

Cognitive Dysfunction among Adult Patient with Psychiatric Disorders

A research presented to the

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Declaration

I am **Sabbir Ahmed**, declare that any single discussion of the research project will not be harmful for any participants or others. I declare that the work presented here is my own. All sources used in the study have been cited appropriately. Any mistakes or inaccuracies are my own.

Signature:

Date:

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4th year, B. Sc. In Speech & Language Therapy

Bangladesh Health Professions Institute

Dedication

Dedicated to.....

My Beloved Family Members

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Glossary Terms

APA: American Psychiatric Association

ASHA: American Speech-Language-Hearing Association

BHPI: Bangladesh Health Professions Institute

CRP: Centre for the Rehabilitation of the Paralyzed

ICDDR,B: International Centre for Diarrhoeal Research, Bangladesh

MCI: Mild Cognitive Impairment

MI: Mental Illness

MoCA: Montreal Cognitive Assessment

NIMH: National Institute of Mental Health

PD: Psychiatric Disorder

SLT: Speech & Language Therapy/Therapist

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Executive Summary

People with psychiatric disorder have difficulties in their cognition and communication skills. In Bangladesh, frequency of mental disorders is 12.2% where females (13.9%) are more vulnerable than male (10.2%). The main purpose of the study was to find out the cognitive dysfunction among psychiatric population. Quantitative research method was chosen by the investigator and used cross – sectional survey to meet the study aim as an effective way to collect data. The study was conducted by using Montreal Cognitive Assessment (MoCA) tool among 80 participants with different types of psychiatric disorder at National Institute of Mental Health, Dhaka. The participants were between 20-59 years old and male and female ratio was quiet similar. Data analysis revealed that the participants had difficulties at different components according to the MoCA tool. Most of the participants were schizophrenia, depression and bipolar disorder types of psychiatric disorder and all the participants had severe type of cognitive disorder. Professionals working with psychiatric population need to remain alert to the presence of cognitive dysfunction in their clients and refer to Speech & Language Therapists for the diagnosis and treatment; which will increase the quality of life of people with PD.

Health is defined by the World Health Organization (WHO) as ‘a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity’ (WHO, 2001) and health promotion is understood as ‘actions that support people to adopt and maintain healthy lifestyles and which create supportive living conditions or environments for health’ (WHO, 2004). According to WHO (1984), about 40 million people in the world suffer from different kinds of psychological disorders like schizophrenia and dementia. Psychiatric illnesses are common and can be costly and debilitating. Mood disorders (depression and bipolar disease) in particular are frequently encountered. In the U.S, approximately 9.1% of the population meets the diagnostic criteria for current depression while 4.1% meet the criteria for major depression. (Medalia & Revheim, 2002). Cognition means the thinking skills, the intellectual skills that allow you to perceive, acquire, understand and respond to information. This includes the abilities to pay attention, remember, process information, solve problems and reorganize information, communicate and act upon the information. All these abilities work in a close, interdependent fashion to allow you to function in your environment. And remember that 85% Schizophrenia patient has cognitive dysfunction or difficulties. Cognitive dysfunction has been linked to central nervous system imbalances. This condition also causes some patients the most disability. According to some investigators, the symptoms of cognitive dysfunction are confusion and poor memory, inability to concentrate and recall simple words and numbers. Their cognitive functions are so impaired that they are unable to perform with their usual activities of daily living, getting lost in familiar places or not be able to communicate effectively. Bangladesh is a developing and densely populated country where prevalence of psychiatric illness is not less than any other country in the world (Al-farooq & Ray, 2011). Among the patient attending the outpatient department of National Institute of Mental Health, in Dhaka 37.46% were suffering from schizophrenia and other psychiatric disorders, 16.14% anxiety disorders, 7.66% substance related disorders, 6.6% somatoform disorders, 4.12% mental retardation and 7.88% other disorders. A study carried out in private clinic in Dhaka city demonstrated that among their admitted patients, 39.4% were suffering from

schizophrenia and other psychiatric disorders, 18.75% mood disorders, 3.6% borderline personality disorders, 1.6% somatoform disorders and 0.6% anxiety disorders (Al-farooq & Ray, 2011).WHO (2008) claimed that mental disorders are among the 20th foremost cause of disability. Around the world, mental disorders are more common between 0 to 59 years old. A systematic review led by the investigators of ICDDRB found that the prevalence of mental disorder in Bangladesh is 6.5% to 31% among adults, where the rate is higher in urban community than rural and women's are more vulnerable (Hossain, Ahmed, Chowdhury, Niessen & Alam, 2014). Over 450 million people in Asian countries reported to suffer from mental or psychiatric disorders (WHO, 2001).

2.1 Background and Literature Review:

According to Psychiatric Association (2013) “a mental disorder is a condition characterized by clinically significant disturbance in an individual’s cognition, emotion regulation or behavior that reflects a dysfunction in the psychological, biological, processes underlying or developmental mental functioning”. Mental Health Disorders are one of the leading causes of disability around the world (WHO, 2002). Mental illness affects many people, but the most do not realize that it does not just cause of emotional problems but it causes cognitive problems too (Titone, 2010). The person with mental illness may have difficulty to think clearly, pay attention and remember. The cognitive problems are only evident during the episodes of illness. For others, the cognitive problems are more constant. If mental illness is managed well, the person can lead a more fruitful life and have longer periods of stability (Medalia & Revheim, 2002). Cognitive functioning is moderately to severely impair in patients with schizophrenia (Keefe, 2000). This impairment is the key fact of the significant disabilities in occupational, social, and economical functioning in patients with schizophrenia (Kremen et al., 2000). According to Trivedi et al. (2004), various efforts are under way to identify specific aspects of cognition that may lie closest to the neurobiological etiology and pathophysiology of the illness, and may provide relevant meeting with animal models of cognition. Studies of psychiatric disorders or mental disorders have traditionally focused on emotional symptoms such as depression, anxiety and hallucination. However, poorly controlled cognitive deficits are equally important and severely compromise quality of life, including social and professional mixing. Consequently, serious efforts are being made to characterize the cellular and cerebral circuits underpinning cognitive function, define the nature and causes of cognitive impairment in psychiatric disorders and identify more effective treatments. Cognitive dysfunction is a poorly controlled and highly relevant measurement of psychiatric disorders (Medalia & Revheim, 2002). Cognitive dysfunction cuts across traditional diagnostic boundaries, and improved treatment should

be a major goal in efforts to improve quality of life for the patient with psychiatric disorders (Gold et al., 2002). Cognitive dysfunction does not just signify poor memory; the range of cognitive impairment is broader and more complex. Cognitive dysfunction in panic disorders is mainly restricted to excessive attention and hyperactivity to threatening (Etkin & Gyurak, 2013). Interestingly, processing speed may actually be accelerated in panic disorders. Cognition refers to a broad range of mental processes including attention, decision-making, behavioral, thought and self-regulation, problem solving, language and memory (Millan & Young, 2012). Although approximately 27% of patients with schizophrenia (and 85% of the general population) are not rated as “impaired” by clinical neuropsychological assessment (Palmer et al., 1997). In some studies 85% Schizophrenia means psychiatric disorder patient has cognitive dysfunction or difficulties. And some other investigator finds that the symptoms of cognitive dysfunction are confusion and forgetfulness, inability to concentrate and recall simple words and numbers (Spohn et al., 1986). Alzheimer’s disease is characterized by poor learning and memory, Parkinson’s disease by motor impairment, depression by melancholy, and schizophrenia by delusions; however, these and related diagnoses are also accompanied by a range of symptoms involving alterations in mood, motor behavior, appetite, sleep and most appropriately, cognitive functioning (Medalia & Revheim, 2002). There are different mental illnesses and they affect cognition differently. Not every person is affected in the same way. Some people with schizophrenia have more cognitive problems than others. Some people with depression or bipolar disorder have problems in one aspect of cognitive functioning but not in another. It is important to understand that a mental illness affects each person differently. By understanding all the different ways of mental illnesses can affect cognition; though it is easier to understand how the person you know is affected. Furthermore, the interrelationship between alterations in cognition and changes in mood, reward, motor performance and effort can be difficult to establish (Etkin & Gyurak, 2013). Families often ask what causes of cognitive impairment. Research has shown us that it is the illnesses themselves that cause much of the cognitive dysfunction. Cognitive dysfunction is a primary symptom of schizophrenia and some affective disorders (Niemi et al., 2002). Furthermore, research has shown that those parts of the brain that are used for specific cognitive skills often do not function normally in people

with schizophrenia and certain affective disorders. This indicates that mental illness affects the way the brain functions and that is what cause the cognitive problem. (Medalia & Revheim, 2002). Cognition in Schizophrenia is that the most important domains of cognitive deficit in schizophrenia are working memory, attention, verbal learning and memory, visual learning and memory, reasoning and problem solving, speed of processing, and social cognition (Green et al., 2004). Trivedi et al. (2004), Cognitive deficits are also present in mood disorders. The relationships between mood and cognition are dynamic ones. In major depression, cognitive impairment can be severe and also can be dementia also. Cognitive deficits in mood disorders include impaired performance in tests of attention, executive functioning and memory (Landre et al., 1992). Increased cognitive dysfunction is associated with greater severity of symptoms. Impairment of working memory, sustained attention, focusing-execution, abstract reasoning and visuomotor skills, verbal memory, verbal fluency, visuospatial ability, have all been reported, in different phase of the illness. Another study shows that cognitive dysfunction is also present on bipolar mood disorder. Zubeita et al. (2001), found that patients did not show significant impairment on Continuous Performance Test (CPT), however, on WCST patients committed more errors than healthy controls. The same study also showed impairment in verbal memory, but not in non-verbal memory. In this study where 30 patients meet the DSM-IV criteria for bipolar affective disorder, were assessed using Wisconsin Card Sorting Test (WCST) for executive functioning, Continuous Performance Test (CPT) for performance on continuous tasks administering and Spatial Working Memory Test (SWMT) for spatial working memory. Fifteen controls matched for age and sex were also assessed. All the patients and controls were educated at least up to standard VIII. The patients' performance was impaired on Wisconsin Card Sorting Test (WCST), implying poor executive functioning as compared with controls, and indicating residual cognitive deficits. The performance on tests of attention, concentration and memory was not significantly different from the matched controls. In another study shows that cognitive difficulties are common on depression or depressive disorder. Drevets et al. (1997), demonstrated the presence of cognitive deficits in depressed patients with verbal and visual memory as well as executive functioning. The study was demonstrated by using Wisconsin Card Sorting Test (WCST) and Spatial

Working Memory Test (SWMT). In this study 30 patients with depression and 15 matched controls and compared their performance on the tests of executive functioning, attention and working memory. The findings of the study suggest that depression indicates significant impairment in the abilities of sustained attention as shown by the fewer correct responses and more missed responses (errors of omission), and this impairment increases with severity. According to Niemi et al. (2004), in somatoform disorder there is also presence of cognitive dysfunction. Cognitive complaints reported frequently by patients include poor concentration, decreased memory for recent events and poor word-finding abilities. About 50%–85% of patients with somatoform disorder report cognitive problems, which contribute considerably to their social and occupational dysfunction. In a study between 1 May and 31 July 2004, we assessed 20 patients who had somatoform disorder by using the test for executive functioning on Wisconsin Card Sorting Test (WCST), performance on continuous task on Continuous Performance Test (CPT) and spatial working memory on Spatial Working Memory Test (SWMT). Fifteen controls (age, education and gender-matched) were also assessed. All the patients and controls were educated at least up to standard VIII. The patients' performance was impaired on Wisconsin Card Sorting Test (WCST) implying poor executive functioning as compared with controls. The performance on tests of attention-concentration was also significantly poorer than that of the controls. On the Spatial Working Memory Test (SWMT), however, significant difference was found only in delayed retrieval and not in immediate recall. The study suggested that cognitive deficits in executive functioning, attention and memory may be contributing to the poor psychosocial functioning in patients with somatoform disorders. O'Leary et al. (2000), showed that verbal memory skills of Borderline Personality Disorder (BPD) patients were impaired, their memory improved with the use of cues. Thus, clinicians might make use of cueing strategies when working with these patients. Paris et al. (1999), found significant impairment on tests of frontal lobe and executive functions in person with Borderline Personality Disorder (BPD) and also showed inconsistent levels of attention, poor orientation to task and slower reaction on Continuous Performance Test (CPT). In fact, suicide risk in Borderline Personality Disorder (BPD) patients has been linked to cognitive functioning and not to level of depression. Patients with schizophrenia who are impaired on measures

of executive functions have difficulty adapting to the rapidly changing world around them. Many cognitive tests require subjects to process information rapidly and can be compromised by impairments in processing speed. This aspect of cognitive impairment is relatively nonspecific and has been found to correlate with a variety of clinically important features of schizophrenia, such as daily life activities (Evans et al., 2003), job possession (Gold et al., 2002), and independent living status (Brekke et al., 1997). Much of the clinical relevance of working memory deficits in schizophrenia comes from strong correlations that working memory measures have with a variety of other cognitive domains impaired in schizophrenia, such as attention, planning, memory (Silver et al., 2003), and intelligence (Keefe, 2000). The frequency of communication difficulties in mental health is not well documented but SLT stated that in a study conducted in Scotland where they found about 80% people of mental health service users have communication support needs (Cummings, 2013). Emerson & Endetby (1996) surveyed the prevalence of cognitive difficulties among 138 people among 21-94 years old with different types of psychiatric disorder (paranoid psychosis, schizophrenia, schizoaffective disorder, bipolar disorder, depression and anxiety) who were receiving mental health services from hospital where 98 subjects had moderate-severe impairment of cognition, 57 had mild to moderate, 37 had naming difficulties and 32 had difficulty with executive functioning. Studies by Landre, Taylor & Kerns (1992) and Anand, Wales, Jackson & Capolov (1994) have identified that person with mental health illness have difficulty with syntax, phonology, semantics and pragmatics. France & Kramer (2001) stated that speech, language and hearing can be impaired in individuals with a diagnosis of mental illness and difficulties in these areas can result in the reduced intelligibility of message or in deficient listening skills. They also added that the main concern of SLT services in mental health setting is the communication ability of individual patient, whilst recognizing the relationship of these skills of other aspects of the individual and his or her environment. The aim of SLT service in mental health is to maximize communication potential within a patient's environment.

2.2 Significance of the study

Still there is no study have been conducted about the aspects of cognitive difficulties to the people with mental illness and their needs of SLT service in Bangladesh. Different articles published at different time and different place around the world reported that people with mental health illness have cognitive difficulties at different level. Though SLT's usually deal with management of a person's communication difficulties, it's their responsibility to identify cognitive difficulties among communication disorders in several group of population. They can help the client who has been identified as a person with communication difficulties though cognitive dysfunction is also a part of communication difficulties (ASHA, 2007). If it is possible to do the study, SLT's may deliver their service to psychiatric people at individual level at society or wider community. SLT is a very new profession in this country and most of the people don't know the importance of this kind of service. The people are not conscious about the person's speech and language impairment and its treatment. This is very common in Bangladesh that people are careless about their mental health illness and some people believe in traditional treatments. This study will help people to be serious about their problems and they will be able to take their needs based treatment. The investigator assumed that the result of the study will help to ensure SLT service in the country at different place. This study will be helpful for SLTs to identify cognitive difficulties among the people with psychiatric disorders and also it would be helpful for SLTs to diagnosis planning interventions for the people with psychiatric disorders and at the same time other health professionals would be more aware about mental illness and they will identify their needs for enhancing cognitive skill. Present world prefer multidisciplinary approach to serve the client. Because the multidisciplinary approach delivers the highest effective service for the person to improve their quality of life (Borill, West, Shapiro & Rees, 2000). So as SLT it is important for them to work with other professionals as a team. This study will also be helpful to raise awareness among the client, family members and society about communication difficulties including cognitive difficulties of psychiatric population by arranging conference, training workshop, awareness camp etc. So, in this section it may conclude that without specialist knowledge highest service may not be possible to

provide. As SLTs are specialist on communication disorders and its management, so they are very important person for the service delivery for client with psychiatric disorder.

2.3 Operational Definition

Key words: Cognitive Dysfunction, Psychiatric Disorder, Adult Patient.

2.3.1 Cognitive dysfunction

Cognitive dysfunction means the loss of intellectual functions such as thinking, remembering, and reasoning of sufficient severity to interfere with daily functioning. Patients with cognitive dysfunction have trouble with verbal recall, executive functioning and concentration (Wallin & Wilken, 2006). It has been linked to central nervous system imbalances. This condition may cause some patients the most disability. According to some investigators, such symptoms include confusion and forgetfulness, inability to concentrate and recall simple words and numbers, and transposing words and numbers. Often, their cognitive functions are so impaired that they are unable to perform their usual activities of daily living and the patient may not be able to communicate effectively (Alloy & Lauren, 2005). Though cognition is a part of communication, we can say that cognitive difficulties are also part of communication difficulties. Communication can be defined as the process which is used for exchanging information, thoughts, and needs and desires (Owens, 2012). In this study, the investigator have used a scale entitled Montreal Cognitive Assessment tools (MoCA) to identify different aspects of cognitive difficulties among the person with different psychiatric disorders. There are 7 components and it carries 30 marks.

2.3.2 Psychiatric disorder

Psychiatric disorder can be defined as syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental function (APA, 2015). In this study the investigator take data from 80 participants from who were admitted at NIMH situated in Dhaka, Bangladesh. This hospital provides indoor and outdoor treatment facilities for the patients. The investigator collected data from indoor adult psychiatric unit.

2.3.3 Adult patient

In human context, the term ‘adult’ has meanings of association with social and legal concepts. A legal adult is a person who has attained the age of majority and is therefore regarded as independent, self-sufficient and responsible (AHMD, 2007). In this study the investigator took data from 80 participants from who were adult means above 18 years of age and admitted at NIMH situated in Dhaka, Bangladesh.

2.4 Objectives of the Study:

General Objectives:

To identify the association between cognitive dysfunction and psychiatric disorders.

Specific Objectives:

- To identify the socio-demographic status of the participants.
- To identify the specific characteristics of cognition among psychiatric disorders.

3.1 Study design:

Quantitative research method have been chosen by the investigator because in this way investigator would be able to use a large number of participants and therefore collected data objectively through this way data was reduced to numbers for statistical analysis in order to draw conclusion (Hicks, 2000). The investigator used cross-sectional survey to meet the study aim as an effective way to collect data. The survey study used to describe the distinctiveness of population and find out how the population is allocated themselves on one or more variables (Frankel & Wallen, 2000). Cross sectional study is one of the appearances of observational study (Park, 2007).

3.2 Study place:

The study place is National Institute of Mental Health (NIMH) at Dhaka. From there the investigator would be able to get available adult patient with different kinds of psychiatric disorders.

3.3 Study population:

A population may be considered as group of observation units, all with measurable or quantifiable characteristics. The observation units may be human beings, groups of individuals, families or any other unit that we define and describe. The population may be seen as immensity as well as a dynamic and a study is always based on a sample of it (Laake, Benestad& Olsen, 2007). In this study, every person with Psychiatric disorder all over Bangladesh was considered as population.

3.4 Sample:

Investigator would use a sampling equation to determine the sample size.

As we know that,

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

Here,

$$z = 95\% = 1.96$$

$$P = 0.106$$

$$q = 1 - p = 1 - 0.106 = 0.89$$

$$d = 0.05$$

So,

$$n = \{(1.96)^2 \cdot 0.106 \cdot 0.89\} / (0.05)^2$$

$$= 145.61$$

$$= 146$$

But it would be too much challenging to complete the study on 146 samples, it would be costly and also the study place is too far from the investigators resident. As a result the investigator gathered 80 samples for this study.

3.5 Sampling procedure:

Convenience sampling used to conduct the study. This method of sampling also referred as accidental, volunteer or opportunistic sampling. Investigator would make inclusion and exclusion criteria and select those individuals who meets inclusion criteria willingly in the study (Depoy & Gitlin, 1998). This method would be used in the study because it is one of the easiest, cheapest and quickest methods of sample selection (Bailly, 1997).

3.6 Inclusion Criteria:

1. Adult person with psychiatric disorder who admitted in Mental Health Hospital.
2. Both man and woman.
3. The people who have primary education level at least will be included.

3.7 Exclusion Criteria:

1. The people with psychiatric disorder who has no record of communication problem before psychiatric disorder.
2. Age level below 18 years old will be excluded.
3. The people who don't have primary education level will be excluded.

3.8 Data collection tools:

The investigator used a checklist entitled Montreal Cognitive Assessment (MoCA) tools. Also paper, pen, pen drive, clip board and consent forms were used for data gathering.

Description of the tools is given below:

1. Visuoconstructional skills (Trail making & Clock):

The examiner instructs the subject: "Please draw a line, going from a number to a letter in ascending order. Begin here [point to (1)] and draw a line from 1 then to A, Then to 2 and so on. End here [point to (E)]." Scoring: Allocate one point if the subject successfully draws the following pattern: 1-A-2-B-3-C-4-D-5-E, without drawing any lines that cross. Any error that is not immediately self-corrected earns a score of 0.

Investigator gave the following instructions: "Draw a clock. Put in all the numbers and set the time to 10 past 11". Scoring: One point is allocated for each of the following three criteria:

Contour (1 pt.): the clock face must be a circle with only minor distortion acceptable (e.g., slight imperfection on closing the circle). Numbers (1 pt.): all clock numbers must be present with no additional numbers; numbers must be in the correct order and placed in the approximate quadrants on the clock face; Roman numerals are acceptable; numbers can be placed outside the circle contour. Hands (1 pt.): there must be two hands jointly indicating the correct time; the hour hand must be clearly shorter than the minute hand; hands must be centered within the clock face with their junction close to the clock centre.

A point is not assigned for a given element if any of the above-criteria are not met.

2. Naming:

Investigator gives the instruction for beginning on the left, point to each figure and say: "Tell me the name of this animal". Scoring: One point each is given for the following responses: (1) lion (2) rhinoceros or rhino (3) camel or dromedary.

3. Memory:

The examiner reads a list of 5 words at a rate of one per second, gave the following instructions: "This is a memory test. I am going to read a list of words that you will have to remember now and later on. Listen carefully. When I am through, tell me as many words as you can remember. It doesn't matter in what order you say them". Mark a check

in the allocated space for each word the subject produces on this first trial. When the subject indicates that (s)he has finished (has recalled all words), or can recall no more words, read the list a second time with the following instructions: "I am going to read the same list for a second time. Try to remember and tell me as many words as you can, including words you said the first time." Put a check in the allocated space for each word the subject recalls after the second trial. At the end of the second trial, inform the subject that (s)he will be asked to recall these words again by saying, "I will ask you to recall those words again at the end of the test."

Scoring: No points are given for Trials One and Two.

4. Attention

Forward Digit Span: Administration: Gives the following instruction: "I am going to say some numbers and when I am through, repeat them to me exactly as I said them". Read the five number sequence at a rate of one digit per second. Backward Digit Span: Administration: Give the following instruction: "Now I am going to say some more numbers, but when I am through you must repeat them to me in the backwards order." Read the three number sequence at a rate of one digit per second.

Scoring: Allocate one point for each sequence correctly repeated, (N.B.: the correct response for the backwards trial is 2-4-7). Vigilance: Administration: The examiner reads the list of letters at a rate of one per second, after giving the following instruction: "I am going to read a sequence of letters. Every time I say the letter A, tap your hand once. If I say a different letter, do not tap your hand". Scoring: Give one point if there is zero to one error (an error is a tap on a wrong letter or a failure to tap on letter A). Serial 7s: Administration: The examiner gives the following instruction: "Now, I will ask you to count by subtracting seven from 100, and then, keep subtracting seven from your answer until I tell you to stop." Give this instruction twice if necessary. Scoring: This item is scored out of 3 points. Give no (0) points for no correct subtractions, 1 point for one correct subtraction, 2 points for two-to-three correct subtractions, and 3 points if the participant successfully makes four or five correct subtractions. Count each correct subtraction of 7 beginning at 100. Each subtraction is evaluated independently; that is, if the participant responds with an incorrect number but continues to correctly subtract 7 from it, give a point for each correct subtraction. For example, a participant may respond

“92 – 85 – 78 – 71 – 64” where the “92” is incorrect, but all subsequent numbers are subtracted correctly. This is one error and the item would be given a score of 3.

5. Language:

Sentence repetition:

The examiner gives the following instructions: “I am going to read you a sentence. Repeat it after me, exactly as I say it [pause]: I only know that John is the one to help today.” Following the response, say: “Now I am going to read you another sentence. Repeat it after me, exactly as I say it [pause]: The cat always hid under the couch when dogs were in the room.” Scoring: Allocate 1 point for each sentence correctly repeated. Repetition must be exact. Be alert for errors that are omissions (e.g., omitting “only”, “always”) and substitutions/additions (e.g., “John is the one who helped today;” substituting “hides” for “hid”, altering plurals, etc.).

Verbal fluency:

The examiner gives the following instruction: “Tell me as many words as you can think of that begin with a certain letter of the alphabet that I will tell you in a moment. You can say any kind of word you want, except for proper nouns (like Bob or Boston), numbers, or words that begin with the same sound but have a different suffix, for example, love, lover, loving. I will tell you to stop after one minute. Are you ready? [Pause] Now, tell me as many words as you can think of that begin with the letter F. [time for 60 sec]. Stop.” Scoring: Allocate one point if the subject generates 11 words or more in 60 sec. Record the subject’s response in the bottom or side margins.

6. Abstraction:

The examiner ask the subject to explain what each pair of words has in common, starting with the example: “Tell me how an orange and a banana are alike”. If the subject answers in a concrete manner, then say only one additional time: “Tell me another way in which those items are alike”. If the subject does not give the appropriate response (fruit), say, “Yes, and they are also both fruit.” Do not give any additional instructions or clarification. After the practice trial, say: “Now, tell me how a train and a bicycle are alike”. Following the response, administer the second trial, saying: “Now tell me how a ruler and a watch are alike”. Do not give any additional instructions or prompts. Scoring:

Only the last two item pairs are scored. Give 1 point to each item pair correctly answered. The following responses are acceptable:

Train-bicycle = means of transportation, means of travelling, you take trips in both;

Ruler-watch = measuring instruments, used to measure. The following responses are not acceptable: Train-bicycle = they have wheels; Ruler watch = they have numbers.

7. Delayed recall:

The examiner gives the following instruction: "I read some words to you earlier, which I asked you to remember. Tell me as many of those words as you can remember." Make a check mark (✓) for each of the words correctly recalled spontaneously without any cues, in the allocated space. Scoring: Allocate 1 point for each word recalled freely without any cues.

8. Orientation:

The examiner gives the following instructions: "Tell me the date today". If the subject does not give a complete answer, then prompt accordingly by saying: "Tell me the [year, month, exact date, and day of the week]." Then say: "Now, tell me the name of this place, and which city it is in." Scoring: Give one point for each item correctly answered. The subject must tell the exact date and the exact place (name of hospital, clinic and office). No points are allocated if subject makes an error of one day for the day and date.

TOTAL SCORE: Sum all sub scores listed on the right-hand side. Add one point for an individual who has 12 years or fewer of formal education, for a possible maximum of 30 points. A final total score of 26 and above is considered normal.

3.9 Data collection procedure:

Data was collected by using questionnaire consisting of semi-structured open ended questions through face to face interviews & written questionnaire. Questionnaire is a method of collecting information where by subjects answer a set of question usually predefined by the researcher (Hicks, 1999). Researcher collected the data himself. At first researcher addressed the subjects and informed about the study. The researcher took the opinion of subjects who were interested and confirmed time and data of the interview.

Before data collection the researcher selected a quiet place where participant feel comfort and were able to give adequate attention during interview. Ensure that nobody present

during interview time at the interview place. At first the Researcher took consent from the participant before interview. The researchers also noted down the facial expression.

3.10 Ethical consideration:

At first to conduct this study, the research proposal was presented and the ethical committee was accepted the proposal. The Head of the Speech & Language Therapy Dept. gave the permission for starting data collection. The principal of BHPI send a letter to NIMH authority for giving permission to collect data from the patients and they have accepted the proposal. During the course of this study, interested subjects were given consent forms and the purpose of the research and the consent form were explained to them verbally in Bengali. The participants were informed that their participation would be fully voluntary and they had the right to withdraw or discontinue from the interview at any time without any hesitation. They were also informed that confidentiality would be maintained. Information might be published in any presentation or writing but their personal identity such as their name and address will not be mentioned in the study.

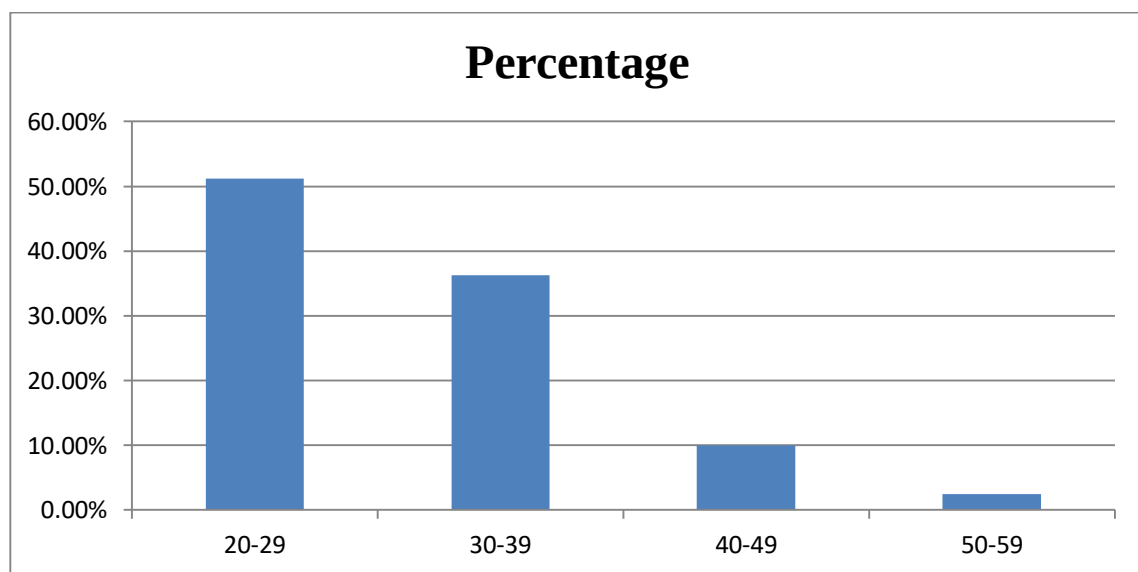
3.11 Data analysis:

Data analysis is a crucial part of any study or research. For data analysis there are many statistical methods but investigator would use descriptive statistical analysis. Descriptive analysis would allow for describing huge amount of information with just a few indices like frequency, it's one of the major advantages (Frankel & Wallen, 2000). There are many statistical methods of the data analysis but investigator used Descriptive statistical analysis by using statistical package for social services (SPSS-23) twenty three version.

The main objective of the study was to find out the relationship between cognitive difficulties and different types of psychiatric disorders. The study was conducted with 80 participants. The participants were observed by the investigators and collected data by face to face interview also. The investigator statistically analyzed the results using descriptive analysis. The chapter outlines the numerical outcomes of the study and presents the data using tables and bar charts of the demographic data and findings of the study.

4.1 Demographic Information

Table: 4.1.1 Descriptive statistics of Age groups and ages of the participants:



The chart gives the information about age group and ages of the participants. The lowest age was 20 years and highest age was 59 years where 51.2% (n=41) were below 30 years of age and 36.3% (n=29) participants were between 30-39 years of age, 10% (n=8) were between 40-49 years of age and 2.5% (n=2) were between 50-59 years of age.

4.1.2 Descriptive statistics of Gender of the Participants:

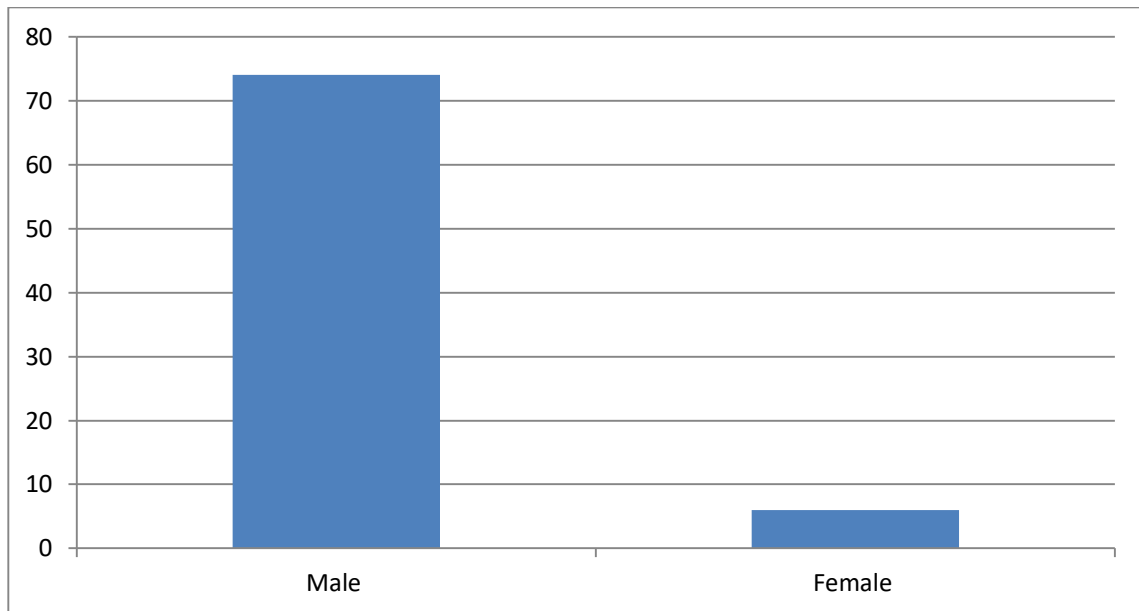
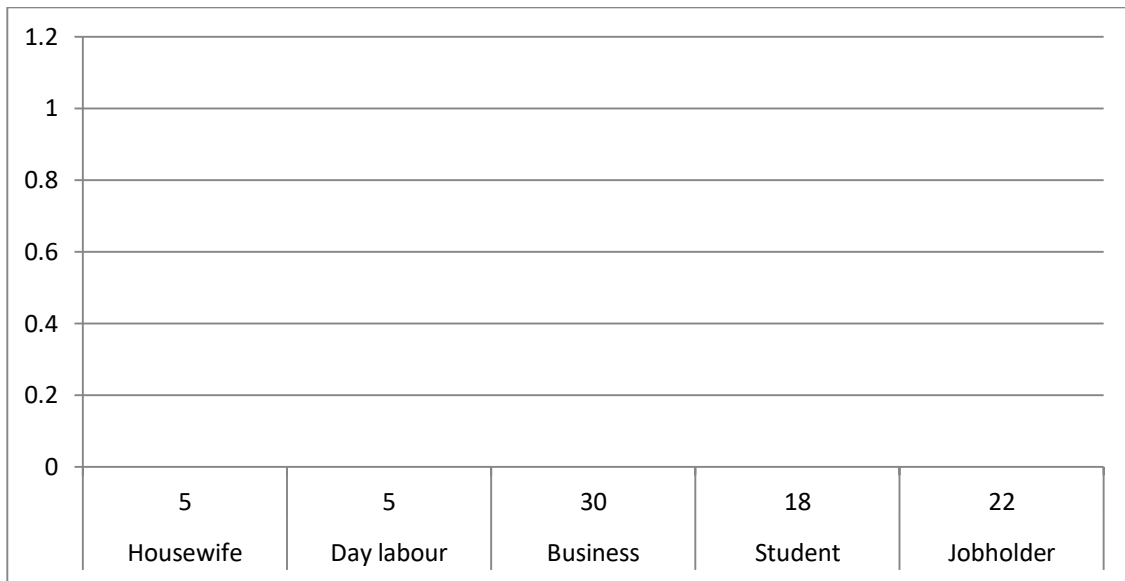


Figure: 4.1.2 Gender of the Participants

The chart illustrates the ratio of male and female in the study. Among 80 participants the investigator was able to take 92.5% (n=74) male and 7.5% (n=6) female in the whole study.

Table: 4.1.3 Descriptive statistics of education of the participants:



The chart gives information about the educational level of the participants. It is clear that 17.5% (n=14) were primary educated, 52.5% (n=42) were secondary educated, 25% (n=20) were higher secondary educated and 5% (n=4) were graduated.

Table: 4.1.4 Descriptive statistics of occupation of the participants:

Occupation	Frequency	Percentage (%)
Housewife	5	6.3%
Day labour	5	6.3%
Business	30	37.5%
Jobholder	22	27.5%
Student	18	22.5%
Total	80	100.0%

The chart shows that 6.3% (n=5) were house wife, 6.3% (n=5) were day labor 37.5% (n=30) were business man, job holder were 27.5% (n=22) and student were 22.5% (n=18).

Table: 4.1.5 Descriptive statistics of marital status of the participants:

Marital status	Frequency	Percentage (%)
Married	43	53.8%
Unmarried	37	46.3%
Total	80	100.0%

The chart shows the marital status of the participants. It shows clearly that 53.8% (n=43) were married and 46.3% (n=37) were unmarried.

Table: 4.1.6 Descriptive statistics of types of psychiatric disorder:

Types of Psychiatric Disorder	Frequency	Male	Female	Percent. (%)	Male (%)	Female (%)
Depression	18	17	1	22.5%	21.25%	1.25%
Bipolar disorder	12	9	2	15.0%	11.25%	3.75%
Schizophrenia	25	23	2	31.3%	28.7%	2.6%
Paranoid psychosis	6	6	0	7.5%	7.5%	0.0%
Substance induced persisting dementia (SIPD)	10	9	1	12.5%	11.25%	1.25%
Substance induced mood disorder (SIMD)	6	6	0	7.5%	7.5%	0.0%
Schizoid-affective disorder	3	3	0	3.8%	3.8%	0.0%
Total	80	74	6	100.0%	92.5%	7.5%

The chart shows the different types of psychiatric disorders of the participants. It shows clearly that 22.5% (n=18) were depression patient where 21.25% (n=17) were male and 1.25% (n=1) was female, 15.0% (n=12) were bipolar disorder patient where 11.25% (n=9) were male and 3.75% (n=2) were female, 31.3% (n=25) were schizophrenia patient where 28.7% (n=23) were male and 2.6% (n=2) were female, 7.5% (n=6) were paranoid psychosis where all the patient were male, 12.5% (n=10) were substance induced persisting dementia patient where 11.25% (n=9) were male and 1.25% (n=1) was female, 7.5% (n=6) were substance induced mood disorder patient where all the patient were male, 3.8% (n=3) were schizoid-affective disorder patient where all the patient were male.

Table: 4.1.7 Descriptive statistics of duration of treatment:

Duration of Treatment	Frequenc y	Male	Femal e	Percenta ge (%)	Male (%)	Fema le (%)
1-4 months	5	5	0	6.2%	6.2%	0.0%
5-8 months	59	53	6	72.8%	65.4%	7.4%
9-12 months	16	16	0	19.8%	19.8%	0.0%
Total	80	74	6	100.0%	92.5%	7.5%

The chart shows the duration of taking treatment at the hospital. It shows that 6.2% (n=5) of the participants were admitted in between 1-4 months where the entire patient were male, 72.8% (n=59) were admitted in between 5-8 months where 65.4% (n=53) were male and 7.4% (n=6) were female, 19.8% (n=16) were admitted in between 9-12 months where the entire patient were male at the hospital.

Table: 4.1.8 Descriptive statistics of cognition of the participants:

Cognition	Frequency	Percentage (%)
Mild	0	0.0%
Moderate	0	0.0%
Severe	80	100.0%
Total	80	100.0%

The chart shows the cognitive disorder level of the participants. Where 26-27 marks was identified as mild types of cognitive disorder, 24-25 marks as moderate types of cognitive disorder and <24 marks as severe types of cognitive disorder. The chart also shows that all the participants were severe types of cognitive disorder.

4.2 Cognition of the participants

Table: 4.2.1 Descriptive statistics of Visuospatial/Executive:

Visuospatial/Executive	Frequency	Percentage (%)
0 (Unable to Answer)	23	28.4%
2 (Answer +1/2)	46	56.8%
3 (Answer +1/2)	11	13.6%
Total	80	100.0%

The chart shows that 28.4% (n=23) gained 0 mark that means these people couldn't able to answer, 0.0% (n=0) gained 1 mark, 56.8% (n=46) gained 2 marks that means they could able to answer 1 question out of 2 and 13.6% (n=11) gained 3 marks means they could able to answer 1 question out of 2.

Table: 4.2.2 Descriptive statistics of Naming:

Naming	Frequency	Percentage (%)
0 (Unable to Answer)	5	6.2%
1 (Answer +1/3)	36	44.4%
2 (Answer +2/3)	35	43.2%
3 (Answer +3/3)	4	4.9%
Total	80	100.0%

The chart shows that 6.2% (n=5) gained 0 mark means they were unable to answer, 44.4% (n=36) gained 1 mark means they were able to name 1, 43.2% (n=35) gained 2 marks means they were able to name 2 and 4.9% (n=4) gained 3 marks means they were able to name 3 things.

Table: 4.2.3 Descriptive statistics of Attention:

Attention	Frequency	Percentage (%)
0 (Unable to Answer)	20	24.7%
1 (Answer +1/4)	28	34.6%
2 (Answer +2/4)	15	18.5%
3 (Answer +3/4)	13	16.0%
4 (Answer +4/4)	4	4.9%
Total	80	100.0%

The chart shows that 24.7% (n=20) gained 0 mark means they were unable to answer, 34.6% (n=28) gained 1 mark means they were able to answer 1 question, 18.5% (n=15) gained 2 marks means they were able to answer 2 questions, 16.0% (n=13) gained 3 marks means they were able to answer 3 questions and 4.9% (n=4) gained 4 marks means they were able to answer 4 questions out of 4.

Table: 4.2.4 Descriptive statistics of Language:

Language	Frequency	Percentage (%)
0 (Unable to Answer)	10	12.5%
1 (Answer +1/2)	69	85.2%
2 (Answer +2/2)	1	1.25%
Total	80	100.0%

The chart shows that 12.5% (n=10) gained 0 marks means they were unable to answer, 85.2% (n=69) gained 1 mark means they were able to answer 1 question and 1.25% (n=1) gained 2 marks means they were able to answer 2 questions out of 2.

Table: 4.2.5 Descriptive statistics of Abstraction:

Abstraction	Frequency	Percentage (%)
0 (Unable to Answer)	10	12.3%
1 (Answer +1/2)	48	59.3%
2 (Answer +2/2)	22	27.2%
Total	80	100.0%

The chart shows that 12.3% (n=10) gained 0 mark means they were unable to answer, 59.3% (n=48) gained 1 mark means they answered 1 question and 27.2% (n=22) gained 2 marks means they answered 2 questions out of 2.

Table: 4.2.6 Descriptive statistics of Delayed recall:

Delayed recall	Frequency	Percentage (%)
0 (Unable to Answer)	2	2.5%
2 (Answer +2/5)	45	55.6%
3 (Answer +3/3)	29	35.8%
4 (Answer +4/4)	1	1.2%
5 (Answer +5/5)	3	3.7%
Total	80	100.0%

The chart shows that 2.5% (n=2) gained 0 mark means they were unable to answer, 0.0% (n=0) gained 1 marks, 55.6% (n=45) gained 2 marks means they answered 2 questions, 35.8% (n=29) gained 3 marks means they answered 3 questions, 1.2% (n=1) gained 4 marks means they answered 4 questions and 3.7% (n=3) gained 5 marks means they answered 5 questions out of 5.

Table: 4.2.7 Descriptive statistics of Orientation:

Orientation	Frequency	Percentage (%)
0 (Unable to Answer)	13	16.0%
1 (Answer +1/6)	6	7.4%
2 (Answer +2/6)	44	54.3%
3 (Answer +3/6)	12	14.8%
4 (Answer +4/4)	1	1.2%
5 (Answer +5/6)	2	2.5%
6 (Answer +6/6)	1	1.2%
Total	80	100.0%

The chart shows that 16.0% (n=13) gained 0 marks means they were unable to answer, 7.4% (n=6) gained 1 mark means they answered 1 question, 54.3% (n=44) gained 2 marks means they answered 2 questions, 14.8% (n=12) gained 3 marks means they answered 3 questions, 1.2% (n=1) gained 4 marks means they answered 4 questions, 2.5% (n=2) gained 5 marks means they answered 5 questions and 1.2% (n=1) gained 6 marks means they were able to answer 6 questions out of 6.

The objective of the study was to identify the presence of cognitive dysfunction among adult people with psychiatric disorders. Findings from the study suggested that people with psychiatric disorders had different types of difficulties considering components (visuospatial/executive, naming, attention, language, abstraction, delayed recall, orientation) in Montreal Cognitive Assessment (MoCA) tool. It was the only study to attempt a survey of all patients in NIMH. Cognitive functioning plays an important role in society for fulfilling a person's daily living activities. The investigator found from the study that 80 participants are sowed a large number of difference in total percentage in socio-demographic areas and characteristics of cognition according to Montreal Cognitive Assessment (MoCA) tool. The investigator used previous studies from different countries for supporting this study. Torrent & Martinez-Arán (2012) completed a study at the Bipolar Disorder Unit of the Hospital Clinic of Barcelona, Spain. Where they found cognitive difficulties are more common in bipolar disorder. They also noticed a specific deficit in the executive control of working memory, verbal learning and executive functioning in patient with bipolar disorder. They found that a total of 113 participants of psychiatric disorders where 68 participants (61%) had bipolar disorder and 45 participants (39%) had completed the follow-up. Where the participants' age was in between 25-65 years, most of the participants' was literate. All the participants were assessed by the means of neuropsychological assessment battery (NAB). They used Montreal Cognitive Assessment (MoCA) tool for the diagnosis of bipolar disorder where they found that 41 participants (61%) had mild to moderate cognitive impairment and 27 participants (39%) had moderate to severe type of cognitive dysfunction. Repeated-measures analyses showed significant effects of time in 2 cognitive domains: attention and executive functions. Attention slightly improved ($P=.043$) but executive function worsened ($P=.001$). Regression analyses showed that the duration of illness and baseline sub-depressive symptoms were associated with poor performance in executive function.

Sub-depressive symptoms at endpoint were associated with poor functioning. The best predictor of low functioning was verbal memory dysfunction at baseline. The study showed that the cognitive impairment remained stable across the follow-up period in many measures assessed except for a worsening of executive measures, which have been found to be associated with the duration of illness and sub-depressive symptoms. Rakhman & Markova (2015) completed a study where cognitive dysfunctions are common in depression or depressive disorder in South Kazakhstan. They found that a total of 87 participants where 24 were male and 63 were female. Cognitive deficit was found in 75 patients (86.2%) by using Montreal Cognitive Assessment (MoCA) tool. Mild cognitive decline was found in 37 patients (42.5%), moderate cognitive dysfunction was found in 36 patients (41.4%), and in 2 cases (2.3%) reported markers specific for initial dementia. They studied the analysis of patient's socio-demographic data. The average age of the patients was 20-40 years. By the educational level the examined group was as follows: people with basic secondary education-7, which is 8.0%, with the secondary vocational-42 (48.3%), university degree had 38 patients (43.7%). Characteristics of employment status in the group of studied patients found that the employed was 33 people, unemployed was 28 patients, and were on disability 26 patients, which is 37.9%. They also detected significant functional impairment of voluntary attention with increasing distraction to external stimuli that caused ease of side association's synthesis and placed them to the current activity. Typical is the modal-nonspecific short-term memory disorders, especially in motor language and visual parts. Arunpongpaisal (2013) found that 81.3% of the participants who had schizophrenia in Thailand. In this study the number of patients with schizophrenia was 75 where 61 participants (81%) of them had cognitive impairment. This study was done by Montreal Cognitive Assessment-Thai version (MoCA-T) tool. All patients were of Thai nationality and at least 18 years old. Eighty-four percent of the subjects were single and 62.7 percent male. On average, the age at onset of the first psychotic symptoms occurred at 26.7 years and duration of illness was 9.5 years. Eighty-four percent of subjects had not received electroconvulsive therapy. Cognitive impairment was defined as the total score below 25 and the prevalence of cognitive impairment in this sample was 81.3%. Moreover, the mean total scores of MoCA-T in these subjects (19.65, SD 5.16) are lower

than Thai patients with mild cognitive impairment (MCI) (21.30, SD 3.64) and normal elderly (25.90, SD 2.14). This study was made to guide the clinicians to assess cognitive function of patients with schizophrenia and provide cognitive rehabilitation in the future.

Modrego & Ferrández (2004) found that a total of 114 participants where 41 participants (36%) had depression and 59 participants (51.7%) had Alzheimer's disease in Spain. The ages of the participants were in between 61-84 years. There were 42 men and 72 women (63%). Educational levels were as follows: 12 did not complete elementary studies, 93 completed elementary studies, 8 graduated from high school, and only 1 graduated from a university. They investigated the study by using Spanish version of Montreal Cognitive Assessment (MoCA) tool. They also found that from 41 depression type of participants 21 (51%) had mild cognitive impairment and 20 (48%) had dementia and from 59 Alzheimer's disease type of participants 31 (52%) had mild cognitive impairment, 28 participants (47%) had dementia. Amer& Musa (2012) investigated a total of 100 older adults were included where 54 were women and 46 were men in Mansoura city, Egypt. It was found that 16.0% of the participants were illiterate, 14.0% were able to read and write, 42.0% had a high-school education, and 28.0% were university graduates. The used Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA) tools for the study. In the current study, we found a prevalence of MCI (32%) higher than that reported in most other published studies, but lower than another study conducted in Cairo, Egypt, which found the prevalence to be 34.2 and 44.3% of the elderly men and women, respectively. The higher prevalence of mild cognitive impairment (MCI) among Egyptians may be because of the fact that 56.5% of the Egyptian elderly are illiterate. Illiterates and residents with a lower educational level represented 72% of our sample. In this study it was generally accepted that depression can be associated with different degrees of cognitive deficit in older persons.

In this study, the result shows that participants with psychiatric disorders has also problem with cognitive functioning. The result shows that all the participants have the presence of cognitive dysfunction. By using descriptive analysis, the data was analyzed by the investigator and then found presence of cognitive dysfunction among all the psychiatric disorders patients. By descriptive analysis investigator found the percentage

of presence which is more than absence of cognitive dysfunction. In this study the investigator analyzed the socio-demographic area among 80 participants ranging from 20-59 years of age where most of the participants were from 20-39 years of age. Investigator includes male participants more than female. In this study most of the participants were primary and secondary education completed and most of the participants were businessman and job holder by profession. In this study half of the participants were married and half were single or unmarried. Investigator also found that most of the participants were schizophrenia, depression and bipolar disorder types of psychiatric disorder and all the participants had severe type of cognitive disorder. In this study the investigator also investigate the percentage of the components of Montreal Cognitive Assessment (MoCA) tool. In visuospatial/executive, where 28.4% of the participants gained 0-1 marks, 56.8% gained 2 marks and 13.6% gained 3 marks. In naming, where 6.2% gained 0 marks, 44.4% gained 1 mark, 43.2% gained 2 marks and 4.9% gained 3 marks. In attention, where 24.7% gained 0 marks, 34.6% gained 1 mark, 18.5% gained 2 marks, 16.0% gained 3 marks and 4.9% gained 4 marks. In language, where 12.3% gained 0 marks, 85.2% gained 1 mark and 1.2% gained 2 marks. In abstraction, where 12.3% gained 0 marks, 59.3% gained 1 mark and 27.2% gained 2 marks. In delayed recall, where 2.5% gained 0-1 marks, 55.6% gained 2 marks, 35.8% gained 3 marks, 1.2% gained 4 marks and 3.7% gained 5 marks. In orientation, where 16.0% gained 0 marks, 7.4% gained 1 mark, 54.3% gained 2 marks, 14.8% gained 3 marks, 1.2% gained 4 marks, 2.5% gained 5 marks and 1.2% gained 6 marks. In analyzing the MoCA results, the investigator incorporated the suggested 1-point total score for individuals with ≤ 12 years of education. Some other studies also had been done where the investigators found the presence of cognitive difficulties among different types of psychiatric disorder.

6.1 Limitation

For conducting the research project the investigator found some limitation and barriers. The investigator always tried to consider these limitations. The investigator did not have enough institutionalized knowledge on psychiatric disorder though some portion of human psychology is included in the course content of B.Sc. in Speech & Language Therapy which is the only professional degree in Bangladesh. To conduct the quantitative study, it is crucial to find in-depth information. In this case the investigator requires a high skill for conducting assessment and collecting valuable field notes or observation reports. But it is the first time for the investigator to conduct this study as a part of 4th year course curriculum in Speech & Language Therapy Department. So, the investigator offered maximum effort to collect this information though there was a time limitation to do this study. The investigator tried to collect information from the participants without biasness and analyzed them in a systematic way. The study is conducted only in NIMH. Other hospitals in Bangladesh are working for the people with psychiatric disorders and many of them are not admitted at any hospital. So, the study is not able to generalize for the broad people. As it is a new study of Bangladesh, there are limited resource and unavailability of information.

6.2 Recommendation

During conducting the study, investigator has determined the cognitive difficulties or dysfunction of the people with psychiatric disorders. The investigator would like to propose the following recommendations:

- Convenience sampling was used to select participants. Further study can be conducted with a wide range and large participant size and for future; in this type of study randomization should be done during sample selection.
- Further study can be conducted on cognitive dysfunction among all psychiatric population including other Mental Health institutes in Bangladesh.

- Need to include psychiatric disorders in detail and its management in course curriculum in B.Sc. in Speech & Language Therapy in Bangladesh.
- Further study can be done by using other tools.

The main conclusion we could be drawn from this study is that even though both speaker and listener know the different meaning of words, which is a necessary condition for sharing a message and a conversation, breakdown seemed to occur in the communicative competence and also cognitive difficulties in patients with psychiatric disorders. The aim of the study was to identify the relation between cognitive dysfunction among the people with psychiatric disorders. Mental health disorders such as schizophrenia, anxiety, depression, bipolar disorder, substance induced persisting dementia and substance induced mood disorder have a serious impact on the health situation in Bangladesh. At the same time lack of knowledge, superstitious beliefs and social stigma prevent individuals with mental health conditions from seeking care. People believe that mental disorders are untreatable or the result of evil influences also plays a role. Women are more vulnerable to experiencing mental disorders and less able to access treatment due to their lower social status. The investigator stressed the need for more research to better understand the scale of the problem in Bangladesh, better access for patient to qualified mental health professionals as well as Speech & Language Therapy service and mass awareness rising campaigns to reduce misconception and stigma about mental health conditions. The findings of the study will help Speech & Language Therapist to work in this area.

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Annexure 1

Permission Letter

20 November, 2017

Head
Department of Speech and Language Therapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

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

Sir,
With due respect, I state that I am a 4th year student (session: 2012-2013) of B.Sc in speech and language therapy in Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am sincerely seeking permission to conduct my research project as a partial fulfillment of the requirements for the degree of B.Sc in Speech and Language Therapy. The title of my project is "Cognitive Dysfunction among Adult Patient with Psychiatric Disorders" under honorable supervisor, Nure Naznin, Lecturer of Speech and Language Therapy Department, BHPI. The main objective of this study is to explore cognitive dysfunction among adult patient with psychiatric disorders.

Self inventory questionnaire will be used that will take maximum 30 to 40 minutes followed by inclusion criteria related information will be collected from Speech and Language Therapists and clients caregivers. Data collectors will receive informed consent from all participants and all data will be kept safely and securely maintaining confidentiality.

Therefore I look forward to have your kind approval for the thesis proposal and to start thesis and data collection. I can also assure you that I will maintain all the requirements for conducting the study.

Yours obediently,

Sabbir Ahmed
DU: 5196
Session: 2012-2013
4th year student of B.Sc Speech and Language Therapy
Bangladesh Health Professions Institute (BHPI),
CRP, Chapain, Savar, Dhaka-1343

Approved by	Comments and Signature
Md. Sazzad Hossain Lecturer & Head (Acting) Department of Speech and Language Therapy Bangladesh Health Professions Institute (BHPI) CRP, Chapain, Savar, Dhaka-1343	Permission has been given to conduct the research project. <i>Sazzad</i> 21.11.17

Md Sazzad Hossain
Lecturer & Head (Acting)

Annexure 2

Permission Letter

20 November, 2017

Head
Department of Speech and Language Therapy
Bangladesh Health Professions Institute (BHPI)
CRP, Chapain, Savar, Dhaka-1343

Subject: Prayer for seeking permission to data collection for undergraduate dissertation.

Sir,

With due respect, I state that, I am a 4th year student (session: 2012-2013) of B.Sc in speech and language therapy in Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am sincerely seeking permission to conduct data collection for my research project as a partial fulfillment of the requirements for the degree of B.Sc in Speech and Language Therapy. The title of my project is "Cognitive Dysfunction among Adult Patient with Psychiatric Disorders" under honorable supervisor, Nure Naznin, Lecturer of Speech and Language Therapy Department, BHPI. The main objective of this study is to explore cognitive dysfunction among adult patient with psychiatric disorders". I would like to data collect for my study from National Institute of Mental Health (NIMH) in Dhaka city.

Self inventory questionnaire will be used that will take maximum 40 to 45 minutes followed by inclusion criteria related information will be collected from Speech and Language Therapists and clients caregivers. Data collectors will receive informed consent from all participants and all data will be kept safely and securely maintaining confidentiality.

Therefore I look forward to have your kind approval for the thesis proposal and to start thesis and data collection. I can also assure you that I will maintain all the requirements for conducting the study

Yours obediently,

Sabbir Ahmed
DU: 5196
Session 2013-2014
4th year student of B.Sc Speech and Language Therapy
Bangladesh Health Professions Institute (BHPI),
CRP, Chapain, Savar, Dhaka-1343

Approved by	Comments and Signature
Md. Sazzad Hossain Lecturer & Head (Acting) Department of Speech and Language Therapy Bangladesh Health Professions Institute (BHPI) CRP, Chapain, Savar, Dhaka-1343	Permission has been given to start the data collection 

Md. Sazzad Hossain
Lecturer & Head (Acting)
Department of Speech & Language Therapy
Bangladesh Health Professions Institute (BHPI)

Annexure 3

Permission Letter


বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)
BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)
(The Academic Institute of CRP)
CRP-Chapain, Savar, Dhaka, Tel: 7745464-3, 7741404, Fax: 7745069
BHPI-Mirpur Campus, Plot-A/5, Block-A, Section-14, Mirpur, Dhaka-1206. Tel: 8020178, 8053662-3, Fax: 8053661

সি.সেবাস
কমিটি
৩০/০৫/১৮
সিআরপি-বিএইচপিআই/০৫/১৮/৬৮

তারিখ : ০৭.০৫.২০১৮

প্রতি
পরিচালক
ন্যাশনাল ইনস্টিটিউট অব মেন্টাল হেল্থ এন্ড হাসপাতাল
শের-এ বাংলা নগর, ঢাকা।

বিষয় : রিসার্চ প্রজেক্ট এর জন্য আপনার প্রতিষ্ঠান সফর ও তথ্য সংগ্রহ প্রসঙ্গে।

জনাব,
আপনার সদয় অবগতির জন্য জানাচ্ছি যে, পাক্ষাত্যস্ত্রদের পুনর্বাসন কেন্দ্রে-সিআরপি'র শিক্ষা প্রতিষ্ঠান বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই) ঢাকা বিশ্ববিদ্যালয় অনুমোদিত বিএসসি ইন স্পীচ এন্ড ল্যান্ডুয়েজ থেরাপি কোর্স পরিচালনা করে আসছে।
উক্ত কোর্সের ছাত্রছাত্রীদের কোর্স কারিকুলামের অংশ হিসাবে বিভিন্ন বিষয়ের উপর রিসার্চ ও কোর্সওয়ার্ক করা বাধ্যতামূলক।
বিএইচপিআই'র ৪র্থ বর্ষ বিএসসি ইন স্পীচ এন্ড ল্যান্ডুয়েজ থেরাপি কোর্সের ছাত্র সাকিব আহমেদ তার রিসার্চ সংক্রান্ত কাজের তথ্য সংগ্রহের জন্য আণ্যায়ী ১০.০৫.২০১৮ তারিখ থেকে ২০.০৬.২০১৮ তারিখ পর্যন্ত আপনার প্রতিষ্ঠানে সফর করতে আশ্রয়ী।
তাই তাকে আপনার প্রতিষ্ঠান সফর এবং প্রয়োজনীয় তথ্য প্রদান সহ সার্বিক সহযোগীতা প্রদানের জন্য অনুরোধ করছি।

ধন্যবাদান্তে
০৫.৫.১৮
মোঃ সাজ্জাদ হোসেন
সহকারী অধ্যাপক ও বিভাগীয় প্রধান
স্পীচ এন্ড ল্যান্ডুয়েজ থেরাপি বিভাগ
বিএইচপিআই।



Annexure 4

Consent Form (English)

Assalamualikum/Namashkar, my name is Sabbir Ahmed and I am conducting this study for a Bachelor project study titled "Cognitive Dysfunction among Adult Patient with Psychiatric Disorders" from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related questions. This will take approximately 10- 15 minutes.

I would like to inform you that this is purely academic study and will not be used for any other purpose. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous.

Your participation in the study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during the interview.

If you have any query about the study or your right as a participant, you may conduct with Sabbir Ahmed, researcher and NureNaznin, Lecturer of Speech & Language Therapy Department, Bangladesh Health Professions Institute (BHPI).

Do you have any questions before I start?

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

Yes..... No.....

Signature/Fingerprint of the participants& date

Signature of the Investigator& date

Signature/Fingerprint of the witness& date

Annexure 5

সম্মতপিত্র

আসসালামুআলাইকুম / নমশকার, আমার নাম সাব্বরি আহমদে। আমি একটা ব্যাচলের প্রজেক্টের জন্য, একটি সংশ্লিষ্ট হাসপাতালে, মানসিক রোগীদের বুদ্ধিমত্তাজনিত যেকোন সমস্যা হয়, সেই বিষয়ে উপর গবেষণা করছি, বাংলাদেশে হলেথ প্রফসেন্স ইন্সটিটিউট, সিআরপিইইতে। কতগুলো প্রশ্নের মাধ্যমে আপনার কাছ থেকে তথ্য নবি। এই আলোচনার সর্বচ্চ সময়সীমা ১০-১৫ মিনিট।

আমি আপনাকে জানাচ্ছি যে, এই গবেষণা সম্পূর্ণভাবে কোর্সের কাজ ছাড়া অন্যকোন উদ্দেশ্যে ব্যবহার হবে না। এই গবেষণায়, আপনার অংশ গ্রহন আপনার বর্তমান ও পরবর্তী চর্কি সার কোন প্রকার ক্ষতি সাধিত হবে না। গবেষক, অংশগ্রহনকারীদের কাছ থেকে গৃহীত সকল তথ্যের গোপনীয়তারক্ষা করবনে এবং প্রকাশের ক্ষেত্রে নাম বাদ দিয়ে প্রকাশ করা হবে।

এই গবেষণায় আপনার অংশগ্রহন হবে ঐচ্ছিক এবং আপনি যেকোন সময় এই গবেষণা থেকে নিজেকে প্রত্যাহার করতে পারবেন। এখানে উল্লেখ্য যে এই সাক্ষাৎকার গ্রহণকালে অংশগ্রহনকারী সকল প্রশ্নের জবাব দিতে বাধ্য থাকবেন না। অংশগ্রহনকারী / অভিভাবক হিসেবে গবেষণা কাজের যেকোন তথ্য জানা আপনার অধিকার সেক্ষেত্রে আপনার যদি কোন তথ্য জানার থাকে তাহলে আপনি যোগাযোগ করতে পারেন গবেষক সাব্বরি আহমদে অথবা সুপারভাইজার নূরনোজননি, স্পীচ এন্ড ল্যাংগুয়েজ থেরাপি বিভাগ, বাংলাদেশ হলেথপ্রফসেন্স ইন্সটিটিউট, ব্রিইচপাই, সিআরপি।

আলোচনা শুরু করার আগে, আপনার কীকিছু জানার আছে?

আলোচনার জন্য আমি কি আপনার অনুমতি পতে পারি?

হ্যাঁ / না

অভিভাবকৰে / অংশগ্ৰহনকাৰীৰ/ সাক্ষৰি স্বাক্ষৰ ও তারথিঃ

গবষেকৰে স্বাক্ষৰ ও তারথিঃ

Annexure 6

Acceptance Letter

Government of the People's Republic of Bangladesh
Office of the Director-cum-Professor
National Institute of Mental Health & Hospital
Sher-e-Bangla Nagar, Dhaka-1207

Memo No.NIMH/2018/949

Date : 6/06/18

To

Sabbir Ahmed

DU: 5196

Session: 2012-2013

4th year student of B.Sc Speech and Language Therapy

Bangladesh Health Profession Institute (BHPI)

CRP, Chapain, Savar, Dhaka-1343.

Subject: Permission to collect research data.

This is to inform you that your Research Proposal entitled "**Cognitive Dysfunction among Adult Patient with Psychiatric Disorders**" has been reviewed by the ethical committee of the institute. You are given permission to collect data for your research activities in NIMH, Dhaka.


(Prof. Dr. Md. Faruq Alam)
Director-cum-Professor
National Institute of Mental Health & Hospital
Sher-e-Banga Nagar, Dhaka- 1207

Student/N/326

Annexure 7

Questionnaire (English)

MONTREAL COGNITIVE ASSESSMENT (MOCA ®)

Version 8.1 English

Name:

Date of birth:

Sex:

Occupation:

Education:

Marital status:

VISUOSPATIAL / EXECUTIVE	Copy cube (2 points)		Draw CLOCK Ten past fifteen) (3 points)				Points
							/5
NAMING							/3
MEMORY Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.		Face	Hair	Mosque	Rose	Eye	No point
	1 st trial						
	2 nd trial						
	3 rd trial						

ATTENTION	Read list of digits (1 digit/ sec.).	Subject has to repeat them in the forward order. [] 2 1 8 5 Subject has to repeat them in the backward order. [] 7 4 2 1	/2
	Read list of letters. F B A C M N A J K L B A F A K D E A A J A M O F A A B	The subject must tap with his hand at each letter A. No points if ≥ 2 errors	/1
	Serial 7 subtraction starting at 100. [] 93 [] 86 [] 79 [] 72 [] 65	or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt	/3

LANGUAGE:

Repeat I only know that Kamal is one to help today [] /1
The cat always hide under the couch when dogs were in the room [] /1

Fluency Name maximum number of words in 1 minute that begin with the letter “F” /1

ABSTRACTION:

Similarity between these words e.g.
banana - orange = fruit [] train – bicycle = [] gold – silver = [] /2

DELAYED RECALL:

(Points only for UNCUEDE recall)
Memory Index Score (MIS) Face Hair Mosque Rose Eye /5
[] [] [] [] []

ORIENTATION:

[] Date [] Month [] Year [] Day [] Place [] City /6

Annexure 8

Questionnaire (Bangla)

মানসিক রোগীদের বুদ্ধিমত্তাজনিত সমস্যা

মন্ট্রেলি যৌক্তিক মূল্যায়ন (MOCA ®)

সংস্করণ ৪.১ ইংরেজি তারিখঃ

নামঃ

জন্ম তারিখঃ

শিক্ষাঃ

পেশাঃ

লিঙ্গঃ

বৈবাহিক অবস্থাঃ

ভাআইএসসপটিএল / এক্সকিউটিভ	কপি করতে হবে ঘড়ি আঁকতে হবে ১৫ টা ১০ সময়))						পয়েন্ট ৫/
নামকরণ							৩/
স্মৃতি		মুখমণ্ডল	চুল	মসজদি	গোলাপ	চোখ	কোন পয়েন্ট নাই

মনোযোগ				ফরওয়ার্ড অর্ডারে বস্তুগত পুনরাবর্তী করতে হবে। 2 1 8 5 4 ব্যাকওয়ার্ড অর্ডারে পুনরাবর্তী করতে হবে। 0 1 2 4 7		২/	
		F B A C M N A J K L B A F A K D E A A J A M O F A A B				/১	
		সিরিয়াল 7 বস্তু 100 এ শুরু [] 93 [] 86 [] 79 [] 72 [] 65				৩/	

ভাষা: পুনরাবর্তী

আমি জানি কামাল আজকে সাহায্যকারী।

১/

কুকুরটি রুমের মধ্যে অবস্থায় বসে। সব সময় সোফায় লুকানো থাকে।

১/

ফলসূচী

এক মিনিটে মধ্যে সর্বোচ্চ শব্দে সংখ্যা যা অক্ষর F. দিয়ে শুরু হয়।

১/

বিস্তারিত :

উদাহরণ গুলোর মধ্যে অনুরূপতা

কলা - কমলা = ফল

ট্রেন - সাইকেল [] সোনা রূপা - []

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বিস্তারিত:

স্মৃতিচিহ্নসংকেত (এমআইএস): মুখ মন্ডল চুল মসজিদ গোলাপ চোখ

/৫

[] [] [] [] []

ওরিয়েন্টেশন:

[] তারিখ [] মাস [] বছর [] দিন [] জায়গা [] শহর/
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