Faculty of Medicine

**University of Dhaka**

# Activity and Participation in Children and Youth with Cerebral Palsy based on International Classification of Functioning, Disability, and Health Core Sets of Children & Youth with Cerebral Palsy

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Submitted in Partial Fulfillment of the requirements for the Degree of Master of Science in Physiotherapy

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for acceptance of this thesis entitled, "**Activity and Participation in Children and Youth with Cerebral palsy based on International Classification of Functioning, Disability and Health Core Sets Children & Youth with CP",** submitted by, **Suchitra Rani Das** for the partial fulfillment of the requirements for the degree of Master of Science in Physiotherapy.

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# Declaration Form

- This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidate for any degree
- This dissertation is being submitted in partial fulfilment of the requirements for the degree of Master of Science in Physiotherapy.
- This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A Bibliography is appended.
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## List of Abbreviation or Symbols

| | |
|---|---|
| ADHD | Attention Deficit Hyperactivity Disorder |
| ASD | Autism Spectrum Disorder |
| ATNR | Asymmetric Tonic Neck Reflex |
| BHPI | Bangladesh Health Profession's Institute |
| BMRC | Bangladesh Medical Research Council |
| CNS | Central Nervous System |
| CP | Cerebral Palsy |
| CRP | Centre for the Rehabilitation of the Paralysed |
| CT | Computed Tomography |
| IRB | Institutional Review Board |
| ICF | International Classification of Functioning, Disability and Health |
| ICF-CY | International Classification of Functioning, Disability and Health Core Sets of Children and Youth |
| KIM | Key Informant Method |
| MLBW | Moderate Low Birth Weight |
| MRI | Magnetic Resonance Imaging |
| NBW | Normal Birth Weight |
| NHIS | National Health Interview Survey |
| NSCH | National Survey of Children's Health |

| | |
|---|---|
| PVL | Periventricular leukomalacia |
| QOL | Quality of Life |
| SD | Standard Deviation |
| SPSS | Statistical Package for the Social Sciences |
| UNCRC | United Nation Convention on the Right of Child |
| USA | United State of America |
| VLBW | Very Low Birth Weight |
| VPT | Very Preterm |
| WHO | World Health Organization |
| WMTS | William & Marie Taylor School |

## Abstract

*Purpose:* The aim of the study was to determine the level of activity and participation in children and youth with cerebral palsy (CP) based on International Classification of Functioning, Disability, and Health Core Sets Children and Youth with CP. *Objectives:* To identify and analyse possible factors as well as their association in activity and participation level in children and youth with cerebral palsy. *Methodology:* A cross-sectional descriptive study design was carried out to find the level of activity and participation among 232 children with cerebral palsy. Activity and participation level were expressed as descriptive (frequency, mean and proportion) and bivariate ($\chi^2$ and Spear-man rank test) were carried out. A *p* value of less than 0.05 was considered significant. Factors that may affect the activity and participation level in children and youth with CP identified as age, Gender, siblings, father's occupation, type of CP involvement of limbs, type of CP involvement of muscle tone. *Results:* Data was analyzed by using SPSS version 20 and data were calculated as frequency, percentages and presented them using a table and figure. In addition, data was cross tabulated with various factors against activity and participation (Modified ICF Core Sets CY with CP). A total of 232 participants with cerebral palsy minimum age group of children were 04 years and maximum age was 18 years. Mean (SD) age of the participants was 8.85 (±2.95) years and male ratio 59% and female ratio 41%. Most of the father doing jobs 49.1% (n=114) at different level and second most common were doing business 28.9% (n=67). 38.8% (n=90) have single sibling, 35.8% (n=83) have two or more siblings. belongs to the Chattogram, rest of the participants 6% (n=14), 1.7% (n=4), 5.2% (n=12), 3.4 majority of the participants 63% (n=146) belongs to the Dhaka division, while 16.4% (n=143) % (n=8), 4.3% (n=10), 1.3% (n=3) from Rajshahi, Khulna, Barishal, Mymenshingh, Rangpur and Sylhet. 79.7% (n=185) had spastic tone, 12.9% (n=30) had athetoid tone, 3.4% (n=8) had ataxic tone and 3.9% (n=9) had mixed type of CP respectively. Cross tabulation between type of CP (involvement of muscle tone) and gender in which out of 137 male 47.4% (n=110) were spastic type of CP. Maximum children with CP had 48.7% (n=113) were diplegic then 33.2% (n=77) were quadriplegic, 6% (n=14) were Monoplegic, 4.7% (n=11) were triplegic, and finally 7.3% (n=17) were

hemiplegic. Cross tabulation between different type of CP (involvement of muscle tone and involvement of limb) found that 45.3% (n=105) were spastic diaplegic, second most participants 19% (n=44) were spastic quadriplegic and others had different type of CP. Spearman correlation coefficient for the correlation between Age of children with CP and activity and participation level in which participant to focusing attention (r= -.165, p= .05) is more correlated than second most correlated coefficient were problem solving by patient (r= -.159, p=.05) and family relation (r= -.159, p=.05). Communicating with receiving spoken message (r= -.134, p=.05) has less correlation with age. In the same way gender of children and youth with CP and school education ($r_{s=}$ -.241, p=.05**)** than second most correlated coefficient was complex interpersonal interaction ($r_s$ = -.197, p=.01) and basic interpersonal relation as well as recreation and leisure has less correlation such as ($r_s$ = -.158, p=.01) and ($r_s$ = -.154, p=.01) respectively so all of the correlation were significant. *Conclusion:* Study suggest that ICF core sets CY-CP can use in rehabilitation sector as an assessment tool which describing functional ability of the children and youth with CP.

***Keywords:*** *Cerebral Palsy, Children, Activity, Participation, ICF, Core Sets.*

# CHAPTER-I INTRODUCTION

## 1.1 Background

Cerebral palsy (CP) which is known as the most common motor disability in childhood (Accardo et al., 2007) and it was first described by William Little in the 1840s ( Sankar & Mundkur, 2005). Cerebral palsy primarily disorder of movement and posture; it comprises heterogeneous group of early onset along with a permanent disorders of movement and posture causing activity limitations which is attributed to non-progressive disturbance in brain occurring early in the development (Rosenbaum et al., 2007). Motor disorders found in cerebral palsy in the middle of disturbances of sensation, perception, cognition, communication, and behaviour, by epilepsy and by secondary contractile organ issues (Rosenbaum et al., 2007). CP is one of the most common developmental disabilities, the worldwide incidence of CP according to population based study range from 1.5 to more than 4 per 1,000 live births or children of a defined age range (Arneson et al., 2009). The estimated prevalence of cerebral palsy is 2 per 1000 live births (Odding et al., 2006). Prevalent found in 3 to 4 per 1000 children in the United States (Christensen et al., 2014). Elkamil, et al., 2011 stated in their study that in the Norwegian counties there were 494 children with CP born between 1st January 1996 and 31st December 2003, corresponding to a prevalence of 2.65 per 1000 live births. International assessment suggests that in developed countries CP affect between 1.2 to 3.0 per 1000 children (Hustad et al., 2011). In western countries prevalence estimates range from 1.5-3.0 per thousand live children but in developing countries the range are much higher and wider about 2-10 per 1000 live children (Durkin et al., 2016). Oskoui et al., 2013 stated in their study that the overall prevalence of CP was 2.11 per 1000 live births and it has been

remained constant in recent years despite improved survival of at risk preterm infants. Survey done on four areas of United States in 2006 with the aiming of determine the prevalence and functioning of CP and found that the prevalence of CP estimates 3.1-3.6 per 1000 (Kirby et al., 2011). However despite of prevalence of CP several studies present that the incidence of CP is higher in male than female and the sex ration is 1.3 to 1.4:1 (Himmelmann & Uvebrant, 2014). Jarvis et al. (2005) reported in their study that incidence of CP in Europe is 30% higher in male. Johnson & Hagberg also reported in 2007 that this is mainly true in preterm group, where male represent up to 70% of all affected children with CP also displaying additionally a greater rate of other squeals (such as cognitive impairment, autism and attention-deficit-hyperactivity disorders). Another study also reported that CP is higher in male preterm live birth especially in the 28 to 31 weeks gestation group (Reid et al., 2016). Tatavarti et al. (2018), doing a study on male sex respondents in cerebral palsy, aiming to analyse comparative incidence of cerebral palsy in preterm births in male and female babies, they also found that male respondents were more affected than female because of female might be more resistance to hypoxia. The prevalence of CP in neighbour country India is 3 out of 1000, however the prevalence of CP is higher than the probable figure (Vyas et al., 2013). In Pakistan population based study done some selected area, study stated that prevalence of CP in children was 1.22/1000 live births in district Swabi, Khyber Pakhtunkhwa-Pakistan and among them majority of affected children were in the age group of 9-10 (39.6%) years (Ahmad et al., 2017). Khandaker et al. (2019), done a population based study to examine the prevalence, clinical characteristics, and risk factors of cerebral palsy (CP) in Bangladesh and observed prevalence was 3.4 per 1000 children. Prevalence of CP from

the early 1980s to 2004 were included in which birth weight and gestational age–specific CP prevalence from international surveillance programs have shown varied tendency, with significant declines from 1980 to 1998 in CP prevalence among children born with very low birth weight (VLBW) (<1500 g), very preterm (VPT) (<32 weeks), (Platt et al., 2007) and moderately preterm (32 to 36 weeks) and stable prevalence among children born with moderately low birth weight (MLBW) (1500– 2499 g) or normal birth weight (NBW) (≥2500 g) (Andersen et al., 2011). In Iceland population based study done in which the prevalence of CP per thousand live births did not change significantly from 1990 to 2003, which stayed between 2.2 and 2.3. Results reveal that decreased from 1.5 to 0.9/1,000 live births for children born at term but stable for preterm births, and increased from 33.7 to 114.6/1,000 live births for very preterm births (Sigurdardottir et al., 2009). Another study shows in their result that prevalence of CP is height those who were born in gestational age 23 weeks and lowest who were born in gestational age 27 weeks (Oskoui et al., 2013). Sankar & Mundkur (2005), classify CP on based on topographic classification are monoplegia, diplegia, quadriplegia where monoplegia and triplegia are quite uncommon. Johnson (2002), classified CP as spastic (unilateral, bilateral), dyskinetic (dystonic, choreoathetoid, unclassifiable), ataxic and unclassifiable. Another study classified CP based on neuromuscular deficit into 1) spastic, 2) dyskinetic (inclusive of choreoathetoid & dystonic), 3) ataxic, 4) hypotonic, and 5) mixed. Commonest type of CP is spastic CP and accounts for 70-75% of all cases, dyskinetics 10-15% and ataxic is less than 5 % (Sankar & Mundkur, 2005). So different type of pattern have been seen that leads to activity limitation and thus restrict participation.

CP is the most common disability in childhood which leads to activity limitation in movement and posture (Rosenberg et al., 2007). Impaired posture can disturb the independent development of daily living activities (Kim & Lee, 2013). CP is a complex disorder, individual with CP relay on many health, educational and social services as well as to improve their functional status, quality of life (QOL) and educational outcome, first we have to understand the individual functional abilities and challenges, and they face in their day to day life. Still now there is not any agreed approach or measure that systematically describes the level of activity and participation of children and youth with CP. The differences can be minimized by applying ICF Core Sets children and youth with CP.

ICF or International Classification of Functioning, Disability and Health formulated by WHO which can serve as a useful tool to describing the functional abilities and challenges of the children with CP in their day to day activities ( WHO, 2001). ICF provides structure for understanding functioning and disability comprehensively from a bio-psychosocial model which includes four components as 1) body functions and structures, 2) activities and participations, 3) personal and 4) environmental factors (WHO, 2001). ICF has pediatric version ICF-CY which records the characteristic of the developing child and the influence of his or her surrounding environments (WHO, 2007). The World Health Organization (WHO), International Classification of Functioning, Disability and Health (ICF), including its children and Youth version (CY), established specially to determine health status of children and youngsters and consists of 1685 categories, it is a considerably wide scale coding system (WHO, 2007). Schiariti et al. (2015), conduct a study with aiming of reporting on the Core Sets developed for children

and youth aged 0 to 18 years, with cerebral palsy (CP) based on the pediatric International Classification of Functioning, Disability and Health (ICF) by the World Health Organization (WHO) in which twenty-six international experts who were expertise in CP chosen by WHO region to attend the consensus meeting; overall 5 ICF-CY core sets were evolved: a Comprehensive Core Set (135 ICF categories); a Common Brief (25 ICF categories); and three age-specific Core Sets: under 6 years (31 ICF categories), from 6 to <14 years (35 ICF categories) and from 14-18 years (37 ICF categories). Comprehensive ICF Core Sets CY-CP provides a multidimensional perspective for measuring and documenting health outcome (Kinsman et al., 2000) and understanding activities and participation and their relationship with impairments to provide answers to questions from children and their parents about current and future functioning, to established realistic goals for treatment, and to improve activities and participation. Study aim is to determine the level of activity and participation based on ICF Core Sets CY with CP.

## 1.2 Justification of the study:

Cerebral palsy (CP) is a group of severe disabling conditions in childhood that have severe demands on health, educational and social services as well as on the families and children themselves (Beckung & Hagberg, 2002). If we compare CP child with their able bodies peer found that their participation in discretionary activities and social situation is significantly decreased. The actual burden of CP in low- and middle-income countries (LMICs) is unknown; however, it is estimated to be 5 to 10 times higher than in high-income countries (HICs) (Cruz et al., 2006). Effective assessment of outcome is important to monitor their progress, evaluate intervention (Lollar et al., 2000). In that sense ICF provides a multidimensional perspective for measuring and documenting health outcome (Kinsman et al., 2000) and understanding activities and participation and their relationship with impairments to provide answers to questions from children and their parents about current and future functioning, to established realistic goals for treatment, and to improve activities and participation. Globally, living with CP are an estimated 17 million people (Graham et al., 2016). In Bangladesh population based study done to determine the prevalence of CP, in that study they found that prevalence of CP is about 3.4 per 1000 live birth (khandaker et al., 2018). Bangladesh is a lower income country so children with CP have to face many challenges than western countries.

Form my knowledge there is no study done in Bangladesh, to find out the activity and participation level of children and youth with CP. As well as there is a gap between systematically describe the activity and participation of children and youth with CP. If able to identify the current and future functioning with using a well-structured tools then time and money will use effectively and efficiently. ICF Core Sets children and youth

with CP provide a comprehensive functional profile thus parents and children with CP will be aware about their level of functioning and challenges thus they can utilize their functioning level and enhance their activity and participation level in mainstream society. So it was considered to find out the activity and participation level in children and youth with cerebral palsy based on International Classification of Functioning, Disability and Health Core Sets Children and Youth with Cerebral Palsy.

### 1.3 Operational Definition:

**Cerebral Palsy:** Cerebral Palsy can be defined as a group of permanent disorders of movement and posture causing activity limitations which is attributed to non-progressive disturbance in brain occurring early in the development. It occurs before, during or after birth at the age of 2 years of age.

**Children:** The UN Convention on the Rights of Child (UNCRC) defines a child as an individual under the age of 18.

**Activity:** Execution of a task or action.

**Participation:** Involvement in a life situation.

**ICF:** ICF or International Classification of Functioning, Disability and Health formulated by WHO which can act as a useful tool to describing the functional abilities and challenges of the children with CP in their day to day activities ( WHO, 2001).

**Core Sets:** ICF Core Sets has a pediatric version ICF-CY which records the characteristic of the developing child and the influence of his or her surrounding environments (WHO, 2007).

## 1.4 Research question:

What are the levels of Activity and Participation in Children and Youth with Cerebral Palsy based on International Classification of Functioning, Disability, and Health Core Sets in Children and Youth (ICF-CY) with Cerebral Palsy?

## 1.5 Objectives:

### 1.5.1 General Objective:

Determine the levels of Activity and Participation in Children with Cerebral Palsy based on International Classification of Functioning, Disability, and Health Core Sets in Children and Youth (ICF-CY) with Cerebral Palsy?

### 1.5.2 Specific Objectives:

1. To explore the socio demographic characteristics of the participants.

2. To find out the medical related characteristics of the participants.

3. To detect the activity and participation level based on Modified ICF-CY Core Sets

4. To find out the association between Socio-demographic characteristics and activity and participation level based on Modified ICF-CY Core Sets

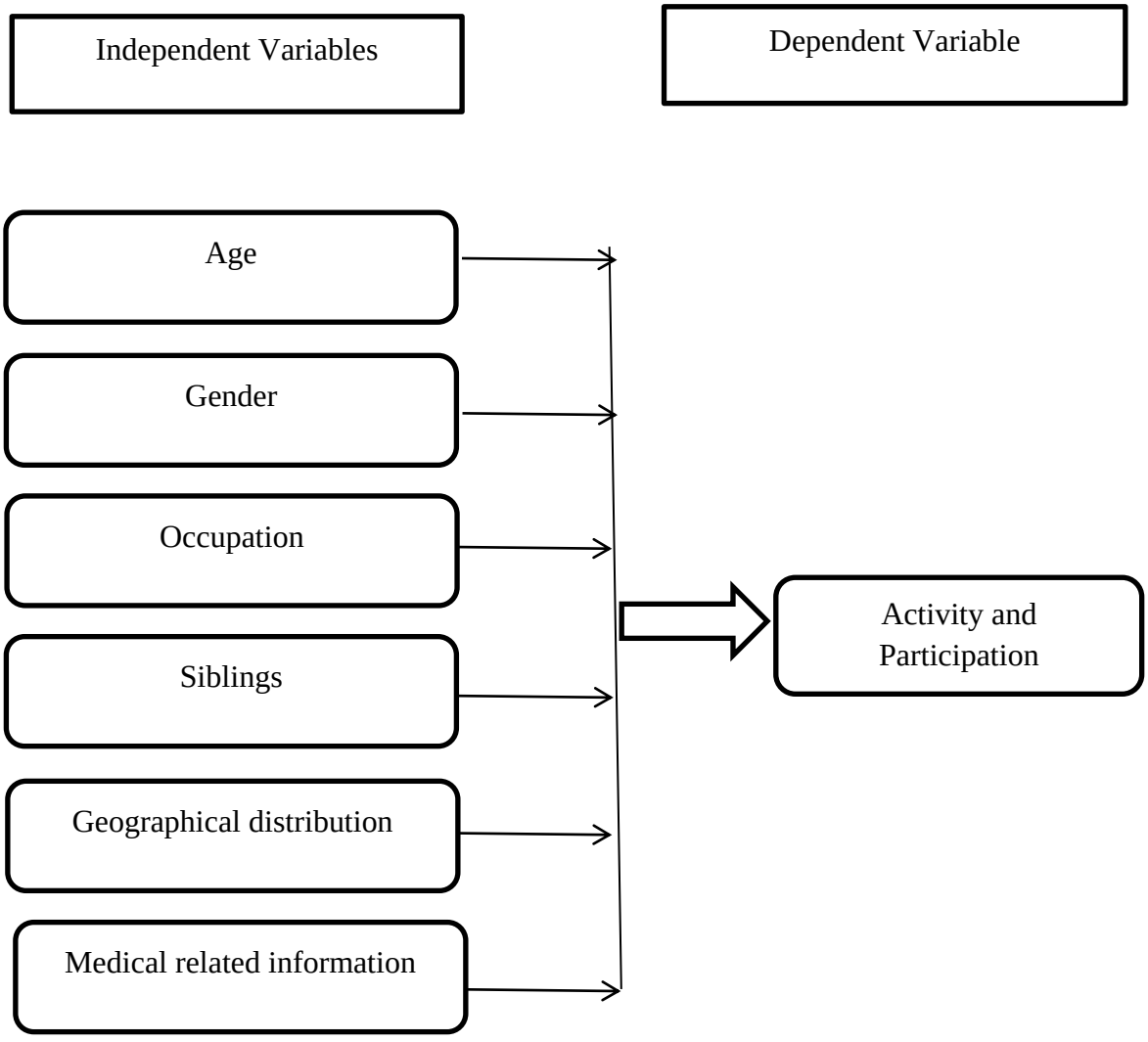
5. To determine the association between Medical related characteristics and Modified ICF-CY Core Sets.

### 1.6 List of Variables:

### Conceptual Framework

The anticipation choosing this framework of this study is Cerebral Palsy which is one of the common conditions in our country and those patients are greatly sufferings from various problems and those problems limit their activities and also restrict participation thus limit their functional ability.

The conceptual framework of this studies are given below



## CHAPTER-II LITERATURE REVIEW

Cerebral Palsy (CP) is a disorder of motion and posture that appears all through infancy or early childhood resulting from damage to the brain (Bax et al., 2005). Another study describe cerebral palsy as CP is not a disease, but a syndrome complex which is characterized by a loss of movement or posture, also non- progressive disturbances which appears early in life and leads to lifelong motor disability (Himmelmann et al., 2012). The harm to the brain is permanent and cannot be cured however the before we begin with intervention the improvement can be made; Central nervous system (CNS) injury which is non-progressive happening in the course of the first 2 (some say 5) years of lifetime is regarded to be CP (O'Shea, 2008). Cerebral palsy is the most common neuro-developmental motor disability in children. This case requires medical, educational, social, and rehabilitative intervention throughout the lifespan (Hurley et al., 2011). The motor disorders of cerebral palsy are frequently accompanied by means of disturbances of sensation, perception, cognition, communication, and behaviour, with the aid of epilepsy, and with the aid of secondary musculoskeletal issues arises (Rosenbaum et al., 2007). It is characterized by the inability to typically manage motor functions, and it has the potential to have an effect on the overall improvement of a child with the aid of affecting the child's capacity to explore, speak, learn, and end up with independent (Jones et al., 2007). Elkamil et al. (2011) reported in their study that according to the Surveillance of CP in Europe (SCPE) definition, cerebral palsy is a group of permanent and non- progressive disorders of movement and posture caused by a central nervous lesion, damage or dysfunction originating early in life. Immeasurable health, social, and psychological problems that the affected children and their families suffer CP has a huge

economic impact (Faria et al., 2011). There are several associated comorbidities seen in children with cerebral palsy, including epilepsy, musculoskeletal problems, intellectual disability, feeding difficulties, visual abnormalities, hearing abnormalities, and communication difficulties (Hallman-Cooper & Gossman, 2019).

Cerebral palsy is the most common chronic motor illness of childhood, affecting about 1.5 to 2.5 children per 1,000 live births (Oskoui et al., 2013). Arneson et al., 2009 stated in their population based study that around the world filed that the prevalence estimates of CP range from 1.5 to more than 4 per 1,000 live births or children of a defined age range. Another population-based review from the USA reported a relatively steady rate of spastic CP, 1.86/1,000 in 1985 to 1.76/1,000 in 2002; Of interest, there have been racial disparities in the adjustments of the prevalence of CP along that time period: while in non-Hispanic White population, the normal prevalence declined from 1.65/1,000 in 1985 to 1.34/1,000 in 2002, the incidence of CP in non-Hispanic Blacks elevated from 2.29/1,000 in 1985 to 2.34/1,000 in 2002 (Braun et al., 2016). The 2012–2013 National Survey of Children's Health (NSCH) and the 2011–2013 National Health Interview Survey (NHIS) decided the incidence of CP through parents' reviews amongst children aged 2–17 years and through this surveys determined a CP prevalence per 1,000 live births that ranged from 2.6 in the NSCH to 2.9 in the NHIS (Maenner et al., 2016). The Australian Cerebral Palsy Register, including data from 1993 to 2006 suggested an standard CP incidence of 2.1 per 1,000 live births with high prevalence in multiples (7 per 1,000 stay births) and in extremely low birth weight neonates (e.g., for birth weight <1,000 g, the prevalence was 50 per 1,000 live births) (Smithers-Sheedy et al., 2016). However despite of prevalence of CP several studies present that the incidence of CP is

higher in male than female and the sex ration is 1.3 to 1.4:1 (Himmelmann & Uvebrant, 2014). Jarvis et al. (2005) reported in their study that incidence of CP in Europe is 30% higher in male. Johnson & Hagberg reported in 2007 that this is mainly true in preterm group, where male represent up to 70% of all affected children with CP also displaying additionally a greater rate of other squeals (such as cognitive impairment, autism and attention-deficit-hyperactivity disorders). Another study also reported that CP is higher in male preterm live birth especially in the 28 to 31 weeks gestation group (Reid et al., 2016). Tatavarti et al. (2018), doing a study on male sex respondents in cerebral palsy, aiming to analyse comparative incidence of cerebral palsy in preterm births in male and female babies, they also found that male respondents were more affected than female because of female might be more resistance to hypoxia. Worldwide, 85 % of children with disabilities live in developing countries, but less than 5 % receive rehabilitation services only (Maloni et al., 2010). In a recent pilot find out about on the infectious causes of childhood disabilities, 859 children with extreme bodily impairment have been recognized from a rural sub-district (i.e., Shahjadpur) of Bangladesh of which 417 (48.5 %) had CP (Khandaker et al., 2014). Another study about the usage of Key Informant Method (KIM) suggested an estimated prevalence of CP up to 3.7/1000 teenagers in Bangladesh (95 percent CI 3.5–3.9) (Murthy et al., 2014). The study done in Bangladesh to find out determinants of CP and study found that Children with male sex were four times more likely to have cerebral palsy than the female child (Hai et al., 2015). Incidence of CP is higher in Bangladesh due to gap in knowledge about CP especially in the arena of epidemiological research, intervention and service utilization. There is no precise cause of cerebral palsy instead some risks factors make contributions to the

development CP prenatal, natal or postnatal duration (Tatla et al., 2013). Indeed, congenital malformations, fetal growth restriction, a couple of gestations, contamination at some point of the fetal and neonatal period, birth asphyxia, preterm delivery, untreated maternal hypothyroidism, perinatal stroke, and thrombophilia were all recognized as risk factors for CP (Hankins et al., 2003). 70 to 80% of cerebral palsy cases are obtained prenatally with unknown causes and birth complications, which includes asphyxia, besides that permanent brain damage may occur due to severe jaundice resulting in athetoid cerebral palsy, which is occur due to certain blood disease such as rhesus incompatibility (Hai et al., 2015). Currently estimated to account for about 6 % of sufferers with congenital cerebral palsy, on the different hand neonatal chance elements for cerebral palsy include first cousin marriage birth after fewer than 32 weeks gestation, birth weight of less than 5 lb with intrauterine growth retardation, intracranial haemorrhage and trauma and about 10 to 20% patients (Chen et al., 2013). The most essential risk factor seems to be prematurity and low birth weight with risk of CP increasing with decreasing gestational age and birth weight in which CP is seen in 10 – 18 % of babies in 500–999 grams birth weight (Msall, 2004). Indeed, the prevalence in 1,000 live births of CP amongst neonates who have been born prior to 28 weeks of gestation is 82, and it decreases to 1.4 at 36 weeks of gestation (Hirvonen et al., 2014). In our country's study found that those had the perinatal problem than who had not the problem during that period There were thirty four times more chance of developing cerebral palsy (Hai et al., 2015). Of interest, although preterm delivery is a well-established risk factor for CP, a recent finding suggests that post term pregnancy at 42 weeks or later is also associated with an increased risk of this condition (Moster et al.,

2010). Pre- eclampsia affects 3-5% of pregnant women and is characterized through maternal hypertension and proteinuria taking place after 20 weeks of gestation (Melheim et al., 2013). Bangash et al., 2014 reported in their study that the pathological changes start when the specific causes resulting in neural damage and ending up with impaired neural connectivity as well as transmission; 10- 15% of cerebral palsy cases are found during birth including prolongs labour, sudden birth, birth asphyxia, baby did not cry immediate after birth or by forceps delivery. Postnatal causes encompass toxic, infectious meningitis, encephalitis, traumatic such as drowning; there is also a relation between coagulopathies causing cerebral infarction and mainly hemiplegic kind of CP. Postnatal events account for 12% – 21% of CP but in a large variety of cases, the cause of CP continue to be unknown (Kulak et al., 2014). Children are greater probable to develop cerebral palsy when any of the following circumstances is present: bleeding in the brain, illnesses that cause an infant to go into shock, infections of the central nervous system (such as meningitis or encephalitis), interruptions in oxygen supply or blood flow to the brain, maternal infections (chorioamnionitis), physical trauma or injury, poisoning from drugs or other toxic substances, premature birth, seizures. Although cerebral palsy isn't inherited, some genetic disorders can cause brain damage early in life such damage, in turn, can lead to cerebral palsy. In addition, research is uncovering genetic components to diseases that mimic the consequence of cerebral palsy (Stephens & Vohr, 2009).

CP is categorised into 4 categories. They are Spastic, dyskinetic (inclusion Athetoid and dystonia), Ataxia and Mixed type of CP. Spastic CP is the most common and account for 70%-75% of all cases, dyskinetic – 10% to 15% and ataxic are much less than 5% of cases. Spastic cerebral palsy is the most common kind of CP which refers to the

accelerated tone, or tension, in a muscle when regular muscle groups work in pairs. Spastic sorts exhibit pyramidal involvement with upper motor neuron signs, weakness, hypertonia, hyperreflexia, clonus and tremendous Babinski. Dyskinesia is characterized by means of greater pyramidal involvement in which rigidity, chorea, choreoathetosis, athetoid and dystonic movements are seen. This type of CP is additionally associated with birth asphyxia (MacLennan et al., 2002). Spastic ataxia affects balance and coordination. Children with ataxic CP may appear shaky and unsteady. In addition, dyskinesia causes a person to have involuntary movements, which generally increase when they try to move and the person can present with any combination of motor types. The topographic classification of CP is monoplegia, hemiplegia, diplegia and quadriplegia; monoplegia and triplegia are highly uncommon. There is a substantial overlap of the affected areas. In most studies, diplegia is the most typical form (30% – 40%), hemiplegiae is 20% –30%, and quadriplegia accounting for 10% – 15%. In an analysis of one thousand instances of CP from India, it used to be discovered that spastic quadriplegia constituted 61% of cases accompanied by diplegia 22% (Singhi et al., 2002). Quadriplegic CP is the most extreme shape involving all four limbs, and the trunk upper limbs are extra severely worried than the lower limbs, associated with acute hypoxic intrapartum asphyxia. However, this is now not the only cause of spastic quadriplegia (MacLennan 1999). It has been found that this type of patients voluntary movements are few; vasomotor adjustments of the extremities are common. Most kids have psuedobulbar signs with difficulties in swallowing and recurrent aspiration of food material and half of the patients have not only optic atrophy but also seizures. Intellectual ability severely impaired in all cases (Menkes, 2000). Hemiplegic CP is a unilateral paresis with upper

limbs greater severely affected than the lower limbs. It is seen in term infants about 56% and preterm infants about 17%. It has multifactorial pathogenesis. Voluntary movements are impaired with hand functions being most affected such as pincer grasp of the thumb, extension of the wrist and supination of the forearm are affected. In the decrease limb, dorsiflexion and aversion of the foot are most impaired. There is increased flexor tone with hemiparetic posture, flexion at the elbow and wrist, knees and equines position of the foot. Palmer grasp may persist for many years and also sensory abnormalities in the affected limbs are common (Menkes, 2000). Spastic diplegia is related with prematurity and low birth weight. Nearly all preterm infants with spastic diplegia shows cystic periventricular leukomalacia on neuroimaging. Periventricular leukomalacia (PVL) is the most common ischemic brain damage in premature infants (Wu & Colford, 2000). In this condition found that lower limbs are greater severely affected then the upper limbs. Few cases may additionally present with toe taking walks due to impaired dorsiflexion of the feet with expanded tone of the ankles. In severe cases, there is flexion of the hips, knees and to a lesser extent elbows. When the infant is held vertically, rigidity of lower limbs is most evident and adductor spasm of the lower extremities causes scissoring of the legs (Sankar & Mundkur, 2005). Early diagnosis is very essential to detect the developmental problem.

Early diagnosis of CP depends on awareness of risk factors, regular developmental screening of all high risk infants and neurological examination. As in all medical conditions, a systematic approach focusing on maternal, obstetric and perinatal histories, evaluate of developmental milestones, and a thorough neurological examination and commentary of the child in a variety of positions such as supine, prone, sitting, standing,

on foot and strolling is required (Sanger et al., 2003). It is now not possible to diagnose CP in infants less than 6 months besides in very extreme cases. The patterns of various types of CP emerge gradually with the earliest sign being a delay in developmental milestones and abnormal muscle tone. Many of the early hypotonia trade to spasticity or dystonia with the aid of 2 – 3 yrs of age. Early signs encompass presence of hand preference in the first year, distinguished fisting, abnormalities of tone–either spasticity or hypotonia of various distribution, persistence of abnormal neonatal reflexes, lengthen in the emergence of protective and postural reflexes, asymmetrical moves like asymmetrical crawl and hyperreflexia. Primitive reflexes should gradually extinguish by using 6 months of age. Among the most clinically useful primitive reflexes are Moro, Tonic labyrinthine and Asymmetric Tonic Neck Reflex (ATNR) (Ellison et al., 1985). Severe motor and coordination impairment also occur (Mandal, 2013). Drooling is another but common symptom among children with CP. Cerebral palsy suffers for lengthy time period and it affect activities of daily living and quality of life (Bell et al., 2010).

Physical examination and medical history taking are the components of diagnosis in which development and any problem were assessed. Besides that test such as CT scan, MRI, and ultrasound are used to find out the cause of CP (Leonard et al., 2011). There is no cure for CP but treatment can improve quality of life and functional level. So treatment program should start as early as possible to prevent secondary complications and improving functional level (Shamsoddini et al., 2014).

CP is a life-long disorder that go along with children throughout their life (Mesterman et al., 2010). Altered in presentation, secondary impairments and functional implication

vary as children grow and transition from infancy, school-age and adulthood ( Rosenbaum et al., 2007). In performing day to day activities children and youth with CP face variable challenges including transfer related mobility (e.g., transfer & locomotion), self- care (dressing and toileting) and participation in social activities (Parkes et al., 2010).

In order to improve their functioning, quality of life (QOL) and educational outcomes, we ought to first understand the functional abilities of individuals having with CP and the challenges they face in performing day to day activities. Functioning' is an umbrella term to describe what a person with a health condition does or is able to do in day to day life which used by the World Health Organization (WHO), it is the foundation of the International Classification of Functioning, Disability and Health (Bickenbach et al., 2012). The ICF can carry out as a useful tool to standardize the explanation of the functional abilities and challenges children and youth with CP have in performing everyday activities (WHO, 2001). The ICF presenting a framework helps to understanding functioning and disability comprehensively from a bio-psychosocial perspective. This bio-psychosocial model of functioning and disability includes four components: (1) body functions and structures; (2) activities and participation; (3) personal; and (4) environmental factors (WHO, 2001). The paediatric model of the ICF (ICF-CY) files the characteristics of the developing infant and the have an effect on of his or her surrounding environment. The ICF-CY consists of 1685 categories. An ICF Core Set is a shortlist of ICF categories that are considered most relevant for explaining the functioning of an individual with a particular health condition. The evolution of ICF Core Sets draws on an evidence-based methodology to identify the most relevant categories

from the entire classification. Each ICF Core Set development project includes the development of a Comprehensive and Brief Core Set. The Comprehensive ICF Core Set is intended for use in interdisciplinary assessments, to promote the ICF as a ‘common language’ for effective teamwork. ICF Core Sets can be used to understand clients' needs, to assess and report client functioning in different settings, and in intervention planning (Grill et al., 2012). The overall purpose of the ICF Core Sets for children and youth with CP is to identify which ICF categories represent the best functional profile of this population with CP aged 0 to 18 years, covering not only all types of CP but also all functional levels (Schiariti et al., 2014).

## CHAPTAR-III METHODOLOGY

### 3.1 Study design

A cross-sectional descriptive study design was carried out to find the level of activity and participation among children with cerebral palsy. The emphasis of this study was to identify the level of activity and participation including observation, reading, writing, speaking, hearing, taste, learn with activities, earn skills, problem solving, decision making, understanding the gesture so on among different type of CP and association with socio-demographic factors as well as medical-related factors such as type of CP based on involvement of limb and also muscle tone.

### 3.2 Study population:

Study population refers to the entire group of people that meet the criterias set by the investigator. The study populations were those who attend with their parents at school as well as therapeutic session in children with cerebral palsy at CRP-Savar, CRP-Mirpur.

### 3.3 Study area/site

The study area was paediatric unit of CRP- Savar, William and Marie Taylor Inclusive School and paediatric unit of CRP- Mirpur. At first researcher was obtained information from the school as well as paediatric unit of CRP-Savar and CRP-Mirpur about how many children have taken physiotherapy treatment from those areas in a day. According to their ideas and suggestions, researcher collect data from those areas.

### 3.4 Study duration

Study was conducted from August, 2017 to April, 2018 and August, 2019 to October, 2019.

### 3.5 Sample size calculation

Optimum sample size is one which is adequate for making correct inferences from a sample to a population (Polgar & Thomas, 1991). So adequate number of sample size is needed to represent the population. In Bangladesh Khandaker et al. (2018), done a population based study to examine the prevalence, clinical characteristics, and risk factors of cerebral palsy (CP) in Bangladesh and observed prevalence was 3.4 per 1000 children. The equation of sample size calculation are given below-

$n = (z)2\ p\ (\ 1 - p\ ) / d2$

Here, $z = 1.96$, $p = 0.34$

$1-p = 1-0.34$

$= 0.66$

$d = 0.05$

According to the equation the sample size would be more than 344 children and youth with cerebral palsy which will provide the desire level of accuracy and also validity of significance test.

232 participants were taken in this study due to availability of the participants according to the inclusion and exclusion criterias as well as participants were randomly allocated in this study.

### 3.6 Inclusion criteria:

1. Children and youth with cerebral palsy

2. Age 4 years to 18 years (Because physical and skill-based activities is required to be done outside and needs physical abilities (Mehraban et al., 2016).

3. Didn't have other neurological conditions such as ASD, ADHD

4. Both boys and girls were included

5. Subjects who were willingly to participate

### 3.7 Exclusion criteria

1. Children with CP who were not attending in the study area.

2. Children with CP who were gone under any kinds of surgery.

3. Children who have other neurological conditions e. g. ASD, ADHD.

### 3.8 Sampling technique

The participants were selected by using Hospital as well as School random sampling technique from the population because in the study every participants had equal chance to be selected so participants were taken based on the inclusion criterias and excluded those

who did not suit those criterias. Total 232 participants were randomly selected from the population.

### 3.9 Data collection tools

Following methods were selected to continue the data collection.

- Semi-structured questionnaire was used for the descriptive information.
- Modified Comprehensive ICF Core Set for CY with CP questionnaire (Activity and Participation)

#### 3.9.1 Semi-Structured questionnaire development

The researcher developed semi-structured questionnaire to collect the relevant data on client's socio-demographic and medical- related information. This form of questionnaire was developed since none of the developed questionnaire found in the literature that addressed all the issues necessary to respond to the objectives of the study. Firstly medical related informations were taken from two persons who were expect with clinical experienced person in the field of paediatric conditions then compile their information and finally formed medical related informations such as type of CP according to the muscle tone and also type of CP according to the involvement of the limb. Socio-demographic information were taken from an expert with researched experienced person such as age, gender, address (district), father's occupation, number of siblings etc. Then compile all the information and arranged according to the needs of this study.

### 3.9.2 Modified Comprehensive ICF Core Set for Children & Youth with CP questionnaire (Activity and Participation)

The World Health Organization's (WHO's) International Classification of Functioning, Disability, and Health (ICF), including its children and youngsters and consists of 1685 categories, is a considerably wide-scale coding system. ICF-CY is a bio-psychosocial model that emphasizes human functioning (body functions and structures, activities and participation) as a result of interaction between health conditions (diseases or diagnoses) and contextual factors. Comprehensive ICF Core Set for CY with CP used for a complete and detailed description of functioning in CY with CP aged 0 up to 18 years. Due to the level of details this Core Set is useful in interdisciplinary assessments from which an exhaustive assessment can be distributed among team members from different professions. The scoring of the questionnaire was in likert scale which consists 5 points. 0 (zero) indicate that there was no difficulties or problem to performing any activities or participation and 4 (four) indicates that participants unable to perform that activity or have complete problems. Interpretation of the questionnaire was like that the more score indicated that participants has poor level of functioning where less score indicate that the participants has good level of functioning. Before going to use ICF Core Sets CY with CP permission was taken from the authority. The structured questionnaire was modified after the pilot study and also informed the authority why we have to avoid or delete some questionnaire, because of cultural differences. Those questionnaire were not suit with our culture.

### 3.10 Data collection technique

Data were collected through face to face interview. At first researcher visit study area and taken permission from the authority to collect data then responsible physiotherapist as well as researcher taken informed consent from the patient by face to face interview. During interview the arena was cum and quite, thus environment help us to transfer information with less time and more accurately.

### 3.11 Linguistic validation of the questionnaire

Linguistic validation of the questionnaire was the most basic level, linguistic validation is the process by which an instrument or patient questionnaire is simultaneously translated by different translators, and both translations were reconciled translation in comparison with the source document. Linguistic validation was done to ensure that the translation states in the target language what the original in the source language intended. Linguistic validation goes beyond producing translations that have equivalence of meaning with the original source document; it provides equivalence of construct value of the instrument items for each culture. The researcher selects experienced professional translators who were native language experts and also specialists in the field of study. Firstly an experienced professional translate the original questionnaire from English to Bangla then another expert professional translate the Bangla questionnaire into English without seeing the original questionnaire this process was called forward translation. Another expert concise the two Bangla questionnaires into one questionnaire (called reconciliation). Back translation is the translation of the first reconciled forward version of the questionnaire back into the source language (English). Backward translator used in order

to detect any misunderstandings, mistranslations or inaccuracies in the intermediary forward version of the questionnaire. Finally testing the questionnaire by parents as well as children and youth with CP's interview.

### 3.12 Pilot study

Pilot study was conducted to increase the reliability of the instrument for data collection. Secondly it was necessary for the author to learn how to administer the instrumentation from which unnecessary errors during the administration could be identify and resolved. The study involved the parents or care giver of the children and youth with cerebral palsy from CRP- Mirpur, who were not included in the main study. 5 persons with different age groups like 4-6 years 2 children with CP, 6-10 years 2 children with CP and 10-upto 18 years 1 children and youth with CP's care giver were selected to test the questionnaire and found that there were several questions were not easier to the participants as well as researcher so used to make changed the structured of the questionnaire as well as quit some of the question because of they didn't match with the socio-cultural perspectives of the children and youth with CP such as D-166, D- 170, D-177, D-360, D-465, D-630, D-640, D- 770, D-945, D-860, D-910. Grand total 11 questions were quit from the questionnaire that means about 81% is similar with our culture and perspectives. Schiariti et al. reported in 2016 on "ICF Core Sets for Children and Youth with Cerebral Palsy: Embracing Cultural Differences" in that study result show that Professionals in Pakistan and India validated the majority of body function and A&P categories 69% and 67% respectfully but in case of activity and participation categories Pakistan validate about 72% and India validate about 80%. So our cultural difference quite similar with Indian

culture. Again inform the authority that due to cultural differences, unable to use those questionnaires in this study.

### 3.13 Data collection procedure

Modified structured questionnaire was filled out by the clinician after having interview with the children and youth with CP's care giver after obtaining consent. Children and youth who were attending at CRP-Savar, WMTS and CRP-Mirpur who were diagnosed as Cerebral Palsy were asked to participate in the study. A Modified structured questionnaire was used for identifying the activity and participation level. In the questionnaire participants demographic as well as medical information including age, sex, level of education, number of siblings, occupational history, type of CP according to limb involvement as well as type of CP according to muscular tone including activity and participation level of the children and youth with cerebral palsy.

### 3.14 Data analysis

An inform consent was taken from children's parents or care giver before collecting the data. A pilot study of questionnaire was done before formal starting of data collection. Data was collected through a semi-structured and modified structured questionnaire and data collector was graduate physiotherapist. Data was analyzed by descriptive statistics and correlation with SPSS software version 20.0. Variables were tabulated, label and values were given orderly in the spread sheet then data were tabulated in the spread sheet. Data were analyzed by descriptive statistics (frequency, mean and std. deviation) and correlation between ordinal data of dependent variables and independent variable were analyzed by bivariate ($\chi 2$ and Spear-man rank test) were carried out. Spearman's Rank

correlation coefficient is a technique which can be used to summarise the strength and direction (negative or positive) of a relationship between two variables. The result will always be between 1 and minus 1. Also p value of less than 0.05 was considered significant. Data were presented using a table and figure. In addition, data was cross tabulated with various factors against Modified ICF Core Sets CY with CP (activity and participation).

### 3.15 Ethical consideration

Researcher followed the Bangladesh Medical Research Council (BMRC) and World Health Organization (WHO) research guide line. Researcher received ethical permission from Institutional Review Board (IRB) of BHPI. In addition for data collection purpose, permission was also obtained from head of physiotherapy department, CRP as well as Principal of William & Marie Taylor School. Researcher maintained the confidentiality of the collected data from the individuals. All the parents or care giver of the children and youth with CP and the authority were informed about the purpose of the study.

### 3.16 Informed consent

Prior to getting information through interview from the respondents, it is important to pick up assent from the subjects. For this investigation, researcher has given informed consent form to each member and disclosed to the subject verbally. Data collector has been referenced those respondents who were completely willing to participate and they reserve the privilege to pull back whenever. Researcher assured them that secrecy would be kept up. The examination result might not have any direct impacts on them however it might be beneficial for their future functioning.

**CHAPTER –IV** **RESULTS**

## 4.1: Socio-demographic information

### 4.1.1. Gender distribution of the participants:

Among 232 participants male were 59 % (n=137), and female were 41 % (n=95). Here male participants were higher than female (Figure 1).

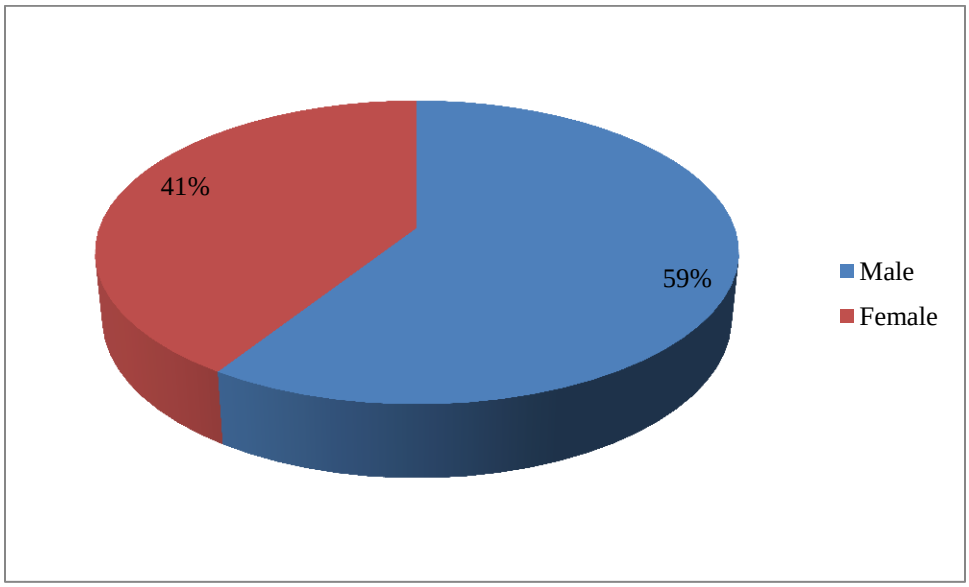



Figure 1: Gender distribution of the participants.

### 4.1.2. Age of the Participants:

Among 232 participants, higher number of participants was 61.6% (n=143) were age range 5-9 years and the number was 34.1% (n=79) were in age range of 10-14 years and least number was 4.3% (n=10) were age range 15-18 years. However the mean (SD) of the participants was 8.85 (±2.95) years (Table 1).

Table 1: Age distribution of the participants

| Age group | Frequency | Percentage | Mean (SD) |
|---|---|---|---|
| 5-9 years | 143 | 61.6% | |
| 10-14 years | 79 | 34.1% | 8.85 (±2.95) |
| 15-18 years | 10 | 4.3% | |

### 4.1.3. Occupation of the Father

Among 232 father of the children and youth with CP most of the father doing job about 49.1% (n=114), 28.9% (n=67) father doing business, 15.5% (n=36) father were in abroad, 2.6% (n=6) were farmer, 2.2% (n=5) doing other activities and 1.7% (n=4) were died (Figure 2).

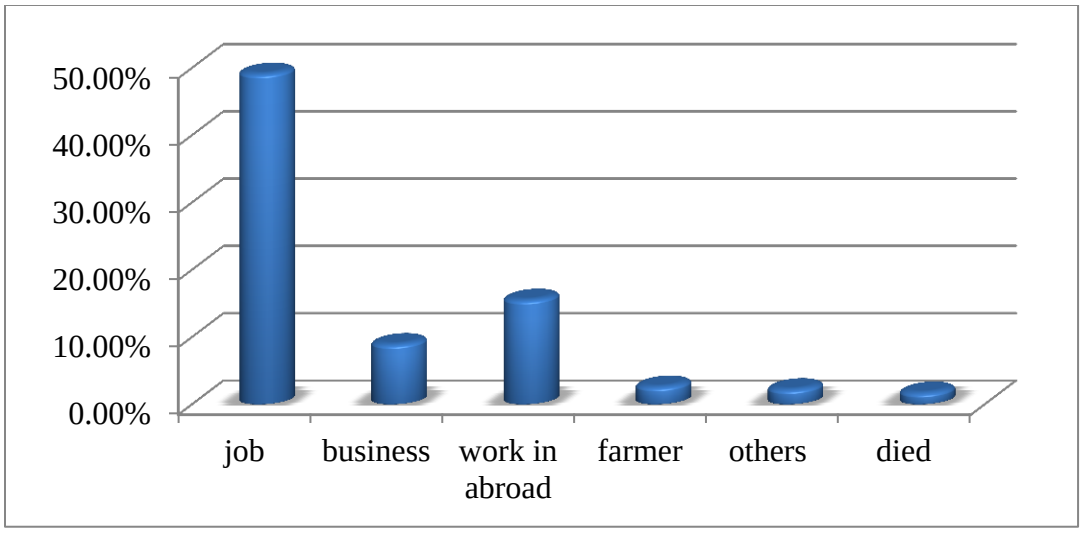



Figure 2: Occupation of the Father

### 4.1.4. Sibling of the participants

Among 232 children with CP 38.8% (n=90) have single sibling, 35.8% (n=83) have two or more siblings and 25.4% (n=59) have no sibling or they have only one child (Figure 3).

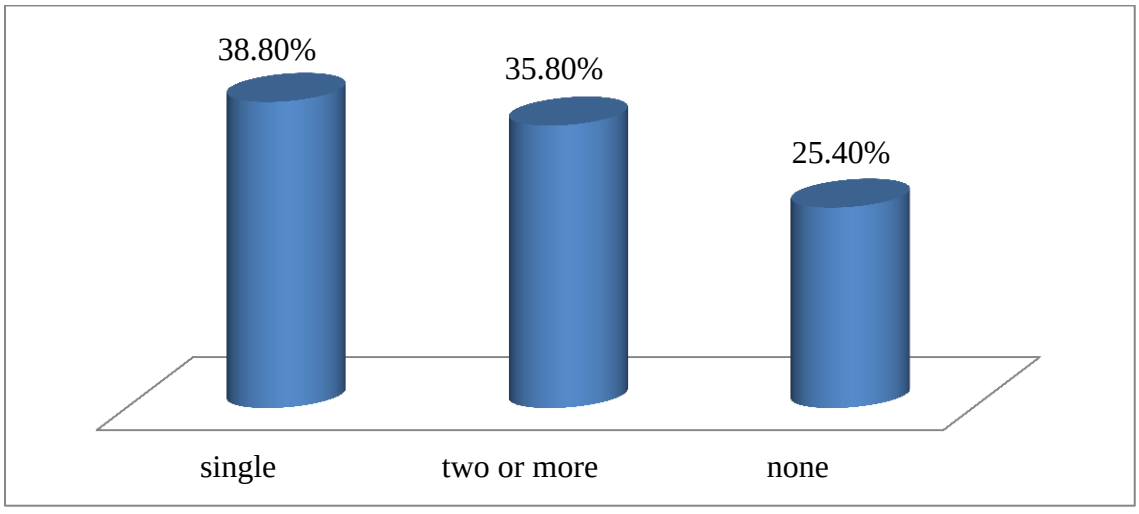



Figure 3: Sibling of the participants

### 4.1.5 Geographical distribution of the participants

Out of 232 participants, belongs to the Chattogram, rest of the participants 6% (n=14), 1.7% (n=4), 5.2% (n=12), 3.4 majority of the participants 63% (n=146) belongs to the Dhaka division, while 16.4% (n=143) % (n=8), 4.3% (n=10), 1.3% (n=3) from Rajshahi, Khulna, Barishal, Mymenshingh, Rangpur and Sylhet (Figure 4).

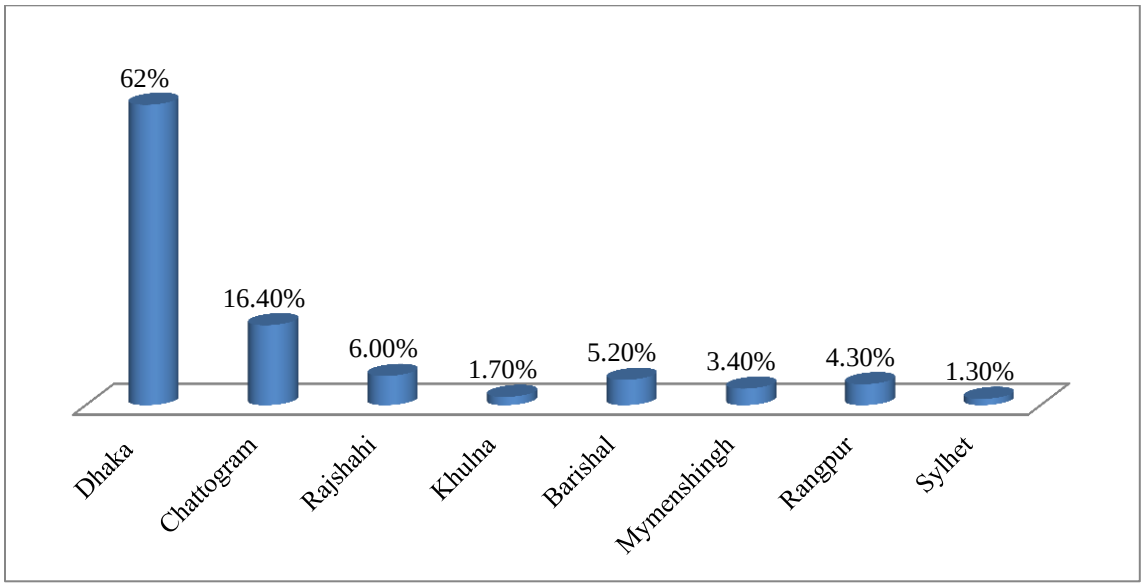



Figure 4: Geographical distribution of the participants in division wise

## 4.2. Medical Related Information of the Participants

### 4.2.1 CP types according to the muscle tone

Out of 232 participants 79.7% (n=185) had spastic tone, 12.9% (n=30) had athetoid tone, 3.4% (n=8) had ataxic tone and 3.9% (n=9) had mixed type of CP respectively (Figure 5).

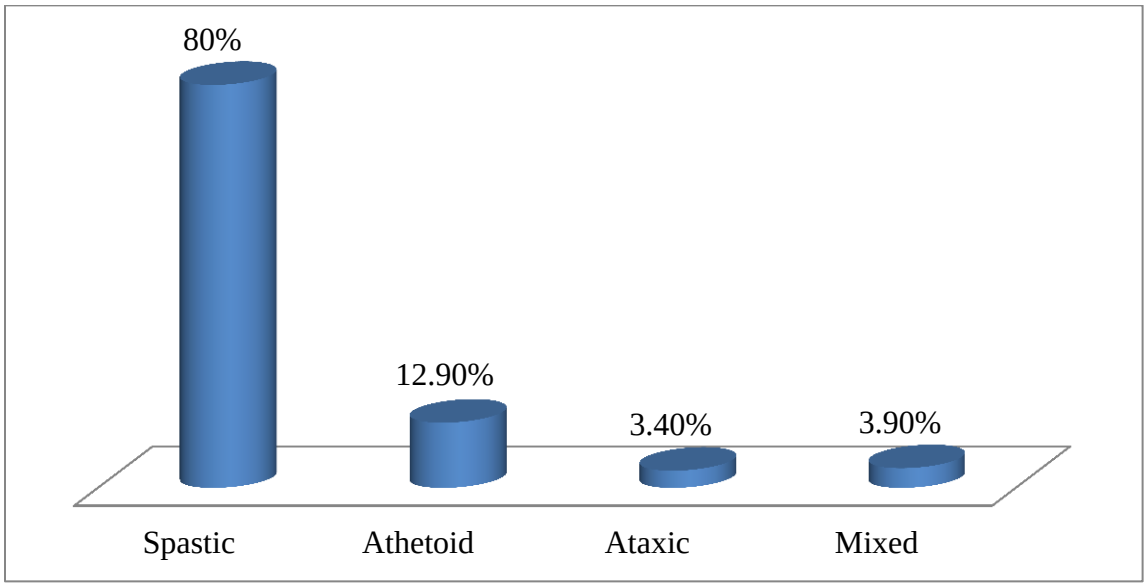



Figure 5. Type of CP According to the Involvement of Muscle Tone

### 4.2.2 Cross tabulation between type of CP (involvement of muscle tone) and Gender

Out of 137 male 47.4% (n=110) were spastic type of CP, consequently 7.8% (n=18), 1.3% (n=3), 2.6% (n=6) were athetoid, ataxic and mixed type of CP. Among 95 female 32.3% (n=75) were spastic type, 12.0% (n=30) were athetoid, 2.2% (n=5) and lastly 1.3% (n=3) were ataxic and mixed type of CP (Table 2).

Table 2. Cross tabulation between type of CP and Gender of participants

| | Gender | | |
|---|---|---|---|
| | **Male** | **Female** | **Total** |
| **Type of CP** | **N (%)** | **N (%)** | **N (%)** |
| **Spastic** | 110 (47.4%) | 75 (32.3%) | 185 (79.7%) |
| **Athetoid** | 18 (7.8%) | 12 (5.2%) | 30 (12.0%) |
| **Ataxic** | 3 (1.3%) | 5 (2.2%) | 8 (3.4%) |
| **Mixed** | 6 (2.6%) | 3 (1.3%) | 9 (3.9%) |
| Total | 137 (59.1%) | 95 (40.9%) | 232 (100%) |

### 4.2.3 Type of CP According to the involvement of the Limb

Here out of 232 participants maximum CP, 48.7% (n=113) were diplegic then 33.2% (n=77) were quadriplegic, 6% (n=14) were Monoplegic, 4.7% (n=11) were triplegic, and finally 7.3% (n=17) were hemiplegic (Figure- 6).

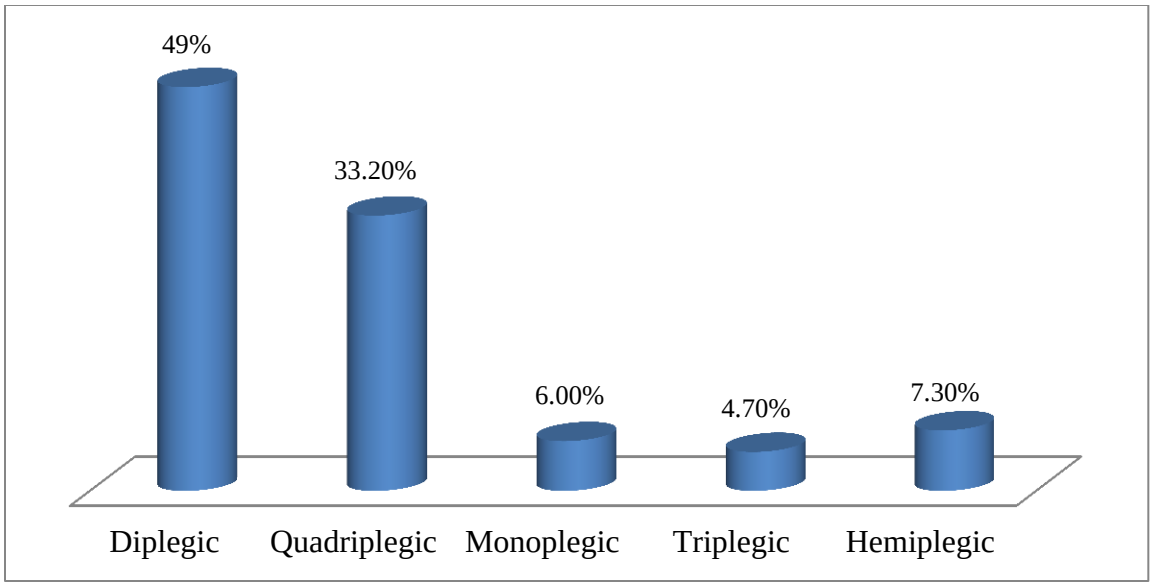



Figure 6: Type of CP According to the involvement of the Limb

**4.2.4 Cross tabulation between different type of CP (involvement of muscle tone and involvement of limb).**

Out of 232 participants maximum participants 45.3% (n=105) were spastic diaplegic, second most participants 19% (n=44) were spastic quadriplegic, 7% (n=16), and 5.2% (n=12) were spastic hemiplegia and spastic monoplegia. 9.5% (n=22), 1.7% (n=4), 0.9% (n=2), 0.4% (n=1), 0.4% (n=1) participants were athetoid quadriplegia, athetoid diaplegia, athetoid monoplegia, athetoid triplegia and athetoid hemiplegia. 2.6% (n=6) were ataxic quadriplegia and 0.9% (n=2) were ataxic diplegia. Finally 2.2% (n=5), 0.9% (n=2), 0.9% (n=2) were mixed quadriplegia, mixed diplegia and mixed triplegia. In this study there were no ataxic monoplegic, mixed monoplegic, ataxic triplegic, ataxic hemiplegic and mixed hemiplegic type of CP present (Table 3).

Table 3. Cross tabulation between both CP type like involvement of muscle tone and involvement of limb.

| | Involvement of limb | | | | |
|---|---|---|---|---|---|
| | **Monoplegia** | **Diplegia** | **Triplegia** | **Quadriplegia** | **Hemiplegia** |
| **Involvement of muscle tone** | **N%** | **N%** | **N%** | **N%** | **N%** |
| **Spastic** | 12 (5.2%) | 105 (45.3%) | 8 (3.4%) | 44 (19%) | 16 (7%) |
| **Athetoid** | 2 (0.9% | 4 (1.7%) | 1 (0.4%) | 22 (9.5%) | 1 (0.4%) |
| **Ataxic** | 0 | 2 (0.9%) | 0 | 6 (2.6%) | 0 |
| **Mixed** | 0 | 2 (0.9%) | 2 (0.9%) | s5 (2.2%) | 0 |
| | 14 (6%) | 113 (49%) | 11 (4.7%) | 77 (33.2%) | 17 (7.3%) |

### 4.3: Activity and Participation level based on Modified ICF Core Sets CY with CP.

The activity and participation score based on modified ICF Core Sets CY with CP reveal that most of the children with CP had mild problem in watching about 69% (n=160) and only 0.4% (n=1) had complete problem, again in case of listening most of the participants had mild problem about 75.4% (n=175) and severe problem had 0.9% (n=2), here no participants had complete problem. Other purposeful senses most of the participants had mild problem about 72.4% (n=168) and severe problems found about 3.4% (n=8) and they had no complete problem. Copying mostly found in mild problem participants about 69.4% (n=161) and complete problem found about 3% (n=7). Learning through action

with objects found mild problem in participants about 71.1% (n=165) and 4.7% (n=11) had complete problem. Mild problem in learning through action with objects found about 71.1% (n=165) and complete problem had found in 4.7% (n=11).

In case of mobility found that 42.7% (n=99) had mild problem in changing basic body position and 0.9% (n=2) had no problem with it consequently 44.8% (n=104) had mild problem and 1.3 % (n=3) had no problem in maintaining a body position. In case of transferring 44% (n=102) had mild problem and no problem with children didn.t found here. In case of walking 30.1% (n=70) had mild and 28.9% (n=67) had moderate problem so this type of children were greatly found. 54.7% (n=127) children had mild problem in basic interpersonal relationship. In case of family relation 63.8 % (n=148) had mild problem but the important thing is 19.8% (n=46) had no problem in family relation. In school education 35.3% (n=82) had mild problem, 27.6% (n=64) had moderate problem and only 4.3% (n=10) had no problem. 38.4% (n=89) had found moderate problem and only 34.5% (n=80) had mild problem but there were no problem with CP had found in engagement in play. Recreation and leisure were very important for each and every person, here 37.1% (n=57) had mild, 25.9% (n=60) had severe, 24.6% (n=57) had moderate and 12.5% (n=29) had complete problem. There were no children and youth found who had no problem.

Table 4: Activity and Participation level in children and youth with Cerebral palsy

| Activity and participation | No problem | Mild problem | Moderate problem | Severe problem | Complete problem |
|---|---|---|---|---|---|
| **Watching** | 38 (16.4) | 160 (69) | 28 (12.1) | 5(2.2) | 1 (0.4) |
| **Listening** | 42 (18.1) | 175(75.4) | 13 (5.6) | 2 (0.9) | 0 |
| **Other purposeful senses** | 43 (18.5) | 168 (72.4) | 13 (5.6) | 8 (3.4) | 0 |
| **Copying** | 22 (9.5) | 161 (69.4) | 26 (11.2) | 16 (6.9) | 7 (3.0) |
| **Learning through actions with objects** | 12 (5.2) | 165 (71.1) | 32 (13.8) | 12 (5.2) | 11 (4.7) |
| **Acquiring objects** | 28 (12.1) | 114 (49.1) | 47 (20.3) | 30 (12.9) | 13 (5.6) |
| **Acquiring concepts** | 18 (7.7) | 123 (53) | 38 (16.4) | 37 (15.9) | 16 (6.9) |
| **Learning to read** | 19 (8.2) | 97 (41.8) | 72 (31) | 25 (10.8) | 19 (8.2) |
| **Learning to write** | 7 (3) | 86 (37.1) | 62 (26.7) | 40 (17.2) | 37 (15.9) |
| **Acquiring skills** | 10 (4.3) | 130 (56) | 57 (24.6) | 25 (10.8) | 10 (4.3) |
| **Focusing attention** | 32 (13.8) | 138 (59.5) | 41 (17.7) | 15 (6.5) | 6 (2.6) |

| Activity and participation | No problem | Mild problem | Moderate problem | Severe problem | Complete Problem |
|---|---|---|---|---|---|
| **Undertaking multiple tasks** | 10 (4.3) | 51 (22) | 79 (34.1) | 57 (24.6) | 35 (15.1) |
| **Problem solving by patient** | 9 (3.9) | 53 (22.8) | 69 (29.7) | 44 (19) | 57 (24.6) |
| **Managing one's own behavior** | 38 (16.3) | 132 (56.9) | 29 (12.5) | 10 (4.3) | 23 (9.9) |
| **Carrying out daily routine** | 22 (9.5) | 108 (46.6) | 56 (24.1) | 19 (8.2) | 27 (11.6) |
| **Communicating with receiving spoken message** | 30 (12.9) | 157 (67.7) | 24 (10.3) | 17 (7.3) | 4 (1.7) |
| **Speaking** | 22 (9.5) | 104 (44.8) | 57 (24.6) | 34 (14.7) | 15 (6.5) |

| Activity and participation | No problem | Mild problem | Moderate problem | Severe problem | Complete problem |
|---|---|---|---|---|---|
| **Pre-talking** | 36 (15.5) | 154 (66.4) | 17 (7.3) | 19 (8.2) | 6 (2.6) |
| **Producing nonverbal message** | 31 (13.4) | 143 (61.6) | 36 (15.5) | 15 (6.5) | 7 (3) |
| **Conversation** | 14 (6.0) | 126 (54.3) | 44 (19) | 38 (16.4) | 10 (4.3) |
| **Maintaining a body position** | 3 (1.3) | 104 (44.8) | 63 (27.2) | 44 (19) | 18 (7.8) |
| **Changing basic body position** | 2 (0.9) | 99 (42.7) | 68 (29.3) | 42 (18.1) | 21 (9.1) |
| **Transferring oneself** | 0 | 102 (44) | 62 (26.7) | 42 (18.1) | 26 (11.2) |
| **Lifting and carrying objects** | 5 (2.2) | 126 (54.3) | 62 (26.7) | 30 (12.9) | 9 (3.9) |
| **Moving objects with lower extremities** | 0 | 54 (23.3) | 69 (29.7) | 63 (27.2) | 46 (19.8) |
| **Fine hand use** | 5 (2.2) | 90 (38.8) | 84 (36.2) | 34 (14.7) | 19 (8.2) |

| Activity and participation | No problem | Mild problem | Moderate problem | Severe problem | Complete Problem |
|---|---|---|---|---|---|
| **Hand and arm use** | 5 (2.2) | 147 (63.4) | 45 (19.4) | 32 (13.8) | 3 (1.3) |
| **Walking** | 1 (0.4) | 70 (30.1) | 67 (28.9) | 48 (20.7) | 46 (19.8) |
| **Moving around in different location** | 0 | 29 (12.5) | 72 (31) | 72 (31) | 59 (25 4) |
| **Using transportation** | 0 | 93 (40.1) | 46 (19.8) | 59 (25.4) | 34 (14.7) |
| **Washing oneself** | 6 (2.6) | 97 (41.8) | 69 (29.7) | 31 (13.4) | 29 (12.5) |
| **Caring of body parts** | 4 (1.7) | 96 (41.4) | 69 (29.7) | 37 (15.9) | 26 (11.2) |
| **Toileting** | 1 (0.4) | 47 (20.3) | 96 (41.4) | 44 (19) | 44 (19) |
| **Dressing** | 3 (1.3) | 69 (29.7) | 75 (32.3) | 40 (17.2) | 45 (19.4) |
| **Eating** | 7 (3.0) | 130 (56) | 51 (22) | 28 (12.1) | 16 (6.9) |
| **Drinking** | 7 (3.0) | 153 (65.9) | 33(14.2) | 23 (9.9) | 16 (6.9) |
| **Basic interpersonal interactions** | 34 (14.6) | 127 (54.7) | 22 (9.5) | 25 (10.8) | 24 (10.3) |

| Activity and participation | No problem | Mild problem | Moderate problem | Severe problem | Complete problem |
|---|---|---|---|---|---|
| **Family relationships** | 46 (19.8) | 148 (63.8) | 18 (7.8) | 13 (5.6) | 7 (3.0) |
| **Preschool education** | 34 (14.7) | 116 (50) | 38 (16.4) | 29 (12.5) | 15 (6.5) |
| **School education** | 10 (4.3) | 82 (35.3) | 64 (27.6) | 45 (19.4) | 31 (13.4) |
| **Engagement in play** | 0 | 80 (34.5) | 89 (38.4) | 45 (19.4) | 18 (7.8) |
| **Recreation and leisure** | 0 | 86 (37.1) | 57 (24.6) | 60 (25.9) | 29 (12.5) |

### 4.4: Correlation between Socio-demographic factors and Activity and Participation level

#### 4.4.1 Correlation between Socio-demographic factors (Age) and Activity and Participation level (Spearman's rs)

Spearman correlation coefficient for the correlation between Age of children with CP and activity and participation level in which participant to focusing attention (rs = -.165, p=.05) is more correlated than second most correlated coefficient were problem solving by patient (rs= -.159, p=.05) and family relation (rs= -.159, p=.05). Communicating with receiving spoken message (rs= -.134, p=.05) has less correlation with age (Table 5)

Table 5: Correlation between Socio-demographic factors (Age) and Activity and Participation level (Spearman's rs).

| **Independent Variable** | **Dependent Variable** | **Spearman rank Value ($r_s$)** | **p-value** |
|---|---|---|---|
| Age | Participant to focusing attention | -.165 | .05 |
| | Problem solving by patient | -.159 | .05 |
| | Communicating with receiving spoken message | -.13 | .05 |
| | Family relation | -.159 | .05 |
| | School education | -.123 | .06 |

4.4.1 Figure-7 Indicate that there was monotonic Correlation between Socio-demographic factors (Age) and Activity & Participation level based on ICF Core Sets CY with CP (Spearman's rs).

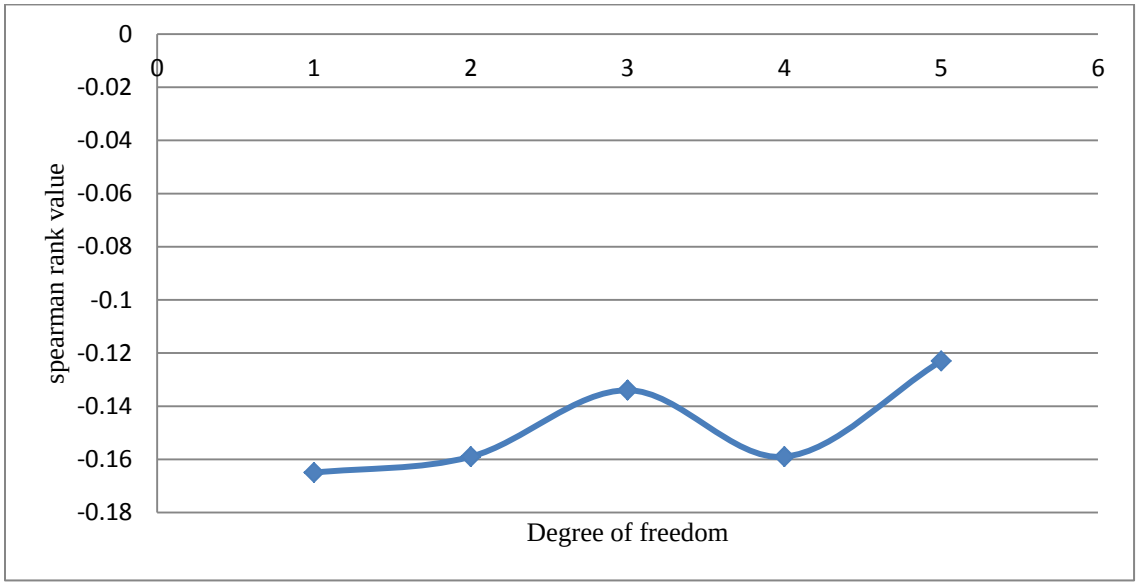



Figure 7: Correlation between Socio-demographic factors (Age) and Activity & Participation level (Spearman's rs)

**4.4.2 Correlation between Socio-demographic factors (Gender) and Activity and Participation level (Spearman's rs)**

Spearman correlation coefficient is higher between gender of children and youth with CP and school education (rs= -.241, p=.05) than second most correlated coefficient was complex interpersonal interaction (rs = -.197, p=.01) and basic interpersonal relation as well as recreation and leisure has less correlation such as (rs = -.158, p=.01) and (rs = -.154, p=.05) respectively.

Table 6: Correlation between Socio-demographic factors (Gender) and Activity & Participation component (Spearman's rs)

| **Independent Variable** | **Dependent variables** | **Spear-man rank Value, $r_s$** | **p-value** |
|---|---|---|---|
| Gender | Basic interpersonal interaction | -.158 | .05 |
| | Complex interpersonal interaction | -.197 | .01 |
| | School education | -.241 | .01 |
| | Recreation & leisure | -.154 | .05 |

Correlation between Socio-demographic factors (Gender) and Activity & Participation level based on ICF Core Sets (Spearman's rs) shows monotonic correlation in this (Figure-8).

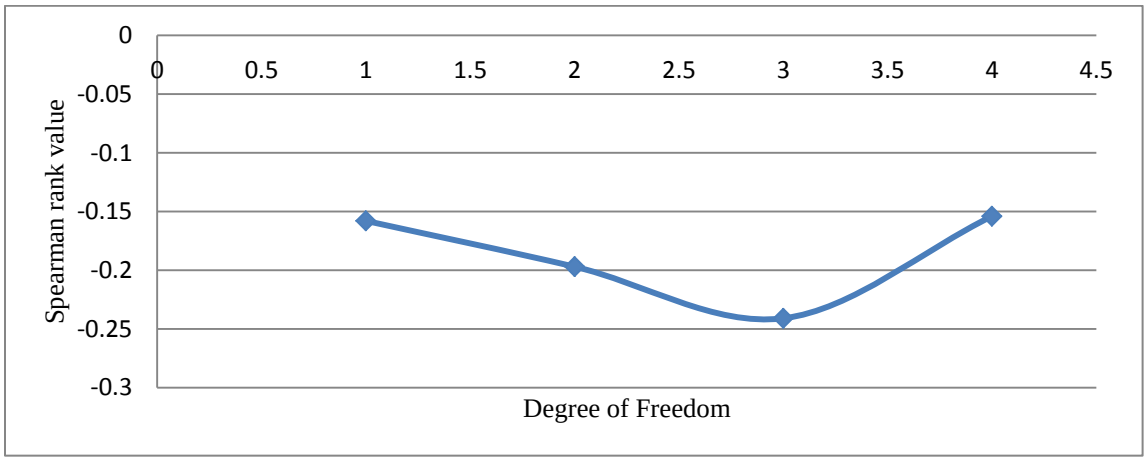



Figure 8: Correlation between Socio-demographic factors (Gender) and Activity & Participation level (Spearman's rs)

### 4.5: Correlation between Medical-related factors and Activity and Participation level (Spearman's rs)

### 4.5.1 Correlation between Medical-related factors (type of CP relation to muscle tone) and Activity and Participation level (Spearman's rs)

Table 7. indicate that Spearman correlation coefficient is higher between type of CP (involvement of tone) of children and youth with CP and fine hand function (rs= .221, p=.05) than second most correlated coefficient was changing basic body position (rs = -.144, p=.01) and speaking (rs = .133, p=.05) and also (rs = .174, p=.05) respectively.

Table 7. Correlation between Medical-related factors (type of CP relation to muscle tone) and Activity and Participation level (Spearman's rs)

| **Independent Variable** | **Dependent Variable** | **Spearman rank Value ($r_{s)}$** | **P-score** |
|---|---|---|---|
| Type of CP in relation to muscle tone | Speaking | .133 | .05 |
| | Fine hand function | .221 | .01 |
| | Changing basic body position | .144 | .05 |
| | Eating | .174 | .05 |

Correlation between Medical-related factors (type of CP relation to muscle tone) and Activity and Participation level based on ICF Core Sets (Spearman's rs) figure shows that there was monotonic correlation between variables (Figure 9).

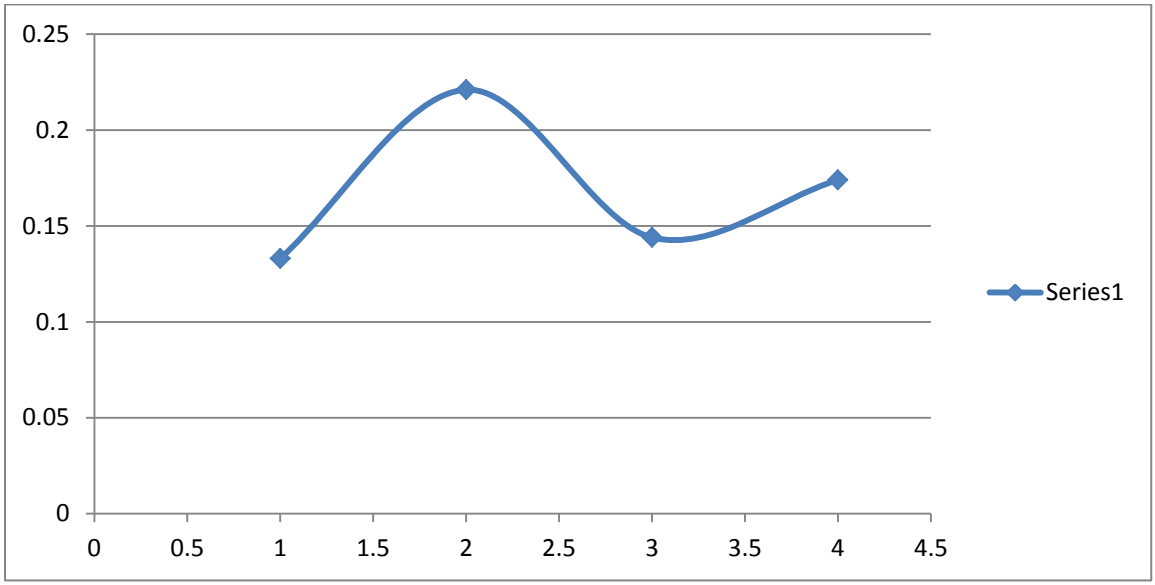



Figure 9: Correlation between Medical-related factors (type of CP relation to muscle tone) and Activity and Participation level (Spearman's rs)

### 4.5.2 Association between medical-related factors (type of CP involvement of muscle tone) and Activity and participation level

Spearman correlation coefficient is higher between type of CP (involvement of limb) of children and youth with CP and acquiring skill (rs= .179, p=.05) than second most correlated coefficient was maintaining a body position (rs = .141, p=.01) and speaking (rs = .133, p=.05) respectively.

Table 8: Correlation between medical-related factors (type of CP involvement of limb) and Activity and participation level

| **Independent Variable** | **Dependent Variable** | **Spearman rank Value ($r_s$)** | **P-score** |
|---|---|---|---|
| Type of CP by limb involvement | Maintaining a body position | .141 | .05 |
| | Acquiring a skills | .179 | .01 |
| | Maintaining a body position | .138 | .05 |

Correlation between medical-related factors (type of CP involvement of limb) and Activity and participation level found non-monotonic relation between variables (Figure 10).

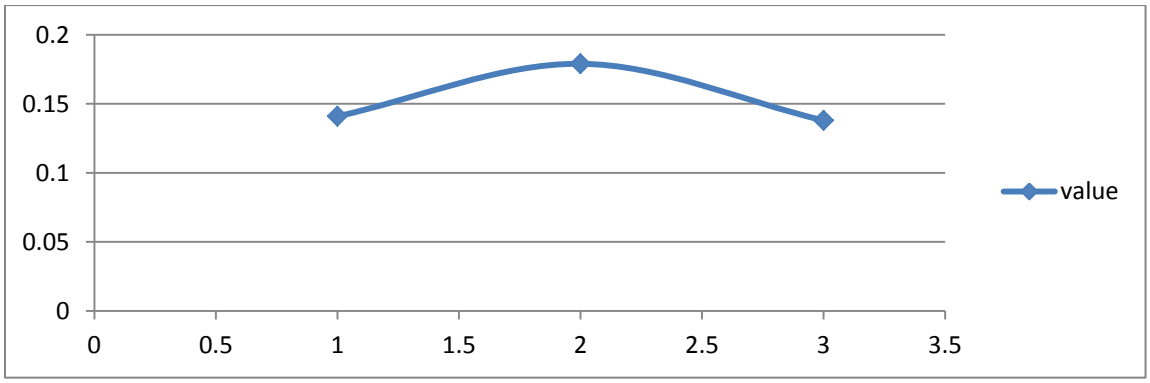



Figure 10: Correlation between type of CP involvement of limb and Activity and Participation level

## CHAPTER-V DISCUSSION

The study aim is to determine the activity and participation level based on ICF Core Sets children and youth with CP. CP is the most disabling condition which leads to activity limitation and participation restriction in their day to day life. Here 232 children and youth with CP were taken in which 137 were male and 95 were female so from this study found that male was higher than female. Several study done to determine sex differences into CP, study found that frequency is higher in male rather than female due to greater biological vulnerability in the some aspect of cerebral structure, hormone protective role, and genetic polymorphism (Vasileiadis et al., 2009). Jarvis et al. reported 2005 in their study that preterm male babies have 16 time higher chance to develop CP than term babies. Another study also reveals that male preponderance among preterm babies having CP

(Tatavarti et al., 2018). Bangladesh is one of the top 10 countries with the greatest number of pre-term birth (Blencowe et al., 2012).

Age of the participants was 5 to 18 years because physical and skill-based activities is required to be done outside and needs physical abilities (Mehraban et al., 2016). In this study pre- school and school-aged participants were taken because they have change to show their activities and participation in their daily life outside the home. In a systematic review found that most of the participants of the study were between 3.5 to 18 years old (Rozkalne & Bertule, 2014). In the study most of the participants' age range was 5-9 years because in CRP, CP age range at paediatric unit is range from 0 month to 11 years besides that this age range patient were easy to carry out rather than older age group.

Study reveal that most of the father were doing job and second most common occupation was business. Father education and socioeconomic status was very important for children and youth with CP. Because study stated that functional outcome of CP vary by social class (Tseng et al., 2018). Oskoui et al. reported in 2016, in their study that maternal education and neighborhood economic conditions were associated with motor functional limitation in children with CP. So socioeconomic solvency is very important to lead an optimal functional life in children and youth with CP.

Supported families have a positive influence on those with CP during both childhood and adulthood. Relationship of siblings are extremely important in some matter most powerful bond and human interaction are between siblings because they act as a surrogate parents, informal teacher and friends (Davidoff, 2006). In this study reveal that 38.8% have single sibling and 35.8% have two or more sibling. Siblings are the vital part in their functional life. Supporting healthy sibling relationship has long term benefits and also siblings who are friends and mentors become not only friend but also mentor for the life time (Freeborn & knafl, 2013). In this study 25.4% participants have no siblings so it may have few benefits like help to continue their long term rehabilitation facilities and also schooling but they were deprived from a friend or mentor like siblings.

Findings of the differential representation of children and youth with CP at CRP-Savar, WMTS and CRP- Mirpur from different division may depend on geographical accessibility. From (figure 5) seen that most of the participants from Dhaka division and then the next highest number were from Chattogram and then from Rajshahi. Only few participants come from other district. Here we can see that health seeking behavior also depends on many factors among them socio-economic factor such as geographical

distance of the health care service, people's awareness about health care provider and also economic status of the people (Ahmed, 2005).

Categorization of children with CP into clinical group is very challenging (Bax et al., 2005). Table-1, shows that spastic type of CP is higher in male rather than female but ataxic CP is higher in female about 2.2% of cases. Few studies support that ataxic CP is higher in female (Pfeifer et al., 2009). There are several study support that spastic type which is higher among children and youth with CP. Sankar & Mundkur in 2005, stated in their study that spastic CP is the commonest and its account for 70%-75% of all cases. Second commonest cases were dyskinetic or athetoid, about 10%-15% and ataxia found in 5% of cases but they were not mentioned about mixed type of CP. Another study stated about 2% of mixed type of CP (Gowda et al., 2015). So from the discussion reveal that Spastic CP is higher in male and ataxic CP is higher in female.

Activity and participation level based on Modified ICF Core sets CY with CP found most of the participants has greater mild problems than other aspect of the activities and participation but few has greater moderate problem such as calculating, problem solving by patient, understanding multiple task, moving objects with lower extremities, moving around in different location, dressing, toileting etc aspect of activities and participation. However, the outcome of the evaluation of activity and participation in clinical settings may provide an unrealistic image of capabilities in daily life, as this setting is isolated from environmental and personal factors (Gorter et al., 2004).

For growth and development of age appropriate capacities are certainly important for functional activities as well as independent daily and social living for children with CP.

In this study found that different age of the participants and few domain of activity and participation level have weak correlation. It may be due to in this study age specific correlation didn't observe and also most of the participants were 5-9 years so might be their cognitive level might not developed equal to age. Another study stated that balanced development of physical and cognitive functioning is rare in children with CP and they do not function normally in a specific domain as well as they do not show normal overall development (Hadden & von Baeyer, 2005). So study indicate that children in older age groups demonstrate better activity and participation then younger. Manual abilities and hand functioning require higher cognitive abilities and motor control and occur at older ages which might explain that younger children shows less correlation with activity and participation than older.

Gender and activity and participation (Modified ICF Core Sets CY-CP) found weak correlation (Table: 5) in aspect of basic interpersonal interaction, complex interpersonal interaction, family relation and school education. Another study reported that they didn't find any sex difference in motor functional level (Chounti et al., 2013). We believed that this correlation is possible due to most of the participants were school going and they were capable to interact at different area and also different level. Another study suggest that school-aged children with CP, the extents of functioning, activity, and participation all depend on the ability of the children to handle and manipulate objects (Lee et al., 2015). So it can be concluded that there is no difference between gender and activity and participation level based on Modified ICF Core sets CY-CP.

Positive correlation found between type of CP (involvement of muscle tone) and activity and participation (Modified ICF Core Sets CY-CP) in which fine hand function is more

correlated than changing basic body position and speaking. In this survey most of the participants were spastic diplegic type so obviously their upper limb more functional than lower limb.

Another positive correlation found between type of CP ( involvement of limb) and activity and participation ( Modified ICF Core Sets of CY-CP) in which acquiring skill includes manipulating tools and toys, or playing games is higher correlation than maintaining a body position include maintaining a lying, squatting, kneeling, sitting and standing position.

### 5.1 Limitation of the study

1. Lack of prior research study on prevalence of CP. There is no exact prevalence of CP in Bangladesh which has affected the sample size selection.

2. ICF Core Sets CY with CP is newly introducing questionnaire in health sector, so its validity test at rehabilitation sector still ongoing.

3. Questionnaire is very much descriptive so it's tough to understand the question in short periods and it's taken 20-30 minutes to complete the questionnaire.

4. The questionnaire was developed in western or developed countries so there are several cultural differences between western and low and middle income countries. This may affect the result of the study.

5. As it is center based study, data were collected only center and also school so naturally activity and participation level is much higher than others which may affect the outcome of the result.

6. As data were taken from CRP-Savar, WMTS-Savar and also CRP-Mirpur so heterogeneous data were taken from different sector that may interfere the result.

7. Sample size was low so it's tough to generalize the result for the whole population.

8. There was no available research found in this topic in the Bangladesh as well as worldwide. So, relevant information about level of activity and participation in children with CP is very much limited.

## CHAPTER-VI CONCLUSION & RECOMMENDATIONS

Children with CP and their parents as well as Health professionals are focus on functional ability rather than impairment. ICF core sets CY with CP, broadly describe the functional ability of the children and youth with CP. The study shows that age, gender, father's occupation, siblings as well as medical factors like CP type based on involvement of limb and involvement of tone were independent variable and activity and functional level based on Modified ICF core set CY-CP was dependent variable. Study found that most of the participant's age range was 5 to 16 years, among them most of the participant's age range between 5 to 9 years old, male participants were higher than female, and most of the participant's father doing jobs and maximum remain in Dhaka division. There were correlation found between different sub-type of CP and activity and participation level based on modified ICF core sets. So this study suggest that ICF core sets CY with CP can use in rehabilitation sector as an assessment tool which describing functional ability of the children with CP.

## 6.1 Recommendations

- A National epidemiological survey on cerebral palsy to determine the baseline data such as incidence, prevalence, age distribution, cause or risk factors of developing cerebral palsy, rather this information cannot be planned properly.

- More study is needed to explain the activity and participation level in children with cerebral palsy.

- Professionals should focus on activity and participation of children with CP rather than impairment.

- Here only activity and participation level was check, recommended to check environmental barrier that may interfere the functional outcome of children with CP.

- Comprehensive ICF core sets is originated in western country so its pattern is like western but it will be more reliable if researcher include cultural activities according in our own perspectives in the questionnaire.

- Another recommendation is if it is possible to increase sample size then the study result will be more generalized.

## BIBLIOGRAPHY


Accardo, P.J., Accardo, J.A. & Capute, A.J. (2008). A neurodevelopmental perspective on the continuum of developmental disabilities. *Capute and Accardo's neurodevelopmental disabilities in infancy and childhood. 3rd ed. Baltimore: Paul H Brookes*, 3-26.

Ahmad, A., Akhtar, N., & Ali, H. (2017). Prevalence Of Cerebral Palsy In Children Of District Swabi, Khyber Pakhtunkhwa-Pakistan. *Kmuj: Khyber Medical University Journal*, *9*(2).

Ahmed, S. M. (2005). Exploring Health Seeking Behavior of Disadvantaged populations in Bangladesh, *Karolinska University Press of Sweden.* Retrieved 22.08.2019 from https://openarchive.ki.se/xmlui/handle/10616/39135.

Andersen, G.L., Romundstad, P., CRUZ, J.D.L., Himmelmann, K., Sellier, E., Cans, C., Kurinczuk, J.J. & Vik, T. (2011). Cerebral palsy among children born moderately preterm or at moderately low birthweight between 1980 and 1998: a European register-based study. *Developmental Medicine & Child Neurology*, *53*(10), 913-919.

Arneson, C.L., Durkin, M.S., Benedict, R.E., Kirby, R.S., Yeargin-Allsopp, M., Braun, K.V.N. & Doernberg, N.S. (2009). Prevalence of cerebral palsy: autism and developmental disabilities monitoring network, three sites, United States, 2004. *Disability and health journal*, *2*(1), 45-48.

Bangash, A. S., Hanafi, M. Z., Idrees, R., & Zehra, N. (2014). Risk factors and types of cerebral palsy. *Journal of Pakistan Medical Association*. 64, 103.

Bax, M., Goldstein, M., Rosenbaum, P., Leviton, A., Paneth, N., Dan, B., ... &

Damiano, D. (2005). Proposed definition and classification of cerebral palsy, April 2005. *Developmental medicine and child neurology*, *47*(8), 571-576. DOI: 10.1017/s001216220500112x.

Beckung, E., & Hagberg, G. (2002). Neuroimpairments, activity limitations, and participation restrictions in children with cerebral palsy. *Developmental medicine and child neurology*, *44*(5), 309-316.

Bell, K.L., Boyd, R.N., Tweedy, S.M., Weir, K.A., Stevenson, R.D., & Davies, P.S. (2010).A Prospective, longitudinal study of growth, nutrition and sedentary behavior in young children with cerebral palsy. *Bio Med Central Public Health*, 10, 179.

Bickenbach, J., Cieza, A., Rauch, A. and Stucki, G. eds. (2012). *ICF core sets: manual for clinical practice for the ICF research branch, in cooperation with the WHO collaborating centre for the family of international classifications in Germany (DIMDI)*. Hogrefe Publishing.

Blencowe, H., Cousens, S., Oestergaard, M. Z., Chou, D., Moller, A. B., Narwal, R., ... & Lawn, J. E. (2012). National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications. *The lancet*, *379*(9832), 2162-2172.

Braun, K.V.N., Doernberg, N., Schieve, L., Christensen, D., Goodman, A. & Yeargin-Allsopp, M. (2016). Birth prevalence of cerebral palsy: a population-based study. *Pediatrics*, 137(1), e20152872.

Cans, C., De-la-Cruz, J., & Mermet, M. A. (2008). Epidemiology of cerebral palsy. *Paediatrics and child health*, *18*(9), 393-398.

Chen, C.M. Hsu, H.C., Chen, C.L., Chung, C.Y., Chen, K.H., & Liaw, M.Y.

(2013). Predictors for changes in various developmental outcomes of children with cerebral palsy. *Research in Developmental Disabilities*, 34, 3867-3874.

Chounti, A., Hägglund, G., Wagner, P., & Westbom, L. (2013). Sex differences in cerebral palsy incidence and functional ability: a total population study. *Acta Paediatrica*, *102*(7), 712-717. Retrieved 02.11.2019 from https://www.researchgate.net/publication/236102748_Sex_differences_in_cerebral_palsy_incidence_and_functional_ability_A_total_population_study.

Christensen, D., Van Naarden Braun, K., Doernberg, N.S., Maenner, M.J., Arneson, C.L., Durkin, M.S., Benedict, R.E., Kirby, R.S., Wingate, M.S., Fitzgerald, R. & Yeargin-Allsopp, M., (2014). Prevalence of cerebral palsy, co-occurring autism spectrum disorders, and motor functioning–Autism and Developmental Disabilities Monitoring Network, USA, 2008. *Developmental Medicine & Child Neurology*, *56*(1), 59-65.

Cruz, M., Jenkins, R., & Silberberg, D. (2006). The burden of brain disorders. *Science*, *312*(5770), 53-53.

Davidoff, L. (2006). The sibling relationship and sibling incest in historical context. *In P. Coles (Ed.), Sibling relationships.* London: Karnac Books, Ltd. Retrieved from https://www.taylorfrancis.com/books/e/9780429480201/chapters/10.4324/9780429480201-2

Durkin, M. S., Benedict, R. E., Christensen, D., Dubois, L. A., Fitzgerald, R. T., Kirby, R. S., ... & Yeargin-Allsopp, M. (2016). Prevalence of cerebral palsy among 8-year-old children in 2010 and preliminary evidence of trends in its relationship to low

birthweight. *Paediatric and perinatal epidemiology*, *30*(5), 496-510.

Elkamil, A., Andersen, G.L., Hagglunad, G., Lamvik, T., Skranes, J., & Vik, T. (2011). Prevalence of hip dislocation among children with cerebral palsy in regions with and without a surveillance programme: a cross sectional study in Sweden and Norway. *Bio Med Central Musculoskeletal disorder*, *12*, 284.

Ellison, P.H., Horn, J.L. & Browning, C.A. (1985). Construction of an Infant Neurological International Battery (INFANIB) for the assessment of neurological integrity in infancy. *Physical therapy*, *65*(9), 1326-1331.

Faria, A.V., Hoon, A., Stachinko, E., Jiang, H., Mashayekh, A., Akhter, K., Hsu, J., Oishi, K., Zhang, J., Miller, M.I., and Mori, S. (2011). Quantitative Analysis of Brain Pathology Based on MRI and Brain Atlases-Applications for Cerebral Palsy. *Neuroimage*, 54(3), 1854-1861.

Freeborn, D., & Knafl, K. (2014). Growing up with cerebral palsy: perceptions of the influence of family. *Child: care, health and development*, *40*(5), 671-679.

Gorter, J. W., Rosenbaum, P. L., Hanna, S. E., Palisano, R. J., Bartlett, D. J., Russell, D. J., & Wood, E. (2004). Limb distribution, motor impairment, and functional classification of cerebral palsy. *Developmental medicine and child neurology*, *46*(7), 461-467.

Gowda, V. K., Kumar, A., Shivappa, S. K., & Srikanteswara, P. K. (2015). Clinical profile, predisposing factors, and associated co-morbidities of children with cerebral palsy in South India. *Journal of pediatric neurosciences*, *10*(2), 108.

Graham, H. K., Rosenbaum, P., Paneth, N., Dan, B., Lin, J. P., Damiano, D. L., Becher, J. G., Gaebler-Spira, D., Colver, A., Reddihough, D. S., Crompton, K. E., &

Lieber, R. L. (2016). Cerebral Palsy. *Nature Reviews, Disease Primers, 2*, 15082.

Grill, E., Bronstein, A., Furman, J., Zee, D.S. and Müller, M. (2012). International Classification of Functioning, Disability and Health (ICF) Core Set for patients with vertigo, dizziness and balance disorders. *Journal of Vestibular Research*, *22*(5, 6), 261-271.

Hadden, K. L., & von Baeyer, C. L. (2005). Global and specific behavioral measures of pain in children with cerebral palsy. *The Clinical journal of pain, 21*(2), 140-146.

Hai, M. S. B. A., Sarker, R. N., Akter, A., Biswas, P., Kundu, G. C., & Mehedi, M. T. (2015). Determinants of cerebral palsy among under-5 children. *Bangladesh Medical Journal*, *44*(1), 3-7.

Hallman-Cooper, J. L., & Gossman, W. (2009). *Cerebral Palsy.* 8600 Rockville Pike, Bethesda MD, 20894 USA: StatPearls Publishing LLC.

Hankins, G.D. & Speer, M. (2003). Defining the pathogenesis and pathophysiology of neonatal encephalopathy and cerebral palsy. *Obstetrics & Gynecology, 102*(3), 628-636.

Himmelmann, K., & Uvebrant, P. (2014). The panorama of cerebral palsy in Sweden. XI. Changing patterns in the birth-year period 2003–2006. *Acta Paediatrica*, *103*(6), 618-624.

Himmelmann, K., Ahlin, K., Jacobsson, B., Cans, C., & Thorsen, P. (2012). Risk Factors for Cerebral Palsy in Children Born at Term. *Obstetric Anesthesia Digest*, *32*(3), 182-183.

Hirvonen, M., Ojala, R., Korhonen, P., Haataja, P., Eriksson, K., Gissler, M.,

Luukkaala, T. & Tammela, O. (2014). Cerebral palsy among children born moderately and late preterm. *Pediatrics, 134*(6), e1584-e1593.

Hurley, D.S., Sukal-Moulton, T., Msall, M.E., Gaebler-Spira, D., Krosschell, K.J. & Dewald, J.P. (2011). The cerebral palsy research registry: development and progress toward national collaboration in the United States. *Journal of child neurology*, 26(12), 1534-1541.

Hustad, K.C., Gorton, K., & Lee, J., (2011). Classification of speech and language profile in 4years old children with cerebral palsy. *National Institute of Health Public Access Author Manuscript*, *53*(6), 1496-1513.

Jarvis, S., Glinianaia, S. V., Arnaud, C., Fauconnier, J., Johnson, A., McManus, V., ... & Krägeloh-Mann, I. (2005). Case gender and severity in cerebral palsy varies with intrauterine growth. *Archives of disease in childhood*, *90*(5), 474-479.

Johnson, A. (2002). Prevalence and characteristics of children with cerebral palsy in Europe. *Developmental medicine and child neurology*, *44*(9), 633-640.

Johnston, M. V., & Hagberg, H. (2007). Sex and the pathogenesis of cerebral palsy. *Developmental Medicine & Child Neurology*, *49*(1), 74-78.

Jones, M.W., Morgan, E., Shelton, J.E. & Thorogood, C., (2007). Cerebral palsy: introduction and diagnosis (part I). *Journal of Pediatric Health Care*, 21(3), 146-152.

Khandaker, G., Muhit, M., Karim, T., Smithers-Sheedy, H., Novak, I., Jones, C., & Badawi, N. (2018). Epidemiology of cerebral palsy in Bangladesh: a population-based surveillance study. *Developmental Medicine & Child Neurology*, *61*(5), 601-609.

Khandaker, G., Muhit, M., Rashid, H., Khan, A., Islam, J., Jones, C. & Booy, R. (2014). Infectious causes of childhood disability: results from a pilot study in rural

Bangladesh. *Journal of tropical pediatrics*, *60*(5), 363-369.

Khandaker, G., Smithers-Sheedy, H., Islam, J., Alam, M., Jung, J., Novak, I., Booy, R., Jones, C., Badawi, N. & Muhit, M. (2015). Bangladesh Cerebral Palsy Register (BCPR): a pilot study to develop a national cerebral palsy (CP) register with surveillance of children for CP. *BMC neurology*, *15*(1), 173.

Kim, Y., & Lee, B. H. (2013). Clinical usefulness of child-centered task-oriented training on balance ability in cerebral palsy. *Journal of physical therapy science*, *25*(8), 947-951.

Kirby, R. S., Wingate, M. S., Braun, K. V. N., Doernberg, N. S., Arneson, C. L., Benedict, R. E., ... & Patz, J. A. (2011). Prevalence and functioning of children with cerebral palsy in four areas of the United States in 2006: a report from the Autism and Developmental Disabilities Monitoring Network. *Research in developmental disabilities*, *32*(2), 462-469.

Kułak, P., Maciorkowska, E., & Goscik E. (2014). Selected risk factors for spastic cerebral palsy in a retrospective hospital–based case control study. *Progress in Health Science*. 4 (2), 7-13.

Lee, J. W., Chung, E., & Lee, B. H. (2015). A comparison of functioning, activity, and participation in school-aged children with cerebral palsy using the manual ability classification system. *Journal of physical therapy science*, *27*(1), 243-246.

Leonard, J. M., Cozens, A. L., Reid, S. M., Fahey, M. C., Ditchfield, M. R., & Reddihough, D. S. (2011). Should children with cerebral palsy and normal imaging undergo testing for inherited metabolic disorders?. *Developmental Medicine & Child Neurology*, *53*(3), 226-232.

MacLennan, A. (1999). A template for defining a causal relation between acute intrapartum events and cerebral palsy: international consensus statement. *Bmj*, *319*(7216), 1054-1059.

MacLennan, A., Stanley, F., Badaw, N., Bennet, L., Bennett, M., Blair, E., Bonnar, J., Brinsmead, M., Chambers, H., Colditz, P. & Creasy, R. (2000). A template for defining a causal relationship between acute intrapartum events and cerebral palsy. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, *40*, 13-21.

Maenner, M.J., Blumberg, S.J., Kogan, M.D., Christensen, D., Yeargin-Allsopp, M. & Schieve, L.A. (2016). Prevalence of cerebral palsy and intellectual disability among children identified in two US National Surveys, 2011–2013. *Annals of epidemiology*, 26(3), 222-226.

Maloni, P.K., Despres, E.R., Habbous, J., Primmer, A.R., Slatten, J.B., Gibson, B.E. & Landry, M.D. (2010). Perceptions of disability among mothers of children with disability in Bangladesh: Implications for rehabilitation service delivery. *Disability and rehabilitation*, *32*(10), 845-854.

Mehraban, A. H., Hasani, M., & Amini, M. (2016). The comparison of participation in school-aged cerebral palsy children and normal peers: A preliminary study. *Iranian journal of pediatrics*, *26*(3).

Melheim, K., Heimstad, R., Austgulen, R., Lydersen, S., Andersen, G.L., Irgens, L.M., & Vik, T. (2013). Mediators of the association between pre-eclampsia and cerebral palsy: population based cohort study. *Bio Medical Journal*, 10, 1136.

Menkes, J.H., (2000). Perinatal asphyxia and trauma In: Menkes JH, Sarnat HB, Eds. *Child Neurology. Lippingcot: Williams and Wilkins*, 427-436.

Mesterman, R., Leitner, Y., Yifat, R., Gilutz, G., Levi-Hakeini, O., Bitchonsky, O., & Harel, S. (2010). Cerebral palsy—long-term medical, functional, educational, and psychosocial outcomes. *Journal of child neurology*, *25*(1), 36-42.

Moster, D., Wilcox, A.J., Vollset, S.E., Markestad, T. & Lie, R.T. (2010). Cerebral palsy among term and postterm births. *Jama*, *304*(9), 976-982.

Msall, M.E. (2004). Developmental vulnerability and resilience in extremely preterm infants. *Jama*, *292*(19), 2399-2401.

Murthy, G.V., Mactaggart, I., Mohammad, M., Islam, J., Noe, C., Khan, A.I. & Foster, A. (2014). Assessing the prevalence of sensory and motor impairments in childhood in Bangladesh using key informants. *Archives of disease in childhood*, *99*(12), 1103-1108.

Mutch, L., Alberman, E., Hagberg, B., Kodama, K. & Perat, M.V. (1992). Cerebral palsy epidemiology: where are we now and where are we going*?*. *Developmental Medicine & Child Neurology*, *34*(6), 547-551.

O'Shea, T.M. (2008). Diagnosis, treatment, and prevention of cerebral palsy in near-term/term infants. *Clinical obstetrics and gynecology*, *51*(4), 816.

Odding, E., Roebroeck, M.E. & Stam, H.J. (2006). The epidemiology of cerebral palsy: incidence, impairments and risk factors. *Disability and rehabilitation*, *28*(4), 183-191.

Oskoui, M., Coutinho, F., Dykeman, J., Jetté, N., & Pringsheim, T. (2013). An update on the prevalence of cerebral palsy: a systematic review and meta-analysis. *Developmental Medicine & Child Neurology*, *55*(6), 509-519.

Oskoui, M., Messerlian, C., Blair, A., Gamache, P., & Shevell, M. (2016).

Variation in cerebral palsy profile by socio-economic status. *Developmental Medicine & Child Neurology*, *58*(2), 160-166.

Pfeifer, L. I., Silva, D. B. R., Funayama, C. A. R., & Santos, J. L. (2009). Classification of cerebral palsy: association between gender, age, motor type, topography and Gross Motor Function. *Arquivos de neuro-psiquiatria*, *67*(4), 1057-1061.

Platt, M.J., Cans, C., Johnson, A., Surman, G., Topp, M., Torrioli, M.G. & Krageloh-Mann, I., (2007). Trends in cerebral palsy among infants of very low birthweight (< 1500 g) or born prematurely (< 32 weeks) in 16 European centres: a database study. *The Lancet*, *369*(9555), 43-50.

Reid, S. M., Meehan, E., Gibson, C. S., Scott, H., Delacy, M. J., & Australian Cerebral Palsy Register Group. (2016). Biological sex and the risk of cerebral palsy in Victoria, Australia. *Developmental Medicine & Child Neurology*, *58*, 43-49.

Rosenbaum, P., Paneth, N., Leviton, A., Goldstein, M., Bax, M., Damiano, D., Dan, B. & Jacobsson, B., (2007). A report: the definition and classification of cerebral palsy April 2006. *Developmental medicine and child neurology. Supplement*, *109*, 8-14.

Rozkalne, Z., & Bertule, D. (2014). Measurement of activities and participation for children with cerebral palsy: A systematic review. In *SHS Web of Conferences* (Vol. 10, p. 00038). EDP Sciences.

Thorkelsson, T., Halldorsdottir, M., Thorarensen, O. & Vik, T. (2009). Trends in prevalence and characteristics of cerebral palsy among Icelandic children born 1990 to 2003. *Developmental Medicine & Child Neurology*, *51*(5), 356-363.

Sanger, T.D., Delgado, M.R., Gaebler-Spira, D., Hallett, M. & Mink, J.W., (2003). Classification and definition of disorders causing hypertonia in

childhood. *Pediatrics*, *111*(1), e89-e97.

Sankar, C. & Mundkur, N. (2005). Cerebral palsy-definition, classification, etiology and early diagnosis. *The Indian Journal of Pediatrics*, *72*(10), 865-868.

Schiariti, V., Masse, L.C., Cieza, A., Klassen, A.F., Sauve, K., Armstrong, R. & O'donnell, M., (2014). Toward the development of the International Classification of Functioning Core Sets for children with cerebral palsy: a global expert survey. *Journal of child neurology*, *29*(5), 582-591.

Schiariti, V., Selb, M., Cieza, A., & O'Donnell, M. (2015). International Classification of Functioning, Disability and Health Core Sets for children and youth with cerebral palsy: a consensus meeting. *Developmental Medicine & Child Neurology*, *57*(2), 149-158.

Shamsoddini, A., Amirsalari, S., Hollisaz, M. T., Rahimnia, A., & Khatibi-Aghda, A. (2014). Management of spasticity in children with cerebral palsy. *Iranian journal of pediatrics*, *24*(4), 345.

Singhi, P.D., Ray, M. & Suri, G. (2002). Clinical spectrum of cerebral palsy in North India—an analysis of 1000 cases. *Journal of tropical pediatrics*, *48*(3), 162-166.

Smithers-Sheedy, H., McIntyre, S., Gibson, C., Meehan, E., Scott, H., Goldsmith, S., Watson, L., Badawi, N., Walker, K., Novak, I. & Blair, E. (2016). A special supplement: findings from the Australian Cerebral Palsy Register, birth years 1993 to 2006. *Developmental Medicine & Child Neurology*, *58*, 5-10.

Stephens, B. E., & Vohr, B. R. (2009). Neurodevelopmental outcome of the premature infant. *Pediatric Clinics*, *56*(3), 631-646.

Tatavarti, S. R., Garimella, R. R., & TDP, S. (2018). Male sex preponderance in

cerebral palsy. *International Journal of Orthopaedics*, *4*(3), 200-202. DOI: 10.22271/ortho.2018.v4.i3d.37

Tatla, S.K., Sauve, K., Virji-Babul, N., Holsti, L., Butler, C., & Loos, H.F. M., (2013). Evidence for outcomes of motivational rehabilitation interventions for children and adolescents with cerebral palsy: an American Academy for Cerebral Palsy and Developmental Medicine systematic review. *Developmental Medicine & Child Neurology*, 55(7), 593-601.

Tseng, S. H., Lee, J. Y., Chou, Y. L., Sheu, M. L., & Lee, Y. W. (2018). Association between socioeconomic status and cerebral palsy. *PloS one*, *13*(1), e0191724.

Vasileiadis, G. T., Thompson, R. T., Han, V. K., & Gelman, N. (2009). Females follow a more "compact" early human brain development model than males. A case-control study of preterm neonates. *Pediatric research*, *66*(5), 551.

Vyas, A. G., Kori, V. K., Rajagopala, S., & Patel, K. S. (2013). Etiopathological study on cerebral palsy and its management by Shashtika Shali Pinda Sweda and Samvardhana Ghrita. *Ayu*, *34*(1), 56.

World Health Organization. (2001). *International classification of functioning, disability and health: ICF*. Geneva: World Health Organization.

World Health Organization. (2007). *International Classification of Functioning, Disability and Health: Children & Youth version*. Geneva: World Health Organization.

Wu, Y.W. & Colford Jr, J.M. (2000). Chorioamnionitis as a risk factor for cerebral palsy: a meta-analysis. *Jama*, *284*(11), 1417-1424.

# APPENDIX

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

*Ref.*

*Date:* 19/03/2018

CRP-BHPI/IRB/03/18/201

To
Suchitra Rani Das
M.Sc in Physiotherapy
Session: 2016-2017, Student ID: 111160034
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

**Subject: Approval of thesis proposal "Activity and Participation in Children with Cerebral Palsy Based on ICF Core Set of Children and Youth (CY) with Cerebral Palsy (CP)" by ethics committee.**

Dear Suchitra Rani Das,

Congratulations!
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to 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 | Dissertation Proposal |
| 2 | Bengali version of the Questionnaire |
| 3 | Information sheet & consent form. |

Since the study involves exploring the Child's present level of functioning through a questionnaire that takes 20 to 30 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 9:00 AM on October 20, 2017 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

**Permission Letter**

Date: 24.02.2018

Head

Department of Physiotherapy

Centre for the Rehabilitation of the Paralysed (CRP) Chapain, Savar, Dhaka-1343

**Through:** Coordinator. M. Sc. in Physiotherapy. BHPI. CRP, Savar. Dhaka

Subject: Prayer for seeking permission for the purpose of collecting data to conduct a thesis.

Sir,

With due respect, I am Suchitra Rani Das, student of part-II, M. Sc. in Physiotherapy at Bangladesh Health Profession's Institute. As per course curriculum I shall have to complete a thesis. In this respect, my thesis title is **"Activity and Participation in Children and Youth with Cerebral palsy based on International Classification of Functioning, Disability and Health Core Sets Children & Youth with CP"**. In this thesis, my participants will be those who are diagnosed as cerebral palsy. I believe paediatric unit of Physiotherapy Department in CRP Savar and Mirpur are the best place to collect data from participants. In addition data collector would be graduate physiotherapist. In order to materialization of the thesis, I need your kind permission to collect data and cooperation from those Physiotherapists.

May I therefore, hope that you would be kind enough to give me permission for data collection and oblique thereby.

Sincerely yours

Suchitra Rani Das

Student of Part-11 M. Sc. in Physiotherapy

BHPI, CRP. Savar, Dhaka-1343

Approved

**Permission Letter**

Date: 20.02.2018

To

The Principal

William & Marie Taylor School

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343

**Subject:** Prayer for seeking permission for the purpose of collecting data to conduct a thesis.

Sir,

With due respect, I am Suchitra Rani Das, student of part-II, M. Sc. in Physiotherapy at Bangladesh Health Professions Institute. As per course curriculum, I shall have to complete a thesis. In this respect, my thesis title is **"Activity and Participation in Children with Cerebral Palsy based on ICF Core Set of Children and youth (CY) with Cerebral Palsy (CP)".**In this thesis, my participants will be those who are diagnosed as cerebral palsy. I believe William & Marie Taylor School in CRP, Savar is the best place to collect data from participants. In addition data collector would be graduate physiotherapist. In order to materialization of the thesis, I need your kind permission to collect data and cooperation from those care givers.

May, I therefore, hope that you would be kind enough to give me permission for data collection and oblique thereby.

Sincerely yours

Suchitra.

Suchitra Rani Das

Student of Part-II M. Sc. in Physiotherapy

BHPI, CRP, Savar, Dhaka-1343

Permitted for Data Collection at WMTS.

19-3-18

Md. Abdullah Al Zubayer
Principal (Acting)
William & Marie Taylor School (WMTS)
(The Inclusive School of CRP)
CRP-Savar, Dhaka-1343

## Consent Form

Assalamu Alaikum/ Namasker, I am Suchitra Rani Das, Part-II, M. Sc. in physiotherapy student, BHPI, CRP, Savar, Dhaka-1343. I am asking you to participate in a research study. This form is designed to give you information about this study. I want to describe this study to you and answer any of your questions. My project title is "Activity and Participation in Children with Cerebral Palsy based on ICF Core Set of Children and youth (CY) with Cerebral Palsy". The purpose of the study is to describe the present child's level of functioning, along with facilitators and barriers that influence functioning. This will take approximately 20 - 30 minutes.

During the interview period if you fell any emotional disturbance, social and economic risk and any other discomfort physical risk please tell me, I will stop the interview immediately. I am committed that the study will not harmful or risk for you. There is no payment for taking part in the study. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview. If you have any query about the study or your right as a participant, you may contact with me or my supervisor Md. Obaidul Haque, Professor and Vice-Principal BHPI, CRP, Savar, Dhaka. Do you have any questions before I start?

So may I have your consent to proceed with the interview?

YES ☐ NO ☐

Signature of the Investigator & Date: ……...

Signature of the Participant & Date: …….

Signature of the Witness & Date: …….

**Research- Questionnaire**

**Activity and Participation in Children with Cerebral Palsy based on International Classification of Functioning, Disability and Health Core Sets Children and Youth with Cerebral Palsy (No. of the participants.....)**

Name: Age:

Interview date: Phone no:

Address: ID:

**In the following question tick the approprite answer of the question.**

**Part-1, Socio-demographic information**

| No. | Questions | Answer |
|---|---|---|
| 1. | Gender | ☐ Male<br>☐ Female |
| 2. | Mather's education | ☐ Illiterate ☐ HSC<br>☐ Literate ☐ Degree<br>☐ Primary ☐ Graduate<br>☐ SSC ☐ Masters |
| 3. | Father's education | ☐ lliterate ☐ HSC<br>☐ Literate ☐ Degree<br>☐ Primary ☐ Graduate<br>☐ SSC ☐ Masters |

| | | |
|---|---|---|
| 4. | Mother's occupation | ☐ Housewife<br>☐ Service holder<br>☐ Business |
| 5. | Father's occupation | ☐ Work in abroad<br>☐ Service holder<br>☐ Business |
| 6. | No. of siblings | …… |

**Part-2, Medical-related information**

| | | |
|---|---|---|
| 7. | Type of delivery | ☐ Normal<br>☐ C-section |
| 8. | If delivery is normal then how long it takes time? | ☐ Prolong period<br>☐ Short period<br>☐ Sudden |
| 9. | Gestitional period of the delivery. | ☐ Pre-term<br>☐ Term<br>☐ Post-term |

| | | |
|---|---|---|
| 10. | Did your child crying immediately after birth? | ☐ Yes ☐ No |
| 11. | If it is 'NO' then how many time take your child to crying? | ☐ 0-5 minutes<br>☐ 11-20 minutes<br>☐ 6-10 minutes<br>☐ 21-30 minutes |
| 12. | Type of CP according to the muscle tone. | ☐ Spastic ☐ Ataxic<br>☐ Athetoid ☐ Mixed |
| 13. | Type of CP according to the limb involvement. | ☐ Monoplegic<br>☐ Diplegic<br>☐ Triplegic<br>☐ Quadriplegic<br>☐ Hemiplegic |

**Part-3, Activity and Participation in Children with Cerebral Palsy**

| NO. | Question | Answer |
|---|---|---|
| D 110 | **Watching**<br>Using the sense of seeing intentionally to experience visual stimuli, such as visually tracking an object, watching persons, looking at a sporting event, person, or children playing. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 115 | **Listening**<br>Using the sense of hearing intentionally to experience auditory stimuli, such as listening to a radio, the human voice, to music, a lecture, or to a story told. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 120 | **Other purposeful sensing**<br>Using the body's other basic senses intentionally to experience stimuli, such as touching and feeling textures, tasting sweets or smelling flowers. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 130 | **Copying**<br>Imitating or mimicking as a basic component of learning, such as copying, repeating a facial expression, a gesture, a sound or the letters of an alphabet | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

| | | |
|---|---|---|
| D 131 | **Learning through actions with objects**<br><br>Learning through simple actions on a single object, two or more objects, symbolic and pretend play, such as in hitting an object, banging blocks and playing with dolls or cars. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 133 | **Acquiring language**<br><br>Developing the competence to represent persons, objects, events and feelings through words, symbols, phrases and sentences | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 137 | **Acquiring concepts**<br><br>Developing competence to understand and use basic and complex concepts related to the characteristics of things, persons or events | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 140 | **Learning to read**<br><br>Developing the competence to read written material (including Braille and other symbols) with fluency and accuracy, such as recognizing characters and alphabets, sounding out words written words with correct pronunciation, and understanding words and phrases. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 145 | **Learning to write**<br><br>Developing the competence to produce symbols that represent sounds, words or phrases in order to convey meaning (including Braille writing and other symbols), such as spelling effectively and | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem |

| | | |
|---|---|---|
| | using correct grammar | ☐ Severe problem<br>☐ Complete problem |
| D 155 | **Acquiring skills**<br><br>Developing basic and complex competencies in integrated sets of actions or tasks so as to initiate and follow through with the acquisition of a skill, such as manipulating tools or toys, or playing games. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 160 | **Focusing attention**<br><br>Intentionally focusing on specific stimuli, such as by filtering out distracting noises. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 166 | **Reading**<br><br>Performing activities involved in the comprehension and interpretation of written language (e.g. books, instructions, newspapers in text or Braille), for the purpose of obtaining general knowledge or specific information. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 170 | **Writing**<br><br>Using or producing symbols or language to convey information, such as producing a written record of events or ideas or drafting a letter. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

| | | |
|---|---|---|
| D 172 | **Calculating**<br><br>Performing computations by applying mathematical principles to solve problems that are described in words and producing or displaying the results, such as computing the sum of three numbers or finding the result of dividing one number by another | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 175 | **Solving problems**<br><br>Finding solutions to questions or situations by identifying and analyzing issues, developing options and solutions, evaluating potential effects of solutions, and executing a chosen solution, such as in resolving a dispute between two people. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 177 | **Making decisions**<br><br>Making a choice among options, implementing the choice, and evaluating the effects of the choice, such as selecting and purchasing a specific item, or deciding to undertake and undertaking one task from among several tasks that need to be done. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 220 | **Undertaking multiple tasks**<br><br>Carrying out simple or complex and coordinated actions as components of multiple, integrated and complex tasks in sequence or simultaneously. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 230 | **Carrying out daily routine**<br><br>Carrying out simple or complex and coordinated actions in order to plan, manage and complete the requirements of day-to-day procedures or duties, such as budgeting time and making plans for | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem |

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| | separate activities throughout the day | ☐ Severe problem<br>☐ Complete problem |
| D 250 | **Managing one's own behaviour**<br>Carrying out simple or complex and coordinated actions in a consistent manner in response to new situations, persons or experiences, such as being quiet in a library. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 310 | **Communicating with - receiving - spoken messages** Comprehending literal and implied meanings of messages in spoken language, such as understanding that a statement asserts a fact or is an idiomatic expression, such as responding and comprehending spoken messages. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 330 | **Speaking**<br>Producing words, phrases and longer passages in spoken messages with literal and implied meaning, such as expressing a fact or telling a story in oral language | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 331 | **Pre-talking**<br>Vocalizing when aware of another person in the proximal environment, such as producing sounds when the mother is close; babbling; babbling in turn-taking activities. Vocalizing in response to speech through imitating speech-sounds in a turn taking procedure. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 335 | **Producing non-verbal messages**<br><br>Using gestures, symbols and drawings to convey messages, such as shaking one's head to indicate disagreement or drawing a picture or diagram to convey a fact or complex idea. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 350 | **Conversation**<br><br>Starting, sustaining and ending an interchange of thoughts and ideas, carried out by means of spoken, written, sign or other forms of language, with one or more persons one knows or who are strangers, in formal or casual settings | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 360 | **Using communication devices and techniques**<br><br>Using devices, techniques and other means for the purposes of communicating, such as calling a friend on the telephone | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 410 | **Changing basic body position**<br><br>Getting into and out of a body position and moving from one location to another, such as rolling from one side to the other, sitting, and standing, getting up out of a chair to lie down on a bed, and getting into and out of positions of kneeling or squatting. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 415 | **Maintaining a body position**<br><br>Staying in the same body position as required, such as remaining seated or remaining standing for work or school. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem |

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| | | ☐ Severe problem<br>☐ Complete problem |
| D 420 | **Transferring oneself**<br>Moving from one surface to another, such as sliding along a bench or moving from a bed to a chair, without changing body position. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 430 | **Lifting and carrying objects**<br>Raising up an object or taking something from one place to another, such as when lifting a cup or toy, or carrying a box or child from one room to another. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 435 | **Moving objects with lower extremities**<br>Performing coordinated actions aimed at moving an object by using the legs and feet, such as kicking a ball or pushing pedals on a bicycle | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 440 | **Fine hand use**<br>Performing the coordinated actions of handling objects, picking up, manipulating and releasing them using one's hand, fingers and thumb, such as required to lift coins off a table or turn a dial or knob. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 445 | **Hand and arm use**<br><br>Performing the coordinated actions required to move objects or to manipulate them by using hands and arms, such as when turning door handles or throwing or catching an object | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 450 | **Walking**<br><br>Moving along a surface on foot, step by step, so that one foot is always on the ground, such as when strolling, sauntering, walking forwards, backwards or sideways. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 455 | **Moving around**<br><br>Moving the whole body from one place to another by means other than walking, such as climbing over a rock or running down a street, skipping, scampering, jumping, somersaulting or running around obstacles. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 460 | **Moving around in different locations**<br><br>Walking and moving around in various places and situations, such as walking between rooms in a house, within a building, or down the street of a town. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 465 | **Moving around using equipment**<br><br>Moving the whole body from place to place, on any surface or space, by using specific devices designed to facilitate moving or create other ways of moving around, such as with skates, skis, scuba | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem |

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| | equipment, swim fins, or moving down the street in a wheelchair or a walker. | ☐ Severe problem<br>☐ Complete problem |
| D 470 | **Using transportation**<br><br>Using transportation to move around as a passenger, such as being driven in a car, bus, rickshaw, jitney, pram or stroller, animal-powered vehicle, private or public taxi, train, tram, subway, boat or aircraft. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 510 | **Washing oneself**<br><br>Washing and drying one's whole body, or body parts, using water and appropriate cleaning and drying materials or methods, such as bathing, showering, washing hands and feet, face and hair, and drying with a towel. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 520 | **Caring for body parts**<br><br>Looking after those parts of the body, such as skin, face, teeth, scalp, nails and genitals, which require more than washing and drying. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 530 | **Toileting**<br><br>Indicating the need for, planning and carrying out the elimination of human waste (menstruation, urination and defecation), and cleaning oneself after wards. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 540 | **Dressing**<br><br>Carrying out the coordinated actions and tasks of putting on and taking off clothes and footwear in sequence and in keeping with climatic and social conditions, such as by putting on, adjusting and removing shirts, skirts, blouses, pants, undergarments, saris, kimono, tights, hats, gloves, coats, shoes, boots, sandals and slippers. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 550 | **Eating**<br><br>Indicating need for, and carrying out the coordinated tasks and actions of eating food that has been served, bringing it to the mouth and consuming it in culturally acceptable ways, cutting or breaking food into pieces, opening bottles and cans, using eating implements, having meals, feasting or dining. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 560 | **Drinking**<br><br>Indicating need for, and taking hold of a drink, bringing it to the mouth and consuming the drink in culturally acceptable ways; mixing, stirring and pouring liquids for drinking, opening bottles and cans, drinking through a straw or drinking running water, such as from a tap or a spring; feeding from the breast. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 570 | **Looking after one's health**<br><br>Ensuring or indicating needs about physical comfort, health and physical and mental well-being, such as by maintaining a balanced diet and an appropriate level of physical activity, keeping warm or cool, avoiding harm to health, following safe sex practices, including using condoms, getting immunizations and regular physical examinations. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 630 | **Preparing meals**<br><br>Planning, organizing, cooking and serving simple and complex meals for oneself and others, such as by making a menu, selecting edible food and drink, getting together ingredients for preparing meals, cooking with heat and preparing cold foods and drinks, and serving the food. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 640 | **Doing housework**<br><br>Managing a household by cleaning the house, washing clothes, using household appliances, storing food and disposing of garbage, such as by sweeping, mopping, washing counters, walls and other surfaces; collecting and disposing of household garbage; tidying rooms, closets and drawers; collecting, washing, drying, folding and ironing clothes; cleaning footwear; using brooms, brushes and vacuum cleaners; using washing machines, driers and irons. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 710 | **Basic interpersonal interactions**<br><br>Interacting with people in a contextually and socially appropriate manner, such as by showing consideration and esteem when appropriate, or responding to the feelings of others. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 720 | **Complex interpersonal interactions**<br><br>Maintaining and managing interactions with other people, in a contextually and socially appropriate manner, such as by regulating emotions and impulses, controlling verbal and physical aggression, acting independently in social interactions, and acting in accordance with social rules and conventions. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 750 | **Informal social relationships**<br><br>Entering into relationships with others, such as casual relationships with people living in the same community or residence, or with co-workers, students, playmates or people with similar backgrounds or professions. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 760 | **Family relationships**<br><br>Creating and maintaining kinship relationships, such as with members of the nuclear family, extended family, foster and adopted family and step-relationships, more distant relationships such as second cousins, or legal guardians. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 770 | **Intimate relationships**<br><br>Creating and maintaining close or romantic relationships between individuals, such as husband and wife, lovers or sexual partners. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 815 | **Preschool education**<br><br>Learning at an initial level of organized instruction in the home or in the community designed primarily to introduce a child to a school-type environment and prepare the child for compulsory education, such as by acquiring skills in a day-care or similar setting in preparation for school (e.g. educational services provided in the home or in community settings designed to promote health and cognitive, motor, language and social development and readiness skills for formal education). | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 820 | **School education**<br><br>Gaining admission to school, education; engaging in all school-related responsibilities and privileges; learning the course material, subjects and other curriculum requirements in a primary or secondary education programme, including attending school regularly; working cooperatively with other students, taking direction from teachers, organizing, studying and completing assigned tasks and projects, and advancing to other stages of education | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 845 | **Acquiring, keeping and terminating a job**<br><br>Seeking, finding and choosing employment, being hired and accepting employment, maintaining and advancing through a job, trade, occupation or profession, and leaving a job in an appropriate manner. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 860 | **Basic economic transactions**<br><br>Engaging in any form of simple economic transaction, such as using money to purchase food or bartering, exchanging goods or services; or saving money. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 880 | **Engagement in play**<br><br>Purposeful, sustained engagement in activities with objects, toys, materials or games, occupying oneself or with others | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

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| D 910 | **Community life**<br><br>Engaging in all aspects of community social life, such as engaging in charitable organizations, service clubs or professional social organizations. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |
| D 920 | **Recreation and leisure**<br><br>Engaging in any form of play, recreational or leisure activity, such as informal or organized play and sports, programs of physical fitness, relaxation, amusement or diversion, going to art galleries, museums, cinemas or theatres; engaging in crafts or hobbies, reading for enjoyment, playing musical instruments; sightseeing, tourism and travelling for pleasure. | ☐ No problem<br>☐ Mild problem<br>☐ Moderate problem<br>☐ Severe problem<br>☐ Complete problem |

**Thank you for your patience.**

**সম্মতি পত্র** (অংশগ্রহনকারীকে  পড়ে শুনাতে হবে)

আসসালামু আলাইকুম / নমস্কার, আমি সুচিত্রা রানী দাস, পার্ট ২, মাস্টার অফ সাইন্স ইন ফিজিওথেরাপি ছাত্রী, বিএইচপিআই, সিআরপি, সাভার, ঢাকা – ১৩৪৩ । আমার গবেষণার শিরোনাম হলো " আইসিএফ কোর সেট উপর ভিত্তি করে সেরিব্রাল পলিসি শিশুদের অংশগ্রহণ এবং কার্যকলাপসমূহ নিরুপন"। গবেষণার উদ্দেশ্য হলো আপনার সন্তানের কার্যকারিতা এবং অংশগ্রহণ সম্পর্কে বর্ণনা করা, এরই  সাথে কার্যকারিতাকে প্রভাবিত করে এমন সহায়ক এবং বাধাসমূহ নিরূপণ করা" আমি আপনার শিশু সম্পর্কে এই সম্পকীয় কিছু প্রশ্ন করতে চাই. এত আনুমানিক  ২০-৩০ মিনিট সময় লাগবে ।

সাক্ষাৎকারের সময় যদি আপনি কোন মানসিক বিপর্যয়, সামাজিক ও অর্থনৈতিক ঝুঁকি এবং অন্য কোন অস্বস্তিকর শারীরিক ঝুঁকিতে পড়ে থাকেন তবে আমাকে বলবেন, আমি অবিলম্বে সাক্ষাৎকারটি বন্ধ করব। আমি প্রতিশ্রুতিবদ্ধ যে গবেষণাটি আপনার জন্য ক্ষতিকর বা ঝুঁকিপূর্ণ হবে না। গবেষণায় অংশগ্রহণের জন্য কোনও পেমেন্ট নেই। আপনার দ্বারা প্রদত্ত সমস্ত তথ্য গোপনীয় হিসাবে গণ্য হবে।

এই গবেষণায় আপনার অংশগ্রহণ হবে স্বেচ্ছাকৃত এবং আপনি কোন নেতিবাচক ফলাফল ছাড়া এই গবেষণা সময় যে কোন সময় নিজেকে প্রত্যাহার করতে পারবেন. এ ছাড়া আপনি পছন্দ করেননা এমন নির্দ্দিষ্ট প্রশ্নের উত্তর না দেওয়ার অধিকার আপনার আছে। যদি আপনার আরো কিচু জানার আগ্রহ থাকে তবে আমি আমাকে অথবা আমার সুপারভাইজার অধ্যাপক মো. ওবায়দুল হক, উপাধ্যক্ষ, বিএইচপিআই, সিআরপি, সাভার, ঢাকায় যোগাযোগ করতে পারেন। শুরু করে পূর্বে আপনার কোনো প্রশ্ন থাকলে আপনি করতে পারেন?

আপনি সম্মতি থাকলে আমি কি আপনার সাক্ষাৎ আরম্ভ করতে পারি?

হ্যাঁ ☐ না ☐

তদন্তকারীর স্বাক্ষর  ও তারিখ: ..... .....

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখ: .....

সাক্ষীর স্বাক্ষর এবং তারিখ: .....

**গবেষনার- প্রশ্নাবলী**

**আইসিএফ কোর সেট উপর ভিত্তি করে সেরিব্রাল পালসি শিশুদের অংশগ্রহণ এবং কার্যকলাপসমূহ নিরুপন**

**(গবেষনায় অংশগ্রহণকারীর নম্বর.....)**

বাচ্চার নামঃ বাচ্চার বয়সঃ

সাক্ষাতের তারিখঃ মোবাইল নং

ঠিকানাঃ আই ডিঃ

**নিম্মোক্ত প্রশ্ন থেকে সঠিক উত্তরের বাম পাশের বাক্সে টিক চিহ্ন দিন। একটি প্রশ্নের একাধিক উত্তর আপনার কাছে সঠিক মনে হলে, সবচেয়ে কাছাকাছি সঠিক উত্তরটিতে টিক চিহ্ন দিন।**

**পর্ব–১, সামাজিক- বৈষয়িক তথ্যবলী**

| ক্রমিক নং | প্রশ্নবলী | উত্তর |
|---|---|---|
| ১। | শিশুর লিঙ্গ | ☐ ছেলে ☐ মেয়ে |
| ২। | মায়ের শিক্ষাগত যোগ্যতা | ☐ নিরক্ষর ☐ এইচ এস সি<br>☐ স্বাক্ষরজ্ঞান ☐ ডিগ্রি<br>☐ প্রাইমারি ☐<br>গ্রাজুয়েশন<br>☐ এস এস সি ☐ মাস্টার্স |
| ৩। | পিতার শিক্ষাগত যোগ্যতাঃ | ☐ নিরক্ষর ☐ এইচ এস সি<br>☐ স্বাক্ষরজ্ঞান ☐ ডিগ্রি<br>☐ প্রাইমারি ☐ গ্রাজুয়েশন<br>☐ এস এস সি ☐ মাস্টার্স |
| ৪। | মায়ের পেশা | ☐ গৃহিণী<br>☐ চাকরিজীবী<br>☐ ব্যবস্যায়ী |

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| ৫। | পিতার পেশাঃ | ☐ প্রবাসে থাকে<br>☐ চাকরিজীবী<br>☐ ব্যবসায়ী |
| ৭। | ভাই-বোনের সংখ্যাঃ | ..... |

**পর্ব–২, মেডিকেল- বৈষয়িক তথ্যবলী**

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| ৮। | ডেলিভারীর ধরন | ☐ নরমাল ☐ সিজার |
| ৯। | যদি নরমাল হয় কতক্ষণ ব্যথা ছিল? | ☐ দীর্ঘ সময়<br>☐ অল্প সময়<br>☐ হঠাৎ |
| ১০। | আপনার শিশু কখন জন্মগ্রহন করে? | ☐ সময়ের পূর্বে<br>☐ সময়মত<br>☐ সময়ের পরে |
| ১১। | আপনার শিশু কি জন্মগ্রহণ করার সাথে সাথে কান্না করেছিল? | ☐ হ্যাঁ ☐ না |
| | যদি হ্যাঁ হয়, কতক্ষণ পরে কান্না করেছিল? | ☐ ০-৫ মিনিট ☐ ১১-২০ মিনিট<br>☐ ৬-১০ মিনিট ☐ ২১-৩০ মিনিট |
| ১২। | মাংশপেশির টান অনুসারে সি পি এর ধরণ | ☐ স্পাসটিক ☐ এটাকজিক<br>☐ এথিটএড ☐ মিক্সড |
| ১৩। | হাত পায়ের ইনভ্লমেন্ট অনুসারে সি পি এর ধরণ | ☐ মনপ্লেজিক ☐ কুয়াড্রিপ্লেজিক<br>☐ ডাইপ্লেজিক ☐ হেমিপ্লেজিক<br>☐ ট্রাইপ্লেজিক |

## পর্ব–৩, সেরিব্রাল পালসি শিশুদের অংশগ্রহণ এবং কার্যকলাপসমূহ নিরুপন

| ক্রমিক নং | প্রশ্ন | উত্তর |
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| ডি-১১০ | পর্যবেক্ষণঃ<br>আপনার শিশুকি নিজের ইচ্ছা শক্তি ব্যবহার কোনকিছু দেখার আগ্রহ প্রকাশ করে কি না। যেমনঃ কোন দৃশ্যমান ব্যক্তি বা বস্তু পর্যবেক্ষণ, অথবা কোনো ক্রীয়া অনুষ্ঠান, কিংবা ব্যাক্তি বা শিশুদের খেলাধুলা পর্যবেক্ষণ ইত্যাদি। | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১১৫ | শ্রবণঃ<br>আপনার শিশুকি কোনকিছু শুনে বুঝতে পারে কি না। যেমনঃ রেডিও বা টিভি শব্দ, মানুষের কণ্ঠস্বর, সঙ্গীত, বক্তৃতা অথবা গল্প ইত্যাদি। | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১২০ | আপনার শিশুকি কোনকিছুর স্পর্শ, অথবা মিষ্টি বা ঝাল এর স্বাদ অনুভব কিংবা ফুলের ঘ্রাণ অনুভোব করতে পারে কি না। | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১৩০ | অনুকরনঃ<br>আপনার শিশুকি কোনকিছুর অনুকরণ বা অনুসরণ করতে পারে কি না। যেমনঃ কেউ কিছু বললে তা সাথে সাথে বলতে পারা, চেহারার অভিব্যাক্তির পুনরাবৃত্তি, শব্দ কিংবা অক্ষর অনুসরণ করতে পারা ইত্যাদি। | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |

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| ডি-১৩১ | বস্তুর সাথে কাজের মাধ্যমে শেখাঃ<br>আপনার শিশুকি এক বা একাধিক ব্যক্তি বা বস্তুর সাথে খেলাধূলা করতে পারে কি না। যেমনঃ একাধিক শিশুদের সাথে খেলা করা, সাঙ্কেতিক কিংবা ভাস্কর্যের সাথে খেলা, অথবা পুতুল বা গাড়ি নিয়ে খেলা ইত্যাদি। | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-১৩৩ | ভাষার দক্ষতা অর্জন করা<br>আপনার শিশুকি কোনো শব্দ মাধ্যমে, প্রতীক, বাক্যাংশ কিংবা বাক্যের মাধ্যমে কোনো ঘটনার অভিব্যক্তি বর্ণনা করতে পারে কি না। | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা<br>☐ উপযোগী না |
| ডি-১৩৭ | ধারনা অর্জনঃ<br>আপনার শিশুকি কোনো ব্যক্তি বা বস্তুর মধ্যকার ঘটনার সংশ্লিষ্ট মৌলিক এবং জটিল ধারণাগুলি বুঝতে পারে এবং ব্যবহার করার দক্ষতা বিকাশ জিনিস বৈশিষ্ট্য, ব্যক্তি বা ঘটনা আপনার শিশুকি বস্তু, ব্যক্তি অথবা কোন ঘটনা সম্পর্কিত সাধারণ এবং জটিল ধারণা বুঝতে পারা এবং ব্যবহারের উন্নতি সাধন | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-১৪০ | পড়তে শেখাঃ<br>আপনার শিশুকি সঠিক উচ্চারণ করে কোন লেখা কিংবাবর্ণমালা স্পষ্ট ও সচ্ছন্দভাবে পড়তে পারা এবং বর্ণমালা ও প্রতীক চিহ্নিত করার ক্ষমতার উন্নতি সাধন | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-১৪৫ | লিখতে শেখাঃ<br>আপনার শিশুকি সঠিক ব্যাকরণ এবং শুদ্ধভাবে উচ্চারণ করে লিখতে পারে? | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |

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| ডি-১৫৫ | দক্ষতা অর্জনঃ<br>আপনার শিশুকি বিভিন্ন সাধারণ অথবা জটিল কাজে যেমন খেলনা দিয়ে খেলা অথবা খেলাধুলা করতে পারে? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১৬০ | মনোযোগ আকর্ষণ করাঃ<br>আপনার শিশুকি নির্দিষ্ট কোন কিছুর দিকে নিজ থেকে মনোযোগ দেয়া কি না? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১৬৬ | পড়াশুনাঃ<br>আপনার শিশুকি কোন তথ্য জানার উদ্দেশ্যে লিখিত বক্তব্য, নির্দেশনা, পত্রিকা অথবা প্রতীক পড়তে ও বর্ণনা করতে পারে? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১৭০ | লেখাঃ<br>আপনার শিশুকি কোন প্রতীক কিংবা ভাষা তৈরি অথবা ব্যাবহার করে কোন ঘটনা অথবা চিঠি লেখতে পারে? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১৭২ | গণনাঃ<br>আপনার শিশুকি গাণিতিক নিয়মানুসারে গণনা করা ও সমস্যার সমাধান করতে পারে যেমন যোগ অথবা বিয়োগ করা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-১৭৫ | সমস্যার সমাধাণঃ<br>আপনার শিশুকি কোন প্রশ্নের সমাধান অথবা সমস্যা সমাধানের জন্য সমস্যা বিশ্লেষণ, সমাধানের উপায় খুজে বের করতে, সমাধান পরবর্তী প্রভাব চিহ্নিত করতে পারে কিনা?? যেমন দুজন ব্যাক্তির মধ্যেকার বিতর্ক নিরসন করা । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |

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| ডি-১৭৭ | সিদ্ধান্ত গ্রহণঃ<br>আপনার শিশুকি একাধিক সমাধান থেকে সর্বাপেক্ষা গ্রহণযোগ্য উপায় বের করে, বাস্তবায়ন, সমাধানের প্রভাব সম্পর্কে বুঝতে পারে কিনা; যেমন নির্দিষ্ট কোন বস্তু ক্রয় করা কিংবা অনেকগুলো কাজ থেকে যথোপযুক্ত কাজটি আগে করা । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-২২০ | সহজ অথবা জটিল কাজ সমাধান করাঃ<br>আপনার শিশুকি একাধারে সহজ ও জটিল কাজ সমাধান করতে পারে? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-২৩০ | প্রতিদিনের কাজের নিয়ম অনুসরনঃ<br>আপনার শিশুকি দৈনন্দিন জীবনের সহজ কিংবা জটিল কাজের পরিকল্পনা, নিত্যদিনের চাহিদা পূরণ ; যেমন কাজের জন্য সময় নির্ধারণ এবং বিভিন্ন কাজের জন্য বিভিন্ন্ পরিকল্পনা করতে পারে? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-২৫০ | নিজের আচরণ নিজে নিয়ন্ত্রণ করাঃ<br>আপনার শিশুকি বিভিন্ন স্থান কাল পাত্র ভেদে নিজের আচার ব্যাবহার নিয়ন্ত্রণ করা যেমন লাইব্রেরিতে নিশ্চুপ থাকা । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৩১০ | কোন কিছু শুনার পর বুঝে সেই অনুসারে যোগাযোগ করাঃ<br>আপনার শিশুকি কোন কিছু শুনে সেটার অর্থ বুঝতে পারে এবং সেই অনুসারে প্রয়োগ করতে পারে কি না; যেমন কেউ ডাকলে প্রতি উত্তর দেওয়া। | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |

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| ডি-৩৩০ | বলাঃ<br>আপনার শিশুকি কথা বলার সময় সুন্দর অর্থবহ শব্দ, বাগধারা ব্যাবহার করা যেমন কোন একটি সমস্যা অথবা গল্প বলা । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৩৩১ | প্রাক কথা বলাঃ<br>আপনার শিশুকি আশেপাশে কেউ থাকলে যেমন মায়ের কাছে আসলে কোন শব্দ করে দৃষ্টি আকর্ষণ করতে চায় কিনা । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৩৩৫ | ইশারায় ভাষা তৈরিঃ<br>আপনার শিশুকি মনের ভাব প্রকাশের জন্য কোন আকার ইঙ্গিত অথবা আঙ্গুলের মাধ্যমে কনকিছু ইশারা করে কিনা । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৩৫০ | আলাপঃ<br>আপনার শিশুকি এক বা একাধিক পরিচিত অথবা অপরিচিত মানুষের সাথে কথা, আকার-ইঙ্গিতের মাধ্যমে নিজের মনের ভাব প্রকাশ করতে সক্ষম কিনা । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৩৬০ | যোগাযোগ প্রযুক্তি ও যন্ত্রপাতি ব্যবহার করাঃ<br>আপনার শিশুকি বন্ধুদের সাথে ভাবের আদান-প্রদানের জন্য কোন ডিভাইস যেমন টেলিফোন ব্যাবহার করতে সক্ষম কিনা । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৪১০ | শরীরের মৌলিক অবস্থার পরিবরতনঃ<br>আপনার শিশুকি এক জায়গা থেকে আর এক জায়গায় নিজেকে স্থানান্তর করতে সক্ষম কিনা ; যেমন এক পাশ থেকে আর এক পাশে গড়াগড়ি দেয়া, বসা, দাঁড়ানো, চেয়ার থেকে নামা কিংবা বিছানায় শোয়া, হাঁটুর উপর দাঁড়ানো অথবা | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |

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| | টয়লেট সিটিং অবস্থায় বসতে পারে কিনা? | |
| ডি-৪১৫ | শরীরের অবস্থান নিয়ন্ত্রনঃ<br>আপনার শিশুকি একটি নির্দিষ্ট অবস্থান ধরে রাখতে পারে কিনা । যেমন কাজে অথবা স্কুলে বসা বা দাঁড়িয়ে থাকতে সক্ষম কিনা । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৪২০ | নিজেকে স্থানান্তরিত করাঃ<br>আপনার শিশুকি নিজে নিজে এক জায়গা থেকে অন্য এক জায়গায় যেমন বেঞ্চের এক পাশ থেকে আর এক পাশে যেতে সক্ষম কিনা । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৪৩০ | কোন বস্তু তুলা এবং ধরে রাখাঃ<br>আপনার শিশুকি কোন বস্তু যেমন খেলনা, কাপ, বক্স এক জায়গা থেকে আর এক জায়গায় স্থানান্তর করতে সক্ষম কিনা । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৪৩৫ | শরীরের নিম্নাংশও দিয়ে কোন কিছু সরানঃ<br>আপনার শিশুকি দুই পা ব্যাবহার করে কোন বস্তু সরাতে পারে কিনা; যেমন পা দিয়ে বলকে লাথি দেয়া অথবা সাইকেলের প্যাডেলে চাপ দেয়া । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৪৪০ | সূক্ষ্ম হাতের ব্যবহারঃ<br>আপনার শিশুকি এক হাত এবং আঙ্গুল ব্যাবহার করে কোন বস্তুকে ধরা, উঠানো কিংবা ছেড়ে দেয়ার সক্ষমতা; যেমন টেবিল থেকে পয়সা উঠানো কিংবা দরজার নব ঘুরানো ইত্যাদি পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৪৪৫ | হাত ও বাহুর ব্যবহারঃ<br>আপনার শিশুকি এক হাত ও বাহু ব্যবহার করে কোন বস্তু সঠিকভাবে চালনা বা সরাতে পারে কিনা; যেমন দরজা টানা কিংবা একটি বস্তু ধরা ও ছোড়া। | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |

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| ডি-৪৫০ | হাঁটাঃ<br>আপনার শিশুকি সঠিকভাবে ভুমিতে পা ফেলে ধাপে ধাপে হাটতে পারে; যেমন পায়চারি করা, সামনের দিকে, পিছনের দিকে অথবা পাশে চলাচল করতে পারে? | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৪৫৫ | চারিপাশে চলাচলঃ<br>আপনার শিশুকি এক জায়গা থেকে অন্য জায়গায় দৌড়ে অথবা বেয়ে বেয়ে পার হওয়া, লাফিয়ে লাফিয়ে অথবা বাঁধা এড়িয়ে চলতে পারে? | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৪৬০ | ভিন্ন ভিন্ন জায়গায় চলাচলঃ<br>আপনার শিশুকি ভিন্ন ভিন্ন জায়গা ও ভিন্ন ভিন্ন অবস্থায় হেঁটে পার হওয়া যেমন ঘরের ভিতরে হাঁটা, বিল্ডিং এর মাঝে অথবা শহরের রাস্তায় হাঁটা । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৪৬৫ | উপকরণ ব্যবহার করে চারিদিকে চলাচলঃ<br>আপনার শিশুকি সাহায্যকারী কিছু নির্দিষ্ট ডিভাইস যেমন স্কেট, স্কি কিংবা সাতারের পোশাকের সাহায্যে ভিন্ন ভিন্ন স্থান থেকে অন্য এক স্থানে যাওয়ার সক্ষমতা যেমন সমতল অথবা উঁচুনিচু জায়াগা, পানিতে সাতার কাটতে পারে কিনা ? | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৪৭০ | পরিবহনের ব্যবহারঃ<br>আপনার শিশুকি বিভিন্ন যানবাহন যেমন গাড়ি, বাস, রিকশা, ট্যাক্সি, প্রানিচালিত যানবাহন, ট্রেন, নৌকা কিংবা বিমানে যাত্রি হিসেবে চলাচল করতে পারে কিনা? | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৫১০ | নিজেকে পরিস্কার রাখাঃ<br>আপনার শিশুকি সঠিক এবং উপযুক্ত পদ্ধতিতে পানি এবং অন্যান্য উপকরন ব্যাবহার করে সম্পূর্ণ শরীর অথবা কিছু অংশ ধৌত করতে পারে কিনা; | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |

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| | যেমন গোসল, হাত-পা ধোয়া, চুল-মুখমণ্ডল ধোয়া এবং টাওয়েল দিয়ে মুছে ফেলা। | |
| ডি-৫২০ | শরীরের অংশসমূহের যত্নঃ<br>আপনার শিশুকি শরীরের যেসব অংশগুলোতে বেশি নজর দেওয়া প্রয়োজন যেমন মুখ, চামড়া, দাঁত, মাথার তালু ইত্যাদি স্থানে বেশি নজর দেয়া কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৫৩০ | প্রসাধনঃ<br>আপনার শিশুকি মল-মুত্র ত্যাগের প্রয়োজনীয়তা চিহ্নিত করতে এবং নিজেই পরিষ্কার করতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৫৪০ | পোশাক পরিধানঃ<br>আপনার শিশুকি স্থান, কাল অনুসারে যথোপযুক্ত পোশাক পরিধান করা যেমন শার্ট, প্যান্ট, শাড়ি, জুতা, কোট ইত্যাদি পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৫৫০ | আহারঃ<br>আপনার শিশুকি সঠিক পদ্ধতিতে খাবার গ্রহণ করতে পারে কিনা; যেমন খাবার কেটে কেটে খাওয়া, হাত দিয়ে মুখে তোলা, ও বোতলের মুখ খোলা ইত্যাদি । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৫৬০ | পানঃ<br>আপনার শিশুকি সঠিকভাবে এবং পর্যাপ্ত পরিমানে পানি পান করার প্রয়োজনীয়তা বুঝে কিনা; যেমন পাইপ দিয়ে পান, বুকের দুধ পান অথবা বোতলের মুখ খোলা ইত্যাদি । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৫৭০ | নিজের যত্ন নেয়াঃ<br>আপনার শিশুকি ভিন্ন ভিন্ন অবস্থা অনুযায়ী শরীরের যথোপযুক্ত যত্ন নিতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৬৩০ | খাবার প্রস্তুতঃ<br>আপনার শিশুকি যথোপযুক্ত পদ্ধতিতে খাবার রান্না এবং পরিবেশন করতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা |

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| | | ☐ মাঝারি সমস্যা | |
| ডি-৬৪০ | গৃহস্থালী কাজ করাঃ<br>আপনার শিশুকি ঘরের বিভিন্ন কাজ যেমন ঘর পরিষ্কার পরিচ্ছন্ন রাখা, ময়লা ফেলা, আলমারিতে কাপড় গুছিয়ে রাখা, কাপড় ইস্ত্রি করা ইত্যাদি যথাযথভাবে করতে পারে? | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৭১০ | মৌলিক গুনাবলি প্রদর্শনঃ<br>আপনার শিশুকি স্থান, কাল, পাত্র অনুযায়ী মানবীয় গুণাবলী প্রদর্শন করতে পারে । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৭২০ | জটিল গুনাবলি প্রদরশনঃ<br>আপনার শিশুকি যথোপযুক্ত মনোভাব নিয়ে সমাজের অন্যান্য মানুষের সাথে পরিচত হওয়া এবং স্থান, কাল ও পাত্র অনুযায়ী সঠিক আচার ব্যাবহার পালন করতে পারে। | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৭৫০ | লৌকিকতাবজিত সামাজিক সম্পর্কঃ<br>আপনার শিশুকি নির্দিষ্ট মানুষের সাথে নির্দিষ্ট সম্পর্ক বজায় রাখা যেমন সমবয়সী মানুষ, সহকর্মী কিংবা একই পেশার মানুষ এর সাথে নির্দিষ্ট সম্পর্ক বজায় রাখতে পারে । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৭৬০ | পারিবারিক সম্পর্কঃ<br>আপনার শিশুকি ছোট কিংবা বড় পরিবারের সদস্যদের সাথে আত্নীয়তার সম্পর্ক বজায় রাখে। | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৭৭০ | অন্তরঙ্গ সম্পরকঃ<br>আপনার শিশুকি মানুষের সাথে বন্ধুত্বপূর্ণ অথবা অন্তরঙ্গ সম্পর্ক তৈরি করা যেমন স্বামী- স্ত্রী, প্রেমিক-প্রেমিকা ইত্যাদি । | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা<br>☐ মাঝারি সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |
| ডি-৮১৫ | প্রাক-বিদ্যালয় শিক্ষাঃ<br>আপনার শিশুকি সমাজে ও পরিবার থেকে প্রাথমিক শিক্ষা গ্রহণ যেমন প্রতিদিনের যত্ন এবং | ☐ সমস্যা নাই<br>☐ অল্প সমস্যা | ☐ বেশি সমস্যা<br>☐ সম্পূর্ণ সমস্যা |

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| | বিদ্যালয়ে যাওয়ার প্রস্তুতি নিতে পারে? | ☐ মাঝারি সমস্যা |
| ডি-৮২০ | বিদ্যালয় শিক্ষাঃ<br>আপনার শিশুকি বিদ্যালয়ে ভর্তি, বিদ্যালয় সংশ্লীষ্ট কাজে জড়িত হওয়া, কোস এর বিষয় বস্তু সম্পর্কে বুঝতে পারে কিনা, সহপাঠী ও শিক্ষকের সাথে সুসম্পর্ক বজায় রাখতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৮৪৫ | চাকরী গ্রহণ, রাখা এবং ছেড়ে দেওয়াঃ<br>চাকরী খোঁজা ও পছন্দ করা, যথাযথ ব্যাবহারবিধি বজায় রাখা এবং সঠিক উপায়ে চাকরী থেকে অব্যাহতি নেয়া এই বিষয়গুলো বুঝতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৮৬০ | আর্থিক লেন্দেনঃ<br>অর্থ ব্যাবহার করে কোন কিছু ক্রয় করা যেমন খাবার কেনা কিংবা কোন দ্রব্য বিনিময় করা অথবা অর্থ সঞ্চয় করা বুঝতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৮৮০ | খেলাধুলায় অংশগ্রহনঃ<br>উদ্দেশ্যমূলক কাজে কিংবা খেলাধুলায় অন্যান্যদের সাথে অংশগ্রহন করতে পারে কিনা? | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৯১০ | সামাজিক জীবনঃ<br>সবধরনের সামাজিক কার্যকলাপে অংশগ্রহন করা যেমন দাতব্য সংস্থা, ক্লাব ইত্যাদি । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |
| ডি-৯২০ | চিত্তবিনোদন এবং অবসরঃ<br>চিত্তবিনোদনের জন্য খেলাধুলা করা, জাদুঘর, আর্ট গ্যালারীতে ঘুরতে যাওয়া, শখের কাজকর্মে অংশগ্রহন, বাদ্যযন্ত্র বাজানো অথবা বিভিন্ন স্থানে ঘুরতে যাওয়া ইত্যাদি । | ☐ সমস্যা নাই ☐ বেশি সমস্যা<br>☐ অল্প সমস্যা ☐ সম্পূর্ণ সমস্যা<br>☐ মাঝারি সমস্যা |

**ধন্যবাদ আপনার মূল্যবান সময় দেওয়ার জন্য।**