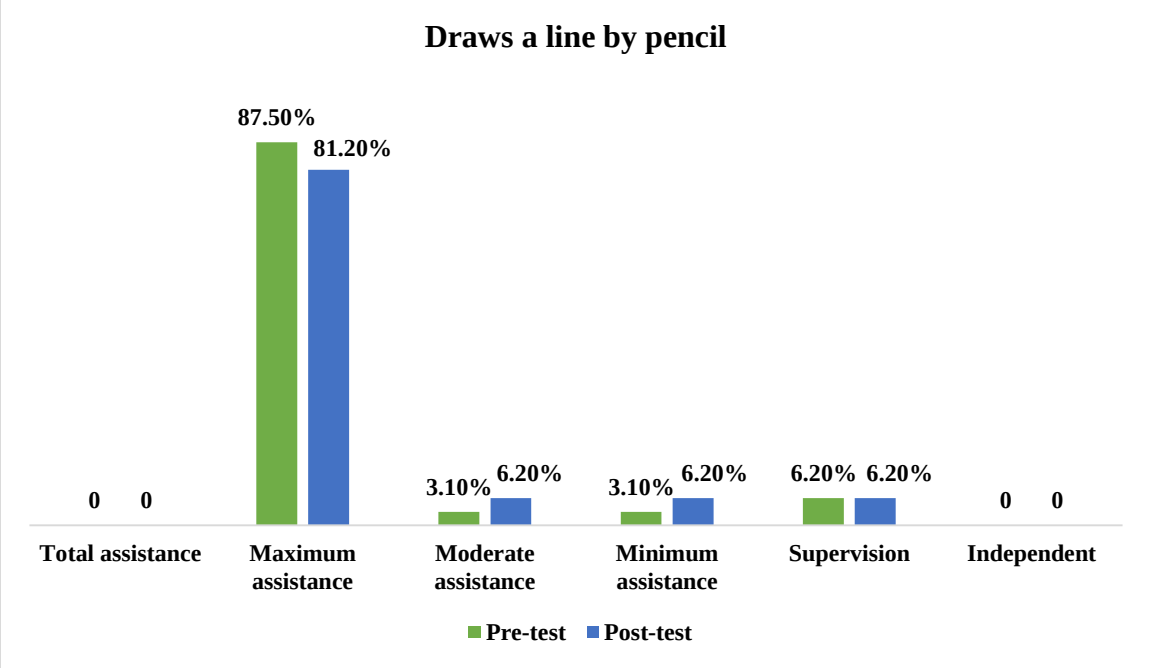
Variable	Total assistance		Maximum assistance		Moderate assistance		Minimum assistance		Supervision		Independent	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Feed self-finger foods	0	0	18 56.2%	17 53.1%	8 25.0%	8 25.0%	4 12.5%	5 15.6%	2 6.2%	2 6.2%	0	0
Feed self with spoon	0	0	19 59.4%	18 56.2%	6 18.8%	6 18.8%	5 15.6%	6 18.8%	2 6.2%	2 6.2%	0	0
Drink from a bottle or cup	0	0	18 56.2%	16 50.0%	6 18.8%	6 18.8%	6 18.8%	7 21.9%	2 6.2%	3 9.4%	0	0
Dress upper body	0	0	22 68.8%	19 59.4%	7 21.9%	10 31.2%	3 9.4%	3 9.4%	0	0	0	0
Dress lower body	0	0	22 68.8%	20 62.5%	7 21.9%	9 28.1%	3 9.4%	3 9.4%	0	0	0	0
Brushing teeth	0	0	21 65.6%	19 59.4%	6 18.8%	8 25.0%	4 12.5%	4 12.5%	1 3.1%	1 3.1%	0	0
Bathe / clean and tidy self	0	0	23 71.9%	21 65.6%	6 18.8%	8 25.0%	3 9.4%	3 9.4%	0	0	0	0
Use the potty or toilet	0	0	24 75.0%	23 71.9%	5 15.6%	6 18.8%	2 6.2%	2 6.2%	1 3.1%	1 3.1%	0	0

Productivity:

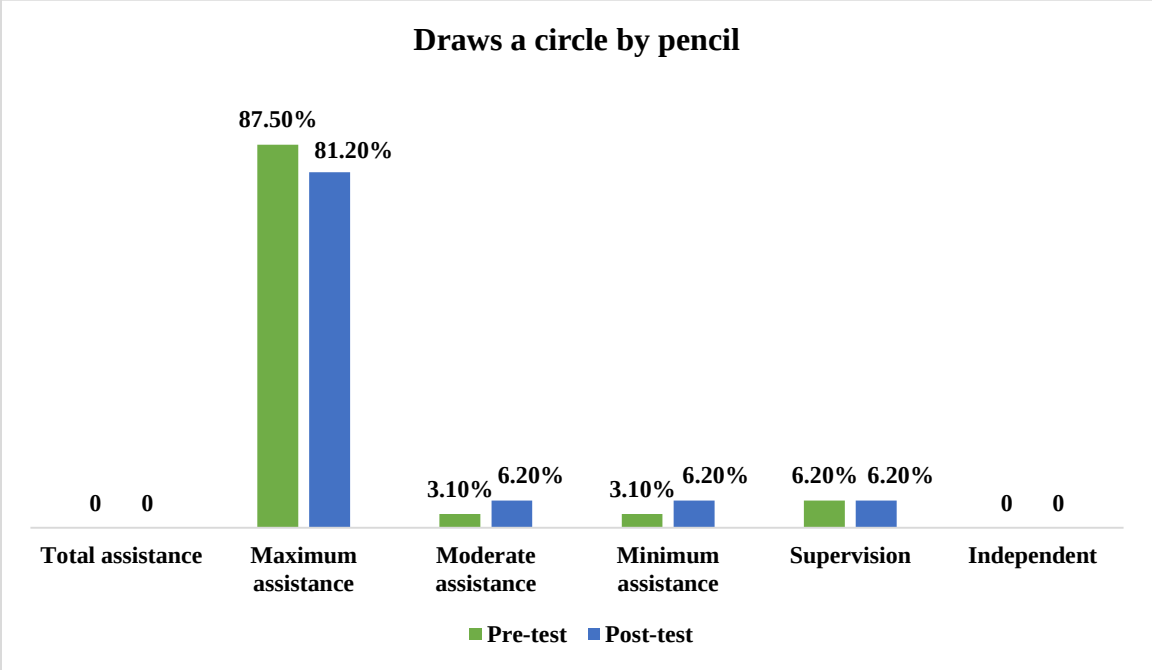
Holding a pen or pencil:



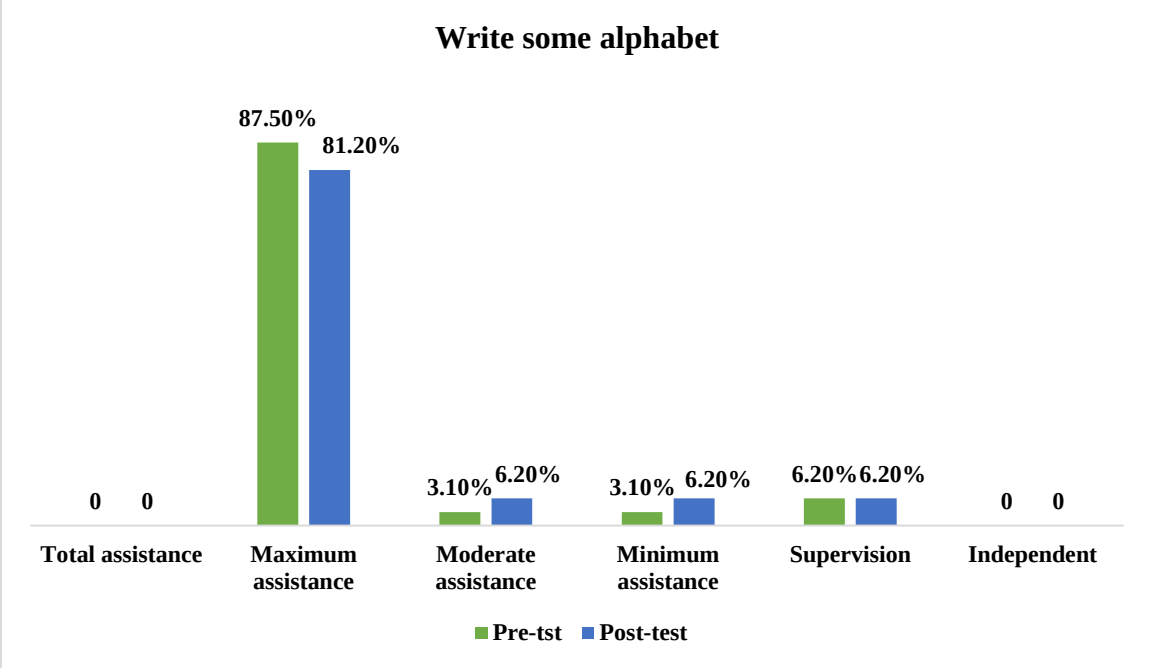
Draws a line by pencil:



Draws a circle by pencil:

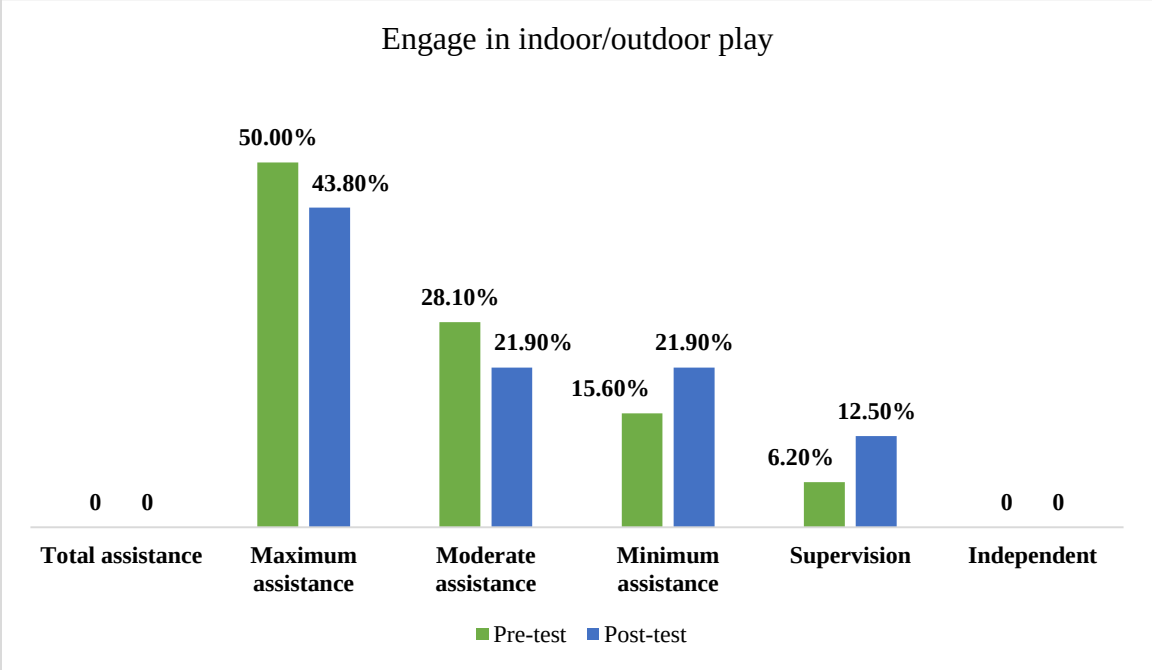


Write some alphabet:



Leisure:

Engage in indoor/outdoor play:



Appendix -7

Hand activities group therapy program statement

In CRP there have 40 bedded Inpatient service at pediatric department. The main aim of the Inpatient program is to run a two-week residential program designed to integrate children with cerebral palsy into family & community life. Immediately after the admission children are assessed in order to procedure an individual treatment. Occupational Therapists administers Hand Therapy sessions every Saturday, Sunday, Tuesday and Wednesday from 9.00 to 10.00 am. Here in this program occupational therapists are taken to those children who have the capacity to sit with minimum support & can maintain proper body stability to perform hand activities. Occupational therapists have done any work by using different types of equipment for the development of cerebral palsy children's hands. By doing this child's can maximize their ability to attain independence in their everyday living & also to perform in meaningful activities in their family & community life. That's why occupational therapists find out problem by assessment in their daily performance & set up goals to achieve the function. Hand activities group therapy is done in 2 ways they are – floor time & table top activities. During floor time children are engaged in different activities like ball throwing, weight throwing, Para suit, paper deviation by finger, ball throwing targeting the bottle or person, hand opening activity by rice. Besides during table top activities children are engaged in different activities like cylindrical grasp, fine motor manipulation board, string beads, colors, size & shape box etc. This equipment is closely related to the child's function & also to improve hand skills component like reach, grasp, carry, release, in-hand manipulation, opposition, eye-hand co-ordination, bilateral hand use, symmetrical hand use, transfer etc. use all of these skills enhance the performance to becomes structured & goal directed.