

**Exploration of Sleep Disturbance of Children with
Attention Deficit Hyperactivity Disorder (ADHD): A
Cross-Sectional Study**



By

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Statement of Authorship

To affirm that the thesis entitled “Exploration of Sleep Disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD): A Cross-Sectional Study” has been completed by Sweety Akter Bithi, DU Roll No. 432 in the Department of B.Sc in Occupational Therapy, Bangladesh Health Professions Institute, Savar, Dhaka, Bangladesh. Except where it is made in the text of the thesis, this thesis contains no material published elsewhere or extracted in whole or in part from a thesis presented by me for any other degree or seminar. No other person’s work has been used without due acknowledgement in the main text of the thesis. This thesis has not been submitted for the award of any other degree in any other tertiary institution. The ethical issue of the study has been strictly considered and protected. In case of dissemination of the findings of this project for future publication, the research supervisor will be highly concerned, and it will be duly acknowledged as an undergraduate thesis.

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Dedication

“To my beloved parents whose beliefs, loves, sacrifices, unconditional supports fostering my strength, enhance my capability.”

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List of Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
ASD	Autism Spectrum Disorder
AWF	Autism Welfare Foundation
BHPI	Bangladesh Health Professions Institute
BSc	Bachelor in Science
CP	Cerebral Palsy
CSHQ	Children Sleep Habit Questionnaire
CRP	Centre for the Rehabilitation of the Paralysed
DS	Down Syndrome
HSC	Higher Secondary School Certificate
ID	Intellectual Disability
IRB	Institutional Review Board
LD	Learning Disability
MSc	Master in Science
OSA	Obstructive Sleep Apnea
PLD	Periodic Limb Disorder
PSC	Primary School Certificate
PSQ	Pediatric Sleep Questionnaire
PSQI	Pittsburgh Sleep Quality Index
RLS	Restless Leg Syndrome
SCSS	Smiling Children Special School
SPSS	Statistical Package for the Social Science
SD	Standard Deviation
SDB	Sleep Disorder Breathing
SSC	Secondary School Certificate

Abstract

Background: Sleep disturbance is associated with children with Attention Deficit Hyperactivity Disorder (ADHD) and it is shown in many literature. Studies represents the prevalence of sleep disturbance was 84.8% in Turkey, 77.5% in India, 73.3% in Australia. Sleep disturbance of ADHD children has been developed as a more concerning issue day by day. However, the student researcher explores in this area because it is less focus in the context of Bangladesh.

Aim: The aim of this study was to explore the sleep disturbance of children with ADHD.

Method: The study was conducted by a cross-sectional quantitative study design through face-to-face survey among 80 participants who are parents of children with ADHD. All the participants were taken through a purposive sampling technique. The age range of the children was 3-13 years. Excluded ADHD children with other medical or psychiatric conditions such as Anxiety, Depression, Autism Spectrum Disorder. All participants received services from rehabilitation centres and special schools. To explore sleep disturbance, Children's Sleep Habit Questionnaires (CSHQ) used. Descriptive analysis was used by using SPSS-20 to analyses the data. The Fisher Exact test was conducted to investigate the associated factors with sleep disturbance.

Result: Results suggested that 80 children with ADHD participated in this study, among them 72 participants were boys & 8 participants were girls and their maximum age was 13 years and minimum age was 3 years, mean age 6.06, SD (± 2.446). Among 80 participants, sleep disturbance prevalence was 77% (n=62). This study also representd the severity of sleep disturbance whereas 72.5% mild, 5% moderate, and no one experienced severe sleep disturbance. The study also examined the rates of sleep

problems. According to the participants, they most experienced sleep duration, sleep onset delay, bedtime resistance. Moreover, this study explored a significant association between child age range, educational background of mother and sleep disturbance. From 62 participants who experienced sleep disturbance, 57.5% were 3 to 5 years age range and rest of the 42.6% were 6 to 13 years age range. Besides, 22.6% participants mother obtained SSC degree, 3% obtained HSC degree, 24.2% obtained BSc degree and 48.4% obtained MSc degree. Nonetheless, this study explored no significant association between child's gender, medication use, living area, educational background of father and sleep disturbance.

Conclusion: The current study investigated majority participants experienced sleep disturbance which indicates that sleep disturbances are becoming increasingly significant issues in children with ADHD over time. These findings highlight the importance of providing comprehensive intervention considering child's sleep disturbance issues. So, the conclusion, it will help to increase awareness about sleep issues and help health professionals to make comprehensive treatment plan and also therapeutic implications aimed at improving sleep, implementing preventative measures such as medications, utilizing relaxation techniques, among other important strategies. The study's conclusion emphasizes the importance of raising awareness among parents regarding these issues.

Keywords: Children with Attention Deficit Hyperactivity Disorder, Sleep, Sleep Disturbance

CHAPTER I: INTRODUCTION

1.1 Background

Shakespeare described Attention Deficit Hyperactivity Disorder (ADHD) as “It is the disease of not listening, and the malady of not marking” (Spruyt & Gozal, 2011). ADHD has defined with various terminology over the years. According to the Diagnostic and statistical manual of mental disorder (DSM), ADHD is a neurodevelopmental disorder characterized by three patterns of symptoms which is inattention, hyperactivity, and impulsivity that interfere child’s daily functioning or development (American Psychiatric Association., 2013). The main symptoms are inattentiveness and distractibility (difficulty finishing tasks), which are often accompanied by executive functioning (organization, working memory) deficiencies, increased impulsivity (talking out of turn, interrupting others), and restlessness (difficulty being silent, fidgeting) (Yürümez & Kılıç, 2016).

In pediatric settings, ADHD emerges as the foremost neurodiverse condition, captivating researchers’ interest and driving their focus towards exploring this participant group in their studies. A systematic review of 175 research papers revealed the global prevalence of ADHD was 7.2% and several studies also revealed the prevalence was between 2% to 7%, whereas school age prevalence rates between 4% and 6%. They also mentioned that prevalence statistics differed depends on data collection settings, whether it collected from clinical/community settings (Wang et al., 2017; Sayal et al., 2018; Huang et al., 2011). Researcher conducted an exploratory epidemiological study in Bangladesh and revealed that 2% of people have ADHD (Nath et al., 2022). Many studies conducted in the past few years, they reported that boys are more likely diagnosed ADHD than girls (O’Brien et al., 2003; Mohammadi et al., 2021; Mir et al., 2016; Cao et al., 2018).

Sleep is a biological process of our body which acts to recharge the batteries of life through conserving our energy, promoting physical growth and mental development (Terman & Hocking, 1913). According to Hill et al. (2007), sleep is a universal habit among all animals, representing a reversible state of detachment from perception. According to Matriccini et al. (2019), sleep is a multifaceted concept that includes duration, timing, quality, and variability. It is also a part of the 24-hour day. Children's health and wellbeing greatly depend on sleep because good sleep is a vital component for a healthy life. Child's cognition and behavior development are significantly influenced by the crucial role of sleeps (Reynaud et al., 2017).

Children of all ages need enough sleep for good general health. Children in the preschool age (3-5 years) require approximately 10-13 hours of sleep, while those in the school age (6-13 years) require 9-11 hours (Yunus et al., 2016; Bhatta et al., 2020). A healthy immune system, cognitive function, and social interaction are all supported by getting enough sleep. It also helps with emotion control, improves focus and concentration, and helps with emotion regulation (Reynaud et al., 2017).

Sleep disturbances that cause sleep restriction or fragmentation can impair a person's mood, attention, behavior, physical health, and ability to function well in school and at work, among other things. They can also cause excessive daytime fatigue in an affected individual (Wajszilber et al., 2018). Sleep problems are common among with neurodiverse children like ASD, ADHD, Cerebral Palsy, other neurodevelopmental disorders, psychiatric illnesses (e.g., depression or anxiety) and atopic dermatitis over the world rather than neuro-typical children (McDonagh et al., 2019). Sleep problems during childhood have been associated with various negative health outcomes in their later stages of life. Sleep issues in childhood are not only associated with emotional and behavioral difficulties but also associate with

performance on that task which demand working memory (Cao et al., 2018). Child's sleep disturbance also impacts on their parent's sleep, quality of life and emotional well-being and leads to daytime fatigue, mood disturbance, decrease effective parenting level. (Weiss & Salpekar, 2010).

In 1957, Laufer and Denhoff was initially reported the connection between ADHD and sleeping issues (Jan et al., 2011). After that many researchers studied sleep issues of ADHD children all over the world and shared their findings towards the world, thus it becomes a highlighted issue & growing the interest of researcher. Some researchers showed that "Parents of ADHD / hyperkinetic children are typically so desperate about nighttime issues that's why daytime issues become insignificant, even they didn't provide attention on daytime sleeping schedule". They also reported that sleep issues are shown between 25% and 50% of ADHD patients (Jan et al., 2011). Sleep disturbances in children with ADHD widespread consequences on their daily functioning, academic performance (difficulties in concentration which potentially leads to barrier of academic achievement), behavior (exhibit irritability, impulsivity, and other behavioral challenges) (Vaidyanathan et al., 2016).

Parents of children with ADHD did commonly complain of sleep problems, 53% to 64% and not related to any drug use (Yürümez & Kılıç, 2016). Sleeping issues are increasing day by day among children with ADHD. They commonly experience sleep disturbances such as difficulties in falling asleep / sleep onset latency, staying asleep (bedtime resistance), and maintaining a regular sleep schedule, sleep anxiety, and excessive daytime sleepiness, have more night waking, difficulty waking, shorter duration and no naps, some sleep habit and related bedtime behavior such as falling asleep in parents' beds, need something special to initiate sleep, nightmares, sleep talking, sleep bruxism (grinding teeth), fear of darkness, fear of loneliness, enuresis,

snoring loudly, sleep walking. They also experience some sleep disorders such as sleep-disordered breathing (SDB) and sleep apnea; restless leg syndrome (RLS), periodic limb movement disorder, insomnia (Huang et al., 2011; Weiss & Salpekar, 2010; Cao et al., 2018). Many studies revealed the prevalence of ADHD child experience SDB (79%), RLS (up to 26%), PLMD (7 to 44%), insomnia (53.5%), which leads to increase hyperactivity, inattention, sleep disruption. Researchers found their studies that sleep medicine used as effective treatment of sleep issues of ADHD child, but it increases the incidence of prolong sleep onset latency, short time sleep (Huang et al., 2011; Hvolby, 2014; O'Brien et al., 2003)

The relationship of sleep issues with ADHD is intricate and multidimensional. Sleep problems in ADHD can either be a natural part of the disorder or get worse because of the symptoms. On the other hand, trouble with sleep contributes to developing ADHD like symptoms, leading to potential misdiagnosis (Cortese et al., 2006). Researcher shared his finding of a study and mentioned that sleep difficulties in children with ADHD not only have a potentially direct negative impact on the nature and severity of daytime ADHD symptoms but also present a considerable challenge for the clinician attempting to elucidate the nature and etiology of the sleep problems and to develop effective treatment strategies. So, it is crucial to find out the reason behind sleep issues in children with ADHD, as well as to create appropriate therapeutic strategies to promotes child's overall health and well-being (J Owens et al., 2004). This study will provide new insight into various sleep-related issues (prevalence of sleep disturbance, sociodemographic factors, investigate associated factors with sleep disturbance among ADHD) of ADHD children in Bangladesh.

1.2 Justification of the study

Through the literature review student researcher find that children with ADHD experience sleep problems and it impacts on their wellbeing, daily routines, and activities (McDonagh et al., 2019) . Occupational Therapist work with individuals to improve their daily functioning. From this study, Occupational Therapist will get insights into various sleep disturbance of Attention Deficit Hyperactive Disorder children, so that when they will provide treatment to the ADHD children, they will be concern about the sleep disturbances issues, and will address child's sleep disturbance to make a comprehensive treatment plan and also provide caregiver education so that sleep disturbances issues can't hampering the child's performance, which can improve their overall quality of life. We all know that Occupational Therapy is an Evidence Based Practice (Lindström & Bernhardsson, 2018). Occupational Therapy department will benefit from this research, it will contribute to the growing body of evidence related to sleep disturbances among ADHD, helping health professionals to make informed decisions. Children with ADHD and their family members will not benefit directly from this study by sharing experiences of sleep habits, they will be happy to be heard that their challenges being acknowledged, thus the parents get mentally support who are always struggling to manage their child's sleep difficulties. From reviewing many literatures, student researcher found that in other countries researcher works with sleep related issues of children with ADHD, but there is a study gap in our country. So, this study will provide new insight to the health professionals and future researchers to work with sleep related issues of individuals with neurodevelopmental disorder. This study will also be helpful for those special schools whose work with ADHD because they will get several information about those children's sleep issues, which can impact on child's school performance.

1.3 Operational Definition

1.3.1 Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD) is a common and enduring neurodevelopmental condition that persists throughout one's life. It is marked by persistent traits of inattention, impulsivity, and hyperactivity, which may disrupt social interactions as well as academic or occupational achievements. Those with ADHD may encounter difficulties in sustaining attention, regulating impulses, and handling heightened energy levels, influencing different facets of their everyday experiences (Nick J. Davis, 2019).

1.3.2 Sleep

Sleep is characterized as a reversible state in which one is engaged in being unresponsive to the outside world and periodically alternates, on a circadian basis, with being engaged and receptive. Sleep is a highly intricate process that extends beyond relaxation and physical rest. Disruptions in sleep can result in various immediate and prolonged effects. Even sleep deprivation leads to death (Horne, J.A., & Minard, A., 1985; Sloane, 2013; Fadzil, 2021)

1.3.3 Sleep Disturbance

Sleep disruption, caused by various factors, can negatively affect mental and physical health. It includes difficulties in starting or maintaining sleep, daytime sleepiness, disruptions in sleep-wake patterns, and issues related to sleep stages. Problems like waking up early or struggling to fall asleep are linked to anxiety and depression. Inadequate sleep can lead to problems like poor concentration, daytime tiredness, and reduced performance (Hungin & Close, 2010; Stores et al., 2023).

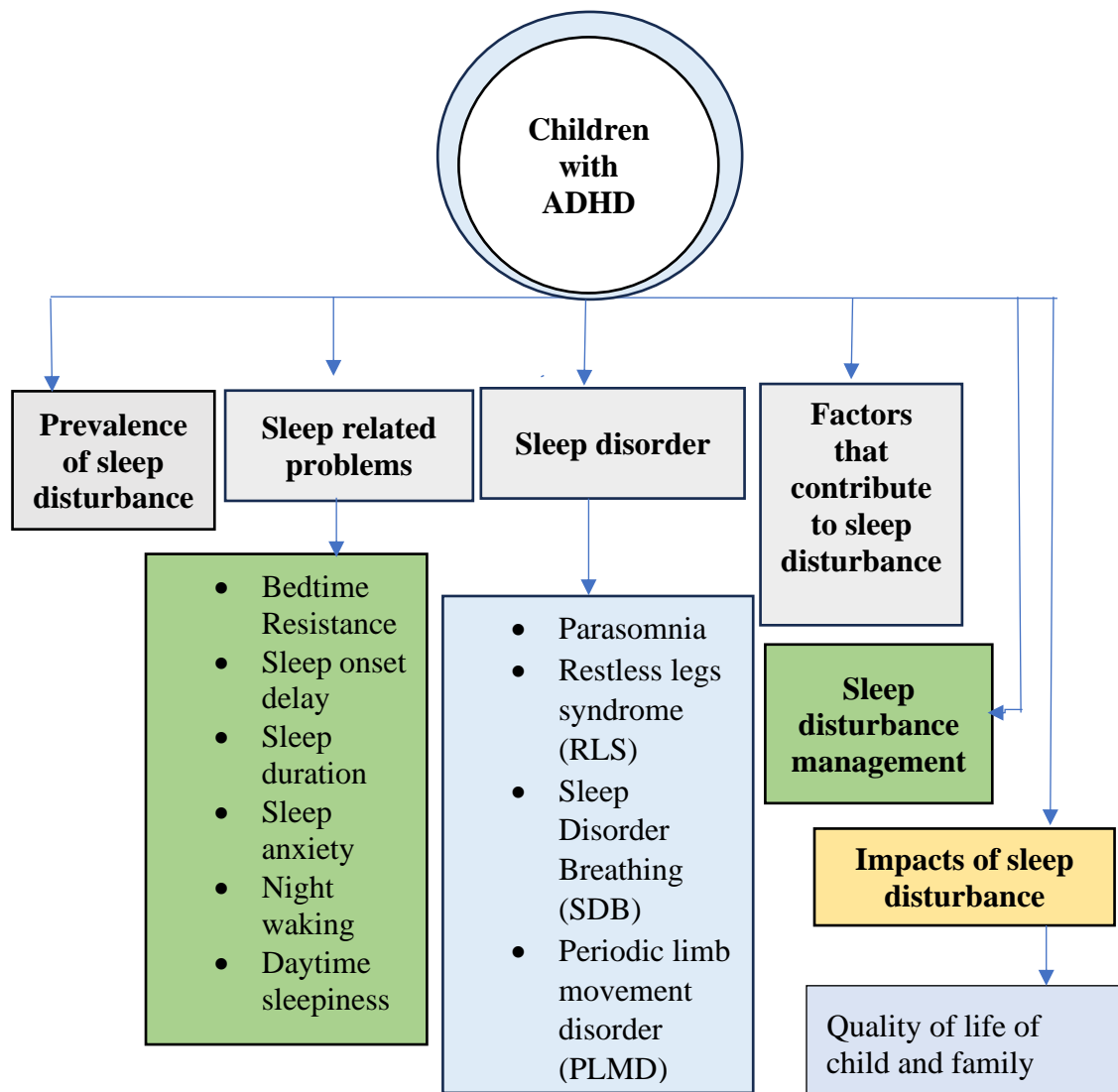
1.4 Aim of the study

The aim of this study was to explore the sleep disturbance of children with ADHD.

CHAPTER II: LITERATURE REVIEW

This chapter addresses the review of related literature information about “Exploration of sleep disturbance of Children with ADHD”. It includes the findings, limitations, recommendations of the articles which is related to this study. Google, Google Scholar, PubMed have been searched for finding related articles which published in previous years. Please see the figure 2.1 for overview of literature review findings.

Figure 2.1 Overview of literature findings



2.1 Prevalence of Sleep Disturbance

A cross sectional comparative study of India assessed sleep disturbances in children with ADHD compared to their typically developing peers in which age range was 6-12 years. They estimated that 77.5% suffered sleep related problems, 65% suffered from different sleep disorder (Joseph et al., 2022). A study of Turkey assessed of the sleep behaviors, sleep problems and frequency in 46 children with ADHD in which their age range was 7 to 13 years, found the prevalence of sleep disturbance was 84.8% (Yürümez & Kılıç et al., 2016). A Cross sectional study of China assessed the prevalence of sleep problems among school aged children using CSHQ scale, they found that the prevalence of sleep disturbance was 4.2% (Li S et al., 2009). A cross sectional study of Australia estimated sleep disturbance prevalence was 73.3 % (n=175), whereas mild sleep problem rate was 28.5% (n= 68) and moderate sleep problem rate was 44.8 % (n= 107) (Sung et al.,2008).

2.2 Sleep related problems

The researcher found some extremely common sleep problems by conducting literature reviews such as bedtime resistance, sleep onset delay, sleep duration, sleep anxiety, night waking, daytime sleepiness. A short description of these sleep problems is given below.

2.2.1 Bedtime resistance

A cross sectional study of Australia conducted to determine the prevalence of sleep problems in children with ADHD and their associations with child quality of life and family functioning. 239 participants participated in their study and those participants recruited from Paediatric hospital outpatient clinic, private pediatricians', offices in Victoria, accounted many sleep problems, bedtime resistance is one of them which was commonly experienced (Sung et al., 2008). Bedtime resistance is a typical sleep

problem in childhood, whereas child resist going to sleep at bedtime, often displays behavior like delaying sleep and seeking additional awake time and may involve factors desire for parental attention, fear, or lack of bedtime routine. Another study also reported about 10 sleep problems among 122 ADHD children. Among those problems, bedtime resistance is commonly experienced (Mick E et al., 2000).

2.2.2 Sleep Onset Delay

Sleep Onset Delay refers to the disruption of natural sleep cycle. Researcher conducted a quantitative study in India, aimed to assessed sleep related problems of children with ADHD, 32 children with ADHD participated in their study compared with healthy siblings and the participants recruited from Child guidance clinic at the department of Psychiatry, Pt B.D Sharma PGIMS, showed that children with ADHD experienced many sleeps related problems but experienced more sleep onset delay (Bhargava et al., 2005). The time it takes to fall asleep after turning out the lights is known as the sleep onset delay. Over 20 minutes is the average sleep latency (Zolovska & Shatkin, 2013). The results of a meta-analysis showed that children with ADHD had significantly higher sleep onset delay and they also experienced bedtime resistance, night waking, difficulties with morning awakenings, and daytime sleepiness (Cortese et al., 2006). On the other hand, a Korean study also examined sleep disturbances using the CSHQ in children with ADHD found that the ADHD group was associated with sleep onset delay (Choi et al., 2010). It is also true, though, that children who are made to go to bed before they're exhausted may grow resistant to sleep, which could be misinterpreted for impulsiveness behavior (Weiss & Salpekar, 2010). A previous study reported 30 male children with ADHD commonly experienced sleep onset latency compared with same age group (5 to 10 years) and sex group (male) 22 children (Lecendreux et al., 2000).

2.2.3 Sleep Duration

Sleep duration refers to the amount of time an individual spends sleeping during a single sleep episode (Hall et al., 2008). A cross sectional study of India, aimed to assess the association between sleep problems and ADHD among preschool age children, encountered children experienced commonly sleep duration problem, they also reported that longer duration of sleep (>8.5h) reduced risk of high level of ADHD symptoms (Cao et al., 2018).

2.2.4 Sleep Anxiety

Sleep anxiety is a feeling of stress or fear about going to sleep or not falling asleep or not being able to stay asleep. Researchers conducted a study in Spain, their results showed that girls under 12 years old experienced sleep anxiety but not highly prevalent (Galarraga R et al ,2016).

2.2.5 Night waking

According to Lim C et al (2008), a study of Singapore, investigated sleep disturbance of children with ADHD, encountered child's experienced sleep problems night waking according to parent's report, also revealed that girls experienced sleep problems more than boys. Another study of Turkey revealed that children experienced more night waking problem (Yürümez & Kılıç et al., 2016).

2.2.6 Daytime sleepiness

A study of Turkey, conducted a quantitative study to assess the frequency of sleep disturbance among 46 child with ADHD compared to 31 peer neurotypical child group, their age range was between 7 to 13 years and the participants were recruited from Ankara University of Medicine Child and Adolescent Psychiatry Clinic, found that 20 to 30 % child experienced daytime sleepiness (Yürümez & Kılıç et al, 2016) . A previous study reported that there were some stated nightly practices of disorganization

and restlessness can also be observed in the morning. Child diaries revealed less restful sleep, difficulties getting out of bed after sleeping, and a marked increase in daytime lack of sleep. Parents also mentioned how tired they feel in the beginning and during the day. However, sleep disturbances and insufficient sleep can result in excessive daytime sleepiness, which can impair mood, concentration, and self-regulation in addition to interfering with daytime performance and ultimately hinder academic performance (Spruyt & Gozal, 2011).

2.3 Sleep disorder

2.3.1 Parasomnia

Parasomnia is a disorder that is characterized by unusual behaviors, movements, emotions, perceptions or dreams when he or she is sleeping. There are various parasomnic behaviors are present including sleepwalking, night terror, sleep talking, bedwetting (Sangal et al., 2005). Researcher showed a higher prevalence of parasomnia in children with ADHD (Yürümez & Kılıç et al, 2016). Researchers conducted a study in Spain, their results showed that girls under 12 years old experienced more commonly in parasomnia (Galarraga R et al ,2016). Another study of China showed their results that parasomnia commonly reported problems (Li S et al, 2009).

2.3.2 Restless Leg Syndrome (RLS)

Restless Leg Syndrome is a sleep disorder identified by an uncontrollable urge to move the legs, frequently accompanied by uncomfortable sensations. Researchers reported 60% of children suffered sleep disorder, whereas 30% of children suffered from RLS (Spruyt & Gozal, 2011; Joseph et al., 2022).

2.3.3 Sleep Disorder Breathing (SDB)

Sleep Disorder Breathing is a type of disorder where breathing is interrupted during sleep. There is a common form of SDB is Obstructive Sleep Apnea (OSA), where

airway becomes partially or fully blocked, that's leads to difficulty in breathing and loud snoring (Spruyt & Gozal, 2011). Researcher reported that 52.5% ADHD child suffered from Sleep Disordered Breathing (Joseph et al., 2022). A study of China also reported that higher prevalence of ADHD child experience SDB (Li S et al, 2009).

2.3.4 Periodic Limb Movement Disorder (PLMD)

Periodic Limb Movement Disorder defined as a partial flexion of a limb and repetitive or stereotype movements of limbs such as toes, feets, thighs during sleeps which lasting for 0.5 to 5 seconds and repeatedly occurred after 5 to 90 seconds (Spruyt & Gozal, 2011; Huang et al., 2011). Researcher provided statement that sleep disturbance is complex, especially in ADHD children, reported children with ADHD commonly experienced PLMD, the prevalence was 7 to 44 %. (Huang et al., 2011).

2.4 Factors that contribute to sleep disturbance

A literature of China highlights a clear connection between ADHD and sleep issues in preschool-age children. The study identifies those preschoolers with a rural household registration, younger parents (age 28 or below), and lower parental education levels (middle school or less) are leading to associated sleep problems. These factors contribute to risk of sleep issues like delayed bedtime, increased time to fall asleep, and others frequent sleep-related problems. The study suggests that rural household registration, younger parental age, and lower educational levels may assist as indicators of socioeconomic status, which influenced the sleep quality and routines of preschoolers (Cao et al., 2018). Previous studies also explored association with child's age, gender, school grade, parent's educational background, monthly income, medication intake (Li S et al., 2009; Ho & Siu, 2018; Joseph et al., 2022).

2.5 Sleep disturbance management

According to Cao et al, they suggested some sleep management for children that

encourage to maintain regular sleep schedule (bedtime and wakeup time), prompting a longer sleep duration exceeding 8.5 to 10 hours, providing education to the parents particularly those who have lower educational backgrounds regarding importance of sleep, child's sleep challenging issues, providing effective strategies to ensuring child's healthy sleep habit (Cao et al., 2018). In a study of Australia, they suggested regarding sleep management issues that implementing behavioral therapies (instructing parents to create and maintain bedtime boundaries, relaxation techniques), regularly monitoring sleep problems and if it increases day by day, immediately seek help from health care professionals such as Pediatricians to effectively manage sleep (Lycett K, 2014). According to a literature review that reviewed conceptual framework and evidence regarding Occupational Therapy practice in sleep management and suggested some management strategies like use of assistive device or equipment (eye mask, dream pad pillow, weight blanket, earplugs), encourage to mind body activity (meditation, yoga, breathing techniques), cognitive behavioral therapy, lifestyle intervention for reducing sleep difficulties (Ho & Siu, 2018).

2.5.1 Quality of life of child and family

According to a meta-analysis of 15 research studies, they encountered that those ADHD children had sleep problems, it's affecting the quality of life not only child but also their families (Mera et al., 2023). A cross sectional study of Australia reported that family members of those children who had mild or moderate sleep problems, they had poorer mental health compared to experience without sleep problems (Sung et al., 2008). A study of Canada revealed the impacts of sleep disturbance among the child with ADHD and found that sleep disturbance causes functional impairment in children, that's why they experienced difficulties in life skills (28%) and social skills (14%) (Craig et al., 2017). Furthermore, sleep disturbances can cause excessive daytime fatigue, interfere

with daytime functioning, including mood, attention span, and behavior which greatly impacts on child's school or work performance (Corkum et al., 1999).

2.6 Impacts of sleep disturbance

2.6.1 Quality of life of child and family

According to a meta-analysis of 15 research studies, they encountered that those ADHD children had sleep problems, it's affecting the quality of life not only child but also their families (Mera et al., 2023). A cross sectional study of Australia reported that family members of those children who had mild or moderate sleep problems, they had poorer mental health compared to experience without sleep problems (Sung et al.,2008). A study of Canada revealed the impacts of sleep disturbance among the child with ADHD and found that sleep disturbance causes functional impairment in children, that's why they experienced difficulties in life skills (28%) and social skills (14%) (Craig et al., 2017). Furthermore, sleep disturbances can cause excessive daytime fatigue, interfere with daytime functioning, including mood, attention span, and behavior which greatly impacts on child's school or work performance (Corkum et al., 1999).

2.7 Key gaps of the study

- Many of the studies used the Children Sleep Habit Questionnaire (CSHQ) scale as a data collection instrument to address sleep issues. Other studies used the Pediatric Sleep Questionnaire (PSQ), Children Sleep Questionnaire-parent version, Conners' Parent Rating Scale, Pittsburgh Sleep Quality Index (PSQI).
- A few studies didn't mention the clear information regarding the age of the study population. They mentioned only the mean age of participants. Hence the current study specified the age range 3 to 13 years of the study population.
- Few studies excluded the female participants from their studies, but current

study included female participants.

- Most studies depended on parental reports for child diagnosis, the current study ensured that diagnoses are confirmed by responsible Occupational Therapists within the organizations.
- Most of the studies didn't provide clear information about methodology. Hence the current study emphasized transparency in these issues and provided detailing about methodology of the study.
- The relevant study conducted in various countries including India, China, Canada, Spain, Australia, Singapore, Turkey and admired that Children with ADHD experienced sleep disturbance. However, in Bangladesh, there is lack of evidence found regarding sleep disturbance issues among children with ADHD.

CHAPTER III: METHODS

3.1 Study Question, Aim, Objectives

3.1.1 Study questions

How are the sleep disturbance of children with Attention Deficit Hyperactivity Disorder (ADHD) experience?

3.1.2 Aim

The aim of this study was to explore the sleep disturbance of children with Attention Deficit Hyperactivity Disorder (ADHD).

3.1.3 Objectives

- To determine the prevalence of sleep disturbances in children with ADHD.
- To identify severity level of sleep disturbance among children with ADHD.
- To examine rates of sleep problems.
- To investigate the association between sociodemographic factors and sleep disturbance among ADHD children.

3.2 Study Design (Method, Approach)

3.2.1 Study Method

To accomplish the goals, Quantitative study design was used in this study. Quantitative study design is a process of collecting numerical data that, in turn, can be subjected to statistical analysis (Apuke, 2017). In quantitative research, researcher collect data through survey or interview, then they enter, store and analysis the data using SPSS (Statistical Package for the Social Sciences). Student researcher used the study design to collect the numerical data from the research participants to achieve the aim and objectives of the research title.

3.2.2 Study Approach

Cross sectional study design was used in this study. Student researcher used this study approach to explore the sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD) in Dhaka city. In this study, student researcher chose this approach because it helped to conduct data from a same target population at a single point in time so that researcher can achieve her aim and objectives. Besides, a cross sectional study provides a snapshot of both exposure and outcome variables within a population at a specific moment. In this study, the exposure variable was “the child condition of ADHD” and outcome variable “sleep disturbance”. Though it was student research, the short period of time and low cost was also a factor of consideration. That’s why this approach used because it is relatively quick and inexpensive to conduct (Wang & Cheng, 2020).

3.3 Study Setting and Period

3.3.1 Study setting

80 people participated in this study, they were randomly selected through 8 different organizations. Two of these organizations were rehabilitation centres and the rest of the six organizations were special schools. All of these special schools are registered.

The study conducted in -

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

Centre for the Rehabilitation of the Paralysed (CRP) is a non-government organization that works for the rehabilitation of the paralysed in Bangladesh and located in Savar, Bangladesh. The founder of CRP is a British Physiotherapist, Valerie Ann Taylor. She started journey in 1979 to meet the needs of people with disabilities. CRP provides medical treatment, rehabilitation and support

services focusing on physical, emotional, social, psychological, and economic aspects. Different services provided in CRP such as Physiotherapy, Occupational Therapy, Speech & Language Therapy. CRP is also famous for special children treatment in paediatric setting. The paediatric settings offered inpatient and outpatient care services. Inpatient services offered two weeks residential programme to treat the children with Cerebral Palsy and outpatient services provide treatment to the different type of paediatric conditions including CP, Autism Spectrum Disorder (ASD), ADHD, Down Syndrome, Intellectual Disability (ID), Learning Disability (LD), Erb's palsy, Clubfoot, Spina bifida, Muscular dystrophy etc.

- **Centre for the Rehabilitation of the Paralysed (CRP), Mirpur, Dhaka-1206.** CRP-Mirpur is a thirteen-floor structure that is accessible to both people with and without impairments. A rare feature in Bangladesh, it includes three elevators and a ramp leading to the fifth floor. In addition, CRP-Mirpur uses six levels to provide its own unique medical, therapeutic, and diagnostic facilities. CRP Mirpur, is the branch of CRP Savar, provides all types of rehabilitation services that CRP Savar offers. They had an Autism Corner Unit, where provided Occupational Therapy and Speech & Language Therapy services to neurodiverse children. They provided individual therapy sessions and group therapy sessions. They also provided outpatient services for neurodiverse children. They ensured best quality services for neurodiverse children and encouraged them to build self-confidence to live life independently, maintain socialization by the qualified health professionals.

- **Protasha Centre for Autism Care, Dogormora, Savar, Dhaka**

A special school for individual with special needs and have schooling activities and therapy program. It is located in Dogormora, CRP road, Savar, Dhaka. They provided services for special children like ASD, ADHD, CP and Down Syndrome. They ensured need based caring and provides quality services to the neurodiverse children.

- **Therapist Point & Shonirvor Special School for Autism and Neurodevelopmental Disorder, Dogormora, Savar, Dhaka**

A specialized school located in Savar, aimed to educate individuals with special need to develop their fullest potential and improve their quality of life. They also provide therapy services. They work for special needs children to grow up their self-confident, develop their behaviors and socialization. They ensured that expertise special educators educated the child's and meets their needs to creating a caring environment.

- **Autism Welfare Foundation (AWF), Modder char, keraniganj model thana, Dhaka-1312.**

AWF is a non-profitable, non-government, voluntary welfare organization, established on April 4, 2004, aimed to educate the children with special needs to perform their maximum strengths and interests and making them able to be independent as much as possible. AWF provides services that support to achieve their mission in different ways, including community awareness, proper diagnosis and early intervention, providing information about training for parents and professionals. AWF's activities now focus on a wider range of services to improve the lives of children with neurodiversity and their families. Their services are daily class activities, daycare services and therapy services.

They also provide outdoor therapy services. AWF successfully works since 2004 towards their goals. 75 awards received by AWF and their students, 79 students transferred to mainstream regular school since 2004, 35 students passed national board exams.

- **Smiling Children Special School (SCSS), Aftabnagar, Banasree, Dhaka**

Smiling Children Special School, situated in the Aftabnagar area of Dhaka, is a well-regarded institution specializing in tailored programs and services. The school is established in 2010. These offerings are carefully crafted to meet the unique educational and developmental needs of diverse groups, including children with special needs and those on the ASD, ADHD, CP, DS etc. They ensured proper assessment/ diagnosis of neurodiverse children by qualified health professionals, provided Occupational Therapy, Speech and Language Therapy, Psychotherapy, Behavior Therapy, Music and Dance Therapy. Their services are pre-schooling activities, vocational training, computer cycle and swimming training, indoor & outdoor (special olympics) games, outing & cultural programs, training and workshop for professionals, training, and workshop for parents etc. They also provided 1:1 education service that means one teacher for one student and ensured to create a caring environment for the children and works for positive changes.

- **Autism Care Foundation Special School, South Banasree, Khilgaon, Dhaka**

Autism Care Foundation Special School is a special education school in South Banasree, Khilgaon, designed to support and empower special needs children like ASD, ADHD, DS, ID, LD etc. It was founded in 2018. They work in three shifts such as morning shift, day shift and full day shift. Their services are Occupational Therapy, Speech and Language Therapy, Psychotherapy,

Behavior modification and socialization program, pre-schooling activities, vocational training program, outing & cultural programs, sports training program etc. They also provided 1:1 education service.

- **Therapy Station Autism Rehab Centre, Shantinagar, Dhaka- 1217**

Therapy station is a renewed therapy centre in Shantinagar, Dhaka- 1217 which has a special school program where special needs children meet the educational needs. Their services are Occupational Therapy, Speech and Language Therapy, schooling activities, outing programs etc.

3.3.2 Study Period

The study period was between May 2023 to February 2024

Data collection period: November 2023 to December 2023

3.4 Study Participants

3.4.1 Study Population

Participants of this study were children with ADHD. But student researcher collected data from the parents of children with ADHD.

3.4.2 Sampling Techniques

Student researcher followed purposive sampling techniques to conduct this study. In purposive sampling, subjects are selected based on study purpose with the expectation that each participant provide unique and rich information of value to the study (Etikan, 2016). The student researcher used this sampling techniques for collecting sample by following the inclusion and exclusion criteria.

3.4.3 Inclusion criteria

- Parents of 3-13 years of ADHD children who have been diagnosed by a qualified clinician (Yunus et al., 2016; Bhatta et al., 2020).
- Parents of ADHD children (both male & female).

- Parents who are mentally stable

3.4.4 Exclusion criteria

- ADHD children with other medical or psychiatric conditions such as Anxiety disorder, Depression, ASD that may affect sleep quality.

3.4.5 Sample size

Sample Size estimation:

According to the standard formula,

n = sample size

z = The standard normal deviate is 2.33 [The Confidence Interval consider as 98%, so the z value is 2.33]

p = 0.02 [Though the prevalence of Attention Deficit Hyperactive Disorder children in Bangladesh is 2% (Nath et al., 2022)]

q = 1- p ; proportion of the target population

= 1- 0.02

= 0.98

d = 0.02; degree of accuracy (Level of significance / margin of errors)

Required sample size, n =?

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

$$\frac{(2.33 \times 2.33) \times (0.02) \times (1 - 0.02)}{(0.02 \times 0.02)}$$

$$= 266$$

According to the equation, the sample should be 266 population, but the researcher collected 80 data from the population of the study. The researcher faced challenges in collecting a sufficiently large sample of ADHD children due to the low prevalence of ADHD in Bangladesh, estimated at only 2%, and also for time limitation (Nath et al., 2022).

3.5 Ethical Consideration

3.5.1 Ethical clearance

- The proposal submitted to the Institutional Review Board of the BHPI, through the department of Occupational Therapy. Student researcher took a consent form from the Institutional Review Board (IRB). IRB form number: CRP-BHPI/IRB/10/2023/760
- Student researcher took permission from the author of the scale which used in this study. The name of scale is “Children Sleep Habit Questionnaire (CSHQ)”.
- Student researcher took permission from therapy centre and special school to collect data from their institution.

3.5.2 Informed consent

- Student researcher made a written consent form which used to take permission from each participant of the study. The student researcher informed the participants about the aim & objectives of her study and ensured that she maintained the participants' confidentiality.

3.5.3 Right of refusal to participate or withdraw

- Participants provided their information voluntarily.
- Student researcher provided withdraw form to each of the participants. If any participants wanted to withdraw his/her information which they provided, they able to do it.

3.5.4 Unequal or power relationship

- Student researcher had no unequal relationship with participants.
- Student researcher didn't show any biasness to the participants.

3.5.5 Risk and beneficence

- Participants were not at any risk by participating in this study.
- Student researcher didn't pay the participants anything in exchange for sharing their information.
- The participants didn't get benefits for participate.

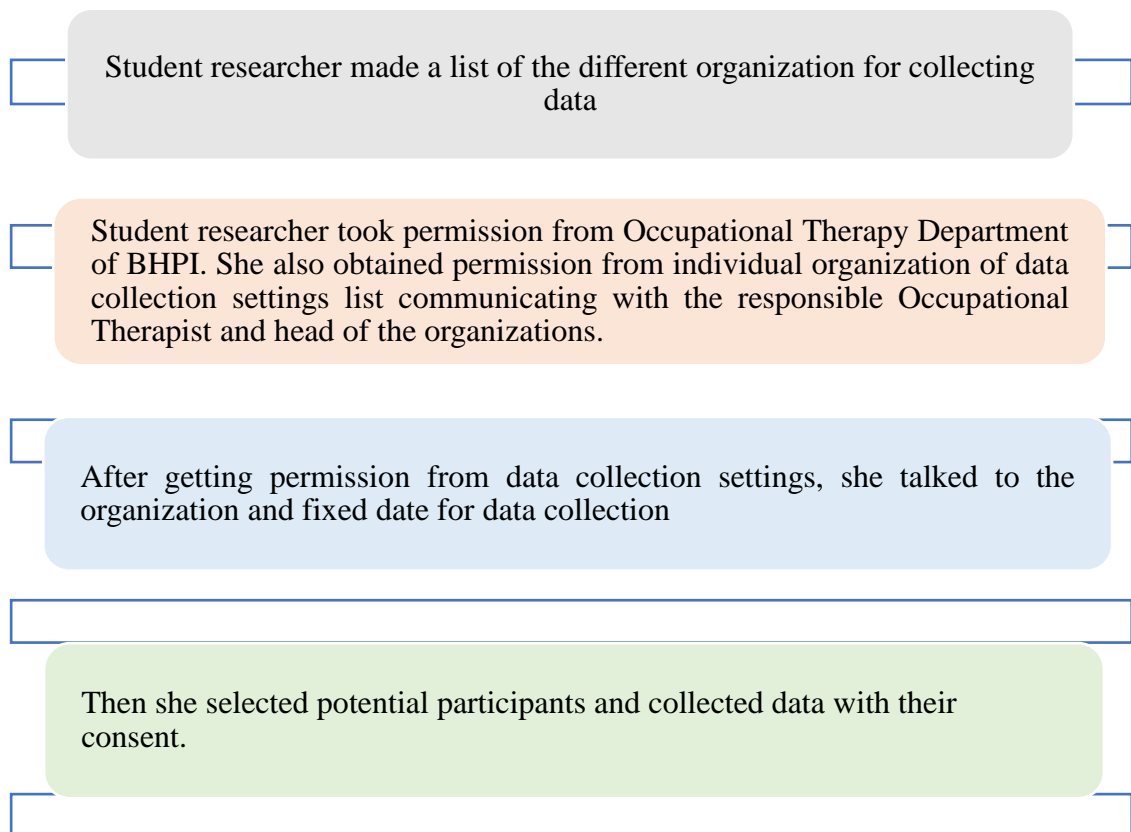
3.5.6 Confidentiality

- Student researcher assured the participants to maintain confidentiality and informed all participants before data collection that she only used their information, but their identity remains highly confidential, the information only shared with research supervisor.

3.6 Data Collection Process

3.6.1 Participant Recruitment Process

Figure 3.6.1 Participant Recruitment Process



3.6.2 Data Collection Method

Data collection is mandatory to accomplish the research process, without gathering the information, the research could not be carried out. To collect data, student researcher used face to face survey method. First of all, student researcher introduced herself and explained her aim, objectives, purpose of the research, then took consent from the participants (if they wanted to participate willingly). Then student researcher asked questions of the parents to complete a sociodemographic questionnaire and a standardized questionnaire about their child's sleep habits and experiences.

3.6.3 Data collection instrument

Socio-demographic questionnaire: This is a semi-structured questionnaire for socio-demographic and other relevant information. Student researcher asked the Parents of ADHD children to complete this questionnaire. Different socio-demographic variables

like- age, gender, education level, occupation, age at ADHD diagnosis, number of siblings, place of residence, family income, medication etc. included in this questionnaire. The student researcher collected data from parents of ADHD children by face-to-face interview using this questionnaire (Nath et al., 2022).

Scale: Child Sleep Habit Questionnaire (CSHQ)-

Researcher assessed the sleep problems by using the scale named “Child Sleep Habit Questionnaire (CSHQ).” The CSHQ developed by Judith A. Owens, Anthony Spirito, is a retrospective, 45-item parent reports questionnaire that appears to be a useful sleep screening instrument to delineate sleep habits and identify problematic sleep domains in preschool and school-aged children. The CSHQ items were reflects the eight sleep domains such as: 1) Bedtime Resistance, 2) Sleep Onset Delay, 3) Sleep Duration, 4) Sleep Anxiety, 5) Night Wakings, 6) Parasomnias, 7) Sleep Disordered Breathing, 8) Daytime Sleepiness. Total Sleep Disturbance score included all items of the eight subscales but consisted of only 33 items, so a higher score indicates more disrupted sleep. Scores for the entire scale (33 items) and its subscales can be determined as Bedtime Resistance (1, 2, 9, 10, 11,12), Sleep Onset Delay (3), Sleep Duration (4, 5 and 13), Sleep Anxiety (11, 12, 14, and 15), Night Waking (16, 17, and 18), Parasomnias (19, 20, 21, 22, 23, 24 and 25), Sleep- Disordered Breathing (26, 27, and 28), and Daytime Sleepiness (6, 7, 8, 29, 30, 31, 32, and 33). The total score is based on the response to all 33 items of 8 subscales. Also, items 11 and 12 are included in two subscales, they only be counted once in the total score. These items are rated on a 3-point scale, if the sleep behaviors occur ≥ 5 days/week, i.e., “usually”, whereas 2 to 4 days and 0 to 1 day are denoted as “sometimes” and “never”, respectively. The CSHQ has a possible score ranging from 31 to 93 points, and higher scores indicate more sleep problems. However, a score of 41 points is considered as the cutoff for the presence of

problematic sleep (Owens et al., 2000).

3.6.4 Field test

Field test is an experiment or practical trial before collecting final data to clarify the questions, assess the response rates and completion times. Student researcher conducted field test of 3 participants before collecting actual data. Firstly, student researcher contacted with the responsible Occupational Therapist of Pediatric department of CRP, Savar. After getting permission from pediatric department, student researcher took consent from participants and conducted field test using Bengali version of sociodemographic and CSHQ questionnaire. Student researcher evaluated the findings of field test, no major changes needed for sociodemographic and CSHQ questionnaire. Some sociodemographic questions were excluded and added some option as answering the questions.

3.7 Data Management and Analysis

Quantitative data analysis is valuable for making evidence-based decisions, drawing conclusions from data, and testing hypotheses. Data cleaning, validation and analysis were performed using the computer-based software program- Statistical Package for Social Science (SPSS), version 20. The descriptive analysis was carried out to determine the prevalence of sleep disturbance among children with ADHD. Data were tested for normality using Shapiro Wilk test, p value less than 0.05 considered as not normally distributed. As the data not normally distributed, Fisher Exact test was used to examine the association between sociodemographic factors and sleep disturbance like child's age range, gender, medication use, living area, mother age, father age, educational background of mother & father, family income monthly whereas a p value less than 0.05 was considered statistically significant. Then the data was presented in a Microsoft word. Microsoft Excell sheet was also used.

3.8 Quality Control and Quality Assurance

Quality control and quality assurance was maintained throughout the study period starting from choosing the appropriate study design that best suited with the aim and objectives of this study and sampling method and sampling size which represented the target population. Data lifecycle management process followed five steps, including data creation, data processing and storage, data usage, data archiving, data destruction (Data Lifecycle Management: Definition & 5 stages, 2023). Student researcher followed the five stages to ensure the quality of this study. 80 participants participated in this study. Researcher collected data conducting face to face survey. The printed questionnaire (maintained a standardized questionnaire for data collection) used as a survey questionnaire. All the data was initially stored in the researcher's desk, then she input the data in the SPSS file for analysis. These were also stored in the researcher's another Gmail account for safety purposes, no one could access the Gmail account. The student researcher analyzed the data properly. After that the researcher rechecked the data randomly for maintaining accuracy. The honorable research supervisor also checked the data. Student researcher stored all the data in goggle drive for long term archive or backup. Destruction of archived data is necessary to create storage for active data, that's why student researcher will permanently delete the archived data after five years, it also prevents unauthorized access to data.

CHAPTER IV: RESULTS

This chapter represented the findings of the study. The chapter contained the study findings in tables and figures focusing the sociodemographic information, sleep related behavior, association between sociodemographic information and sleep disturbance among ADHD children.

4.1 Sociodemographic characteristics

Table 4.1 Sociodemographic characteristics

Variable	Category	n = 80	Percent (%)
Gender	Male	72	90%
	Female	8	10%
Child's age	Age in years	Mean age 6.06, SD (± 2.446)	
	Minimum age	3	
	Maximum age	13	
	3 to 5 years	46	57.5 %
	6 to 8 years	21	26.3%
	9 to 11 years	9	11.3%
	12 to 14 years	4	5%
Mother age	Age in years	Mean age 31.73, SD (± 5.470)	
	Minimum age	21	
	Maximum age	50	
	21 to 29 years	28	35%
	30 to 37 years	39	48.8%
	38 to 45 years	12	15%
	46 to 53 years	1	1.3%
Father age	Age in years	Mean age 38.21, SD (± 5.940)	
	Minimum age	28	
	Maximum age	55	
	28 to 35 years	29	36.3%

	36 to 43 years	33	41.3%
	44 to 51 years	17	21.3%
	52 to 59 years	1	1.3%
Child education	Yes	66	82.5%
	No	14	17.5%
Mother education	High school (S.S.C)	16	20.0%
	College (H.S.C)	10	12.5%
	Bachelor's degree	16	20.0%
	Master's degree	38	47.5%
Father education	Primary (P.S.C)	1	1.3%
	High school (S.S.C)	10	12.5%
	College (H.S.C)	6	7.5%
	Bachelor's degree	20	25.6%
	Master's degree	43	53.8%
Family income (monthly)	20000 to 30000 tk	10	12.5%
	30000 to 40000 tk	21	26.3%
	Above 50000 tk	49	61.3%
Living area	Urban	77	96.3%
	Rural	3	3.8%
Child takes medicine	Yes	40	50%
	No	40	50%
Make sleep-friendly environment	Yes	65	81.3%
	No	15	18.3%
Sleep-quality affects school performance	Rarely	22	27.5%
	Sometimes	35	43.8%
	Often	9	11.3%
	N/A	14	12.5%

Table 4.1 represented an overview sociodemographic characteristic of children with ADHD including the child's age, gender, education, child's mother & father age,

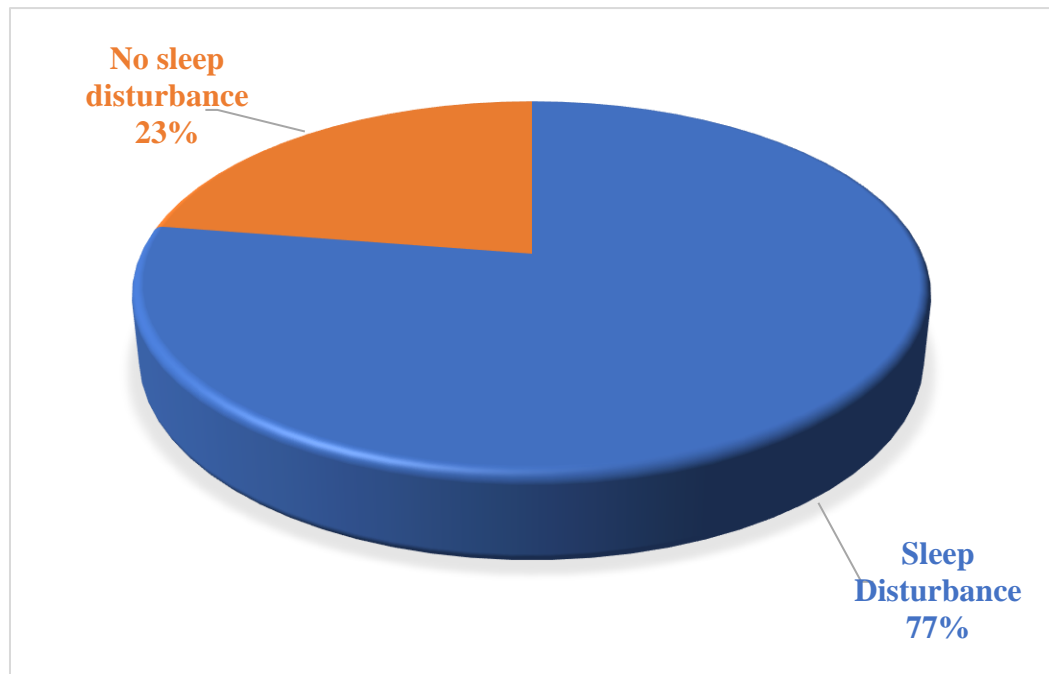
child's mother and father educational background, living area, monthly family income, medication, sleep-friendly environment, school performance.

This table showed that among 80 participants, about 90% (n=72) were boys and 10% (n=8) were girls. Their mean age was 6.06 years, SD (± 2.446) and minimum age was 3 and maximum age 13. It also showed that 57% (n= 46) participants were 3 to 5 years range, 26.3% (n= 21) participants were 6 to 8 years range, 11.3% (n= 9) participants were 9 to 11 years range, 5% (n= 4) participants were 12 to 14 years range. It also showed that child's mother mean age was 31.73 years, SD (± 5.470) and minimum age was 21 and maximum age 50, 35 % (n= 28) participants were 21 to 29 years range, 48.8% (n= 39) participants were 30 to 37 years range, 15% (n= 12) participants were 38 to 45 years range, 1.3% (n= 1) participants were 46 to 53 years range. It also showed that child's father mean age was 38.21 years, SD (± 5.940) and minimum age was 28 years and maximum age 55 years, 36.3% (n= 29) participants were 28 to 35 years range, 41.3% (n= 33) participants were 36 to 43 years range, 21.3% (n= 17) participants were 44 to 51 years range, 1.3% (n= 1) participants were 52 to 59 years range. Among 80 children, 82.5% (n=66) children go to school, 17.5% (n=14) do not go to school. Next described about child's mother educational background, 47.5% (n=38) mother obtained Master's degree (MSc), 20%(n=16) mother obtained Bachelor's degree (BSc), 12.5%(n=10) mother obtained HSC degree, 20%(n=16) mother obtained SSC degree. As per child's father educational background, 53.8% (n=43) obtained Master's degree (MSc), 25.6%(n=20) obtained Bachelor's degree (BSc), 7.5%(n=6) obtained HSC degree, 12.5%(n=10) obtained SSC degree, 1.3% (n=1) obtained PSC degree. Among 80 children's families, 12.5 % (n=10) families earn 20000 to 30000tk monthly, 26.3% (n=21) families earn 30000 to 40000 tk ,61.3% (n=49) families earn above 50000 tk. Among 80 children, 96.3 % (n=77) of children

live in urban areas, rest of the 3.8 % (n=3) lives in rural area. Among 80 children, 50% (n=40) children take medicine, 50% (n=40) do not take medicine. Among total participant families, 81.3% (n=65) families make sleep friendly environment for their child, 18.3%(n=15) families do not make sleep friendly environment. 27.5% (n=22) child's sleep quality rarely affects their school performance, 43.8%(n=35) child's sleep quality sometimes affects their school performance, 11.3%(n=9) child's sleep quality often affects their school performance, 12.5% (n=14) not applicable as child's do not attend school.

4.2 Prevalence of sleep disturbance

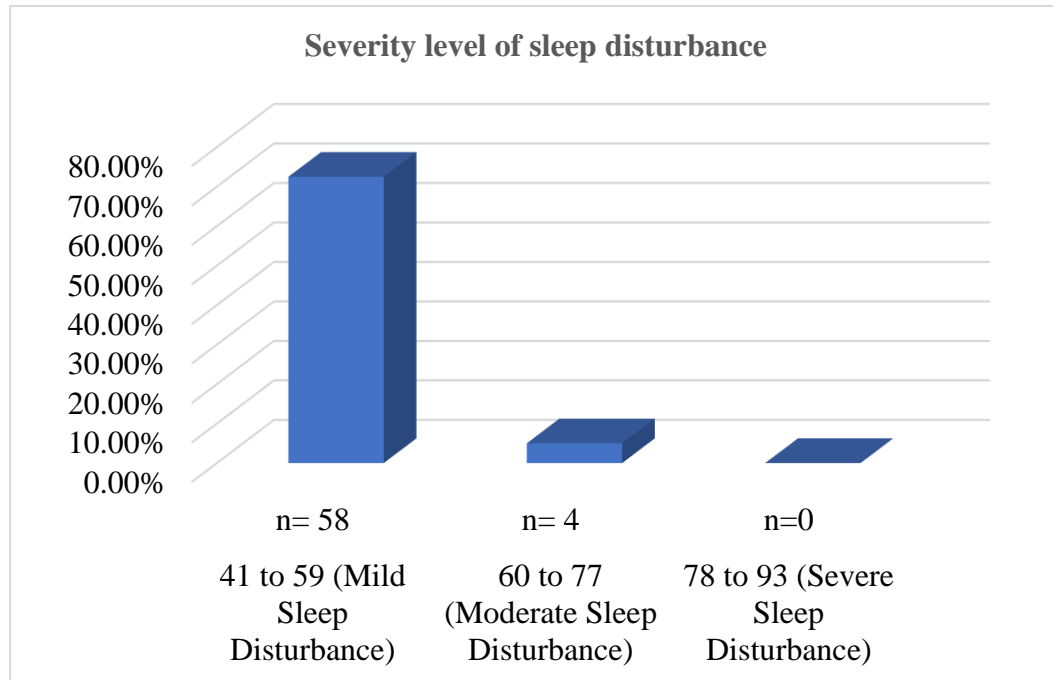
Figure 4.2 Prevalence of sleep disturbance



This figure showed the prevalence of sleep disturbance among children with ADHD. Among 80 children, 77% (n=62) children experience sleep disturbance, 23% (n=18) do not experience any sleep disturbance.

4.3 Severity level of sleep disturbance

Figure 4.3 Severity level of sleep disturbance



According to Figure 4.3, it was evident that out of the 80 participants, 62 children were reported to experience sleep disturbance. Figure 4.3 reveals the severity level of sleep disturbance in those 62 children. It showed that 72.5% (n=58) of children experienced mild sleep disturbance, 5% (n=4) experienced moderate sleep disturbance and no one experienced severe sleep disturbance.

4.4 Rates of sleep problems

Table 4.4 Rates of sleep problems

Variable	Percentage		
	Usually	Sometimes	Rarely
Bedtime Resistance	52.5%	43.8%	3.8%
Sleep Onset Delay	57.5%	0%	42.5%
Sleep Duration	82.5%	15.0%	2.5%
Sleep Anxiety	37.5%	50.0%	12.5%
Night Waking	36.3%	42.5%	21.3%
Parasomnias	42.5%	53.8%	3.8%
Sleep Disordered Breathing	32.5%	66.3%	1.3%
Daytime Sleepiness	47.5%	51.5%	1.3%

Findings from Table 4.4 revealed the percentages of sleep-related problems among children with ADHD, highlighting problems such as bedtime resistance (52.5%), sleep onset delay (57.5%), and sleep duration (82.5%).

4.5 Associated factors with sleep disturbance

Table 4.5 Associated factors with sleep disturbance

Variable	Category	Sleep disturbance n=62	No sleep disturbance n= 18	Fisher Exact Significant value	P value
Child age range	3 to 5 years	43 (93.5%)	3 (6.5%)	19.446	0.000
	6 to 8 years	14 (66.7%)	7 (33.5%)		
	9 to 11 years	4 (44.4%)	5 (55.6%)		
	12 to 14 years	1 (25.0%)	3 (75.0%)		
Gender	Male	54 (75%)	18 (25%)	0.188	0.117
	Female	8 (87.1%)	0 (100%)		
Medication use	Yes	31(77.5%)	9 (22.5%)	1.000	.605
	No	31(77.5%)	9 (22.5%)		
Living area	Urban	60 (77.9%)	17 (22.1%)	0.540	0.540
	Rural	2 (66.7%)	1(33.3%)		
Mother age	21 to 29 years	23 (82.1%)	5 (17.9%)	4.180	0.254
	30 to 37 years	31 (79.5%)	8 (20.5%)		
	38 to 45 years	8 (66.7%)	4 (33.3%)		
	46 to 53 years	0 (0.0%)	1 (100%)		
Father age	28 to 35 years	25 (86.2%)	4 (13.8%)	4.730	0.168
	36 to 43 years	25 (75.8%)	8 (24.2%)		
	44 to 51 years	12 (70.6%)	5 (29.4%)		
	52 to 59 years	0 (0.0%)	1 (100%)		
Educational background of Mother	High school (SSC)	14 (22.6%)	2(11.1%)	13.340	0.002
	College (HSC)	3 (4.8%)	7(38.9%)		
	Bachelor's degree	15(24.2%)	1(5.6%)		
	Master's	30(48.4%)	8(44.4%)		

	degree				
Educational background of Father	Primary (PSC)	1 (1.6%)	0(0.0%)		
	High school (SSC)	9(14.5%)	1(5.6%)		
	College (HSC)	4(6.5%)	2(11.1%)		
	Bachelor's degree	16(25.8%)	4(22.2%)		
	Master's degree	32(51.6%)	11(22.5%)		
					2.050
Family income (monthly)	20000 to 30000 tk	10 (100%)	0(0.0%)		
	30000 to 40000 tk	17 (81.0%)	4 (19.0%)		
	Above 50000 tk	35(71.41%)	14(28.6%)		
					3.913

[Note: Student researcher conducted normality test to assess whether the data normally distributed or not. The findings were the data not normally distributed because the p value was less than 0.05, that's why researcher conducted Fisher Exact test to assess associated factors with sleep disturbance.]

Regarding the sleep disturbance and child age range, the finding was statistically significant, (N = 80, Fisher's Exact Test, $p = .000$), $p < 0.05$, indicating relationship between sleep disturbance and child age range.

Based on the statistical test, there is no significant association between gender and sleep disturbance. Fisher Exact value 3.913, $p = 0.126$ ($p > 0.05$).

The finding of the test was not statistically significant, (N = 80, Fisher's Exact Test, $p = 0.605$), ($p > 0.05$), indicating no relationship between sleep disturbance and

medication use.

The finding was not statistically significant, (N = 80, Fisher's Exact Test, $p = .540$, ($p > 0.05$), indicating no relationship between sleep disturbance and living area of child.

The finding was not statistically significant, (N = 80, Fisher's Exact Test, $p = .254$, ($p > 0.05$), indicating no relationship between sleep disturbance and mother age.

The finding was not statistically significant, (N = 80, Fisher's Exact Test, $p = .168$, ($p > 0.05$), indicating no relationship between sleep disturbance and father age.

The results indicated a significant association between educational background of mother and sleep disturbance, Fisher Exact value 2.050, $p = .002$ ($p < 0.05$).

The results indicated no significant association between educational background of father and sleep disturbance, Fisher Exact value 2.050, $p = 0.763$, ($p > 0.05$).

The results also indicated no significant association between family income and sleep disturbance, Fisher Exact value 3.913, $p = 0.126$ ($p > 0.05$).

CHAPTER V: DISCUSSION

The study explored sleep disturbance of children with ADHD (age range 3-13 years). For this study, participants were recruited through purposive sampling techniques, and it was a face-to-face survey. Sleep disturbance was measured by CSHQ scale.

Concerning this study purpose, it was important to investigate sociodemographic factors. According to the result of the investigation on sociodemographic information, among 80 participants, 90% (n=72) child were male and 10% (n=8) were female. So, the male participants response rate was nine times higher than female participants. Previous studies also reported that ADHD are more common in male rather than female (Gaub & Carlson, 1997; Gudjonsson et al., 2012; Cao et al., 2018; Slobodin & Davidovitch, 2019). In this study, the mean age of child was 6.06 years which did not match the previous studies 9.01 years & 8.9 years (Sung et al., 2008; Yürümez & Kılıç et al., 2016). But nearly matched the previous study, the mean age was 4.91 years (Cao et al., 2018). Previous study claimed that lower parental age (age 28 or below) works as a factor that contribute to sleep disturbance which did not match the current study finding (Li S et al., 2009; Ho & Siu, 2018; Cao et al., 2018; Joseph et al., 2022). Current study explored mother's age range between 30 to 37 years whose children experience more sleep disturbance, father's age range between 36 to 43 years whose children experience more sleep disturbance. Current study found that mother's mean age was 31.73 years and father's mean age was 38.21, which is nearly close to the previous study (Yürümez & Kılıç et al., 2016).

Furthermore, the first objective of the current study was to determine the prevalence of sleep disturbance. The results showed that the current studies found that significantly greater sleep problems are prevalent, among 80 participants, 77% suffer from different sleep disturbance. On the other hand, Sleep problems are particularly

common among children suffering from developmental disorders. This current study finding agrees with previous studies in developed countries Children with ADHD (Yürümez & Kılıç et al., 2016, Sung et al.,2008).The current study's findings prevalence is similar to the previous study, which conducted in India, the prevalence was 77.5 % (Joseph et al., 2022). Another study findings of Australia are close to similar that was 73.3% (Sung et al.,2008).

However, the second objective of the current study was to identify severity level of sleep disturbance among children with ADHD. Current study reveals that 72.5% children experience mild sleep problems and only 5% children experience moderate sleep problems in Bangladesh. Researchers of previous study mentioned their participants severity level of sleep disturbance whereas 28.5% mild sleep problems & 44.8% moderate or severe sleep problems which is not similar with current study finding (Sung et al.,2008). This suggests that the severity of sleep problems among ADHD children can vary across different cultures. Current study finds out 81.3% (n=65) families make sleep friendly environment for their child. This positive approach serves as an effective strategy for dealing with sleep challenges of ADHD children.

Moreover, the third objective of the current study was to examine rates of sleep problems among children with ADHD. In this study, it was endeavor the most common sleep problems such as Bedtime resistance, Sleep Onset Delay, Sleep Duration experienced ADHD children which was agreed by previous studies (Joseph et al., 2022, Cao et al., 2018, Galarraga R et al, 2016).

As per fourth objective of the study about the investigated associated factors with sleep disturbance. Current study found that there was a significant association between child's age range and sleep disturbance. Among 62 children who experienced sleep disturbance, n=43 (93.5%) children whose age range in between 3 to 5 years

experienced sleep disturbance, n= 14 (66.7%) children whose age range in between 6 to 8 years experienced sleep disturbance, n=4 (44.4%) children whose age range in between 9 to 11 years experienced sleep disturbance, n=1(25.0%) children whose age range in between 12 to 14 years experienced sleep disturbance. So, the most affected age range is 3 to 5 years because of child's mother's lower educational level which is similar with previous study findings (Cao et al., 2018).

The current study could not identify any significant association between gender and sleep problems. The previous study indicated that there was an association between gender and sleep disturbance, they also reported that girls experienced more than boys (Lim C et al ,2008). But current study finds that boys experienced more than girls. This finding agrees with previous study (Galarraga R et al., 2016, Li S et al.,2009). This variation might be occurred because of geographical location, ADHD condition being common in boys than girls.

In this study, it was found that there was no relationship between sleep disturbance and medication use, which agreed with the previous study, they reported that the prevalence of sleep problems 53 to 64% and those problems didn't relate with the medication use (Gruber et al., 2000). Present study reveals that among 62 children who had sleep disturbance, 31 children took medication, and 31 children didn't take medication. This current study finding doesn't agree with the previous study finding (Galarraga R et al., 2016). They showed a significant association between sleep disturbance and medication use, also explored that those children did not take medicine, they suffered more sleep disturbance.

Even so, this study encountered no relationship between sleep disturbance and living area of child. This finding was not align with previous study (Cao et al., 2018). They showed a significant association and endeavored that children with ADHD

from rural household, experienced more sleep disturbance.

In this study, it was found that there was no relationship between sleep disturbance and mother & father age. Previous studies encountered that lower age (age 28 or below) of parent's child experienced more sleep disturbance, but current study finding didn't match with that statement (Li S et al., 2009; Ho & Siu, 2018; Cao et al., 2018; Joseph et al., 2022).

Current study findings show that there was a significant association between educational background of mothers and sleep disturbance, but no significant association with educational background of father and sleep disturbance. The previous study claimed that there was an association between parental educational background and also mentioned that lower parental education work as a factor of sleep disturbance of children with ADHD (Cao et al., 2018). But current study doesn't agree with that statement because parents who have higher educational background their child experience 47.5% (mother), 53.8% (father), on the other hand who have lower educational background their child experience 20% (mother), 1.3% (father). This variation might occur because of cultural context, timeframe of study conduct, not able to reach satisfaction level of participants to generalize the study results.

Another finding of this study, there was no significant association between monthly family income and sleep disturbance, which was not agreed to the previous study because they claimed that lower family income levels associated with sleep disturbance (Li S et al., 2009). Student researcher collected maximum data from specialized schools, those schools require a significant amount of money, who's able to afford it they admitted their children. This could be one of the causes of variation in findings.

CHAPTER VI: CONCLUSION

6.1 Strength and Limitation

6.1.1 Strength of the study

- Ethical approval from Institutional Review Board (IRB), BHPI.
- Obtained Author's permission for using CSHQ scale in this study.
- Researcher followed proper methods to conduct this study.
- The study provided clear methodological information detailing study design, data collection process, data management and analysis.
- Obtained supervisor feedback regularly.

6.1.2 Limitation of the study

- According to sample size calculation, the study population was 266 but researcher collected 80 data, which could not generalize the results.
- There was no comparison group in this study.
- Researcher encountered difficulties to collect data because of low prevalence of ADHD children.
- This study relied on parent's report, which introduced subjectivity and possibility of potential biases. If researcher could conduct objective measure such as actinography, polysomnography, enhanced the accuracy of sleep assessment.

6.2 Practice Implication

6.2.1 Recommendation for future practice

- This study provides evidence about sleep related issues among children with ADHD.
- Hence 'sleep and rest' is an important occupational area. This study will guide

health professionals to develop an effective intervention considering sleep challenges as a concerning issues and educate the caregivers to make sure effective bedtime routines and sleep friendly environment.

- This study will increase public awareness about the importance of addressing sleep disturbance issues for those who have ADHD children, early sleep issues identification and intervention.

6.2.2 Recommendation for future research

There are some recommendations for further research which will create evidence in the field of Occupational Therapy and enhances our knowledge. Future research should be conducted on -

- explore the impacts of sleep disturbance on the quality of life of children with ADHD.
- understanding the effects of sleep disturbance in ADHD children on parental quality of life
- explore the sleep quality of parents of children with ADHD.
- Investigating the effective treatment strategies of sleep disturbance.

6.4 Conclusion

Good sleep is vital for overall physical, psychological health and well-being because it enhances brain development, reduces the risk of diseases. But an individual's inadequate sleep not only led to functional impairment and affect life and social skills, but also impact on family functioning. The study aimed to explore sleep disturbance of children with ADHD. The current study investigated majority participants experienced sleep disturbance which indicates that sleep disturbances are becoming increasingly significant issues in children with ADHD over time. These findings highlight the importance of providing comprehensive intervention considering child's sleep

disturbance issues. So, the conclusion of the study, it will help to increase awareness about sleep issues and help health professionals to make comprehensive treatment plan and also therapeutic implications aimed at improving sleep in children with ADHD, implementing preventative measures for sleep disorders such as medications and utilizing relaxation techniques and breathing exercises, among other important strategies. The study's conclusion emphasizes the importance of raising awareness among parents regarding these issues.

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APPENDICES

Appendix A: Approval / Permission Letter

IRB Approval Form

	 বাংলাদেশ হেল্থ প্রফেশন ইনস্টিটিউট (বিএইচপিআই) Bangladesh Health Professions Institute (BHPI) <small>(The Academic Institute of CRP)</small>									
	Ref. CRP-BHPI/IRB/10/2023/760	Date: 18.10.2023								
<p>To</p> <p>Sweety Akter Bithi</p> <p>4th Year, B.Sc. in Occupational Therapy</p> <p>Session: 2018-2019; Student ID: 122180314</p> <p>Department of Occupational Therapy</p> <p>BHPI, CRP, Savar, Dhaka-1343, Bangladesh</p> <p>Subject: Approval of the thesis proposal "Exploration of sleep disturbance of children with attention deficit hyperactivity disorder" by ethics committee.</p> <p>Dear Sweety Akter Bithi,</p> <p>Congratulations.</p> <p>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 and Khadija Akter Lily as thesis supervisor. The following documents have been reviewed and approved:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Sr. No</th> <th style="width: 90%;">Name of the document</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Dissertation/thesis/research Proposal</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Questionnaire (English &/or Bengali version)</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Information sheet & consent form</td> </tr> </tbody> </table> <p>The purpose of the study is to explore the sleep disturbance of children with Attention Deficit Hyperactivity Disorder (ADHD). The study involves use of Standardized scale (Children Sleep Habits Questionnaire (CSHQ) Scale) that may take about 40 to 45 minutes to fill in the questionnaire. There is no likelihood of any harm to the participants and no economical benefits for the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at 8.30 AM on 23rd September 2023 at BHPI 38th IRB Meeting.</p> <p>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.</p> <p>Best regards,</p> <p style="text-align: center;">  Muhammed Millet Hossain Associate Professor Project & Course Coordinator Dept. of Rehabilitation Science BHPI, CRP, Savar, Dhaka-1343, Bangladesh </p> <p>Member Secretary Institutional Review Board (IRB) BHPI, CRP, Savar, Dhaka-1343, Bangladesh.</p>			Sr. No	Name of the document	1	Dissertation/thesis/research Proposal	2	Questionnaire (English &/or Bengali version)	3	Information sheet & consent form
Sr. No	Name of the document									
1	Dissertation/thesis/research Proposal									
2	Questionnaire (English &/or Bengali version)									
3	Information sheet & consent form									
<p>সিআরপি-চাপাইন, সাতার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭০০ ০২৯৬৪৭ CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 22444564-5, +88 02 224441404, Mobile: +88 01730059647 E-mail : principal-bhpi@crp-bangladesh.org. Web: bhpi.edu.bd</p>										

Permission from Author of CSHQ scale



Sweety Bithi 9/14/2023

to anthony_spirito@br... ▾



Dear Anthony Spirito,

Hello! Hope you are well ! I am Sweety Akter Bithi, 4th year Bachelor of Science in Occupational Therapy student of Bangladesh Health Professions Institute(BHPI). Bangladesh Health Professions Institute(BHPI) is an academic institute of Centre for the Rehabilitation of the Paralysed (CRP). Centre for the Rehabilitation of the Paralysed (CRP) is a non government organisation of Bangladesh that provides medical treatment, rehabilitation and support services focusing on physical, emotional, social, psychological and economic aspects. I am writing this email to you because I am interested in using the Children's Sleep Habit Questionnaire (CSHQ) in my undergraduate research.

Research Title: Exploration of sleep disturbance of children with Attention Deficit Hyperactive Disorder (ADHD): A Cross-sectional study

Objective one: To determine the prevalence of sleep disturbance in children with ADHD

Objective two: To evaluate the impact of sleep disturbance on the behaviour and performance of children with ADHD.

I am eagerly waiting to use the Children's Sleep Habit Questionnaire (CSHQ). I hope you will be kind enough to grant permission and send me the English module of this questionnaire. I assure that I will do proper citation in my research.

Kind regards,

Sweety Akter Bithi

4th year student, B.Sc in Occupational Therapy
Bangladesh Health Professions Institute (BHPI),
CRP,Savar,Dhaka,Bangladesh.

Contact no: 01867554770



Spirito, Antho... 9/14/2023



to me ▾

Good luck with your research !

[Show quoted text](#)

--

Anthony Spirito, PhD ABPP
Professor of Psychiatry and Human Behavior
Alpert Medical School of Brown University
Box G-BH
Providence, RI 02912
fax 401-444 - 1911 phone 401-444-1929

Fedex:
700 Butler Drive
Providence, RI 02906



CSHQ article.pdf



Data collection permission form

Date: 18 October, 2023

To

The head of the Pediatric Department

Centre for the Rehabilitation of the Paralysed (CRP)

CRP-Chapain, Savar, Dhaka-1343

Subject: **Prayer for seeking permission to collect data for the research project.**

Sir,

With due respect to state that, I am a student of 4th year B. Sc. in Occupational Therapy department of Bangladesh Health Professions Institute (BHPI). In 4th year, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Bachelor of Science in Occupational Therapy. My research title is "Exploration of sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD)" which is supervised by Khadija Akter Lily, Lecturer of Occupational Therapy Department, Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. The purpose of the study is to explore the sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD). Now I am looking for your kind approval to start my data collection and I would like to assure that anything of my research period will not be harmful for the participants.

I therefore pray and hope that you would be kind enough to give me the permission for collecting the data and oblige thereby.

Sincerely

Sweety
Sweety Akter Bithi
4th year, B.Sc. in Occupational Therapy
Session:2018-19 ; Student ID: 122180314
Bangladesh Health Professions Institute
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Signature and comments of head of the department

Sk. Moniruzaman
Sk. Moniruzaman
Associate Professor
Head of the Department of Occupational Therapy
Bangladesh Health Professions Institute
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

*She will collect
data from this
Department. please
help her.*

Shankes
Sh
10-10-23

Mosneera Parveen
Head of Department
Department of Paediatric
CRP, Savar, Dhaka

Date: 18 October, 2023

To

Center Manager

Centre for the Rehabilitation of the Paralysed (CRP)

CRP - Mirpur, Dhaka -1206

Subject: **Prayer for seeking permission to collect data for the research project.**

Sir,

With due respect to state that, I am a student of 4th year B. Sc. in Occupational Therapy department of Bangladesh Health Professions Institute (BHPI). In 4th year, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Bachelor of Science in Occupational Therapy. My research title is "Exploration of sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD)" which is supervised by Khadija Akter Lily, Lecturer of Occupational Therapy Department, Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. The purpose of the study is to explore the sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD). Now I am looking for your kind approval to start my data collection and I would like to assure that anything of my research period will not be harmful for the participants.

I therefore pray and hope that you would be kind enough to give me the permission for collecting the data and oblige thereby.

Sincerely

Sweety

Sweety Akter Bithi

4th year, B.Sc. in Occupational Therapy

Session:2018-19 ; Student ID: 122180314

Bangladesh Health Professions Institute

BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Ref: CRP-BHPI/IRB/10/2023/760

Signature and comments of head of the department

Sk. Moniruzzaman

Sk. Moniruzzaman

Associate Professor

Head of the Department of Occupational Therapy

Bangladesh Health Professions Institute

BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Date: 18 October, 2023

To

Chairperson

Prottasha Centre for Autism Care

Dogomora, CRP road, Savar, Dhaka

Subject: **Prayer for seeking permission to collect data for the research project.**

Sir,

With due respect to state that, I am a student of 4th year B. Sc. in Occupational Therapy department of Bangladesh Health Professions Institute (BHPI). In 4th year, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Bachelor of Science in Occupational Therapy. My research title is "Exploration of sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD)" which is supervised by Khadija Akter Lily, Lecturer of Occupational Therapy Department, Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. The purpose of the study is to explore the sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD). Now I am looking for your kind approval to start my data collection and I would like to assure that anything of my research period will not be harmful for the participants.

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Signature and comments of head of the department

Sk. Moniruzzaman

Sk. Moniruzzaman

Associate Professor

Head of the Department of Occupational Therapy

Bangladesh Health Professions Institute

BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Principal
Principal
Prottasha Centre for Autism Care
CRP Road, Savar, Dhaka
23.10.2023

Date: 18 October, 2023

To

Chairperson

Therapist Point & Shonirvor Special School for Autism and Neurodevelopmental Disorder
Dogomora, CRP road, Savar, Dhaka

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

Sir,

With due respect to state that, I am a student of 4th year B. Sc. in Occupational Therapy department of Bangladesh Health Professions Institute (BHPI). In 4th year, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Bachelor of Science in Occupational Therapy. My research title is "Exploration of sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD)" which is supervised by Khadija Akter Lily, Lecturer of Occupational Therapy Department, Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. The purpose of the study is to explore the sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD). Now I am looking for your kind approval to start my data collection and I would like to assure that anything of my research period will not be harmful for the participants.

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BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Signature and comments of head of the department

Sk. Moniruzaman

Sk. Moniruzaman

Associate Professor

Head of the Department of Occupational Therapy

Bangladesh Health Professions Institute

BHPI, CRP, Savar, Dhaka-1343, Bangladesh



Permission Granted
Nayem
18/10/23

Md. Nayem Nizam Majumder
B.Sc OT (CRP, DU), MDS (JU-Incourse)
Senior Occupational Therapist & M.
Therapist Point & Shonirvor Special School



বাংলাদেশ হেল্থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)
 BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
 (The Academic Institute of CRP)
 CRP-Chapain, Savar, Dhaka. Tel: 02224445464, 02224441404, Website: www.bhpi.edu.bd

Date: 07.12.2023

To
 The Principal
 Smiling Children Special School,
 House No#39, Road- 05, Block - E, Aftabnagar,
 Badda, Dhaka-1212.

Subject: *Regarding Data collection for dissertation.*


Greetings from Bangladesh Health Professions Institute (BHPI). I would like to inform you that, BHPI, the Academic Institute of CRP is running B. Sc in Occupational Therapy Course, under Faculty of Medicine, University of Dhaka.

According to the content of 4th year of University course curriculum, the students have to do Research and Course work in different topics to develop their skills. Considering the situation, your institute will be the most appropriate place to collect data.

4th year students of BHPI Sweety Akter Bithi would like to collect data in your organization from 10.12.2023 to 30.01.2024. Her title: "Exploration of sleep disturbance of children with Attention, Deficit Hyperactivity Disorder (ADHD)".

We shall remain grateful to you if you could kindly allow us in conducting the placement.

With regards


 Sk. Moniruzzaman
 Associate Prof. & Head
 Dept. of Occupational Therapy
 BHPI.



Approved

 11.12.23

Date: 18 October, 2023

To

Dr. Rownak Hafiz

Chairperson

Autism Welfare Foundation (AWF)

Modder Char, Shamlapur, Keraniganj Model Thana, Dhaka- 1312

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

Sir,

With due respect to state that, I am a student of 4th year B. Sc. in Occupational Therapy department of Bangladesh Health Professions Institute (BHPI). In 4th year, I have to submit a research project to the University of Dhaka in partial fulfillment of recruitments of the degree of Bachelor of Science in Occupational Therapy. My research title is "Exploration of sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD)" which is supervised by Khadija Akter Lily, Lecturer of Occupational Therapy Department, Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. The purpose of the study is to explore the sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD). Now I am looking for your kind approval to start my data collection and I would like to assure that anything of my research period will not be harmful for the participants.

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Sincerely

Sweety

Sweety Akter Bithi

4th year, B.Sc. in Occupational Therapy

Session:2018-19 ; Student ID: 122180314

Bangladesh Health Professions Institute

BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Ref: CRP-BHPI/IRB/10/2023/760

Signature and comments of head of the department

Sk. Moniruzaman

Sk. Moniruzaman

Associate Professor

Head of the Department of Occupational Therapy

Bangladesh Health Professions Institute

BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Permission Granted
Molly
02.12.2023
Mariyam Monwar
Vice Principal
Autism Welfare Foundation



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
 BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
 (The Academic Institute of CRP)
 CRP-Chapain, Savar, Dhaka. Tel: 02224445464, 02224441401. Website: www.bhpi.edu.bd

Date: 09.12.2023

To
 The Principal
 Autism Care Foundation Special School,
 House No#13, Road#12/1, Block # G, South Banasree,
 Khilgaon, Dhaka.

Subject: *Regarding Data collection for dissertation.*


Greetings from Bangladesh Health Professions Institute (BHPI). I would like to inform you that, BHPI, the Academic Institute of CRP is running B. Sc in Occupational Therapy Course, under Faculty of Medicine, University of Dhaka.

According to the content of 4th year of University course curriculum, the students have to do Research and Course work in different topics to develop their skills. Considering the situation, your institute will be the most appropriate place to collect data.

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We shall remain grateful to you if you could kindly allow us in conducting the placement.

With regards


 Sk. Moniruzzaman
 Associate Prof. & Head
 Dept. of Occupational Therapy
 BHPI.



Md :Jasim Ud

 Principal
 Autism Care Foundation Spec



বাংলাদেশ হেল্থ প্রফেশন্স ইনষ্টিটিউট (বিএইচপিআই)
 BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
 (The Academic Institute of CRP)
 CRP-Chapain, Savar, Dhaka. Tel: 02224445464, 02224441404, Website: www.bhpi.edu.bd

Date: 09.12.2023

To
 The Chairperson
 Therapy Station Autism Rehab Centre,
 117, Shantinogor, Dhaka - 1217,

Subject: *Regarding Data collection for dissertation.*


Greetings from Bangladesh Health Professions Institute (BHPI). I would like to inform you that, BHPI, the Academic Institute of CRP is running B. Sc in Occupational Therapy Course, under Faculty of Medicine, University of Dhaka.

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With regards


 Sk. Moniruzzaman
 Associate Prof. & Head
 Dept. of Occupational Therapy
 BIPI.



২৩/১২/২৩
 Modestur Begum
 Chairperson
 Therapy Station
 Autism Rehab Centre

Appendix B: Information Sheet & Consent Form

Information sheet (English version)

Title: Exploration of sleep disturbance of Children with Attention Deficit Hyperactivity Disorder (ADHD): A Cross-Sectional Study

Investigator:

Sweety Akter Bithi

Student of 4th Year, B.Sc. in Occupational Therapy

Session: 2018-2019

Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343

Place: Therapy Centre and Special school in Dhaka.

Introduction:

I am Sweety Akter Bithi, B.Sc. in Occupational Therapy student at Bangladesh Health Professions Institute (BHPI), have to conduct a thesis as a part of this Bachelor course, under thesis supervisor Khadija Akter Lily. You are going to have detailed information about the study purpose, data collection process and ethical issues. You do not have to decide today whether you will participate in the research. Before you decide, you can talk to anyone you feel comfortable with about the research. If this consent form contains some words that you do not understand, please ask me to stop. I will take the time to explain.

Background and Purpose of the study:

You are being invited to be a part of this research because as a parent you have a better understanding of sleep related issues of your child. The purpose of my study is to explore the sleep disturbance of children with Attention Deficit Hyperactivity Disorder (ADHD). This study will be helpful to have a better understanding of the prevalence of sleep disturbance, sleep duration, sociodemographic factors that contributes to sleep

disturbance among children with Attention Deficit Hyperactivity Disorder (ADHD) and association between Attention Deficit Hyperactivity Disorder (ADHD) & sleep disturbance.

Research related information:

The research-related information will be discussed with you throughout the information sheet before taking your signature on the consent form. After that participants will be asked to complete a standard questionnaire which may need 40-45 minutes. In this questionnaire, there will be questions on demographic factors (for example- age, gender, education level, occupation, age at ADHD diagnosis, number of siblings, place of residence, family income, medication) and a standardized questionnaire which contains some sleep related question. The information remains confidential and your identity will not be disclosed.

Risks and benefits:

We are asking you to share some personal information if you feel uncomfortable giving information. You do not need to take part in the discussion interview/survey if you don't wish to do so, and that is also okay. On the other hand, you may not have any direct benefit by participating in this research, but your valuable participation is likely to help us to find out some valuable information about sleep disturbance of children with Attention-deficit/hyperactivity disorder (ADHD). It is expected that there is no additional risk, inconvenience, or discomfort in participating in the relevant research.

Confidentiality:

Information about you will not be shared with anyone outside of the research team. The information that we collect from this research project will be kept private. Only the researchers will know about your information, and we will lock that information up with a lock and key. It will not be shared with or given to anyone except Khadija Akter

Lily, the study supervisor.

Sharing the Results:

Nothing that you tell us today will be shared with anybody outside the research team and nothing will be attributed to you by name. The knowledge that we get from this research will be shared and widely available to the public.

Information withdrawal:

You can cancel any information collected for this research project in a fixed time. After publishing the research, you can't withdraw any information. After the cancellation, we expect permission from the information whether it can be used or not.

Whom to Contact:

If you have any questions, you can ask me now or later. If you wish to ask questions later, you may contact any of the following: Sweety Akter Bithi, Bachelor of Science in Occupational Therapy, Department of Occupational Therapy. Cell phone-01867554770. This proposal is reviewed and approved by Institutional Review Board (IRB), Bangladesh Health Professions Institute (BHP), CRP-Savar, Dhaka-1343, Bangladesh, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find out more about the IRB, contact Bangladesh Health Professions Institute (BHPI), CRP-Savar, Dhaka-1343, Bangladesh. You can ask me any more questions about any part of the research study if you wish to. Do you have any questions?

Consent Form (English version)

Research Title: Exploration of sleep disturbance of Children with Attention Deficit Hyperactive Disorder (ADHD): A Cross-Sectional Study

Sweety Akter Bithi (investigator) is a 4th-year student of BSc in Occupational Therapy Department, 2018-2019 session at Bangladesh Health Professions Institute (BHPI), the academic institute of Centre for the Rehabilitation of the Paralysed (CRP). This study is a part of the course curriculum of Occupational Therapy Department. The study supervisor by Khadija Akter Lily, Lecturer of Occupational Therapy Department, Bangladesh Health Professions Institute (BHPI). All participants are informed about the purpose and nature of the study. After knowing the flowing information, participants will decide to participate in the study-

- investigator will receive permission from participants to take part in the study.
- the participant will not be harmed for participating in the study.
- investigator will be available to answer the participants any questions related to this study.
- participants are free to decline to answer any question during the interview.
- investigator will maintain the confidentiality of the participants.
- participants can withdraw from the study at any time.

I am _____ a participant of this study is clearly informed about the aim of the study. I am participating willingly in this study. I have the right to withdraw my name from this study at any time and I am not bound to answer anyone for that.

Signature:

Signature of the participant:	Date:
Signature of the investigator:	Date:

Withdrawal Form (English version)

Title: Exploration of sleep disturbance of Children with Attention-deficit/hyperactivity disorder (ADHD): A Cross-Sectional Study

Participant's Name: _____

Reason of withdrawing:

Whether the use of previous data will be allowed? Yes/No

Participant's Signature: _____ Date: _____

Witness Signature: _____ Date: _____

Information Sheet (Bangla Version)

গবেষণার শিরোনাম: অ্যাটেনশন ডেফিসিট হাইপারঅ্যাক্টিভিটি ডিসঅর্ডার (এডিএইসডি) এ আক্রান্ত বাচ্চাদের ঘুম জনিত ব্যাঘাত অনুসন্ধান করা ।

গবেষক:

সুইটি আক্তার বিথী, বিএসসি ইন অকুপেশনাল থেরাপি (চতুর্থ বর্ষ), সেশনঃ ২০১৮-২০১৯, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই), সিআরপি-সাভার, ঢাকা- ১৩৪৩

স্থানঃ ঢাকার বিভিন্ন থেরাপি সেন্টার ও স্পেশাল স্কুল।

ভূমিকা

আমি সুইটি আক্তার বিথী, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) এ বিএসসি ইন অকুপেশনাল থেরাপির শিক্ষার্থী, এই ব্যাচেলর কোর্সের অংশ হিসেবে একটি গবেষণা সম্পন্ন করতে হয়, এই গবেষণাটি অধ্যাপিকা খাদিজা আক্তার লিলি এর অধীনে সম্পন্ন করা হবে। এই তথ্যপত্রের মাধ্যমে আপনি গবেষণার উদ্দেশ্য, উপাত্ত সংগ্রহের প্রক্রিয়া এবং নৈতিক বিষয়াবলি সম্পর্কে বিশদ তথ্য জানতে পারবেন। আপনি গবেষণায় অংশগ্রহণ করবেন কিনা তা আজকে সিদ্ধান্ত নিতে হবে না। আপনি সিদ্ধান্ত নেওয়ার আগে, গবেষণা সম্পর্কে আপনি যার সাথে স্বাচ্ছন্দ্য বোধ করেন তার সাথে আলোচনা করতে পারেন। যদি এই সম্মতি পত্রের কোন শব্দ বুঝতে না পারেন বা কোন কিছু জানার থাকে, দয়া করে আমাকে থামতে বলুন। আমি সময় নিয়ে আপনাকে ব্যাখ্যা করবো।

গবেষণার প্রেক্ষাপট এবং উদ্দেশ্য

আপনাকে এই গবেষণার অংশ হওয়ার জন্য আমন্ত্রণ জানানো হচ্ছে কারণ একজন অভিভাবক হিসেবে আপনি আপনার সন্তানের ঘুমের অভ্যাসগুলি সম্পর্কে ভালো জানেন। আমার গবেষণার উদ্দেশ্য হল অ্যাটেনশন ডেফিসিট হাইপারঅ্যাক্টিভিটি ডিসঅর্ডার (এডিএইসডি) এ আক্রান্ত বাচ্চাদের ঘুম জনিত ব্যাঘাত অনুসন্ধান করা । এই গবেষণাটি অ্যাটেনশন ডেফিসিট হাইপারঅ্যাক্টিভিটি ডিসঅর্ডার (এডিএইসডি) এ আক্রান্ত বাচ্চাদের ঘুমের ব্যাঘাতের ব্যাপ্তি, ঘুমের সময়কাল, যেসব সোশিওডেমোগ্রাফিক ফ্যাক্টরগুলো বাচ্চাদের ঘুমকে তরান্বিত করে তা নির্ণয় করতে এবং এডিএইসডি এর সাথে ঘুমজনিত ব্যাঘাতের সম্পর্ক আছে কিনা তা জানতে সাহায্য করবে।

গবেষণা সম্পর্কিত তথ্য

আপনার থেকে সম্মতিপত্রে স্বাক্ষর নেবার আগে, এই তথ্যপত্রের মাধ্যমে গবেষণা পরিচালনা করার

তথ্যসমূহ বিস্তারিত ভাবে আপনার কাছে উপস্থাপন করা হবে। আপনি যদি এই গবেষণায় অংশগ্রহণ করতে চান, তাহলে সম্মতিপত্রে আপনাকে স্বাক্ষর করতে হবে। এর পরে অংশগ্রহণকারীদের একটি স্যান্ডার্ড প্রশ্নাবলী সম্পূর্ণ করতে বলা হবে যার জন্য ৪০-৪৫ মিনিট সময় লাগতে পারে। এই প্রশ্নাবলীতে ঘুমের অভ্যাসগুলো সম্পর্কে এবং কিছু সোশিওডেমোগ্রাফিক প্রশ্ন থাকবে (উদাহরণস্বরূপ: বয়স, লিঙ্গ, বাবা-মায়ের বয়স, ভাই-বোনের সংখ্যা, পরিবারের মাসিক আয় ইত্যাদি)। রেকর্ড করা তথ্য গোপনীয় থাকবে এবং আপনার পরিচয় প্রকাশ করা হবে না।

ঝুঁকি এবং সুবিধা

আমরা আপনাকে কিছু ব্যক্তিগত তথ্য শেয়ার করতে বলছি আপনি তথ্য দিতে অস্বস্তি বোধ করলে এবং আপনি যদি তথ্য দিতে না চান তাহলে আপনাকে জরিপে অংশগ্রহণ করতে হবে না। অন্যদিকে, এই গবেষণায় অংশগ্রহণ করে আপনার সরাসরি কোনো লাভ নাও হতে পারে, কিন্তু আপনার মূল্যবান অংশগ্রহণ আমাদেরকে অ্যাটেনশন ডেফিসিট হাইপারঅ্যাক্টিভিটি ডিসঅর্ডার (এডিএইসডি) এ আক্রান্ত বাচ্চাদের ঘুমের ব্যাঘাত সম্পর্কে কিছু মূল্যবান তথ্য খুঁজে বের করতে সাহায্য করবে। এটি প্রত্যাশিত যে প্রাসঙ্গিক গবেষণায় অংশগ্রহণের জন্য আপনার কোন ক্ষতি হওয়ার ঝুঁকি নেই।

গোপনীয়তা

আপনার সম্পর্কে তথ্য গবেষণা দলের বাইরে কারো সাথে শেয়ার করা হবে না। এই গবেষণা প্রকল্প থেকে আমরা যে তথ্য সংগ্রহ করি তা গোপন রাখা হবে। শুধুমাত্র গবেষকরা আপনার তথ্য সম্পর্কে জানতে পারবেন এবং আমরা সেই তথ্যটি লুকিয়ে রাখবো। এটি গবেষক তত্ত্বাবধায়ক খাদিজা আক্তার লিলি ছাড়া কারো সাথে শেয়ার করা হবে না।

ফলাফল শেয়ার করা

আপনি আজ আমাদের যা বলবেন তার কিছুই গবেষণা দলের বাইরের কারো সাথে শেয়ার করা হবে না এবং আপনার নামে কিছু দায়ী করা হবে না। এই গবেষণা থেকে আমরা যা জানতে পারবো তা জনসাধারণকে জানানো হবে যাতে তারা ব্যাপকভাবে উপলব্ধি করতে পারে এবং জানতে পারে।

তথ্য প্রত্যাহার

আপনি একটি নির্দিষ্ট সময়ের মধ্যে এই গবেষণা প্রকল্পের জন্য সংগৃহীত যেকোনো তথ্য বাতিল করতে পারেন। গবেষণা প্রকাশ করার পরে, আপনি কোনো তথ্য প্রত্যাহার করতে পারবেন না। আপনি প্রত্যাহার করার পরে, অনুমতি দিবেন পরবর্তীতে আমরা আপনার দেওয়া তথ্য ব্যবহার করতে পারবো কি না।

কার সাথে যোগাযোগ করবেন

যদি আপনার কোন প্রশ্ন থাকে, আপনি এখন বা পরে আমাকে জিজ্ঞাসা করতে পারেন। আপনি যদি পরে প্রশ্ন জিজ্ঞাসা করতে চান, তাহলে আপনি যোগাযোগ করতে পারেন: সুইটি আক্তার বিথী, বিএসসি ইন অকুপেশনাল থেরাপি, অকুপেশনাল থেরাপি বিভাগ, সেল ফোন- ০১৮৬৭৫৫৪৭৭০। এই প্রস্তাবটি প্রাতিষ্ঠানিক পর্যালোচনা বোর্ড (আই আর বি) দ্বারা পর্যালোচনা এবং অনুমোদিত হয়েছে। বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই), সিআরপি-সাভার, ঢাকা- ১৩৪৩, যেটি একটি কমিটি যার কাজ হল গবেষণায় অংশগ্রহণকারীরা যাতে ক্ষতির হাত থেকে সুরক্ষিত থাকে তা নিশ্চিত করা। আপনি যদি আই আর বি সম্পর্কে আরও জানতে চান, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই), সিআরপি-সাভার, ঢাকা- ১৩৪৩-এ যোগাযোগ করুন। আপনি যদি চান তবে গবেষণা অধ্যয়নের যেকোনো অংশ সম্পর্কে আমাকে আরও প্রশ্ন করতে পারেন। আপনি কি কিছু জানতে চান?

Consent Form (Bengali Version)

গবেষণার বিষয়: অ্যাটেনশন ডেফিসিট হাইপারঅ্যাক্টিভিটি ডিসঅর্ডার (এডিএইচডি) এ আক্রান্ত বাচ্চাদের ঘুম জনিত ব্যাঘাত অনুসন্ধান করা।

সুইটি আক্তার বিথী (গবেষক) বিএসসি ইন অকুপেশনাল থেরাপি বিভাগে, ২০১৮-১৯ সেশনের ৪র্থ বর্ষের শিক্ষার্থী, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই), একাডেমিক ইনস্টিটিউট পক্ষাতগ্রস্তদের পুনর্বাসন কেন্দ্র (সিআরপি)। এই গবেষণাটি অকুপেশনাল থেরাপি বিভাগের পাঠ্যক্রমের একটি অংশ। গবেষণা তত্ত্বাবধায়ক খাদিজা আক্তার লিলি, অকুপেশনাল থেরাপি বিভাগের অধ্যাপিকা, বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই)। সমস্ত অংশগ্রহণকারীদের গবেষণার উদ্দেশ্য এবং প্রকৃতি সম্পর্কে অবহিত করা হয়।

নিম্নলিখিত তথ্য জানার পর, অংশগ্রহণকারীরা গবেষণায় অংশগ্রহণ করার সিদ্ধান্ত নিবেন -

- গবেষক অংশগ্রহণকারীদের কাছ থেকে গবেষণায় অংশ নেওয়ার জন্য অনুমতি নিবেন।
- গবেষণায় অংশগ্রহণের জন্য অংশগ্রহণকারীর কোনো ক্ষতি হবে না।
- গবেষক অংশগ্রহণকারীদের এই গবেষণার সাথে সম্পর্কিত যেকোন প্রশ্নের উত্তর দেওয়ার জন্য সবসময় প্রস্তুত থাকবে।
- গবেষণায় অংশগ্রহণকারীরা তথ্য নেওয়ার সময় যেকোনো প্রশ্নের উত্তর দিতে অস্বীকার করতে পারেন।
- গবেষক অংশগ্রহণকারীদের গোপনীয়তা বজায় রাখবেন।
- গবেষণায় অংশগ্রহণকারীরা যে কোনো সময় গবেষণা থেকে প্রত্যাহার করতে পারেন।

আমি এই গবেষণার একজন অংশগ্রহণকারী _____ গবেষণার লক্ষ্য সম্পর্কে

স্পষ্টভাবে অবহিত। আমি এই গবেষণায় স্বেচ্ছায় অংশগ্রহণ করছি। আমার এই গবেষণা থেকে যেকোনো

সময় আমার নাম প্রত্যাহার করার অধিকার আছে এবং আমি এর জন্য কাউকে উত্তর দিতে বাধ্য নই।

স্বাক্ষর:

অংশগ্রহণকারীর স্বাক্ষর:	তারিখ:
গবেষকের স্বাক্ষর:	তারিখ:

Withdrawal Form (Bengali Version)

গবেষণার বিষয়: অ্যাটেনশন ডেফিসিট হাইপারঅ্যাক্টিভিটি ডিসঅর্ডার (এডিএইচসডি) এ আক্রান্ত
বাচ্চাদের ঘুম জনিত ব্যাঘাত অনুসন্ধান করা।

অংশগ্রহণকারীর নাম: _____

প্রত্যাহারের কারণ: _____

পূর্ববর্তী তথ্য ব্যবহারের অনুমতি থাকবে কিনা?

হ্যাঁ / না

অংশগ্রহণকারীর স্বাক্ষর: _____

তারিখ: _____

স্বাক্ষীর স্বাক্ষর ঃ _____

তারিখ: _____

Appendix C: Questionnaire

Sociodemographic Questionnaire (English version)

1. Child's Age:

2. Child's Sex: Male/ Female

3. Age at ADHD diagnosis:

4. Number of Siblings: 0 / 1/ 2/ 3/ 4

5. Mother's Age:

Occupation:

Educational background: Primary School/High School/College/Bachelor's
degree/Master's degree

6. Father's Age:

Occupation:

Educational background: Primary School/High School/College/Bachelor's
degree/Master's degree

7. Living area: Rural / Urban

8. Mobile Number:

9. Family income (Monthly): 10000-20000 / 20000-30000 /30000-40000/ above 50000

Taka

10. Is your child takes any medicine? Yes/No

11. Does your child go to School? Yes/No

12. Does your child's display irritability, mood swings, or excessive frustration during
the day? Rarely/Sometimes/Often/Always

13. Do you make a sleep-friendly environment for your child? Yes/ No

14. Does your child's sleep quality affect their school performance?
Rarely/Sometimes/Often/Always

Children's Sleep Habit Questionnaire (English version)
Child's Sleep Habits
(Preschool and School Aged)

The following statements are about your child's sleep habits and possible difficulties with sleep. Think about the past week in your child's life when answering the questions. If last week was unusual for a specific reason (such as your child had an ear infection and did not sleep well or the TV set was broken), choose the most recent typical week. Answer USUALLY if something occurs 5 or more times in a week; answer SOMETIMES if it occurs 2-4 times in a week; answer RARELY if something occurs never or 1 time during a week. Also, please indicate whether or not the sleep habit is a problem by circling "Yes," "No," or "Not applicable (N/A).

Bedtime:

Write in child's bedtime: _____

3	2	1	Problem ?
Usually	Sometimes	Rarely	
(5-7)	(2-4)	(0-1)	

Child goes to bed at the same time at night (R)(1)				Yes	No	N/A
Child falls asleep within 20 minutes after going to bed (R)(2)				Yes	No	N/A
Child falls asleep alone in own bed (R)(3)				Yes	No	N/A
Child falls asleep in parent's or sibling's bed (R)(4)				Yes	No	N/A
Child falls asleep with rocking or rhythmic movements				Yes	No	N/A
Child needs special object to fall asleep (doll, special blanket, etc.)				Yes	No	N/A
Child needs parent in the room to fall asleep (5)				Yes	No	N/A

Child is ready to go to bed at bedtime				Yes	No	N/A
Child resists going to bed at bedtime				Yes	No	N/A
Child struggles at bedtime (cries, refuses to stay in bed, etc.) (6)				Yes	No	N/A
Child is afraid of sleeping in the dark (7)				Yes	No	N/A
Child is afraid of sleep alone (8)				Yes	No	N/A

Sleep Behaviour:

Child's usual amount of sleep each day: _____ hours and _____ minutes

(Combining nighttime sleep and naps)

3 2 1 Problem?
 Usually Sometimes Rarely
 (5-7) (2-4) (0-1)

Child sleeps too little (9)				Yes	No	N/A
Child sleeps too much				Yes	No	N/A
Child sleeps the right amount (R) (10)				Yes	No	N/A
Child sleeps about the same amount each day (R)(11)				Yes	No	N/A
Child wets the bed at night (12)				Yes	No	N/A
Child talks during sleep (13)				Yes	No	N/A
Child is restless and moves a lot during sleep (14)				Yes	No	N/A
Child sleepwalks during the night (15)				Yes	No	N/A
Child moves to someone else's bed during the night (parent, brother, sister, etc.) (16)				Yes	No	N/A
Child reports body pains during				Yes	No	N/A

sleep. If so, where?				
Child grinds teeth during sleep (your dentist may have told you this) (17)				Yes No N/A
Child snores loudly (18)				Yes No N/A
Child seems to stop breathing during sleep (19)				Yes No N/A
Child snorts and/or gasps during sleep (20)				Yes No N/A
Child has trouble sleeping away from home (visiting relatives, vacation) (21)				Yes No N/A
Child complains about problems sleeping				Yes No N/A
Child awakens during night screaming, sweating, and inconsolable (22)				Yes No N/A
Child awakens alarmed by a frightening dream (23)				Yes No N/A

Waking During the Night:

3 2 1 Problem?
 Usually Sometimes Rarely
 (5-7) (2-4) (0-1)

Child awakes once during the night (24)				Yes No N/A
Child awakes more than once during the night (25)				Yes No N/A
Child returns to sleep without help after waking				Yes No N/A

Write the number of minutes a night waking usually lasts: _____

Morning Waking:

Write in the time of day child usually wakes in the morning: _____

	3 Usually (5-7)	2 Sometimes (2-4)	1 Rarely (0-1)	Problem?
Child wakes up by him/herself (R)(26)				Yes No N/A
Child wakes up with alarm clock				Yes No N/A
Child wakes up in negative mood (27)				Yes No N/A
Adults or siblings wake up child (28)				
Child has difficulty getting out of bed in the morning (29)				
Child takes a long time to become alert in the morning (30)				
Child wakes up very early in the morning				
Child has a good appetite in the morning				

Daytime Sleepiness:

	3 Usually (5-7)	2 Sometimes (2-4)	1 Rarely (0-1)	Problem?
Child naps during the day				Yes No N/A
Child suddenly falls asleep in the middle of active behavior				Yes No N/A
Child seems tired (31)				Yes No N/A

Sociodemographic Questionnaire (Bengali Version)

১। শিশুর বয়সঃ

২। শিশুর লিঙ্গঃ ছেলে / মেয়ে

৩। এডিএসডি নির্ণয়ের সময় শিশুর বয়সঃ

৪। ভাই-বোনের সংখ্যাঃ

৫। মায়ের বয়সঃ

পেশাঃ

শিক্ষাগত যোগ্যতাঃ প্রাথমিক বিদ্যালয় / হাই স্কুল / কলেজ / স্নাতক ডিগ্রী / মাস্টার্স ডিগ্রী

৬। বাবার বয়সঃ

পেশাঃ

শিক্ষাগত যোগ্যতাঃ প্রাথমিক বিদ্যালয় / হাই স্কুল / কলেজ / স্নাতক ডিগ্রী / মাস্টার্স ডিগ্রী

৭। বাসস্থানঃ শহর / গ্রাম

৮। মোবাইল নাম্বারঃ

৯। পরিবারের আয় (মাসিক)ঃ ১০,০০০ – ২০,০০০ হাজার / ২০,০০০ – ৩০,০০০ হাজার/ ৩০,০০০ –

৪০,০০০ হাজার / ৫০০০০ হাজারের বেশি টাকা

১০। আপনার শিশু কোনো ওষুধ গ্রহণ করে? হ্যাঁ / না

১১। আপনার শিশু স্কুলে যায়? হ্যাঁ / না

১২। আপনার সন্তান কি কোন কিছু নিয়ে খুবই বিরক্তি, ঘন ঘন মেজাজ পরিবর্তন, অতিরিক্ত হতাশা

প্রকাশ করে? কদাচিৎ/কখনো/প্রায়ই/ সর্বদা

১৩। আপনি কি আপনার সন্তানের জন্য ঘুমের উপযুক্ত পরিবেশ তৈরি করেন? হ্যাঁ / না

১৪। আপনার সন্তানের ঘুমের পরিমাণ কি তার স্কুলের কাজকর্ম কে প্রভাবিত করে?

কদাচিৎ/কখনো/প্রায়ই/ সর্বদা

Children Sleep Habit Questionnaire (Bengali Version)

নিম্নলিখিত বিবৃতিগুলি আপনার সন্তানের ঘুমের অভ্যাস এবং ঘুমের সম্ভাব্য অসুবিধা সম্পর্কিত। প্রশ্নগুলোর উত্তর দেওয়ার সময় আপনার সন্তানের গত সপ্তাহের ঘুমের অভ্যাসের কথা ভাবুন। যদি গত সপ্তাহে কোনো নির্দিষ্ট কারণে ঘুম অস্বাভাবিক হয়ে থাকে (যেমন আপনার সন্তানের কানে ইনফেকশন হয়েছে এবং ভালো ঘুম হয়নি বা টিভি সেট ভেঙে গিয়েছে), তাহলে সাম্প্রতিকতম খুব কাছাকাছি কোন একটি সপ্তাহ বেছে নিন। যদি সপ্তাহে 5 বা তার বেশি বার অভ্যাসগুলো ঘটে থাকে তাহলে উত্তর দিন "প্রায়" ; যদি এটি সপ্তাহে 2-4 বার হয় তাহলে উত্তর দিন "মাঝে মাঝে" যদি কখনোই না ঘটে বা সপ্তাহে 1 বার ঘটে তাহলে উত্তর দিন "খুবই কম"। এছাড়াও, অনুগ্রহ করে শিশুর ঘুমের অভ্যাসের কোনো সমস্যা আছে কিনা উত্তর দিন "হ্যাঁ," "না" বা "প্রয়োজ্য নয়।

ঘুমানোর সময়:

শিশুর ঘুমানোর সময় লিখুন _____

৩	২	১	সমস্যা?
প্রায়	মাঝে-মাঝে	খুবই কম	
(৫-৭)	(২-৪)	(০-১)	

	৩	২	১	হ্যাঁ	না	প্রয়োজ্য	না
শিশু প্রতি রাতে একই সময়ে ঘুমাতে যায় (আর) (১)							
শিশু বিছানায় যাওয়ার ২০ মিনিটের মধ্যে ঘুমিয়ে পড়ে (আর) (২)							
শিশু নিজের বিছানায় একা ঘুমিয়ে পড়ে (আর) (৩)							
শিশু বাবা-মা বা ভাই-বোনের বিছানায় ঘুমিয়ে পড়ে (আর) (৪)							
শিশুকে দোল দিলে বা ছন্দময় নাড়াচাড়া করলে ঘুমিয়ে পড়ে							
শিশুর ঘুমানোর সময় বিশেষ কিছু বস্তুর প্রয়োজন হয় (পুতুল, বিশেষ কঞ্চল ইত্যাদি)							
শিশুর ঘুমানোর সময় বাবা-মায়ের প্রয়োজন হয় (৫)							

শিশু তার ঘুমানোর সময়ে বিছানায় ঘুমাতে যেতে প্রস্তুত থাকে				হ্যাঁ না প্রয়োজ্য না
শিশু তার ঘুমানোর সময়ে বিছানায় ঘুমাতে যেতে অনীহা প্রকাশ করে				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমানোর সময় বিরক্ত করে (কান্না করা, বিছানায় অবস্থান করতে চায় না (৬)				হ্যাঁ না প্রয়োজ্য না
শিশু অন্ধকারে ঘুমাতে ভয় পায় (৭)				হ্যাঁ না প্রয়োজ্য না
শিশু একা ঘুমাতে ভয় পায় (৮)				হ্যাঁ না প্রয়োজ্য না

ঘুমের আচরণ:

শিশুর প্রতিদিনের ঘুমের পরিমাণ: _____ ঘন্টা এবং _____ মিনিট (রাতের ঘুম এবং দিনের ঘুম একত্রে)

৩ ২ ১ সমস্যা?
 প্রায় মাঝে-মাঝে খুবই কম
 (৫-৭) (২-৪) (০-১)

শিশু অল্প সময় ঘুমায় (৯)				হ্যাঁ না প্রয়োজ্য না
শিশু বেশি সময় ঘুমায়				হ্যাঁ না প্রয়োজ্য না
শিশু সঠিক পরিমাণে ঘুমায় (আর) (১০)				হ্যাঁ না প্রয়োজ্য না
শিশু প্রতিদিন প্রায় একই পরিমাণ ঘুমায় (আর) (১১)				হ্যাঁ না প্রয়োজ্য না
শিশু রাতে বিছানায় প্রসাব করে (১২)				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের মধ্যে কথা বলে (১৩)				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের মধ্যে অস্থির থাকে এবং অনেক নড়াচড়া করে (১৪)				হ্যাঁ না প্রয়োজ্য না
শিশু রাতে ঘুমের মধ্যে হাঁটাহাটি করে (১৫)				হ্যাঁ না প্রয়োজ্য না
শিশু রাতে ঘুমের মধ্যে অন্য কারও বিছানায় চলে যায় (১৬)				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের সময় শরীরে ব্যথার কথা বলে। যদি তাই হয়, কোথায় ?				হ্যাঁ না প্রয়োজ্য না
শিশু রাতে ঘুমের মধ্যে তার দাঁত পেষণ করে (আপনার শিশুর দাঁতের ডাক্তার এটি আপনাকে বলে থাকতে পারে) (১৭)				হ্যাঁ না প্রয়োজ্য না

শিশু জেঁরে জেঁরে নাক ডাকে (১৮)				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের মধ্যে শ্বাস বন্ধ হয়ে যায় বলে মনে হয় (১৯)				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের মধ্যে নাক ডাকছে বা হাঁপাচ্ছে বলে মনে হয় (২০)				হ্যাঁ না প্রয়োজ্য না
শিশুর নিজের বাড়ি ছাড়া অন্য কোথাও ঘুমাতে কষ্ট হয় (যেমনঃ আত্মীয়স্বজনের বাড়িতে গেলে, ছুটিতে কোথাও ঘুরতে গেলে (২১)				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের সমস্যা সম্পর্কে অভিযোগ করে				হ্যাঁ না প্রয়োজ্য না
শিশু ঘুমের মধ্যে জেগে উঠে চিৎকার করে, ঘামে এবং অসন্তোষ করে (২২)				হ্যাঁ না প্রয়োজ্য না
শিশু ভয়ঙ্কর স্বপ্ন দেখে ভয় পেয়ে জেগে ওঠে (২৩)				হ্যাঁ না প্রয়োজ্য না

রাতে জেগে উঠা

৩	২	১	সমস্যা?
প্রায়	মাঝে-মাঝে	খুবই কম	
(৫-৭)	(২-৪)	(০-১)	

শিশু রাতে একবার জেগে ওঠে (২৪)				হ্যাঁ না প্রয়োজ্য না
শিশু রাতে একাধিকবার জেগে ওঠে (২৫)				হ্যাঁ না প্রয়োজ্য না
শিশু জেগে উঠার পর কারো সাহায্য ছাড়াই পুনরায় ঘুমিয়ে পড়ে				হ্যাঁ না প্রয়োজ্য না

শিশু রাতে কয় মিনিটের জন্য জেগে ওঠে লিখুন: _____

সকালে জেগে উঠা

শিশু সাধারণত সকালে কয়টায় ঘুম থেকে জেগে উঠে তা লিখুন: _____

৩	২	১	সমস্যা?
প্রায়	মাঝে-মাঝে	খুবই কম	
(৫-৭)	(২-৪)	(০-১)	

শিশু নিজে থেকেই জেগে উঠে (আর) (২৬)				হ্যাঁ না প্রয়োজ্য না
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শিশু অ্যালার্ম ঘড়ি বাজলে জেগে উঠে				হ্যাঁ না প্রযোজ্য না
শিশু নেতিবাচক মেজাজ নিয়ে জেগে উঠে (২৭)				হ্যাঁ না প্রযোজ্য না
পরিবারের প্রাপ্তবয়স্করা বা ভাই-বোনেরা শিশুকে জাগিয়ে তোলে (২৮)				হ্যাঁ না প্রযোজ্য না
শিশুর সকালে ঘুম থেকে উঠতে কষ্ট হয় (২৯)				হ্যাঁ না প্রযোজ্য না
শিশুর সকালে ঘুম ঘুম ভাব কাটিয়ে উঠতে অনেক সময় লাগে (৩০)				হ্যাঁ না প্রযোজ্য না
শিশু খুব ভোরে ঘুম থেকে উঠে				হ্যাঁ না প্রযোজ্য না
শিশুর সকালে ভালোই ক্ষুধা পায়				হ্যাঁ না প্রযোজ্য না

দিনের ঘুম

৩	২	১	সমস্যা?
প্রায়	মাঝে-মাঝে	খুবই কম	
(৫-৭)	(২-৪)	(০-১)	

শিশু দিনের বেলায় ঘুমায়				হ্যাঁ না প্রযোজ্য না
শিশু কোনো কাজ করার সময় বা খেলার সময় হঠাৎ ঘুমিয়ে পড়ে				হ্যাঁ না প্রযোজ্য না
শিশুকে ক্লান্ত মনে হয় (৩১)				হ্যাঁ না প্রযোজ্য না

গত সপ্তাহে আপনার শিশুর নিম্নলিখিত কাজের সময়ে ঘুম ঘুম ভাব হয়েছে বা ঘুমিয়ে পড়েছে (যা প্রযোজ্য সব পরীক্ষা করে দেখুন)ঃ

১	২	৩
ঘুম ঘুম ভাব হয়নি	ঘুম ঘুম ভাব হয়েছে	ঘুমিয়ে পড়েছে

নিজে নিজে খেলা			
টিভি দেখা (৩২)			
গাড়িতে চড়া (৩৩)			
খাবার খাওয়া			

Appendix D: Supervision Record Sheet

Bangladesh Health Professions Institute
 Department of Occupational Therapy
 4th Year B. Sc in Occupational Therapy
 OT-401 Research Project

Thesis Supervisor-Student Contact; face to face or electronic and guidance record
 Title of thesis: Exploration of sleep Disturbance of children with Attention Deficit
 Hyperactivity Disorder (ADHD): A cross-sectional study

Name of student: Sweety Akter Biti

Name and designation of thesis supervisor: Khadija Akter Lily
 Lecturer
 Department of Occupational Therapy, BHPJ, CRP

Appointment No	Date	Place	Topic of discussion	Duration (Minutes/Hours)	Comments of student	Student's signature	Thesis supervisor signature
1	09.08.23	Library Building	Introduction, Research Title, Aim, Objectives	2:00 hrs 45 min	Effective discussion about research	Sweety	[Signature]
2	16.08.23	u	Research scale discussion, Procedure of email sending to author, feedback on aim, objectives	1 hrs 45 min	Effective discussion	Sweety	[Signature]
3	19.08.23	u	Research proposal guideline, methodology writing	2 hrs 50 min	Effective discussion about sampling, methodology, writing proposal	Sweety	[Signature]

4	11.09.23	Library Building	Research proposal submit & discussion	1 hrs 45 min	write on research proposal	Sweety	Not
5	12.09.23	u	Research proposal feedback, presentation guideline	2 hrs 45 min	Effective discussion on presentation & proposal write up	Sweety	Not
6	21.09.23	u	Research proposal presentation feedback	1 hrs 45 min	Helpful feedback	Sweety	Not
7	19.10.23	u	Feedback on data collection permission letter	30 min	Helpful feedback	Sweety	Not
8	20.12.23	u	Field test related sharing & data collection feedback	1 hrs 45 min	write up background and justification	Sweety	Not
9	08.01.24	u	Background & justification submission + Discussion	2 hrs	Write up literature reviews and methodology	Sweety	Not
10	15.01.24	u	Feedback on background & justification, literature review, methodology submission	2 hrs 45 min	write up 1st draft	Sweety	Not
11	27.01.24	u	Feedback on literature review and methodology	3 hrs	write up existing 1st draft and correction according to feedback	Sweety	Not
12	11.02.24	u	Feedback on 1st draft (full)	3 hrs	Got helpful feedback on 1st draft	Sweety	Not
13	20.02.24	u	Guideline for abstract writing, 1st draft correction checking	2 hrs	Correction 1st draft	Sweety	Not
14	28.02.24	u	Discussion on data entry and data analysis problem	2 hrs 45 min	Helpful feedback	Sweety	Not

15	12.03.24	Library Building	Feedback on result, data collection form checking	2 hrs 45 min	Correction according to feedback	Sweety	No
16	17.03.24	u	Feedback on 2nd draft (full)	3 hrs	Effective feedback	Sweety	No
17	19.03.24	u	Feedback on abstract, result, discussion	2 hrs 45 min	Helpful feedback	Sweety	No
18	23.03.24	u	Guideline on powerpoint presentation	45 min	Effective guideline	Sweety	No
19	02.04.24	u	Feedback on result	1 hrs 45 min	Effective feedback	Sweety	No
20	15.04.24	u	Feedback on powerpoint presentation	1 hrs 45 min	Effective feedback	Sweety	No

Note:

1. Appointment number will cover at least a total of 40 hours; applicable only for face to face contact with the supervisors.
2. Students will require submitting this completed record during submission your final thesis.