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ENVIRONMNTAL BARRIERS: AS REPORTED BY PARENTS OF CHILDREN WITH CEREBRAL PALSY

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Bachelor of Science in Physiotherapy (B.Sc. PT)

Reg. no: 8663

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BHPI, CRP, Savar, Dhaka-1343

Bangladesh Health Professions Institute (BHPI)

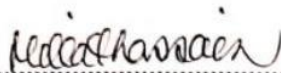Department of Physiotherapy

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We the undersigned certify that we have carefully read and recommended to the Faculty of Medicine, University of Dhaka, for the acceptance of this dissertation entitled

ENVIRONMENTAL BARRIERS: AS REPORTED BY PARENTS OF CHILDREN WITH CEREBRAL PALSY

Submitted by **Mosharrat Jahan Dola**, for the partial fulfilment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

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Approval date: 18/11/2023

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DECLARATION

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I declare that the work presented here is my own. All sources used have been cited appropriately. Any mistakes or inaccuracies are my own. I also decline that same any publication, presentation or dissemination of information of the study. I would bind to take consent from the department of Physiotherapy of Bangladesh Health Profession Institute (BHPI).

Signature: Mosharrat Jahan Dola   **Date: 18/11/2023**

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CONTENTS

Acknowledgement

At first, I would like to express my gratitude to the almighty Allah who gives me the ability to complete this project in time with great success. I would like to pay my gratitude towards my parents who constantly encouraged me to carry out this study.

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Acronyms

BHPI	Bangladesh Health Professions Institute
CHIEF-SF	Craig Hospital Inventory environmental factor-Short from
CRP	Centre for the Rehabilitation of the Paralysed
CP	Cerebral Palsy
IRB	Institutional Review Board
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

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List of Tables

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List of Figures

Abstract

Background: Cerebral palsy caused by damage and defects in the growing brain that lead to aberrant nervous system formation, which leads in persistent abnormalities in the strength, control, or both of the limbs. The study was conducted to identify the environmental barriers as reported by parents of children with cerebral palsy.

Specific objectives: To find out the demographic status of the participants. To evaluate the environmental barriers. To evaluate which item of the environmental barriers has most and least impact on participants. To detect association between demographic status and environmental barriers.

Method: The cross-sectional study was conducted by using convenience sampling procedure. The study population was parents of children with cerebral palsy who are receiving treatment from CRP. Total 100 participants were selected conveniently for the study within 1 to 12 child's age range. Data was collected by using CHIEF-SF questionnaire. Data was analyzed through SPSS 20 version.

Result: In this research mean age of children was 5.39. This study found 54% boy and 46% girl which is child's sex. Environmental barriers were detected by CRAIGH HOSPITAL INVENTORY ENVIRONMENTAL FACTOR scale. From this dimension the mean score of environmental barriers was $30.21\pm$ (24.175). eighty two percent participants had the barrier for the discrimination.

Conclusion: Our results showed that these barriers were most encountered in the discrimination and help home. Government policies were the least of the barriers, based on frequency. The policies subscale has the lowest barrier since most participants don't know how to obtain facilities for children with cerebral palsy from governmental and non-governmental organizations. The biggest troublesome barrier was the ability to receive support from home and facing discrimination and the least problematic barrier was government policies, in order of the size of the problematic things. Environmental barriers were related to participant's education, occupation, monthly income, and residential area. Age and gender of the kid, however, were not connected to environmental constraints.

Keywords: Cerebral palsy, Environmental barrier

CHAPTER-I	**INTRODUCTION**

1.1 Background

One of the most common causes of motor impairment in children is cerebral palsy (CP). The most recent definition of CP describes it as a collection of lifelong conditions that affect mobility and posture development and result in activity restrictions and are caused by non-progressive abnormalities in the prenatal or newborn brain (Sadowska et al. 2020, p. 1505). According to data from Europe, the average frequency of CP is 2.08 per 1000 live births, but in the group of infants born with a body weight of less than 1500 g, the frequency is 70 times greater than in the group of infants born with a body weight of more than 2500 g. (Jhonson. 2020, p.1506). The prevalence of cerebral palsy is between 1.8-2.3 instances per 1000 children, according to data from population-based research and national cerebral palsy registries in Europe, Australia, and the United States. (Kakooza-Mwesige et al. 2017, p. e1275).185 (mean age 7 .3 years; 36% of girls) of the 207 children with cerebral palsy (estimated prevalence of 3.4 per 1000 births) received comprehensive information. Children exhibited movement problems in 22 (12%) children, unilateral seizures in 37 (20%), bilateral seizures in 113 (61%) and ataxic CP in 9 (5%) children. There were no four children assigned to the subtype. Among all children, 109 (59%) had intellectual disabilities, 109 (51%) had epilepsy, 42 (23%) had severe vision impairment, 10 (5%), had hearing impairment, and 84 (45%) had severe speech impairment. 46 (25%) of the 52 babies that were born prematurely had an Apgar score of less than 7 in the first five minutes. (Bufteac et al. 2018, p. 5). The observed frequency in Bangladesh was 3.4 per 1000 kids. The majority (79.6%) had CP that was spastic. Overall, 79.6% of children with cerebral palsy (language 67.6%, intellectual 39.0%, epilepsy 23.7%, visual 10.2%, hearing 10.2%) had at least one associated disease. 78.2% of them have never received rehabilitation. (Khandaker et al. 2019, p. 604). Periconceptional, prenatal, perinatal, and neonatal risk factors for cerebral palsy can all exist. preconception factors include the mother's overall health, the use of stimulants or medications, starvation, poisonings, infections etc. The pregnancy, physical or chemical causes, Prenatal causes include numerous pregnancies, placental anomalies, placental abruption, premature membrane rupture, toxicity, vaginal hemorrhage, etc. Premature birth, protracted labor, hypoxia, aided

delivery, meconium aspiration, etc. are perinatal causes. respiratory distress syndrome, neonatal convulsions, hyperbilirubinemia, etc. occur throughout the neonatal and infant periods. (Reddihough et al. 2020, p. 8). Cerebral palsy classification: According to Balf and Ingram, there are several different types of cerebral palsy, including diplegia, hemiplegia, bilateral hemiplegia, ataxia, dyskinesia, and mixed type. According to SCPE classification, its goal is to present a straightforward system for classifying patients. Type of spasms It exhibits excessive muscular tone, hyperreflexia, and abnormal reflexes. It can be further divided into unilateral spastic type and bilateral spastic type without resulting in diplegia, tri-, or tetraplegia. Type of dyskinesia: This sort of muscle tone regularly varies and fluctuates. movement made by the patient that is uncontrollable, repetitive, and involuntarily. there are two distinct subtypes of it Dystonic and choreoathetoid cerebral palsy. The pregnancy, physical or chemical causes, Prenatal causes include numerous pregnancies, placental anomalies, placental abruption, premature membrane rupture, toxicity, vaginal hemorrhage, etc. Premature birth, protracted labor, hypoxia, aided delivery, meconium aspiration, etc. are perinatal causes. respiratory distress syndrome, neonatal convulsions, hyperbilirubinemia, etc. occur throughout the neonatal and infant periods. (Sadowska et al. 2020, p. 1509). Cerebral palsy classification: According to Balf and Ingram, there are several different types of cerebral palsy, including diplegia, hemiplegia, bilateral hemiplegia, ataxia, dyskinesia, and mixed type. According to SCPE classification, its goal is to present a straightforward system for classifying patients. Type of spasms It exhibits excessive muscular tone, hyperreflexia, and abnormal reflexes. It can be further divided into unilateral spastic type and bilateral spastic type without resulting in diplegia, tri-, or tetraplegia. Type of dyskinesia: This sort of muscle tone regularly varies and fluctuates. movement made by the patient that is uncontrollable, repetitive, and involuntarily. there are two distinct subtypes of it Dystonic and choreoathetoid cerebral palsy. Ataxic of CP generally lowing the muscle tone, motor coordination may loss which cause ataxia. (Sadowska et al. 2020, p. 1509). According to motor type, 85% of cerebral palsy cases are spastic.4% of people are ataxic, while 7% of people have dyskinetic cerebral palsy, which includes dystonia and choreoathetosis. Topographically, two categories can be distinguished: unilateral (affecting only one side of the body) and bilateral (affecting both sides of the body). Here are some examples of bilateral spastic CP: Diplegia, which affects lower limbs more so than

higher limbs, ranges from 10% to 36%; quadriplegia, which affects the torso and all four limbs, ranges from 24% to 31%. Using topographical division, the primary motor categories of dyskinesia, ataxia, and hypotonia are not included (TeVelde et al. 2019, p. 6)

According to the gross motor function classification system, cerebral palsy is divided into five levels, as follows (Rethlefsen et al. 2010, p. 461)), in their article titled Cerebral palsy in children: a clinical summary. According to GMFCS level, cerebral palsy is categorized as follows:

Level I: Can Walks without limitations but have poor Speed, balance and co-ordination.

Level II: Perform Walks with limitations indoors or outdoors, climbs stairs holding on to a rail. But limitations on walking on unsmooth surfaces and go down, in congested or narrow spaces.

Level III: Walks by using a hand-held mobility device also can climb stairs by holding railing. Can travel outdoors or on uneven surface by using self-propelled wheelchair

Level IV: Powered mobility device is needed for self-mobility due to great mobility limitations

Level V: Voluntary control of movements is restricted because of physical impairments and have no means of independent mobility. Transported in a manual wheel chair.

According to manual ability classification system cerebral palsy classified into five different levels as following: classification of cerebral palsy according to MACS level: Level I: Can handles objects easily and successfully.

Level II: handles most objects but reduced speed/quality.

Level III: Handles objects with difficulty but help to prepare or modify activity Level IV: Can handles limited number of objects in adapted setting

Level V: Cannot handle objects.

According to communication function classification System; cerebral palsy classified into five different levels as following: classification of cerebral palsy according to CFCS level:

 Level I: Effective sender and receiver with both unfamiliar and familiar persons.

Level II: Effective but slow-paced sender and receiver with both unfamiliar and familiar persons.

Level III: Effective sender and receiver with familiar partners.

Level IV: Inconsistent sender and receiver with familiar partners.

Level V: Seldom effective sender and receiver with familiar partners

According to eating and drinking ability classification system; cerebral palsy classified into five different levels as following: classification of cerebral palsy according to EDACS level:

Level I: Eats and drinks safely and efficiently.

Level II: Eats and drinks safely but with some limitations to efficiency.

Level III: Eats and drinks with some limitations to safely; there may also be limitations to efficiency.

Level IV: Eats and drinks with significant limitations to safety.

Level V: Unable to eat or drink safely; consider feeding tube

Cerebral palsy (CP) is the most common cause of motor deficits in children.

The impacted rate is 2.1 per 1000 live births. CP is typically understood to be a collection of issues with posture, motor coordination, and movement pattern development. as a result of enduring, non-progressive abnormalities in the development of the fetal brain. CP is brought on by a range of causes that are usually misinterpreted, despite the fact that several risk factors, including placental abruption, delivery asphyxia, and newborn medical problems, have been discovered. The diagnosis of CP is made using the clinical presentation, which includes movement patterns. It is regarded as a diagnostic standard. In this instance, neither the results of laboratory tests nor those from imaging tests are necessary for the diagnosis. Based on movement patterns, clinicians categorize CP into four groups: spastic, dyskinetic (dystonia or choreoathetosis), ataxic, and mixed. The main movement pattern of those with spastic kind of CP is spasticity, and they are exclusively disabled. Spastic CP, which makes up 70% to 80% of all instances, is the most common type of CP overall. According to topographical classification, children with spastic CP are divided into three subtypes: quadriplegic (bilateral spasticity with arm involvement equal to or greater than the leg), hemiplegic (unilateral spasticity, typically the arm more than the leg), and diplegic (bilateral spasticity with leg involvement greater than the arm). Long-term functional deficits and motor impairments are CP features. Major medical comorbidities associated with CP include speech disorders, seizures,

dental and nutritional issues, as well as cognitive, sensory, linguistic, and intellectual deficits. As a result, managing CP children requires a multidisciplinary, all-encompassing, and coordinated approach, with the child's independence and community participation as the main goals. Stress isn't any worse for caregivers than it is for others. This load alludes to a negative outcome of the care scenario for both the caregivers and the person who needs help. In general, taking care of a child with a disability can be quite stressful for the caregiver. CP has a tremendous impact on the lives of children who are affected as well as their mothers, who are the primary caregivers, because of the common comorbidities and multidisciplinary management of CP. On the other hand, a complete investigation of the responsibility of moms who provide care is still pending. There doesn't seem to be any published study on the possibility that topographical classification affects the quality of life for kids with cerebral palsy. Additionally, no studies have examined how the mother's stress levels as a caregiver relate to the child's quality of life Finding the connections between topographical classifications, the child's quality of life, and the mother's burden in Cerebral Palsy may have major effects on the design and implementation of more successful interdisciplinary interventions. (Ozkan. 2018, p. 3132). A thorough interview and study of the data gleaned from it are required to undertake the difficult process of CP diagnosis. Children's sociodemographic information, patients' birth histories, mothers' pregnancies, and postpartum histories, patients' past and present medical histories are taken as a subjective assessment and visual observation some additional tests is done by therapist and the results are crucial elements to determine the severity of CP. It takes a protracted clinical process to assure the patient's condition and level, and it demands an objective assessment. It is necessary to distinguish cerebral palsy from other motor abnormalities in order to make the diagnosis. Similar clinical presentations to CP can occur in other neurodevelopmental diseases. For all children with cerebral palsy, monitoring of mental retardation, hearing impairment, ophthalmologic impairment, speech and language difficulties, nutrition, and growth is necessary. (O'SHEA. 2008, p. 816). This study is conducted to evaluate the level of environmental barrier. this study will be an attempt to find out the association among environmental barriers and sociodemographic conditions of parents of children with cerebral palsy.

1.2 Rational

Cerebral palsy is a neurological illness, and it is becoming more and more common. These kids require constant close supervision and care because of their difficult behavior and interests. Parents of children with cerebral palsy have lower levels of life satisfaction than parents of typically developing children. Environmental barriers are classified as (a) products and technology; (b) natural environment and human-made changes to environment; (c) support and relationships; (d) attitudes; and (e) service systems and policies. Many parents who come to CRP for treatment encounter numerous obstacles. It is impossible to increase awareness of people's problems if these obstacles are not targeted. Therefore, it's critical to concentrate on the obstacles that patients confront in order to enhance the standard of care and minimize their suffering. It will be simple to give patients at CRP with high-quality care if barriers are identified.

Also, in Bangladesh there are very few research about the environmental barriers faced by parents of children with cerebral palsy. By this study Physiotherapist and other professionals will aware about the environmental barriers of children with cerebral palsy and it can play a role in resolving.

1.3 Research question:

What are the environmental barriers for the children of cerebral palsy as reported by their parents?

1.4 Aim of the study

The current study aims to investigate the environmental impediments that parents of children with cerebral palsy have identified.

1.5 study objectives

1.5.1 General objective:

To find out environmental barriers of children with Cerebral palsy attending at CRP.

1.5.2 Specific objective:

- To identify environmental barriers among the parents of children with cerebral palsy
- To find out the level (according to CHIEF its frequency & magnitude) of Environmental barriers of parents with cerebral palsy children
- To identify what type of barriers are mostly faced by parents of children with cerebral palsy
- To find out the socio-demographic information of parents of children with Cerebral palsy.
- To examine relationship among socio demographic variables, environmental barriers (CHIEF) scores

1.6 conceptual framework

Independent variables

Dependent variables

Age

Sex

Family member

Father's occupation

Parent's educational

status Living area

Monthly income

Children number of parents

Environmental barriers (CHIEF score)
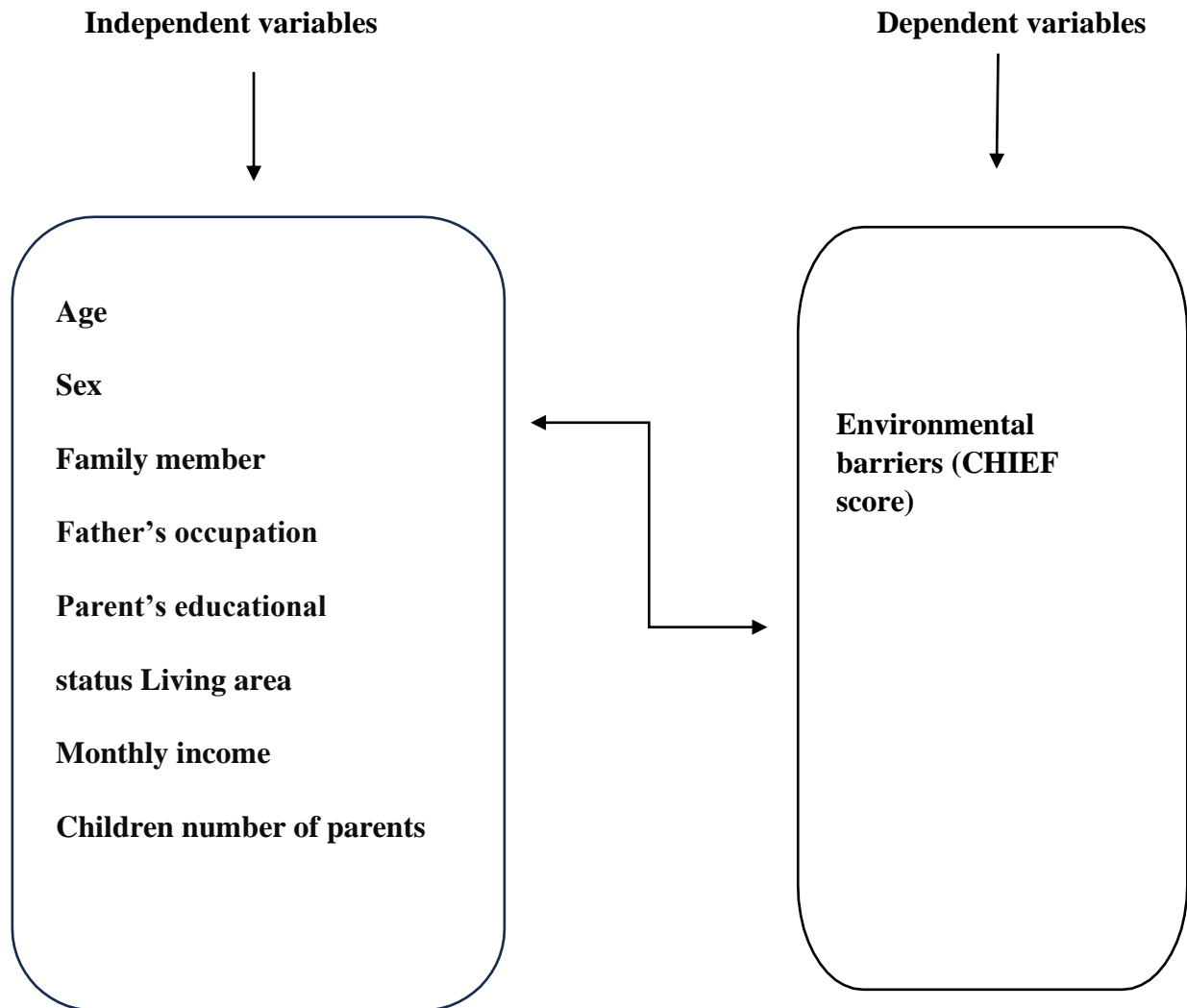
A non-progressive interference, lesion, or aberration of the developing or immature brain results in cerebral palsy, which is a collection of persistent, though not always stable, issues with mobility, posture, and motor function. Motor function and postural abnormalities that start in early childhood and persist until death are the main indicators of cerebral palsy; they are non-progressive but alter with age. Motor function difficulties, which are the primary signs of cerebral palsy, are typically accompanied by other dysfunctions, such as seizures and secondary musculoskeletal illnesses, as well as sensory, perceptual, cognitive, communicative, and behavioral abnormalities. (Rosenbaum et al. 2007, p. 8). A prenatal etiology of CP was clearly identified in various research from developing nations. Some of these nations have the medical technology needed to diagnose. The more advanced technology for diagnosing numerous prenatal causes includes MRI, genetic testing, virology, etc. In rare instances where congenital disease or incompatibility signs were present, it was determined that the cause was prenatal, and these children were not included in subsequent studies as having CP. According to research, low birth weight (LBW) accounts for 13–20% of cerebral palsy (CP) cases in low-income nations. Prematurity and intra-uterine development retardation are frequently included because, very frequently, the gestational age at birth is unknown, making it impossible to register. The situation is different for better income countries, where 30–40% of CP cases are predisposed by LBW. It's impossible to tell whether a kid who is delivered prematurely was CP or not in low-income nations because many infants die before their due dates. N. van den Broke, in a personal communication. Perinatal asphyxia was cited as a contributing factor to CP in between 20–46% of instances. (Gladstone. 2010, p. 191). Untreated neonatal sepsis, ABO and rhesus invompalibility, G6PD deficiency, delayed diagnose is and treatment of jaundice. as well as assepticaemia, bacterial meningitis, meningoencephalitis, measles, and pertussis, were all prevalent in this population. Additionally, 12%–25% of infants had neonatal convulsions, and 10%–21% had infections.as well as assepticaemia, bacterial meningitis, measles

Meningoencephalitis and pertussis, were all prevalent in this population. Additionally, 12%–25% of infants had neonatal convulsions, and 10%–21% had infections. These rates are higher than those of any developed nation. (Gladstone. 2010, p. 191). According to a December 2017 article, the prevalence of CP varies among the various American states, with an average of 3.6 cases per 1000 people. (Overall rate of multistate collaboration in the USA) 3.3 instances per 1000 in Wisconsin, 3.8 cases per 1000 in Georgia, and 3.7 cases per 1000 in Alabama. Even while the study claims that boys are more likely to have CP than girls, it also demonstrates that black and non-Hispanic children are more afflicted than Hispanic children.

Most surprisingly, children in high-income areas have lower rates of CP than their counterparts. Spastic type of CP was discovered to be a prevalent subtype; 77% of all instances were spastic, and of this spastic group, 70% had bilateral spasms. The most prevalent subtype of CP was identified as being spastic, accounting for 77% of all instances. Of this spastic group, 70% were bilateral spastic, adding new data to the epidemiological research of CP. An investigation into the prevalence of CP was conducted in Uganda in 2017. This study was based on a population. The frequency was 1.8–2.3 instances per 1000 children, and it was more prevalent among Ugandan rural children under the age of 8, who are more susceptible to the disease than children who are older and more susceptible than children in high-income nations. Compared to people living in high-income nations, the post- neonatal CP rate in Uganda is five times greater. When the cause of cerebral palsy cannot be determined in less developed nations, as has been demonstrated by a thorough analysis, it is generally believed that the cause is prenatal. (Kakooza-Mwesige et al.,2017, p. 1) Cerebral Palsy Prevalence in Indian Children: According to a 2019 analysis, there were 2.95 cerebral palsy cases per 1000 children. Cerebral Palsy Prevalence among Indian Children: Eight papers were qualified and included for quantitative analysis out of the 862 publications that were searched. Per 1000 children surveyed, the overall pooled prevalence of cerebral palsy was 2.95 (95% CI 2.03-3.88). The pooled prevalence for the study populations in the rural, urban and mixed -rural-urban sub-groups was 1.83(95% CI 0.41-3.25) (95% CI 1.433.16), and 4.37 (95% CI 2.24-6.51), respectively. There has been a high frequency of long-bone fractures among children and young adults receiving residential care with quadriplegic cerebral palsy, with the majority of fractures occurring in the upper extremities. (Developmental Medicine & Child Neurology. 2002, p. 312). Hip pathological abnormalities in children with

cerebral palsy. Hip displacement is a secondary musculoskeletal issue in children with CP. About 1% of patients with spastic hemiplegia, 5% of patients with diplegia, and up to 55% of patients with quadriplegia experience hip dislocation. (KP Murphy et al. 2009, p.31). The following hip abnormalities are associated with cerebral palsy: calavera, subluxation, displaced upward, and slanting acetabulum. We also think that the semitendinosus and semi-membranous are responsible for the abnormalities of the knee flexion and hip adduction. Others are hip dysplasia, weight bearing, degenerative arthritis, patella Atia, spondylosis (KP Murphy et al. 2009, p. 30). Damage to the brain's structure is permanent and irreversible. Additionally, the symptoms can vary and evolve with time. Children with a variety of difficulties, including epilepsy, hearing and vision loss, intellectual disability, eating and swallowing issues, nutrition issues, and respiratory illnesses, suffer mobility and postural disorders. Long-term cerebral palsy patients experience difficulties with daily living tasks and quality of life. (Ostenjo et al. 2004, p. 586) Spastic cerebral palsy is the most prevalent form. The muscles become stiff and permanently constricted as a result. These varieties are named using a Latin prefix indicating the number of affected limbs and the word plegia, which means paralysis or weakness: Classification schemes frequently make reference to the location or topography of the aberrant motor function in order to distinguish between different subgroups of spastic CP. Bilateral lower extremity involvement is referred to as diplegia; unilateral upper and lower extremity involvement is referred to as hemiplegia; involvement of three extremities—typically both lower and one upper—is referred to as triplegia; four extremity involvement— more severe upper extremity spasticity—is referred to as double hemiplegia; and severe four extremity involvement is referred to as quadriplegia/tetraplegia.(Pakula et al. 2009,p. 428). The bone mineral density (BMD) of teenagers with spastic cerebral palsy is lowered. Femoral osteopenia affects nearly all children who are unable to stand and 75% of children with moderate to severe cerebral palsy. Over the course of their lifetimes, children with severe cerebral palsy develop osteopenia that is clinically significant. This is due, unlike in senior individuals, to a slower rate of bone mineral growth than in healthy youngsters, rather than actual reductions in bone mineral. No. 108 In children with moderate to severe CP, several elements of skeletal growth and development, including skeletal maturation, are typically affected. (Henderson et al. 2005, p. 773). Children with CP frequently have visual impairments. It has been discovered that poor visual acuity affects more than 70% of children with cerebral

palsy.While strabismus, amblyopia, nystagmus, optic atrophy, and refractive errors are more common, central visual impairment appears to play a major role in the acuity issues.Children with visual perception issues are also more likely to have CP caused by periventricular leukomalacia.Retinopathy, cortical visual impairment, and strabismus are more common in children with cerebral palsy who have a history of prematurity than in children with cerebral palsy who do not. Refractive error does not differ between premature children who have cerebral palsy and those who have not. (Ashwal et al. 2004, p. 858)

About 2% to 6% of Children with cerebral palsy (CP) may experience limitations in involvement due to their physical, social, and attitude environments. In order to recognize and explain this environment, we will explore current and potential methodologies in this section. In order to locate unpublished articles and "grey" literature, we used a critical analysis of the data from the World Health Organization Literature Review on Environmental Factors, a search of electronic databases, and interviews with experts. A variety of facilitator and barrier elements were cited by parents of disabled children as well. These included financial hardships, insufficient public services, and psychosocial demands (from family and school). According to observational research, the layout of the building, a reduction in income, and the availability of particular equipment all directly affect the participation rates of children. Some tools on the market make an effort to capture. According to Statistics Canada's Citation 2006, 174,810 Canadian children under the age of 15 have considerable activity limits as a result of disability. According to Oskoui et al. (2013, p.509). 1.84 out of every 1000 children in Quebec and 2-2.5 out of every 1000 children born in Canada have cerebral palsy (CP), one of the most prevalent motor disabilities in childhood. Children are affected by this disorder throughout their entire lifespans and family caregivers—who typically look after these kids—may have a major emotional and financial strain as a result (Kancherla et al. 2012,p. 838).The discovery of child's impairment has long been regarded as an emergency for parents (Huang et al. 2010,p. 1214).Their reactions include shock because of the disappointment of their desires for a solid infant, dissent and refusal to acknowledge the determination, anger and accusing the therapeutic framework for providing inadequate care, fear and instability regarding the degree of incapacity and related disability, and feeling disempowered and overpowered by an unusual future (George et al., 2021,p. 16). These 13

conclusions are the result of investigations done with the parents of children who have cerebral paralysis. The unique effects of culture and the traditional family are not well understood, despite the fact that there are a few common occurrences for parents of children with cerebral paralysis as societies have become more multicultural, with sizable and growing Asian populations, countries like the United States of America (U.S.A.) and the United Kingdom (U.K.) come to be. It is important for healthcare professionals in various countries to comprehend better how parents' involvement in a child's impairment diagnosis is influenced by family and culture. In kids aged 0 to 14 for a very long time, the prevalence of direct and extreme handicap is estimated to be 5%. According to (Kawakatsu et al. 2012, p. 2), children with disabilities are more prevalent in low-income countries than high-income countries. The family should provide more assistance and care for kids who have cerebral palsy. However, due to a child's conduct and the stress of providing for a child on a daily basis, mothers face a number of problems. In cerebral palsy, the damage and injury to the brain are irreversible. Unlike certain other bodily components, the brain does not "heal" like some other organs. This means that during a person's lifetime, the cerebral palsy itself will neither improve or worsen. Associative situations, however, could get better or worse with time. Cerebral palsy has permanent rather than reversible effects. Cerebral palsy is a lifelong affliction for those who are diagnosed with it. It is common for a family to experience stress following the birth of a child with cerebral palsy. The primary caregivers for children with cerebral palsy are their parents, who must balance the demands of their own family obligations with those of the cerebral palsy child. The family should provide more assistance and care for kids who have cerebral palsy. However, due to a child's conduct and the stress of providing for a child on a daily basis, mothers face a number of problems. In cerebral palsy, the damage and injury to the brain are irreversible. Unlike certain other bodily components, the brain does not "heal" like some other organs. This means that during a person's lifetime, the cerebral palsy itself will neither improve or worsen. Associative situations, however, could get better or worse with time. Cerebral palsy has permanent rather than reversible effects. Cerebral palsy is a lifelong affliction for those who are diagnosed with it. It is common for a family to experience stress following the birth of a child with cerebral palsy. The primary caregivers for children with cerebral palsy are their parents, who must balance the demands of their own family obligations with those of the cerebral palsy child. Based confirmed. (Henderson et al. 2004, p. 858)

CHAPTER III	METHODOLOGY

3.1 study Design

Structured questionnaires were used in a cross-sectional descriptive study, and parents of children who had cerebral palsy results were interviewed. This study's design was suitable for determining the goals. The information was gathered all at once or in a brief period of time. This study sought to determine the association between sociodemographic status and environmental barriers as reported by parents of children with cerebral palsy. This is why a cross-sectional study was chosen as the type of study. The most significant benefit of the cross-sectional study was that it cost less time and money to conduct because there was no follow-up and fewer resources were needed (Olsen et al., 2004, p. 7). A cross-sectional study is distinguished by its ability to compare the features of various population groups at one specific period, and by the fact that its conclusions are derived from whatever data fits inside the study's parameters. It enables comparisons across numerous variables for researchers, such as those relating to age, gender, income, and educational attainment when studying walking.

When carrying out the research's goals and objectives, the researcher used the quantitative survey approach because it is appropriate when the problem is well-known, straightforward, and unambiguous. The goal of quantitative research is to test theories and prove facts while also demonstrating causal explanations, correlations between variables, and the ability to anticipate. During the course of the study, quantitative research designs remain constant and predetermined. Studies that used quantitative methods produced statistical data to support their claims and provided answers to specific research topics. n order to determine the extent of environmental impediments among children with cerebral palsy as described by their parents at Savar in-between, a cross-sectional study with a quantitative approach was carried out. The researcher will attempt to determine whether the dependent variable and independent variable are correlated. Cross-sectional research is the most effective way to gather data from huge datasets in order to determine the answers to these questions.

3.2 Study site

Data were gathered by the researcher in outpatient unit and inpatient unit of pediatrics department of center for the rehabilitation of paralyzed in Savar, Bangladesh. Participants are contacted by the researcher met at specific locations. All parents of cerebral palsy children who were chosen for the study and who met the inclusion requirements. Every participant received an explanation from the researcher of the study's goals. Samples were drawn by the researcher from persons who voluntarily took part in the study.

3.3 Study population

A population was a clearly defined collection or class of the individuals, things, or events that the study is trying to learn more about. From a review of the literature and the study's objectives, the criteria for study populations were established. As the assumptions and theoretical framework of the investigation came into focus, selection criteria were gradually developed. Parents of children with cerebral palsy made up the study's target population using convenience sampling.

3.4 Sample size

Finding the ideal sample size was extremely challenging because it much relies on the investigator conducting the study. The more carefully prepared the statistical study, the better it will be. The sample size of the study must be sufficient in light of the objectives. The study sample needs to be "big enough" for a statistically significant effect of the same magnitude that is necessary for scientific significance. The equation sample size is given below:

$$n = \frac{z^2 pq}{d^2}$$

$$= \frac{(1.96)^2 \times 0.34 \times 0.66}{(0.05)^2}$$

$$= \frac{3.84 \times 0.34 \times 0.66}{0.05 \times 0.05}$$

$$= 344$$

Were,

n = Sample size

z= linked to 95% confidence interval (use 1.96) p = expected prevalence, 0.34

q = 1- p (expected non-prevalence) ,0.966

d = margin of error at 5% (standard value of 0.05) The actual sample size was, n=344

This study's actual sample size was determined to be 344. It is challenging to collect a larger number of samples because this study is a component of an academic research project and there are time constraints. 100 parents who had cerebral palsy children were chosen as the sample for this investigation.

3.5 Sampling technique

The convenience sampling strategy was employed when a specific subset of a large population is simple to reach. This sampling approach is chosen by researchers because it allows for the collection of significant amounts of data utilizing a variety of methods. This diversity will provide a greater cross-section of knowledge as a result. It also takes less time than many other sampling techniques because just the most appropriate candidates are chosen. In comparison to other sampling techniques, convenience sampling technique findings are typically more representative of the target population. participants were chosensince the researcher could easily access them. A specific group of persons is the goal of the convenience sampling technique. According to a set of inclusion and exclusion criteria, the samples were gathered.

3.6 Selection criteria

3.6.1 Inclusion criteria

• Mothers or fathers of children with cerebral palsy who were interested to participate this study

• All consecutive cerebral palsy patients aged between 1 years to 12 years

• All types of cerebral palsy were included

• Both boys and girls were included

• Participants who were able to communicate and had no hearing problems were selected for the study. Clear communication was required to provide answer during the interview session.

3.6.2 Exclusion criteria

Explicit rejection to participate in the study or any circumstance that makes it impossible to do the interview, such as illness, a conflict with a personal commitment, or a scheduling conflict.

• Child who had other pediatric condition

• Parents who are medically unstable

• Parents who have cognitive problem

3.7 Data collection period

Data was meticulously collected while still being secret. Each participant gave a specific window of time for data collection. Each questionnaire generally took 10 to 15 minutes to complete.

3.8 Data collection tool

In Bengali Consent Form and Questionnaire, as well as other items including a pen, pencil, eraser, clipboard, white paper, and notebook, were required for the study.

3.9 Method of data collection

Measurement tool:

Patients personal Information and history: Age, gender, family member, level of education, employment position, monthly income, smoking, number of children.

Craig hospital inventory of environmental factor (SF): The CHIEF-SF measures perceived environmental barriers and consists of 12 items from the following five dimensions: policies, physical/structural, work/school, attitudes/support and assistance/ services (Whiteneck et al. 2004, p. 1326). Each CHIEF-SF item measures two domains pertaining to the frequency of a problem caused by the environment (scored from never 0 to daily 4) and the magnitude of the effect of this problem (scored from minimal 1 to major 2), with a range in score (the product of the frequency and magnitude of the problem scores) from 0 to 8, with a higher score indicating a greater perceived barrier (Whiteneck et al. 2004, p. 1326). Each dimension was examined in our analysis. To facilitate interdimensional comparison, we calculated the average item score for each dimension (sub score of the dimension divided by the number of items in the dimension, ranging from 0 to 8), because each dimension consists of a different number of items. The work/school dimension was excluded when forming the total score because the CHIEF-SF work/school related questions could only be answered by people who were working or in school (Whiteneck et al. 2004, p. 1327). The sum of the item scores from all the dimensions (excluding work/school) formed the total CHIEF-SF score (CHIEF-t), with a maximum score of 96 indicating the greatest level of environmental barriers.

• A consent forms

• In that time some other necessary materials are used like pen, pencil, white paper, clip board, eraser, file, notebook and laptop.

3.10 Data analysis procedure

In order to evaluate the data, Microsoft Excel 2019 and the statistical package for social science (SPSS) version 20.0 were both used. The accuracy of each questionnaire was double-checked for any omissions or ambiguities. Put the names of the variables, along with their types, values, decimal places, label alignments, and measurement levels, in the SPSS variable view first. After that, SPSS's data view needed to be entered. When all the data had been entered, the researcher double-checked the data to make sure it had been appropriately transferred from the SPSS data view to the questionnaire sheet. When SPSS was ready to analyze the raw data, that was.

3.10.1 Kruskal Wallis test

A nonparametric statistical test called the Kruskal-Wallis (Kruskal & Wallis, 1952, p. 584) evaluates differences on a single continuous variable that is not normally distributed among three or more independently sampled groups. The Kruskal-Walli's test can be used to analyze data that are not regularly distributed, such as ordinal or rank data.

3.10.2 Man-Whittney test

In clinical studies, it is occasionally necessary to compare the effectiveness of two therapies using the Mann-Whitney (or Wilcoxon-Mann-Whitney) test. In cases where the data are not normally distributed, it is frequently offered as an alternative to the t test. The Mann-Whitney test is frequently thought of as a test of population medians, in contrast to a t test, which is a test of population means. Although it isn't strictly accurate, treating it as such can result in a poor analysis of the data. (Macfarland et al. 2016, p. 104)

3.11 Study Rigor

Researchers constantly strive to uphold honesty and reliability in their work. The investigation was carried out in a systematic and transparent manner to minimize sources of bias and mistake. The author seeks assistance from his supervisor while performing the study and suitably complies with his instructions. The researcher made a conscious effort during data collecting and analysis to avoid introducing his personal opinions, attitudes, and prejudices into the process. It was made sure that participants weren't influenced by experience during the data collecting. The supervisor carefully coded the participant data and verified it to make sure there were no mistakes. The outcome in the results section was not affected by displaying any personal interpretation. The findings can be applied by other researchers in similar fields.

3.12 Level of Significance

The study's "p" value was determined to determine its significance. The significant outcome for health service research was judged to be a p-value of 0.05 or lower. Results are considered significant when the p-value is less than or equal to the significant level. P value also shows association between independent and dependent variables.

3.13 Informed consent

In a descriptive verbal approach, the subjects were first made aware of the goals and objectives of the study. It was made sure the subject fully understood the consent form before it was handed to them. At any point, the study's participants could choose to stop taking part. There was a guarantee given to the participants that their names and addresses would not be shared. Assuring the attendees that their information might be disseminated in any customary presentation, seminar, or writing while maintaining anonymity. The participant's safety would not be jeopardized, the researcher assured them. No information has been shared with anyone but the research supervisor in order to maintain the confidentiality of the participants' information. The researcher was always available to answer any additional questions about the study.

3.14 Ethical consideration

The World Health Organization (WHO) Research recommendations, the Institutional Review Board (IRB), the Health and Family Officer, Savar Upazila, Savar, Dhaka, and the Bangladesh Medical Research Council (BMRC) recommendations were all followed during the entire course of this research endeavor. The Institutional Review Board and the relevant member of the ethical committee of the Bangladesh Health Professions Institute (BHPI) gave their approval to the dissertation proposal, which also included the methodology. All participants' approval was obtained through informed consent.

All participants' privileges and rights were protected. The study's purpose and goals were all understood by all participants. With the consent of the relevant authority, the study's findings were made public. Regarding participants' conditions and medical care, the researcher rigorously upheld anonymity.

CHAPTER-IV RESULTS

For the purpose of this research, a total 100 participants who were parents of children with cerebral palsy were questioned. Necessary information was collected from the respondents and after analysis data was presented as tables and graphical from below.

Socio-demographical information:

4.1 Age range of the children

Table 1 Showing Age range of the of the children (n=100)

Age range	Frequency (n)	Percentage (%)	Mean	SD
1-4	48	48	5.39	3.324
5-8	32	32		
9-12	20	20		
Total	100	100		

Table 1 represents the age of the children. It had shown that children with age group 9- 12 years are less in number and the children with age group 1 to 4 years old were more in number in the study. Demographic data shows that among 100 children, 1 to 4 years of age about 48% children or 48 children, about 32% of children and 32 children are 5-8years age group. In between 9-12 years of age group are 20% or 20 children. The mean of the age of the children is 5.39. The standard deviation of the age of the children is 3.324 respectively shown in the table.

4.2 Gender of participant's child

From the pie chart it was seen that boy with cerebral palsy (54%) were more in number than girl with cerebral palsy (46%) in total 100 participant's children.
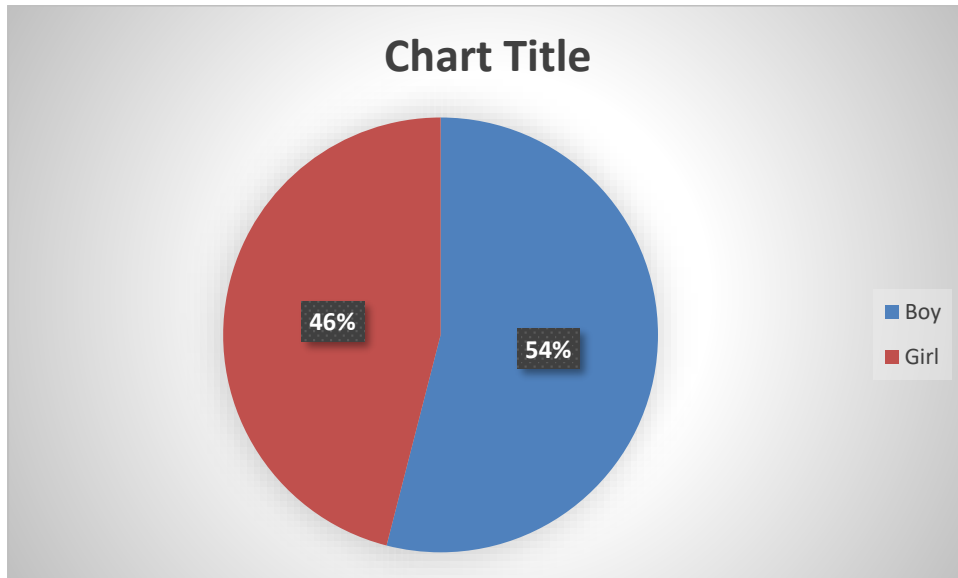

Figure 1: The pie chart is representing the gender of the CP child

4.3 Number of family members of participants

Table 2: Showing family members of the participants (n=100)

Family member	Frequency	Percentage
3	17	17%
4	34	34%
5	26	26%
6	12	12%
7	1	1%
8	3	3%
9	3	3%
10	4	4%

The majority of the 100 participants(n=100) had a household population of 4 family members (34%), accordingly 17 participants had 3 family members (17%),26 participants had 5 family members (26%),12 participants had 6 family members (12%),1 participant had 7 family members (7%),3 participants had 8 family members, also another 3 participants had 9 family members (3%),4 participants had 10 family members (4%) mean is 5.20 and std,deviation is 3.022.

4.4 Occupations of the participants

Among the 100 participants, highest number participants were non-government employee with 25% which means 25 participants. Then 16%(n=16) participants were government employee. Accordingly,22% (n=22) participants were businessmen, 15%(n=15) were labour,13%(n=13) were drive,5%(n=5) do agricultural work followed by 4% (n=4). The mean is 2.15 and std. deviation is 1.629.
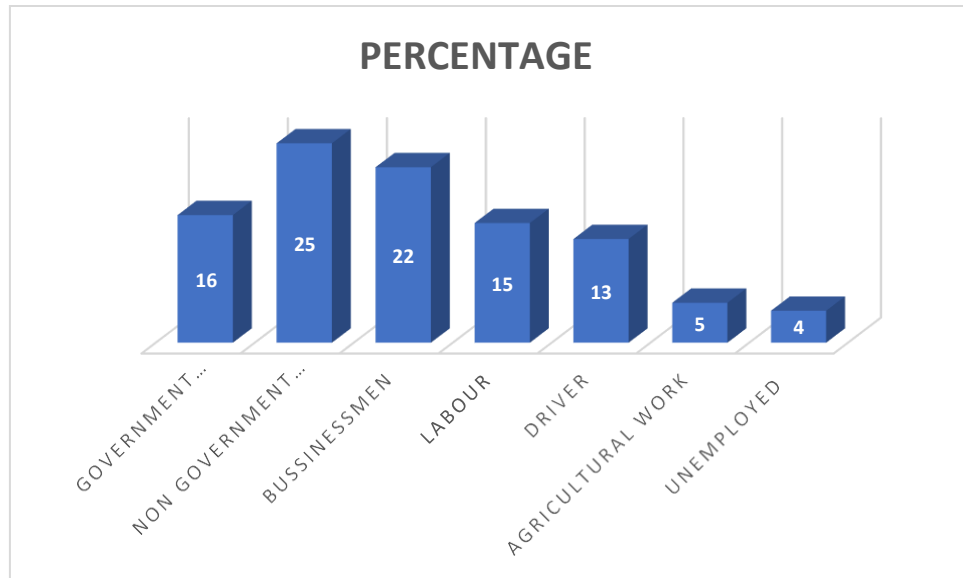
Figure 2 showing participant's(father) occupation of children with cerebral palsy (n=100)

4.5 Educational status of participants(n=100)

Among of the total participants (n= 100), 14 (n=14) were non educate, 16% (n=16) of the participants had only primary education, 19% (n=19) had passed Secondary School Certificate, 13% (n=13) had Higher secondary level education, 26% (n=26) .
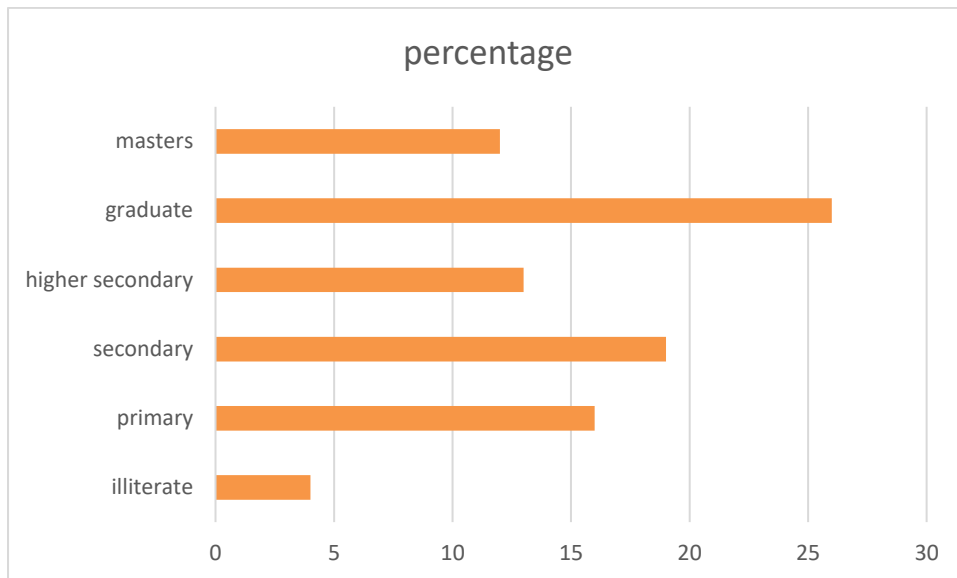
Figure 3 showing educational status of participants

Participants had graduation and 12% (n=12) participants had masters level education. The mean is 2.57 and St. Deviation is 1.635.

4.6 Living Area of the participants(n=100)

Figure 4 is representing the living area of participants

Out of 100 participants,38%(n=38) participants came from rural area,19%(n=19) participants came from semi-rural area and 43 %(n=43) participants came from urban area. The mean is 0.95 and St. Deviation is

4.7 Monthly family income of the participants

Table 3. Showing the monthly family income (in BDT) of the participants

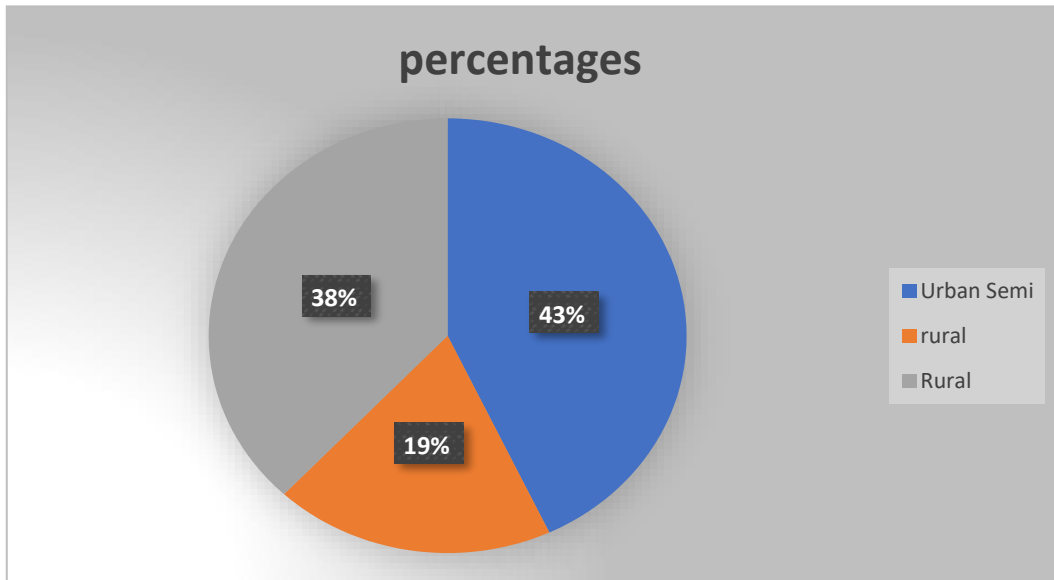| Monthly family income	Frequency (n)	Percentage (%)	Mean	SD
Less than 10,000 BDT	29	29	1.17	0.985
10,000-25,0000 BDT	37	37		
25,000-50,000BDT	22	22		
More than 50,000 BDT	12	12		
Total	100			

Table 3 shows the monthly family income range in Bangladeshi taka of the participants. The table also shows the frequency, percentage, mean and standard deviation of their monthly family income. Maximum numbers n=37(37%) of participants had the monthly family income of 10,000 to 25,000 taka and least numbers n=12(12%) of participants had the monthly family income of more than 50,000 taka. 22% (n=22) participants had monthly income 25,000-50,000 taka and 29 participants (29%) had monthly income less than 10,000 taka. The mean of the family income of the participants is 1.17. The standard deviation of the family income of the participants is 0.985 as shown in the table above

4.8 Number of the children of the participants (n=100)

Table 4 is representing the number of children of the participant

Number of children	Frequency (n)	Percentage (%)	Mean	SD
1	25	25	2.10	0.823
2	43	43		
3	30	30		
4	1	1		
5	1	1		

participants have shown in frequency, percentage, mean and St. Deviation. 25(25%) participants which is minimum had 1 child who is suffering from cerebral palsy. 43% (n=43) participants which is maximum had 2 children including CP child. 30 participants had 3 children. Then only 1 participant had 4 children and another one participant was found who had 5 children which is the maximum number of children through data collection. The mean was 2.10 and SD is 0.823.

4.9 CRAIG HOSPITAL INVENTORY ENVIRONMENTAL FACTOR (CHIEF) score of the participants

Table 5 showing mean, SD, minimum & maximum score of CHIEF-SF

CHIEF	Mean	SD	Minimum	Maximum
Score	30.21	24.175	0	82

Each question on the CHIEF contains two parts: frequency (i.e., how often has XXX been a problem for your child?) and magnitude (is this a big or little problem?). Frequency questions are scored from 0 (never a problem) to 4 (daily problem) and magnitude questions are scored as either 1 (little problem) or 2 (big problem). Frequency and magnitude scores are then multiplied to get a product score (out of 8). Higher scores indicate greater environmental barriers. The questions (12) are summed to get a total score out of 96. The mean is 30.21 and St. Deviation is 24. 175.The minimum score was 0 out of 96 and maximum was 82 out of 96.

4.10 Mean±SD for the CHIEF-SF subscale(items)

Table 6 mean and SD of CHIEF item

Items of subscales	Mean ±SD
Transportation	3.11±3.081
natural environment	1.39±2.059
Surrounding	1.01±1.772
Information	2.17±2.753
Medical care	3.01±3.148
Help home	**4.16±3.222**
Help work/school	3.39±2.957
Attitude home	3.45±2.959
Attitude work	3.03±2.858
Discrimination	3.84±.2.950
Policies businesses	**0.87±1.561**
Policies government	1.14±2.050

The data from the CHIEF instrument were summarized as means± SD table 6 and were displayed according to the frequency and magnitude of each item table (6). In descending order, parents reported environmental barriers their children encountered: **help home (4.16±3.222)**, discrimination (3.84±2.950), attitude-home (3.45±2.959), help work (3.39±2.957), transportation (3.11±3.081), attitude work (3.03±2.858), transportation (3.01±3.148), information (2.17±2.753), natural environment (1.39±2.059), policies government (1.14±2.05), policies business (**0.87±1.56).**

4.11 Frequency of the barriers(items) (total participants=100)

Table 7 representing frequency of number of participants suffered from barriers.

Items (barriers)	N affected (%)	Frequency				
		daily	weekly	monthly	Less than monthly	Never
Transportation	60	18	21	17	4	40
Natural environment	44	2	13	16	13	56
Surrounding	33	0	13	11	9	67
Information	50	9	21	12	8	50
Medical care	60	20	21	13	6	40
Help-home	73	28	27	16	2	27
Help-work/school	71	16	24	25	6	29
Attitude home	72	15	31	16	10	28
Attitude work/school	67	15	21	23	8	33
Discrimination	82	21	24	23	14	19
Policies business	32	1	6	15	10	68
Policies government	30	1	10	12	7	70

parents reported the greatest barriers encountered by their children were discrimination which means the child discriminated by family members and outsiders(n=82). In contrast, least encountered barrier was policies government (n=30) which is 30% participants. Second highest barriers were availability of help home which means getting help from family members. (73%) and attitude home is the third one barrier (n=72) for the parents' children with cerebral palsy. Accordingly, 71% participants had the barrier from getting help from work/home. 67% participants faced barriers

33

attitude in working place or school for their children with cerebral palsy. Also 60 participants had the barrier of medical care for their cerebral palsy child. Another 60 participants were had faced transportation barrier. Half of the participants which 50% of the participants faced barriers for getting information which is related to their cerebral palsy child. 44 participants had barriers for natural environment and 33% parents had barriers of surroundings. Lastly, 32 participants had the barriers from business policies.

4. 12 Magnitude of the barriers(n=100)

Table 8 is representing the magnitude of barriers

Items(barriers)	N affected (%)	Magnitude		
		Little problem	Big problem	No problem
Transportation	60	16	44	40
Natural environment	44	25	19	56
Surrounding	33	20	13	67
Information	50	21	29	50
Medical care	60	23	37	40
Help home	73	17	56	27
Help work/school	71	23	48	29
Attitude home	72	21	51	28
Attitude work/school	67	23	44	33
Discrimination	81	25	56	19
Policies business	33	21	12	68
Policies government	30	14	16	70

From the table 8 it can be seen that 56 participants had big problem about discrimination for their cerebral palsy child,25 participants had small problem about this barrier. In contrast, 12 participants had big problem about policies business barrier. 16 participants had little problem and 44 participants had big problem in transportation barriers. In 44% participants, 25 participants had small problem and 19 participants had big problem about natural environment barrier. About surrounding barrier,20 participants had little problem and 13 had big problem.21 participants had little problem for getting information anything related to their CP child,29 participants reported it as big problem. About medical care n=60 had little problem=23 had big problem. N=37 had little problem. About help work barrier 48 had big problem and 23 had small problem. Lastly, from 30% participants 14 had little problem for government policies and 16 had big problem.

4.13 Association between environmental barriers (CHIEF-score) and sociodemographic of participants

At the chart show that, after Correlations between Environmental barriers and socio demographic among the 100 patients P-Value of educational status, occupation, family member, Monthly-income, living area are 0.001 which means this are significant with environmental barriers. Then we declare that education, family member, occupation, monthly-income variables are correlated with environmental barriers. And the child's age and sex have P-Value more than 0.05 which are nor significant with environmental barriers. That's means there has no correlation between the child's age, sex and environmental barriers.

Table 9: Association between environmental barriers and sociodemographic of participants

Independent variables	Test name	P value	Mean±SD(CHIEF Score)	Significance
Child's Gender	Man-Whittney	0.280	47.10±20.931	Not Significant
Child's age	Kruskal Wallis	0.228		Not Significant
Father's occupation	Kruskal Wallis	0.006		Significant**
Educational status	Kruskal Wallis	0.024		Significant*
Living area	Kruskal Wallis	0.022		Significant*
Monthly income	Kruskal Wallis	0.018		Significant *

*≤0.05; **≤0.01; ***≤0.001;

Table 9 is representing the association between gender and CHIEF total score. Here Man Whittney U test was conducted. P value was 0.280 (p value=<0.05). So, there was no association between child's gender and environmental barriers of the participants. Again, Kruskal Wallis test was conducted for finding association of child's age and CHIEF score value is 0.228 (p value=<0.050). So, there was also no association between child's age and environmental barriers of the participants. There was significant association between father's occupation and environmental barriers. (P value of Kruskal Wallis test is 0.006). Like father's occupation, p value of educational status of parents (Kruskal Wallis test) is significance as the p value is 0.024. So, there is significant association between educational status of participants and environmental barriers. Also, Kruskal Wallis test again showed the p value 0.022 which means significant association between living area and CHIEF score. So, there is significant association between living area of participants and environmental barriers. For the result of association between monthly income and environmental barriers, P value of Kruskal Wallis was 0.018 which was definitely significant. The association between father's occupation and CHIEF score was more significant than educational-status, monthly-income and living area.

CHAPTER-V	DISCUSSION

The purpose of the study was to identify the environmental barriers of patients with cerebral palsy who were admitted to CRP between June and August 2023. Even knowing how many people in Bangladesh are affected by cerebral palsy is impossible. Cerebral palsy survey data are currently lacking in the CRP. About 100 samples were collected for this study. The standard deviation of age in this study was 3.324 while the mean age was 5.39. In other study,27.7% children were from 0-4 years, 5-9years children were 32.2%,26.2% children were in 10-14 years and 13.8% children were in 15-18 years among 130 cerebral palsy children (Jahan I et al. 2020, p. 1416) There were 42% boy children of the participants in the study, and 58% were girl children. In one survey, 62.2% children were male(n=214) and 37.8% children were female (n=130 out of 344) (Hayati et al. 2021). On the other hand, according to one survey (Davis et al., 2010, p. 66), there were 45.1% women and 54.9% men overall in Australia. In America, different research found that 60% of the population was male child and 40% was female child. In other study, only male made up 69% of the living population in Bangladesh (Mobarak et al., 2000, p. 429). In Iranian study, 39 were male and 36 were female out of 75 children (Nobakht et al., 2013, p.42).

In this study it was found that 14% participants were illiterate,16% have passed primary level.19% participants crossed the secondary level and 13% passed higher secondary level. 26% participants which was highest completed their higher education and 12% completed post-graduation. The mean point was 2.57 and St. Deviation was 1.635. Another study was seen in the US. According to Hwang et al. (2011, p. 914), a mother's education was 6.7% H.S.C. complete. In Australia, research indicated that 1.5% of mothers had completed primary school, 37.2% had completed high school, 22.1% had obtained a trade certification, and 29% had graduated from university. According to Davis et al. (2010, p. 66), father's education included 0.5% primary school, 39.2% high school, 29.4% trade certification, and 23% university level completion. 38% of mothers in Bangladesh, according to one survey (Mobarak et al. 2000, p.429).

In this study, 25% participants had 1 child who is diagnosed as cerebral palsy child. 43% participants had 2 children, accordingly 30% participants had 3 children. Only one participant was found having 4 children, another one was found with 5 children. Mean is 2.10 and SD is .823. But in another study, it was found that most of the participants 49.5% (n=53) had 2 children (Bumin and Tukel 2008, p.1376) and also in another study found that 46% (n=42) participants had 2 children (Hung et al. 2010). In other study, 195 participants had 1-2 children (56.7%),128 participants had 3-4 children (37.2%),21 participants had 5- 6 children (6.1%) (hayati et al. 2021, p. 919) In this study, maximum numbers n=37(37%) of participants had the monthly family income of 10,000 to 25,000 taka and least numbers n=12(12%) of participants had the monthly family income of more than 50,000 taka. 22% (n=22) participants had monthly income 25,000-50,000 taka and 29 participants (29%) had monthly income less than 10,000 taka. The mean of the family income of the participants is 1.17. The standard deviation of the family income of the participants is 0. 985.According to the findings of a study by Bumin and Tukel (2008, p.1377), the majority of participants (81.3%) (n=87) were from middle- high socioeconomic backgrounds. According to the findings of a different study, 79% of caregivers hailed from low socioeconomic families (Mu'ala, Rabati, and Shwani, 2008, p. 132). According to Badia et al. (2016, p. 314), parents' educational level from elementary school was 28.9%, high school graduate 35.3%, university graduate was almost same as high school like 35.8%.

In this study, highest number participants were non-government employee with 25% which means 25 participants. Then 16%(n=16) participants were government employee. Accordingly,22% (n=22) participants were businessmen, 15%(n=15) were labour,13%(n=13) were drive,5%(n=5) do agricultural work followed by 4% (n=4). The mean is 2.15 and std. deviation is 1. 629.But it was found in another study, agriculture as the primary occupation was also significantly over-represented (Jahan et al. 2020, p. 1415). In sumba research explained that 77.8% father's occupation were agricultural work(n=130) and 7.1% does nonagricultural work. Unemployed were 0 (Jahan et al. 2020, p. 1415). In this study, out of 100 participants, 38% (n = 38) were from rural areas, 19% (n = 19) were from semi-rural areas, and 43% (n = 43) were from urban areas. The standard deviation is 0.0903 while the mean is 0.95. in other interview, in northeast of England only two of the children—children 5 and 7—provided information that nine people resided in suburban areas, one in a semi-rural one, and two in a rural one.

Our results showed that environmental barriers were most encountered in the help home and discrimination. However, Nobakht, Z et al. (2013, p. 43) found that services and assistance subscale were two highest scoring subscales in Tehran. The school and work subscale and the natural and built subscale were the two subscales with the highest scores, according to Law et al. (2007, p. 1639) and Vogts et al. (2010, p. 683). The decrease in the score of natural environments in comparison with help home and medical care. Children with higher functional levels were shown to have less environmental barriers, according to Law et al. (2007, p. 1639) and Colver et al. (2011, p. 33) The children who attended school received scores on the work and school subscale. Nobakht, Z et al. (2013, p.44) showed that school and work subscale were decrease in score. Parents reported that these children encountered fewer barriers when they participated in the school environment. Our results showed few differences between natural environment, policies business and policies government. Also, the result showed an increase of all means in comparison with those of Nobakht, Z et al. (2013), Law et al. (2007) and Vogts et al. (2010). The variations in the actual environment may be the cause of these increases. The information didn't support Law's findings by showing that the policies business item comprises the least common barriers. But my study supports law's finding as the least barrier in this study is also policies business. According to the frequency of the problematic items, the most daily reported barriers were availability of transportation in agreement with Vogts et al. (2010, p. 683). But in our case, frequency of most problematic item was discrimination (81%). Another item in this study were most problematic was help home (73%). Nobakht et al. (2013, p. 42) indicate a study that, availability of transportation and availability of education and training were most daily reported barriers. According to the magnitude of the problematic items, in this case the greatest was discrimination (76%). But for Nobakht et al. (2013) it was transportation. Another motive for Nobakht et al. (2013, p. 44) of the study was to examine the relationship between the CHIEF total score and the child's age, sex, gross motor function, manual ability, and cognitive level. In my study, it was examined that the relationship between CHIEF score and child's age, sex, father's-occupation, monthly income of family, participant's educational level, participant's number of children, living area. After conducting man-Whittney test the p value came= 0.280 (p value=<0.05). for gender of children with cerebral palsy which had no significance relation with environmental barriers. The data from Nobakht, Z et al. (2013) indicate no significant

differences by the child's sex which supports law et al. (2007). The findings of Colver et al. (2011, p. 262), which revealed that boys had less favorable opinions from family and friends than girls do not, however, support those findings. The ICF claimed that contextual factors were to blame for the discrepancy between a child's capacity and performance. When it comes to the personal components of these characteristics, other factors did not significantly affect the degree to which a kid encountered environmental obstacles, with the exception of their functional abilities, which include manual dexterity, gross motor function, and cognitive level. Such obstacles must be removed in order to boost participation, along with facilitators. Association between child's Age and of environmental barriers examined by Kruskal-Walli's test and result 0.228 which association was not significant (p<0.05).Supporting my study, the findings of the study by Law et al. (2007,p. 1639), which revealed that barriers were more common for children between the ages of 12 and 14 than for those between the ages of 6 and 8 and for those between the ages of 9 and 11. Similarly, older students were reported to have encountered much more difficulties than younger pupils in research by Hemmingson and Borell (2002,p. 60). The rise in participation among children as they get older may account for this variation. We can state that there are no changes, but a larger sample size should be used to investigate this matter. In this study, P-Values of participant's education, occupation, monthly income & living area are less than 0.05, which is significant with CHIEF score. that's means these environmental barriers are influenced by the participant's education, occupation, their income as well as their living area.

5.1 Limitation:

This research had several restrictions. First off, a small sample size meant that this study's population as a whole might not have been accurately represented. The researcher observed a significant link between environmental obstacles and only four factors in this study because the sample size was too small. The link of environmental barriers with more variables might be established if the sample size were greater. Because the CHIEF Scale has never been utilized in the field of rehabilitation, there is no literature to draw upon. Although related papers were discovered, they were all investigated in the context of different nations, hence no statistically significant results for Bangladesh were included in this analysis. Numerous studies claimed that a number of variables, including the gross motor function, manual ability, cognitive level and speech development. The results confirm that the CHIEF instrument is user-friendly, but they also point out certain challenges with data interpretation when the instrument is used alone to measure environmental barriers. Along with other pertinent participation measures, gathering socioeconomic and income data, and elucidating parental perspectives on the relative significance of various environmental barriers to their child's participation, more extensive case-controlled series testing of the CHIEF instrument is needed.

CHAPTER-VI	CONCLUSION & RECOMENDATION

6.1 Conclusion

Bangladesh is a third-world nation that is still developing. There are extremely few people who are educated. Additionally, the actions of both the government and non-government organizations in the health sector are insufficient for the locals. In Bangladesh, cerebral palsy is a common disease. However, the majority of individuals in this nation are ignorant of cerebral palsy. However, in affluent nations, physiotherapy is seen as a crucial component of care for kids with cerebral palsy. The responsibility of physiotherapists practicing in Bangladesh as members of a rising medical profession is to produce some compelling evidence that will strengthen their practice. The purpose of this study was to determine the most encountered environmental of children with CP. Our results showed that these barriers were most encountered in the help home and medical care. In order to complete the study, the researcher created a quantitative and retrospective study design. 100 data points from the samples were obtained from the registered unit of Pediatrics using a standard questionnaire. The data base revealed that children between the ages of 1 and 4 are more likely to have cerebral palsy. Males tend to be more affected than females. According to the frequency of the problematic items, the most daily reported barriers were availability of transportation. The least barrier according to frequency were natural environment and policies government. Policies subscale are least in barrier it's because most of the participants doesn't have the right information of getting facilities for cerebral children from government and non-government association. According to the magnitude of the problematic items, the greatest was availability help from home and the lowest problematic barrier was policies business. participant's education, occupation, Monthly- income, living area were associated with environmental barriers. In contrast, child's age and sex weren't associated with environmental barriers. Most of the participants belong to small family. Non -government employee was highest in participants. luckily, a significant number of participants were graduate. Participants mostly came from rural area. Cerebral Palsy management is a long-time process so it is important to create awareness, have the proper knowledge that which environmental barriers a creating problem for children and their parents and receive proper step to make the life easier for Cerebral Palsy children.

6.2 Recommendation

Finding out the environmental barriers of cerebral palsy children as reported by their parents in Bangladesh was the study's main goal, and the findings have allowed for this goal to be fully achieved. Here are some suggestions:

Should collect more samples in order to get more accurate and trustworthy results.

To determine the validity of the questionnaire, more samples should be collected for the pilot study.

However, studies would need to be conducted with hypothesis testing in mind; the cross-sectional approach should be replaced with a case-control approach.

Sample should collect from the only pediatric unit in CRP in Bangladesh.

This research was conducted at the undergraduate level; a graduate-level study might produce more precise results. The study had some limitations, which were discussed in the pertinent section. It is advised to get around those constraints while doing more research.

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26 April, 2023

Head

Paediatric Department

Centre for the Rehabilitation of the Paralysed (CRP)

Chapain, Savar, Dhaka-1343

Subject: Prayer for seeking permission to conduct data collection for the research project.

Sir,

With due respect I state that I am a 4th year student of B.Sc in Physiotherapy Department of Bangladesh Health Professions Institute (BHPI), affiliated with the Faculty of Medicine, University of Dhaka. I am sincerely seeking your permission to collect data for the research project as the partial fulfillment of the requirements for the degree of B.Sc in Physiotherapy. The title of my research project is, "Environmental barriers: as reported by parents of children with cerebral palsy".Under the honorable supervisor, Muhammad Millat Hossain, Associate Professor, Department of Rehabilitation Science. The main objective of this study is to find outenvironmental barriers that cerebral palsy children and their parents face. Data will be collected by me from the parents of cerebral palsy child through interview method. I would like to collect data from 1st June to 31st Augustaccording to the Departmental preference time. All information which I collect from participants will be treated as confidential. Now I am seeking your kindness to approve my application to collect data for the research project and I would like to assure that anything of my research project will not be harmful for the participants.

So, I therefore pray and hope that you would be kind enough to grant me the permission of conducting data collection for the research project.

Yours obedient,

Mosharrat Jahan Dola

Mosharrat Jahan Dola
4th year B.Sc in Physiotherapy
Bangladesh Health Professions institute(BHPI)
Session: 2017-2018
CRP, Savar, Dhaka-1343

Head of the department	Comment and Signature
Hosneara Parveen Head of ofPaediatric Department Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343	She will collect data from this Department. please help her. Thanks 22-5-23

Hosneara Perve
Head of Departme
Department of Paedi
CRP. Savar Dhak

51

26 April, 2023

Head

Paediatric Department

Centre for the Rehabilitation of the Paralysed (CRP)

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Session: 2017-2018
CRP, Savar, Dhaka-1343

Head of the department	Comment and Signature
Hosneara Parveen Head of ofPaediatric Department Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343	She will collect data from this Department. please help her. Thanks 22-5-23

Hosneara Perveen
Head of Department
Department of Paediatri
CRP. Savar. Dhaka

মৌখিক সম্মতি পত্র

আসসালামু আলাইকুম,

আমি মোশাররাত জাহান দোলা, বিএসসি ৪র্থ বর্ষের ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধীনে বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউটের (বিএইচপিআই) ফিজিওথেরাপির ছাত্রী। আমার ব্যাচেলর ডিগ্রী পেতে, আমাকে একটি গবেষণা পরিচালনা করতে হবে এবং এটি আমার অধ্যয়নের একটি অংশ। অংশগ্রহণকারীদের নিম্নলিখিত পড়ার পরে গবেষণায় অংশগ্রহণের জন্য অনুরোধ করা হচ্ছে।

আমার গবেষণার শিরোনাম হল "পরিবেশগত প্রতিকূলতা :সেরেব্রাল পালসিতে আক্রান্ত শিশুদের পিতামাতার কর্তৃক বিবরণী"। এই গবেষণার মাধ্যমে আমি উক্ত সম্পর্কিত কারণগুলি অনুসন্ধান করব।

আমার গবেষণা প্রকল্প বাস্তবায়নের জন্য, আমাকে সিপি বাচ্চাদের পিতামাতাদের কাছ থেকে ডেটা সংগ্রহ করতে হবে। অতএব, আপনি অধ্যয়নের জন্য আমার মূল্যবান বিষয় হতে পারেন এবং আমি আপনাকে আমার অধ্যয়নের অংশগ্রহণকারী হিসাবে অনুরোধ করতে চাই। আমি প্রতিশ্রুতিবদ্ধ যে এ অধ্যয়ন আপনার কোন ক্ষতির কারণ হবে না।

আমি আপনাকে জানাতে চাই যে এটি একটি সম্পূর্ণরূপে একাডেমিক অধ্যয়ন এবং অন্য কোন উদ্দেশ্যে ব্যবহার করা হবে না।আমি আশ্বাস দিচ্ছি যে সমস্ত তথ্য গোপন রাখা হবে। আপনার অংশগ্রহণ স্বেচ্ছায় হবে। আপনার কোনো দ্বিধা বা ঝুঁকি ছাড়াই অংশগ্রহণের ৭ দিনের মধ্যে সম্মতি প্রত্যাহার এবং অংশগ্রহণ বন্ধ করার অধিকার আছে। .

অধ্যয়ন সম্পর্কে আপনার যদি কোন প্রশ্ন থাকে অংশগ্রহণকারী হিসাবে, আপনি আমার সাথে টেলিফোনে যোগাযোগ করতে পারেন অথবা আমার সুপারভাইজার মুহাম্মদ মিল্লাত হোসেইন,সহযোগী অধ্যাপক, ডিপার্টমেন্ট রিহেবিলিটেশন সাইন্স,বিএইচপিআই,সিআরপি,সাভার উনার সাথে যোগাযোগ করতে পারেন।।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে?

তাহলে, ইন্টারভিউ নিয়ে এগিয়ে যেতে আমি কি আপনার সম্মতি পেতে পারি?

হ্যাঁ............. না............

অংশগ্রহণকারীর স্বাক্ষর..................... তারিখ......................

গবেষকের স্বাক্ষর .... তারিখ......................

Appendix-II (B)

Informed consent

Assalamualaikum, I am Mosharrat Jahan Dola, a student of Physiotherapy Course 2017-18 session of Bangladesh Health Professions Institute (BHPI) under Faculty of Medicine, University of Dhaka. I need to complete research to get my BSc in Physiotherapy degree. The title of my research is, "environmental barriers: as reported by parents of children with cerebral palsy". The main aim of this research study is to determine environmental barriers which parents of CP faces. To complete this survey, I will ask you some questions about your home, medical,transportation etc. I assure you; you will not be harmed by me and my questions. The information you provide will be kept confidential and used for research purposes only. You have the right to stop participating in research at any time. Also, if you feel unsure about answering a question, you can skip that question. It will take 15 minutes to 20 minutes to complete the questionnaire. Please answer my questionnaire correctly and assist the data collector as much as possible in evaluating your health.

Yes   No

Thank you for your participation as well as your cooperation by answering the questions appropriately.

Signature of Participant...................   Date ....
Signature of Data Collector ....   Date ....
Signature of the Researcher...................   Date ....

54

প্রশ্নপত্র

শিরোনাম: "পরিবেশগত প্রতিকূলতা: সেরেব্রাল পালসিতে আক্রান্ত শিশুদের পিতামাতার কর্তৃক বিবরণী"

পর্ব-১: ব্যক্তিগত তথ্য

রোগীর নাম	
বাবার নাম	
মায়ের নাম	
বয়স:	
লিঙ্গ:	
মোবাইল নম্বর:	

পর্ব ২-: সামাজিক -জনসংখ্যাগত তথ্য

পরিবারের সদস্য সংখ্যা:	
পেশা(পিতা):	১.সরকারি কর্মী ২. বেসরকারি কর্মী ৩.ব্যবসায়ী ৪.মজুর ৫. চালক ৬. বেকার
শিক্ষাগত অবস্থা :	১.অশিক্ষিত ২. প্রাইমারী ৩.এসএসসি ৪.এইচএসসি ৫.অনার্স
আবাসস্থল:	১.শহর ২.আধা শহুরে ৩.গ্রামীণ
মাসিক আয়(টোকাতে):	১. <১০,০০০ ২. ১০,০০০-২৫,০০০ ৩.২৫,০০০-৫০,০০০ ৪.>৫০,০০০
সন্তানসংখ্যা:	

APPENDIX-III(A)

পর্ব-৩: চিফ স্কেল (ক্রেগ হসপিটাল ইনভেন্টরি এনভায়রনমেন্টাল ফ্যাক্টরস)

রোগীর পিতামাতার কর্তৃক মৌখিক বিবরণী

(√) চিহ্ন দিন

সিরিয়াল নং	প্রশ্নাবলী	দৈনিক	সাপ্তাহিক	মাসিক	মাসখানেকের কম	কখনোই না	বড় সমস্যা	ছোট সমস্যা
১)	গত ১২ মাসে, আপনার সন্তানের যাতায়াত ব্যবস্থার জন্য আপনার কতবার সমস্যা হয়েছে?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
২)	গত ১২ মাসে, তাপমাত্রা, ভূমিকম্প, বৈরী আবহাওয়া এসব প্রাকৃতিক সমস্যার জন্য আপনার সন্তানের জন্য যা দরকার ছিলো তা কতবার সমস্যা হয়ে দাড়িয়েছে?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৩)	গত ১২ মাসে,আপনার চারপাশের অন্যান্য দিকগুলো যেমন- আলো,শব্দদূষণ, জনঘাট এর জন্য আপনার সন্তানের চাহিদার জন্য কতবার বাধার সম্মুখীন হন কি না?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৪)	গত ১২ মাসে,আপনার সন্তানের জন্য যে তথ্যগুলো আপনি চেয়েছিলেন বা প্রয়োজন ছিল তা পেতে কতবার সমস্যা হয়েছিল?							

	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৫)	গত ১২ মাসে,আপনার সন্তানের জন্য স্বাস্থ্য সেবা এবং চিকিৎসা সেবার সহজলভ্যতা পেতে কতবার সমস্যা হয়েছিল?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৬)	গত ১২ মাসে,বাড়িতে কতবার আপনার সন্তানের জন্য অন্য কারো সাহায্য প্রয়োজন ছিল এবং সে সাহায্যেগুলি পান নি?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৭)	গত ১২ মাসে,স্কুল কিংবা কর্মস্থানে কতবার আপনার সন্তানের জন্য অন্য কারো সাহায্য প্রয়োজন ছিল এবং সে সাহায্যেগুলি পান নি?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৮)	গত ১২ মাসে,বাড়িতে আপনার সন্তানের জন্য আপনার প্রতি অন্যদের বিরূপ মনোভাবে কতবার সমস্যা হয়েছিল?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
৯)	গত ১২ মাসে,স্কুলে কিংবা কর্মস্থানে আপনার সন্তানের জন্য আপনার প্রতি অন্যদের বিরূপ মনোভাবে কতবার সমস্যা হয়েছিল?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
১০)	গত ১২ মাসে,আপনার সন্তানের জন্য কতবার কুসংস্কার বা বৈষম্যের শিকার হয়েছিলেন?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
১১)	গত ১২ মাসে,আপনার সন্তানের জন্য সংস্থা ও ব্যবসা নীতি ও নিয়মগুলো কতবার আপনার জন্য সমস্যা তৈরি করেছিল?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							
১২)	গত ১২ মাসে, কতবার সরকারি প্রোগ্রাম এবং নীতিগুলো আপনি যা চান বা করতে চান তা করা আপনার জন্য কঠিন করে তোলে?							
	যখন ওই সমস্যাটি ঘটে তখন কি এটি একটি বড় সমস্যা নাকি ছোট সমস্যা?							

Questionaries
Title: "Environmental barriers: as reported by parents of children with cerebral palsy"
Part 1: personal information

Patient's name	
Father's name	
Mother's name	
Child's Age	
Child's gender	
Mobile number	

Part 2: sociodemographic information

Family member	
Occupation(father)	1.govt job 2.non-government job 3.businessman 4.labour 5.driver 6.agricultural work 7.unemployed
Educational status	1. Illiterate 2. primary 3. SSC 4.HSC 5.graduate 6.post graduate
Living area	1.urban 2.semi-rural 3.rural
Monthly income	1.<10,000 tk 2.10,000-25,000 tk 3. 25,000-50,000tk 4.>50,000 tk
Number of children	

Craig Hospital Inventory of Environmental Factors
Short Form

© (for information contact charrison-felix@craighospital.org or dmellick@craighospital.org)

Being an active, productive member of society includes participating in such things as working, going to school, taking care of your home, and being involved with family and friends in social, recreational and civic activities in the community. Many factors can help or improve a person's participation in these activities while other factors can act as barriers and limit participation.

First, please tell me how often each of the following has been a barrier to your own participation in the activities that matter to you. Think about the past year, and tell me whether each item on the list below has been a problem **daily, weekly, monthly, less than monthly, or never.** If the item occurs, then answer the question as to how big a problem the item is with regard to your participation in the activities that matter to you.

(Note: if a question asks specifically about **school or work** and you neither work nor attend school, check not applicable)

	Daily	Weekly	Monthly	Less than monthly	Never	Not applicable	Big problem	Little problem
1. In the past 12 months, how often has the availability of transportation been a problem for you?	O	O	O	O	O			
When this problem occurs has it been a big problem or a little problem?							O	O
2. In the past 12 months, how often has the natural environment – temperature, terrain, climate – made it difficult to do what you want or need to do?	O	O	O	O	O			
When this problem occurs has it been a big problem or a little problem?							O	O
3. In the past 12 months, how often have other aspects of your surroundings – lighting, noise, crowds, etc – made it difficult to do what you want or need to do?	O	O	O	O	O			
When this problem occurs has it been a big problem or a little problem?							O	O
4. In the past 12 months, how often has the information you wanted or needed not been available in a format you can use or understand?	O	O	O	O	O			
When this problem occurs has it been a big problem or a little problem?							O	O
5. In the past 12 months, how often has the availability of health care services and medical care been a problem for you?	O	O	O	O	O			
When this problem occurs has it been a big problem or a little problem?							O	O
6. In the past 12 months, how often did you need someone else's help in your home and could not get it easily?	O	O	O	O	O			
When this problem occurs has it been a big problem or a little problem?							O	O
7. In the past 12 months, how often did you need someone else's help at school or work and could not get it easily?	O	O	O	O	O	O		
When this problem occurs has it been a big problem or a little problem?							O	O

8. In the past 12 months, how often have other people's attitudes toward you been a problem at home?	o	o	o	o	o				
When this problem occurs has it been a big problem or a little problem?								o	o
9. In the past 12 months, how often have other people's attitudes toward you been a problem at school or work?	o	o	o	o	o	o			
When this problem occurs has it been a big problem or a little problem?								o	o
10. In the past 12 months, how often did you experience prejudice or discrimination?	o	o	o	o	o				
When this problem occurs has it been a big problem or a little problem?								o	o
11. In the past 12 months, how often did the policies and rules of businesses and organizations make problems for you?	o	o	o	o	o				
When this problem occurs has it been a big problem or a little problem?								o	o
12. In the past 12 months, how often did government programs and policies make it difficult to do what you want or need to do?	o	o	o	o	o				
When this problem occurs has it been a big problem or a little problem?								o	o