EFFECTIVENESS OF TOILET TRAINING PROGRAM FOR CHILDREN WITH AUTISM

By

NAZNIN AKHTER

Submitted in partial fulfillment of the requirements for the degree of M.Sc. in Rehabilitation Science

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BANGLADESH HEALTH PROFESSIONS INSTITUTE (BHPI)

Faculty of Medicine

University of Dhaka

Declaration

This work has not previously been accepted in substance for any degree and is not concurrently submitted in candidature for any degree.

This dissertation is being submitted in partial fulfillment of the requirements for the degree of M.Sc. in Rehabilitation Science.

This dissertation is the result of my own independent work/investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references.

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I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority.

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Supervisor's statement

As supervisor of **Naznin Akhter's** M.Sc. thesis work, I certify that, I consider her thesis **"EFFECTIVENESS OF TOILET TRAINING PROGRAM FOR CHILDREN WITH AUTISM"** to be suitable for examination.

……

Muhammad Millat Hossain

Associate Professor

Department of Rehabilitation Science,

BHPI, CRP, Savar, Dhaka

Date:…….

We the undersigned certify that we have carefully read and recommended to the faculty of medicine, university of Dhaka for acceptance of this thesis entitled,

"EFFECTIVENESS OF TOILET TRAINING PROGRAM FOR CHILDREN WITH AUTISM"

Submitted by **Naznin Akhter**, for the partial fulfillment of the requirements for the degree of M.Sc. in Rehabilitation Science.

Muhammad Millat Hossain
Associate Professor
Department of Rehabilitation Science,
BHPI, CRP …….

Prof. Dr. Mohammad Sohrab Hossain
Professor, BHPI, CRP ……..

Mohammad Habibur Rahman
Assistant professor, School of Science &
technology, Bangladesh Open …….
University, Gazipur - 1705

Kamrunnahar
Lecturer, Department of Rehabilitation
Science …….
BHPI, CRP

Date of approval: ……/……/..2024

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Acronyms

ADHD - Attention deficit hyperactivity disorder

ASD – Autism Spectrum Disorder

BHPI - Bangladesh Health Professions Institute

BMRC - Bangladesh Medical and Research Council

BSFS - Bristol stool form scale

CRP - Center for the Rehabilitation of the Paralysed

DSM – 5 - The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition

FDD - Functional Defecation Disorder

FFR - Functional Fecal Retention

FI - Fecal Incontinence

FRNFI - functional non - retentive fecal incontinence

GDD - Global Developmental Delay

GI – Gastrointestinal

ID - Intellectual Disability

IRB - Institutional Review Board

NCC-WCH - National Collaborating Centre for Women's and Children's Health

NICE - National Institute for Health and Care Excellence

PACCT - Paris Consensus on Childhood Constipation Terminology

SPSS - Statistical Analysis in Social Science

THPQ - R - Toileting Habit Profile Questionnaire - Revised

US - United States

WHO - World Health Organization

Abstract

Background: Autism is increasing throughout the world. In context of Bangladesh, the manifestation rate is estimated to be between 0.15% and 0.84%, with the highest prevalence rate being observed in Dhaka (3%). In Bangladesh 1 in 589 children aged 16-30 months old children had ASD. The incidence of involuntary urination or defecation in children with Autism higher compared to normally developing children. Constipation was most common in Africa and least in Asia. But it is a matter of repentance that the prevalence of constipation in Bangladesh is 19% that is highest in Asia. In Bangladesh, we educate parents about toilet training procedures. In special needs school most of the cases they use timing or scheduling with reinforcement for training up this. But for constipation independence there is no standard protocol to measure defecation performance. **Objectives:** To identify the effectiveness of toilet training program for children with autism **Methods:** One group pretest - posttest design was done to find the changes among children with autism who suffering from defecation difficulties. **Results:** After applying intervention there was a significant change in stool consistency where p value was (.000<0.05). Besides that, after applying intervention some behavior also changed of sensory hyper - reactivity like defecation withdrawal behavior with p value 0.008<0.05, sitting on specific place for defecation where significant value was 0.003<0.05, toilet accepting behavior for urination and defecation where p value was .008<0.05, child comfortless to accept bathroom where significant value was .008 < 0.05, child's painful behavior during defecation reduced and interest to defecate outside of home also significant where significant value were same for both (0.008 < 0.05). In case of mother's educational background, there found a moderate to high correlation with changed behavior of autism children where r = .859 and p value was 0.05. But mothers age and monthly income with changed behavior were not correlated where r = -.505, with p value 0 .079 > .05 and r = -.156, and p value 0 .610 > 0.05. **Conclusion:** Constipation problem among autism children common as they suffering from sensory problems to intake regular foods. Appropriate problem identification and intervention can manage childhood constipation.

Key words: *Autism, Constipation, Defecation, Toilet Training*

CHAPTER-I INTRODUCTION

1.1 Background:

Autism is a neurobehavioral condition that is attributed to causing trouble in social relationship, communication, adaptability, and sensory processing (American Psychiatric Association, 2013). In developed nations, the typical diagnosis age is inwardly 38 to 120 months, although parents typically start to worry regarding the growth of their child when a child is within 18 and 24 months old (van't Hof et al; 2021). Becerra-Culqui et al; (2018) in their study stated that parents are concerned about early indicators such as inadequate eye contact, delayed in indicate a place, direction, person or thing; either spatially or figuratively or gesturing something, delayed responding to their name, and slow mumbling /speech. Globally, the number of people with ASD was estimated to be between 0.6 and 313.3 in every ten thousand individuals (Talantseva et al; 2023). Among Asian countries the highest significance of autism in Japan and that is 3.22% (Rasool et al; 2023). In context of Bangladesh, the manifestation rate is estimated to be between 0.15% and 0.84%, with the highest prevalence rate being observed in Dhaka (3%) (Hossain et al; 2017). Here 1 in 589 children aged 16-30 months had ASD. In a study of 38,440 children, researchers found that boys were more likely to experience developing autism than girls and that it was more common among parents with advanced age groups (Akhter et al; 2022). According to recent research, autism can be caused by different biological causes, along those that are genetic, congenital, immunological, neuroanatomical, biochemical, and environmental (Hwang & Lee, 2024). In Bangladesh, a study done by Khan, et al; in 2024 found that in comparison to healthy controls, there was a significant correlation found between the odds of ASD being lower in nuclear families, fathers in the range of ages those 22–35 years, and fathers in association with an advanced degree of education (≥masters). From a retrospective cohort studies from 1997 – 2013 among children up to 3 years it found that compared to children without constipation, early childhood constipation significantly increased the risk of ASD in young children (Lee et al; 2023). Existing research has indicated that children with ASD

aged four to ten years demonstrate significantly lower levels of self-care performance than those with typical development (Chi, & Lin, 2021 & Yela-González et al; 2021). The incidence of involuntary urination or defecation in children with Autism higher compared to normally developing children (Niemczyk et al; 2018). From a systematic review and meta-analysis conducted in 2023 found that, functional constipation is more common in developable countries than in undeveloped nations (Wang et al; 2023). A cross sectional study found that functional constipation was more common among toddler groups where maximum children complained excruciating defecation (81.4%) and in Bristol Stool Form Scale they choose type II, were defecation mentioned for three times within seven days (Musali, & Damireddy, 2023).

In children with typical development, sphincter control develops from 9 to 12 months of age. Typically, bladder control is achieved between 24-48 months of age (Boyraz et al; 2018). Normal child usually learn and achieve the millstone of toilet from four years (Schum et al; 2002). Generally, 18 to 24 months is a good age to begin toilet training. Effective and self-directed toilet use behavior can be expected from 18 to 36 months of age (Boyraz et al; 2018). Involuntary urination or defecation may have a considerable and unfavorable effect on lives of children with developmental disabilities, as it can impede their capacity to take part in social activities. This is because of several indicators, that include inadequate hygiene, stigmatization, discomfort and irritation in the genital region, reduced self-esteem, and restrictions on daily activities (Kroeger & Sorensen-Burnworth, 2009).

Constipation might be most functional than organic where percentages were 90 and 10. (Hyams et al; 2016). The physiopathology of constipation might be numerous like stool retaining tendency, abnormal anorectic anatomy, maintain a prescribed selection of food, regular exercise, genetic and mental issues. But stool holding tendency is the main reason for constipation in kids (Vriesman et al; 2020). Ineffective defecation training and pain associated with constipation created discomfortness and fear, thus children hold stool unconsciously (Mulhem et al; 2023). Functional constipation management can be associated with effective stress less toilet training, reducing withholding behavior and with the use of medication (Tran et al; 2023). But organic constipation cannot but manage without medication (Hojo et al; 2024). Organic constipation associated with

abnormal development of anatomical structure and intestinal organs, progressive or non – progressive status of brain and body functions, abnormal development of spinal cord, intestinal nerve related problems and medications (Classen et al; 2022).

With an estimated incidence of 33%, the diagnosis of GI symptoms among ASD population ranged from 0% to 69%. A study mentioned that, it is preferable to use Rome IV criteria rather than Rome III criteria for diagnosis FC (Lasheras et al; 2023).

Table 1 Pediatric functional constipation as per Rome IV basis

Age	Criteria for diagnosis
Less than 4four years old	Two or more requirements for a minimum of thirty days Firstly, obtaining two or less bowel movements per week; Secondly, holding excessive amounts of stool; Thirdly, experience excruciating or difficult bowel movements; Fourthly, having large - diameter stools; Fifthly, having large mass of feces in the rectum; Sixthly, experiencing a minimum of one fecal incontinence episode within seven days following the learning of defecation ability; and Lastly, having stools with a large diameter that could prevent children from using the restroom who have already completed preschool.
More than or equal four years old	In kids who are at least four years old, two or more signs associated with at least one month: Firstly, fewer than two bowel movements per 7 days; Secondly, a minimum of one fecal incontinence episode within 7 days; Fourthly, presenting a large mass of bodily waste in the rectum; Fifthly, stool with a history of being too big to fit through the toilet; Sixthly, additional criteria: - Incomplete discharge of stool and a desire to hold extravagant feces - Hurtful or hard-to-pass stools; - Without meeting the requirements for irritable bowel syndrome

(Vernon - Roberts et al; 2021)

To identify normal defecation and functional constipation the frequency of defecation and regular toilet timing related understanding is important (Tran and Sintusek, 2023). During the 1st seven days of life, stool excretion happens more frequently than four times a day. Interestingly by the age of four, it drops to three times a day. Furthermore, between four and six weeks of age; at least, to once or twice daily (Weaver, 1988). During breast feeding time irregular stool discharge occurs that not need any medication or intervention (Aziz & Malik, 2024). Functional constipation in children can be associated with sleep patterns. A recent findings found relationship sleep patterns with constipation where odds ratio were 1.47 at 95% confidence interval (Tian et al; 2024). A retrospective study conducted in UK found that constipated people have more depressive symptoms than non-constipated where odds ratio was 2.18 (Yun et al; 2024). In Bangladesh, a cross sectional study found by Rome IV criteria that the number of constipation and functional constipation occurrences among school going children in Dhaka city were nineteen percent and eleven percent respectively. It also found that unhygienic toilet environment of school, inadequate water intake, and screen time for more than two hours are mainly responsible (Benzaminet al; 2022). After all, dietary habits, geographic location, and being exposed to vulnerable situations in life have all been connected to the development of functional constipation (Koppen et al; 2018).

Parents of children with Autism often complain about defecation performing limitation in Occupational Therapy practice. Children with Autism face challenges in Communication, Social interactions, and stereotyped behavior. They are unable to understand and communicate defecation appropriate behavior. According to a study conducted in Bangladesh, the majority of children is not engaged in self-care activities and need a lot of help to complete and engage in self-care activities. The frequency among children engaging in self-care practices, taking part in family and leisure activities, and enjoyment of family & recreational activities were 54%, 57.2%, & 62% respectively (Sonia, 2019).

In Bangladesh, we educate parents about toilet training procedures. In special needs school most of the cases they use timing or scheduling with reinforcement for training up this. But for managing sensory behavior associated constipation among ASD populations, there is no standard protocol to practice.

1.2. Justification of the study

Autism becomes the unexpected issue and burden that increasing day by day not only in Bangladesh but globally (Hossain et al; 2017). The review of the study done by Tran & Sintusek on 2023 viewed that by using the diagnostic criteria of Rome IV, according to estimates, the average worldwide manifestation of FC among children was 14.4%. Constipation was most common in Africa and least in Asia. But it is a matter of repentance that the prevalence of constipation in Bangladesh is 19% that is highest in Asia (Benzamin et al; 2022). Autism children suffer from sensory hypersensitive, hypo responsive or mixed response. Due to hyper or hypo responsive to sensory skills children with ASD suffers from profound problem in nutrition and food selectivity that includes food consistency, color, temperature, smell and taste (Li et al; 2024). A scoping review done by Baraskewich et al; in 2021 found that around 86% children refuse foods for sensory sensitivities. And overall these food selectivity restricted their child to take regular food that heavily impact on gut health. Besides that, daily age appropriate insufficient amount of water intake can also lead to constipation (Vieux et al; 2017). Due to sensory dysfunction, children with autism avoid many textural foods and that includes fruits, veggies, nuts and different roots taste (Li et al; 2024). Though parents use different laxatives and lubricants to manage their child's constipation but their side effects make child more irritating and discomfort (de Geus et al; 2023). Overall it hampers their optimum performance of activities with daily living and deteriorates their mental health. In pediatric outpatient unit of CRP many parents with younger children diagnosed with ASD complained about defecation related behavioral problems. But within limited time duration that quiet some difficult to educate and train them about importance of defecation management even it associated with constipation. Besides that due to socio-economic condition parents usually not bring their children to pediatrician or gastroenterologist. Even many pediatricians ignore those defecation problems and not educate about toilet training. But, in this case school played an important role for rehabilitation of children with ASD where holistic approaches can apply with ongoing follow up. Many literatures suggested that if constipation persists for prolong time that may raise children's emotional anxiousness, disturbance and behavioral problems (Fedele et al; 2024). Throughout the world child-oriented, the Azrin and Foxx, Dr. Spock's, and

the early elimination programs are important and popular defecation training methods. However, there wasn't much data supporting constipation in Asian settings, (Choby & George, 2008). Besides that, in Asian countries like India many parents do not give importance to children's defecation behavior (Gauri et al; 2023). But following that children's behavioral problems limit exceeds. The main objectives of toilet training are to optimize overall child's defecation related behavior as per sensory hypo – reactivity or hyper - reactivity responses. The toilet training protocol used in the study can contribute accessible information gaining among mothers. Besides that through this research mothers can give importance on early management of constipation and they can consult with appropriate professionals. Though there are very limited gastroenterologist or pediatric practitioner knows about occupational therapy and that's why they never refer a child who is suffering from constipation that is closely related with sensory issues. This research can be the window of spreading information among health service providers that through toilet training intervention and sensory integration an autism child's participation in society and family can be enhanced.

Only an in-patient toilet training education program for children with cerebral palsy was the subject of a 2013 qualitative study conducted by Akter. However, in BD there is a deficient study to determine the efficacy of toilet training program for managing functional constipation among ASD child's. In contrast to the global literature there are no studies done in this nature in Bangladesh. That's why, researcher interested to carry out this study.

1.3 Research question

Is a toilet training program more beneficial for autism children who struggle with their defecation problems?

1.4: Hypothesis

Null hypothesis H_01: The pre- and post-experimental groups are not associated in terms of stool consistency after intervention

Alternative Hypothesis H_a1:

The pre- and post-experimental groups are associated in terms of stool consistency after intervention.

Null hypothesis H_02: The pre- and post-experimental groups are not associated in terms of hyper active behavior after intervention.

Alternative Hypothesis H_a2:

The pre- and post-experimental groups are associated in terms of hyper active behavior after intervention.

Null hypothesis H03: The pre- and post-experimental groups are not associated in terms of hypo reactive perception behavior after intervention.

Alternative Hypothesis Ha3:

The pre- and post-experimental groups are associated in terms of hypo reactive perception behavior after intervention.

1.5 Operational definition

***Autism*:** Autism is a condition where children are struggled with socialization, communication and to perform age appropriate play and daily living activities (American Psychiatric Association, 2013). According to the DSM-5, part A includes that; a child needs to consistently struggle in all three social communication and interaction domains. It comprises continuous issues with social interaction and communication in a variety of settings, such as inappropriate conversation approach, nonverbal communication behaviors related to social interaction, and forming, sustaining, and comprehending relationships in many social contexts. From part B, in order to be diagnosed; at least two of the four categories of restricted, repetitive behaviors must be present for ASD. Parts C stated that, symptoms have to exist in the early phases of development. Symptoms lead to a clinically significant impairment in social, occupational, or other important domains of current functioning mentioned by Part D. Last part indicates that, these disruptions not more appropriately explained by ID or GDD (American Psychiatric Association, 2013). In this study those child will be included who are diagnosed as autism by an occupational or speech and language therapist from the responsible school.

Functional constipation:

Levy et al; (2018) in their study stated the drastic and far – the definition of FC was changed from Rome II to Rome IV. Rome II was first introduced in 1999. For diagnosing criteria FC used for 0- 4 years and functional fecal retention (FFR) used for 0 - 16 years. Following that, from 2005, the PACCT came into use. Rome III standards were applied starting in 2006. Rome IV criteria have been used worldwide since 2016 to diagnose functional constipation (Levy et al; 2017).

Functional Non-retentive Fecal Incontinence (FNRFI): When a child's stool comes out while they're trying to pass gas. The Rome III classification defines FNRFI as a history of defecating in outside of home and in social environment unsuitably for at least once per month with a minimum four-year developmental age.

Fecal incontinence (FI): FI is the incapacity to sustain stool until get to a toilet. It might be happened by diarrhea, impairment of muscles or nerves inside rectum, constipation, or prolong time weaknesses (Bliss et al; 2024).

CHAPTER-II LITERATURE REVIEW

Globally, in recent years the amplitude of ASD has sharply being increased (Maenner et al., 2021) & (Zeidan et al., 2022). ASD has a pooled prevalence of 98 per 10,000 people worldwide, with higher rates in developing nations. Men are far more likely than women to have an ASD (Wang et al; 2022) & (Rajindrajith et al; 2023). 48.67% of the population reported having gastrointestinal symptoms (Wang et al; 2022). From an integrative review done by Tye et al; in 2019 estimated that the incidence of any type of GI problems among autism population, that may vary between 9% and 70% but may even be as high as 91%. Another study conducted in US, found that, in comparison to children with other developmental behavioral disorders, children with autism may have a higher lifetime risk of constipation (Cuffman & Burkhart, 2021). Constipation is very common, occurring at a rate of at least 50% of cases (Holingue et al; 2018). Approximately 9.5% of children worldwide suffer from chronic constipation (Rajindrajith et al; 2023). The incidence of constipation was increased within 1-9 years old children that were 12% in Asia (Djurijanto et al; 2024). A review done by Mulay & Kartik in 2022 indicated that younger and non-verbal ASD children had higher prevalence of constipation that is potentially associated with their aggressiveness, oppositional, rigid compulsive behavior and even anxiety.

From a systematic review and Meta - analysis of thirty-seven studies, FC was discovered to be common in 0.5% to 32.2% of cases, with a 9.5 pooled frequency (Koppen et al; 2018). As per Chen et al; in 2023 a cross-sectional study conducted in China among 301 kids notified that the children who eat the most allergy-causing food items (cow's milk, eggs, fish, and shrimp), suffered from FC, difficulties with anal fissures, stomach ache, and discomfort when fecesing. Infamously, for children with ASD, there is a profound problem in nutrition and food selectivity as they have restricted food intake due to sensory issues that includes food consistency, color, temperature, and taste (Li et al; 2024). A scoping review done by Baraskewich et al; in 2021 found that feeding problems associated with selective intake and presence of sensory sensitivities were 86%

and 69% respectively. In actuality, there become imbalances in the makeup of bacteria in the gut. On the other hand, rigidity and recurrent eating patterns can cause excessive consumption of certain foods, such as carbohydrates, which can also have an influence on the composition of the gut material present in the gastrointestinal tract (Turriziani et al; 2022) & (Li et al; 2024). Actually, a study conducted by Steiner et al; in 2014 and Koppen et al; in 2018 claimed that 38% and 37% of patients can get recovery from constipation respectively if adhered to therapy.

Childhood FC is often treated with a combination of pharmacological and non-pharmacological interventions (Van der Plas et al; 1997).

A summary of the research done by Santucci et al; in 2021 found that probiotics, prebiotics and symbiotic of pharmacological management can significantly reduce constipation among children's. A variety of medication classes, including lubricants, stimulant laxatives, osmotic laxatives, and chloride channel activators, are most useful for treating constipation (de Geus et al; 2023). But within pharmacological management most researches have indicated that herbal and traditional medicine were effective in treating children constipation without causing any notable side effects than drugs (Tran & Sintusek, 2023).

On the other hand, non - pharmacological management like diet, therapy, toilet training and abdominal massages are effective to manage childhood constipation (Wegh et al; 2022).

There are the four basic approaches to toilet training (Choby & George, 2008). Among those the American Academy of Paediatrics and Canadian Paediatric Society advocate the child-oriented toilet training technique, that is the most approachable, widely recognized, and useful approach for the child age range from 1.5 years to 2 years (Clifford et al; 2020). In order to benefit from the gastro colic reflex, child is instructed to sustain a position to use the toilet for no more than five minutes at a time., one to three times a day, after meals with positive reinforcement and rewards to encourage that behavior more (Weaver, 1988). Children learn to recognize when they have the desire to

urinate through this procedure, and consequently, instead of holding feces or urine in, they exhibit the habit of using the restroom (Koppen & Benninga, 2022).

Toilet training become started around age 2 years and was dependent on the children's physiological with psychological readiness (Wyndaele & Vermandel, 2023). The efficacy of toilet training might be imposed to a variety of elements, including the status of structural with cognitive development of children, the age at which they are expected to begin training, the techniques and materials employed, the educational background of those providing the training, their current employment status, their level of experience, and the socioeconomic situation of the parents including the presence of a working mother or father, and the presence of rural and urban areas (Boyraz et al; 2018). In the most common toilet training program parents usually maintain a time schedule to sit over potty. Unless a parents sufficient effort and time this would became untrained. Sometimes it can be like, parents unable to understand the child's desire, or can toilet in unscheduled time. Continuous accidents causes rose of the parent's angriness and even punish the child. Toilet training as per time scheduling causes child reliance to other, and spiritless (Azrin & Foxx, 2019). There are different toilet training methods. Among them potty training was quick and effective with both the Azrin and Foxx method and the child-oriented approach, but little was known about how long-lasting the training was (Klassen et al; 2006). Millions of children have used the "Rapid Toilet Training" method since 1973, when it was developed by Azrin and Fox. A study was conducted among 9, mental detarded children to assess the effectiveness of the training manual. The multispecies training package included a schedule for elimination, enhanced liquid intake, progressive guidance, penalties, constructive feedback, specific designated sitting, and a urine alarm. The research indicated that defecation skills as sequence of reactions that can occur through the execution of either both favorable and unfavorable incidents or responses instead of associations of muscular responses with internal stimulus were most remarkably associated with people with Mental Deranged (Azrin & Foxx, 1971).

Classroom based intense intervention also popular like increased intake of fluid, specific time breaks for sitting in toilet schedules, programmed reward, and regular diaper check plays important role for defecation and urination training (Cagliani et al; 2021).

A thorough analysis was done by Wegh et al. in 2022 among the five continents (Oceania, Asia, Europe, South America, and North America) found that the increased fiber rich foods intake, cow's milk-free diet, and green banana reduced constipation. But cow's milk elimination reported a significant success to reduce constipation (Wegh et al. in 2022) & (Vandenplas et al; 2016). The 2017 study by Boilesen et al; revealed that constipation has been linked to low fluid consumption. Nevertheless, increasing fluid consumption on its own has not been demonstrated to be helpful in treating pediatric functional constipation (Boilesen et al; 2018). A review of the literature conducted in 2007 by van Dijk et al; explained that there are five sequential steps make up the process of education for kids and parents: know, dare, can, will, and do. In case of liquid intake two systematic reviews explained that low amount of fluid intake can leads to constipation (Boilesen et al; 2017). But contradictorily another systematic review found that increased fluid intake don't work on reducing constipation for children (Todhunter-Brown et al; 2024). According to NICE Guideline the recommend water intake per day to reduce constipation among children, including water contained in food should be like.

Table 2 seven month to eight years old liquid intake

Age	Liter
Seven month to one year	0.8 (milk and other necessary foods)
one year to three year	1.3
Four to eight year	1.7

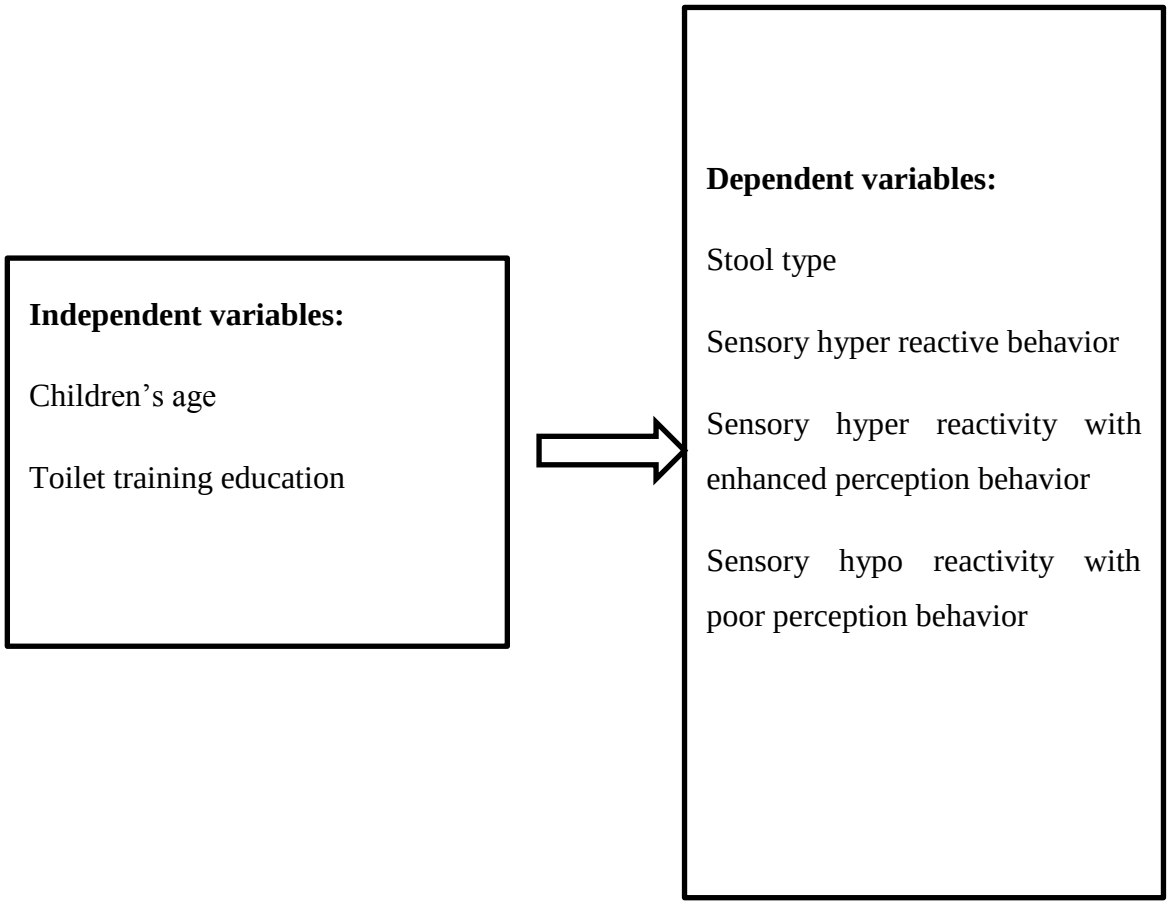
(NCC - WCH, 2010).

For Toilet training intervention reinforcement and gradual physical assistance elimination plays an essential role for learning and expressing appropriate toilet related behaviors (Chung et al; 2024). A retrospective type of thesis was carried out in 2023 by Osborn et al; demonstrated that physical activity combined with education, emotional regulation and defecation training reduced constipation as well as enhanced emotional control and self-assurance during a six-month period. For children and young people who aged between 5 – 17 years, the WHO suggested at least 60 minutes of moderate-to-intense physical exercise each day to decrease a feeling of anxiety and depression (World Health

Organization, 2010). Moreover, child's who meet the WHO recommendation of 60 minutes or more of physical activity per day experienced functional constipation less frequently in their fourth year of existence than child's who met the recommendation of less than one hour per day where odds ratio were 0.48 (Driessen et al; 2013). Literature review done by Rajindrajith et al; in 2023 found some false beliefs and an incorrect conceptions which frequently result in incorrect assumptions like limited treatment duration due to concern that extended periods of laxative administration results in colon dysfunction and inadequate management techniques such increasing fiber and water in the diet interfere with successful therapeutic strategies.

CHAPTER-III METHODOLOGY

3.1 Conceptual Framework



3.2 Study objectives

3.2.1 General objective: To identify the effectiveness of toileting program for children with autism

3.2.2 Specific Objectives:

- To identify the socio-demographic characteristics of the participants
- To identify whether intervention reduce constipation/stool consistency according to Rome IV
- To identify whether intervention normalize sensory hyper reactive behavior.
- To identify whether intervention normalize sensory hyper reactivity with enhanced perception behavior
- To identify whether intervention normalize sensory hypo reactivity with poor perception behavior
- To identify if there any association present with changed behavior of children

3.3 Study design

A pre - experimental research design is selected with one group pretest - posttest design where the experimental group is acted as the research main subjects. A pretest observation of the dependent variables was made prior to the treatment being given to the selected group, and a dependent variable observation of the special needs students was conducted following the test. In this study researcher make comparisons between the same groups of children's mother, at different points in time. This study was carried out over a period of time for 3 months. In pretest - posttest study design there is no control or randomization (Thyer, 2012). This study was carried out to identify effectiveness of toilet training program. Impact on performing urination and defecation of toilet training program among students of special needs school. Researcher choose this design as the sample size was extremely tiny, and it was quiet difficult to include ASD students as age range limited to 3- 6 years for using defecation questionnaire where children diagnosed mostly between 3 years to 5 year that is statistically found between low, middle and high income countries (Matos et al; 2022).

The outcome parameters were to compare in pre-test and posttest. All the information's were collected by using reliable and validated clinical tests. All the data were entered using a data collection form and analyzed using IBM SPSS statistics 22 statistical software.

3.4 Study population

This study will include the students of any background of special school. The age range of three to six years was chosen since this is when indications of pain during or after faeces often appear, as well as when chronic problems with toileting usually appear (McElhanon et al; 2014 & McKeown et al; 2013). Children with ASD according to DSM – 5 diagnosed by therapist (OT / SLT) were included in this study. Children were excluded who use medication to manage constipation ((Beaudry-Bellefeuille & Lane, 2017). Children outside of ROOM IV criteria will not be able to participate in the study (Beaudry-Bellefeuille et al; 2019).

3.5 Study site:

The pre - experimental research was carried out in the Prottasha Center for Autism care and Sonirvor Center for Neurodevelopmental Disorder among the regular students of special needs school.

3.6 Study period

The study underwent approximately 10 months duration of academic year.

3.7 Sampling method and sample size

In this study, sample was select from two special needs school who meet the inclusion criteria within study frame (11.11. 23 to 20.02. 2024). All of the three to six-year-old students from two schools who were diagnosed with autism were included in the study. There is a purposive non probability sampling was conducted and there are 13 children's met the criteria and all are allocated into the study. In this study participants were selected purposively as because the participants have some particular features or characteristics which detailed helped to identify research objectives. Three students from

Sonirvor and ten from Prottasha School meet the requirements. Thus all these 13 children's mother receives treatment education regarding defecation and constipation.

3.8 Inclusion criteria and exclusion criteria:

3.8.1 Inclusion criteria;

- Children with ASD according to DSM – 5 diagnosed by therapist (OT / SLT)
- Age range 3 - 6 years
- Male and female child both can participate in the study
- Mothers suffering from child problems with bladder control or defecation difficulties

3.8.2 Exclusion Criteria;

- Mothers who will not be interested in participating in the study.
- Children outside of Rome IV criteria will not be able to participate.
- Children who use medication to manage constipation
- Child's whom stool comes out while they're trying to pass gas not include in the study

3.9 Measures

There are two measures used in this study. One is Rome IV Diagnostic Criteria for FDD-Based Probe Questions (ROME FOUNDATION, 2021). One quick and easy diagnostic tool that pediatricians can use to determine whether a child is constipated is the Bristol stool form scale (Koh et al; 2010). This tool is categorized into seven groups: types one and two have solid stools, which indicate constipation; types three to five have stools that fall within a "normal range"; and types six and seven have loose stools, which indicate diarrhea. This tool developed in UK by Stephen Lewis and Ken Heaton (Lewis & Heaton, 1997).

Another one is the THPQ-R (Beaudry-Bellefeuille et al; 2019). That tool was bilingually adapted according to the linguistic validation process (English - Bengali). This tool used as a pre and post assessment tool to differentiate normal and abnormal behaviors of

defecation in terms of intervention. There are 25 items scored using a scale with two categories one for “frequently or always” and two for “never or rarely” (Beaudry-Bellefeuille et al; 2019).

3.10 Data collection

3.10.1 Data collection tools

- Consent form: please see appendix.
- Research questionnaire: please see appendix
- Stationary items (Pen, Papers, Clip board)

3.10.2 Data collection from school

- Data collection permission
- Categorize 3-6 year old children diagnosed with ASD by OT/SLT assessment from school admission record
- Collect phone number of mothers from school
- Consent taken from mothers
- For data collection communicate with each mothers separately to identify whether their child have defecation problems as per Rome IV criteria.

3.11 Sample allocation process

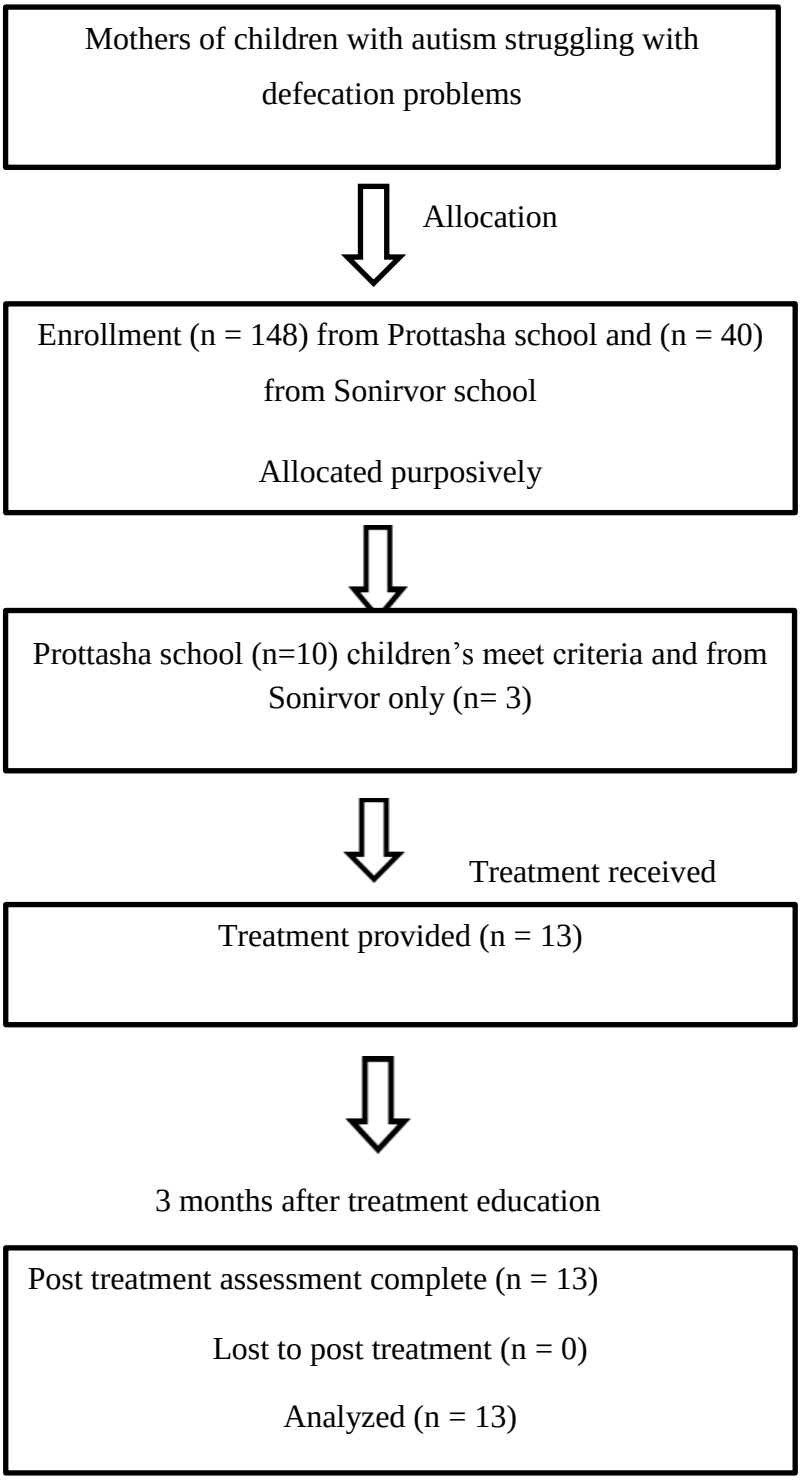


Fig 1: Flow chart of mothers with autism child's allocation

3.12 Intervention

3.12.1 Treatment sessions

30 minutes in one day per week. For sessions mothers did not have to pay for the session.

3.12.2 Assessment

Assessor assessed the behaviors from mother at the end of after 3 months based on the questionnaire.

3.12.3 Intervention group training

One occupational therapist provide toilet training education program to each mothers for approximately 30 minutes per week according to the school shifts of the child. Therapist also gives feedback and share opinions regarding mothers interest.

3.13 Data management and analysis

All the tests conducted as per the guidelines of M.Sc. in Rehabilitation Science department standard protocols and procedures. For data analysis, descriptive, inferential, and comparative statistics were employed. Results were presented in graphs and tables, descriptive data in numbers and %, appropriate analysis were done. Researcher found pretest and posttest frequency and percentages of participants. To compare pretest and posttest data researcher check data normality test. It showed data were not normal. Besides that both data types were ordinal, that's why researcher used Wilcoxon signed rank test instead of paired sample t –test to compare and contrast pretest and posttest of the participants. To identify Correlation of mother's age, monthly income, mothers educational background with changed behavior after intervention researcher convert nominal data to scale data. As per normality check data were normally distributed that's why carried out a Pearson test with a p-level of statistical significance ($p<0.05$).

3.14 Utilization of result

The research was designed to determine the efficacy of toilet training program for children with autism. The research findings might bring changes in practice of

occupational therapy evidence of practice with minimal cost and utilization time and activities as every education are coherent with Bangladeshi culture.

3.15 Assuring the quality of the study

3.15.1 Linguistic validation

Before data collection researcher conducted linguistics validations of the questionnaires by involving Occupational Therapists through a short pilot study for the translation and cross-cultural adaption.

3.15.2 Homogeneity

The group of children is homogenous regarding inclusion criteria and socio-demographic factors.

3.15.3 Pilot study

Researcher conducted a short pilot trial before conducting the study for checking feasibility of the protocol and outcome measure in pediatric setting of CRP.

3.16 Ethical considerations

This pre - experimental study includes mothers of autism child, occupational therapists, and other resources for better outcome. All participants' information was kept confidential. The participants had the freedom to stop receiving intervention at any moment. Ensure voluntary participation, no coercion; and assure no harms of the study participants.

Concerns of ethics were adhered by the World Health Organization and Bangladesh Medical and Research Council.

Before conducting the dissertation, a proposal on research outlines was provided to the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) in Center for the Rehabilitation of the Paralysed (CRP). After obtaining authorization to gather data, data were collected from two special needs school of Savar area. All data files were stored in strict secure and maintained confidentiality.

CHAPTER-IV RESULTS

This result chapter analyzed socio-demographic information's of participants and individual participant's pre and post result analysis of toilet training for children with defecation problem.

4.1. Socio – demographic variables

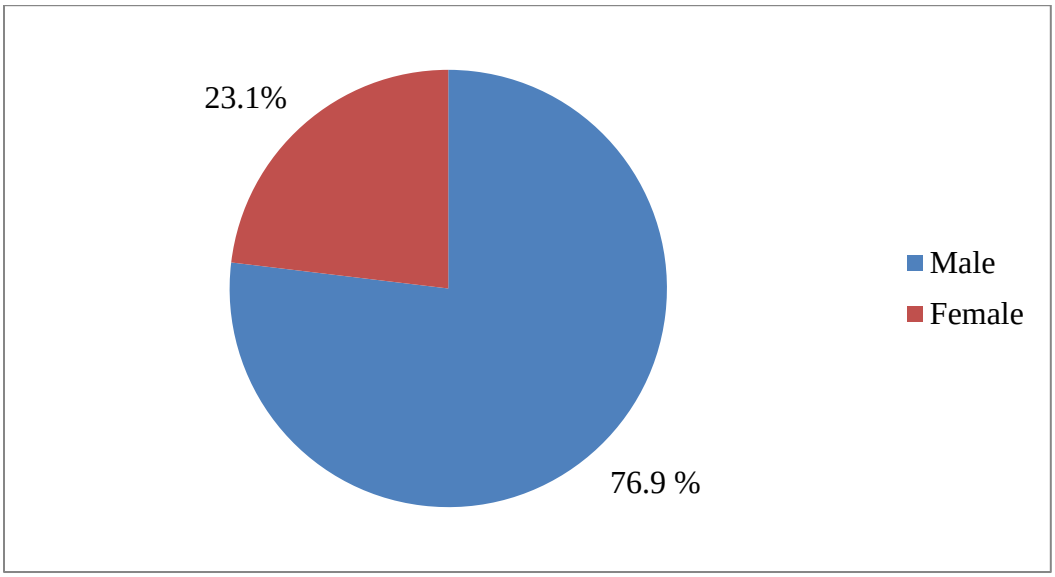


Figure 2: Gender distribution

The given pie chart demonstrated that among the participants 76.9% were male and 23.1% female and the frequency were 10 and 3 respectively. So, it showed that most of the children's were male whose mother participated in the study for toilet training intervention.

Table 3 Age and monthly income distribution

Variable	Range	Mean± SD
Children's age	3.4 – 6	5.254 ± 0.7523
Mothers age	25 – 35	30.62 ± 3.22
Fathers age	28 – 42	35.46 ± 3.886
Family monthly income	15000 - 100000	48461 ± 19619.783

Note: SD = Standard Deviation, N = 13

Taka - Bangladeshi taka

In the above table total 13 children's data are presented. The mean (±SD) age for all children's were 5.254 (± 0.7523) years. The participants' minimum age was 3.4years and maximum age was 6 years. Mothers who involved in the study their mean age (±SD) were 30.62 (± 3.2) years. The minimum age of the mother was 25 years and maximum age was 35 years. On the other hand, fathers age range within 28 – 42 years where mean age were (±SD) 35.46 (± 3.886) years. Besides, that all the children's average family income per month between 15,000/- to 10, 0000/- where mean income were 48461 taka with the standard deviation 19619.783 taka.

Table 4 Marital status and educational background

Variable		Frequency	Percent %
Marital status	Married	13	100
Mothers	Secondary	1	7.7
educational	Higher	5	38.5
Background	Secondary		
	Graduate	3	23.1
	Post graduate	4	30.8
Fathers	Secondary	2	15.4
educational	Higher	3	23.1
background	Secondary		
	Graduate	5	38.5
	Post graduate	3	23.1

All mothers were married in the study. Most of the mothers educational background presented higher secondary as 38.5% mothers completed their higher secondary education. On the other hand most fathers were graduate (38.5%). Interestingly there were no illiterate or primary educational background mother and fathers in the study.

Table 5 Mother and Fathers Occupation

Variable		Frequency	Percent %
Mothers occupation	Housewife	13	100
Fathers occupation	Government job	1	7.7
	Private job	7	53.9
	Abroad	3	23
	Business	2	15.4

All the mothers in the study were housewife (100%). In case of father's occupations, they were doing government job, private job, business and abroad accounting for 7.7%, 53.9%, 15.4% and 23% of their total. But the fathers of most children engaged in private job.

Table 6 Siblings number and family member

Variable		Frequency	Percent %
Siblings number	One sibling	3	23.1
	Two siblings	3	23.1
	No siblings	7	53.8
Family member	3	5	38.5
	4	3	23.1
	5	3	23.1
	7	1	7.7
	9	1	7.7

Compared to siblings one and two in the family, the percentage of children without siblings (53.8%) was greater. In this study most of the family consisting of 3 family

members (38.5%). Four and five family members consisting have same percentages (23.1%). Apart from that, there is just one family, with a maximum of nine members.

Table 7 Delivery type

Variable		Frequency	Percent %
Delivery type	Normal spontaneous delivery	3	23.1
	Cesarean section	10	76.9

This table showed that most the mothers delivered their children by cesarean section (76.9%) than normal spontaneous delivery (23.1%).

Table 8 Types of toileting practice among children and school mobility

Variable		Frequency	Percent %
Types of toileting practice	Western commode	8	61.5
	Asian commode	5	38.5
School mobility	On foot	9	69.2
	Rickshaws	4	30.8

In addition, families use western commode more often than Asian commode (61.5% vs. 38.5%, respectively) for their children. Among 13 children most of them go to school on foot (69.2%) and by rickshaws (30.8%) rather than using other transports.

Table 9 Daily combinations of food and Osmotic laxative drugs use (stool softeners)

Variable		Frequency	Percent %
Daily combination of food (Fruits, nuts, milk, vegetables, fish, meat)	Daily	7	53.8
	Sometimes	4	30.8
	Rarely	1	7.7
	Not ever	1	7.7
Osmotic laxative drugs use (stool softeners)	Daily	2	15.4
	Not ever	11	84.6

In case of daily combination of food 53.8% mothers mentioned that they regularly eat fruits, nuts, milk, vegetables, fish, and meat. In addition, the chart above indicated that the majority of moms do not provide stool softeners to their child's to relieve constipation.

4.2 Stool type

Table 10 Pre and post type of stool

Item	Mean ± SD	DF	t-table	t-cal	P. value
Pre –type of stool	1.62±.506	12	2.21	9.76	.000<0.05
Post type of stool	3.46 ±0.660				

In Bristol stool form scale type 1 and 2 presented as constipated stool. Normal stool verities are 3, 4, and 5. Conversely, types 6 and 7 are diarrheal stools. As per that tool the participants pretest score was 1.62±0.506 that means constipated stool. On the other hand, posttest score was 3.46±0.660 that means normal stool. Overall, it seems that after intervention stool type has been changed. As per table, the calculated value is more than

the tabulated value (9.76 > 2.21) at 12 degrees of freedom where p value was significant 0.000<0.05. So, researcher accepted the alternative hypothesis that, the intervention can reduce constipation between pre and post experimental group in terms of stool consistency after intervention.

4.3 Behavioral frequency

Table 11 Sensory hyper-reactive behavioral frequency

Item	**Recurrence of the behavior**	**Pre item**		**Post item**		**Wilcoxon signed ranked test**
		Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	p. value
1	Frequently	9	69.2	2	15.4	**.008**
	Never	4	30.8	11	84.6	
2	Frequently	2	15.4	1	7.7	.317
	Never	11	**84.6**	12	**92.3**	
3	Frequently	10	76.9	1	7.7	**.003**
	Never	3	**23.1**	12	**92.3**	
4	Frequently	11	84.6	2	15.4	**.003**
	Never	2	15.4	11	84.6	
5	Frequently	9	69.2	2	15.4	**.008**
	Never	4	30.8	11	84.6	
6	Frequently	6	46.2	3	23.1	.083
	Never	7	**53.8**	10	**76.9**	
7	Frequently	7	53.8	1	7.7	.014
	Never	6	**46.2**	12	**92.3**	
8	Frequently	8	61.5	1	7.7	**.008**
	Never	5	38.5	12	92.3	
9	Frequently	10	**76.9**	3	**23.1**	**.008**

	Never	3	26.3	10	76.9	
10	Frequently	5	38.5	2	15.4	.083
	Never	8	61.5	11	84.6	
11	Frequently	1	7.7	1	7.7	1.00
	Never	12	**92.3**	12	**92.3**	
12	Frequently	6	46.2	4	30.8	.414
	Never	7	53.8	9	69.2	
13	Frequently	1	7.7	1	7.7	1.00
	Never	12	**92.3**	12	92.3	
14	Frequently	4	30.8	4	30.8	1.00
	Never	9	69.2	9	69.2	

In toilet profile habit questionnaire data type were ordinal. Data normality test showed not normal that's why a Wilcoxon signed rank test conducted. In pre-test 69.2 % participants reported that their child hides to pop frequently whereas after post-test 84.6% participants said that their child never hides to pop that was statistically significant where p-value was 0.008. On the other hand, in sensory item 3, mothers reported that their child's preference to poop in their clothing behavior also reduced significantly whereas 92.3% child never done that type of behavior after intervention where significant value 0.003<0.005. Besides that, child's sitting behavior on potty for poop was also significantly improved whereas significant value 0.003<0.005 where 84.6% child show never that type of behavior after posttest. In case of item 5, children found it discomfort able to urinate and defecate while seated on the toilet, even at home. But interestingly, 84.6% children never show uncomfortable sitting behavior after intervention that is statistically significant where significant value 0.008 < 0.05. In case of item 8, before providing intervention 61.5% children felt pain frequently when pooping. But after intervention, 92.3% children never felt pain that is statistically significant where significant value was 0.008 < 0.005. In item 9, children's another sensory hyper-reactivity behavior was to refuse poop outside of home. In this case, in pretest 76.9% child show refusal behavior, in posttest only 23.1% children show that refusal behavior outside of home and this improvement is also statistically significant where significant

value was 0.008<0.005. Overall, In Sensory hyper-reactivity area most respondents demonstrated improvement significantly for item 1, 3, 4, 5, 8, 9.

Overall it can sum up that, in case of sensory hyper-reactivity, item number 1, 3, 4, 5, 8, 9 demonstrated highly significant than other items. So, it means that the intervention significantly related to an association between pre and post experimental group in terms of hyper - reactive behavior than sensory hypo reactive behavior after intervention. So, researcher accepted alternative hypothesis and rejected null hypothesis for these items.

Table 12 Sensory hyper-reactivity/enhanced perception behavioral frequency

Item	**Recurrence of the behavior**	**Pre item**		**Post item**		**Wilcoxon signed ranked test**
		Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	p. value
15	Frequently	3	23.1	-	-	0.102
	Never	10	76.9	13	100	

In case of sensory hyper reactivity the p value showed more than significant value (0.102>0.05) that means that intervention was not more significant to reduce sensory hyper-reactivity/enhanced perception related behavior. So, the researcher accepted null hypothesis and reject alternative hypothesis that the pre- and post-experimental groups are not associated in terms of sensory hyper reactivate behavior after intervention.

Table 13 Sensory hypo-reactivity/poor perception behavior

Item	Recurrence of the behavior	Pre item		Post item		Wilcoxon signed ranked test
		Frequency	Percent	Frequency	Percent (%)	p. value
16	Frequently	7	53.8	3	23.1	0.102
	Never	6	46.2	10	76.9	
17	Frequently	10	23.1	2	15.4	0.317
	Never	3	**76.9**	11	**84.6**	
18	Frequently	4	30.8	5	38.5	1.00
	Never	9	69.2	8	61.5	
19	Frequently	4	30.8	3	23.1	0.655
	Never	9	69.2	10	76.9	
20	Frequently	5	38.5	3	23.1	0.157
	Never	8	61.5	10	76.9	
21	Frequently	4	30.8	2	15.4	0.157
	Never	9	69.2	11	84.6	
22	Frequently	2	15.4	1	7.7	0.317
	Never	11	**84.6**	12	**92.3**	
23	Frequently	4	30.8	1	7.7	0.083
	Never	9	**69.2**	12	**92.3**	
24	Frequently	1	7.7	-	-	0.317
	Never	12	**92.3**	13	**100**	
25	Frequently	9	69.2	6	46.2	0.180
	Never	4	30.8	7	53.8	

For identifying sensory hypo-reactive behavior between pretest and posttest researcher found that data not normally distributed. That's why researcher conducted Wilcoxon

signed ranked test instead of paired sample t – test to compare pretest and posttest results of sensory hypo-reactivity. For item 23 mothers reported that before intervention 30.8% children frequently show that their child doesn't seem to know how to push the poo out but after intervention 92.3% child never show that that type behavior but that was not statistically significant as the p value was more than the significant value 0.083 > 0.05.

Notoriously, every p value of sensory hypo-reactivity/poor perception not significant to intervention as every p value presented more than 0.05. So, Null hypothesis is accepted because there is no relationship between pre and post experimental group in terms of hypo reactive perception behavior after intervention.

4.4 Correlation of autism child's changed behavior after intervention with maternal age, income per month and mother's educational background

Table 14 Pearson rank correlation coefficients for autism child's changed behavior after intervention

Variable	Posttest total	Mothers age	Monthly income	Pearson rank correlation coefficients (p-value)
Posttest total	1	-.505	-.156	
Mothers age		1	0.409	0.079
Monthly Income			1	0.610

To identify Correlation of mother's age, monthly income, mothers educational background with changed behavior after intervention researcher convert nominal data to scale data. As per normality check data were normally distributed that's why conducted Pearson test. The correlation between mothers age and children changed behavior was not statistically significant where r = -.505, and p value 0 .079 > .05, on the other hand monthly income is also not statistically significant with children changed behavior as r = -.156, and p value 0.610 > 0.05. Overall for mother's age and monthly income, researcher accepted the null hypothesis and reject alternative hypothesis that after providing

intervention the findings were not associated with mother's age and family's monthly income.

Table 15 Spearman Rank correlation coefficients for autism child's changed behavior after intervention

Variable	Posttest total	Mothers educational Background	Spearman's rho correlation coefficients (p-value)
Posttest total	0.055		
Mothers educational Background		1	0.859

In case of mothers educational background researcher conducted Spearman's correlation as this variable is qualitative discrete variable. Table 15 showed that, there was a moderate to high level correlation with changed behavior and mother's educational background and that was statistically significant where r = .859 and p value 0.05. So, researcher accepted alternative hypothesis that, there is an association between changed behavior with educational background and that is statistically significant.

CHAPTER-V DISCUSSION

A pre - experimental study entitled “Effectiveness of “Toilet Training Program” for Children with Autism” was conducted. The primary goal of the research was to find whether there is any relationship for managing constipation and behavior among children with autism complaining with defecation problems. Moreover, the study has conducted to examine the participants' socio-demographic situation and individual children’s pre and post behavioral performance of applying toilet training intervention. This section addresses the study's outcomes and conclusions and also compares them to previous studies. Throughout the study the toilet training intervention was provided to mothers. A systematic reviews on effectiveness study looked at different service delivery models (n = 15); family- and caregiver-delivered interventions (n = 32) (Todhunter-Brown et al; 2024). In this study only 13 samples participated but it is found that a study conducted in USA for 3 ASD children in school settings by a reinforcement-based toilet training program (Cicero & Pfadt; 2002). Besides that, another study on efficacy on toilet training program done in Turkey within 3 participants at a school with various probe design (Ardiç & Cavkaytar, 2014). Overall, a systematic review also found that most of the studies of effectiveness of toilet training program for children with autism have small sample size (Simon et al; 2022). Though in this study the age range was limited to 3 – 6 years, the mean (±SD) age for all children with autism were 5.254 (± 0.7523) years, but results can also contribute an important role for children with ADHD as well. It is known that FDD also affects older children. Furthermore, no tool that deals with intestinal and sensory problems was discovered (Atladottir et al; 2013). In case of gender, male children’s are higher than female participated in the study. From literature it is found that 84.4% of the autistic children were male where 76.9% male children’s mother participated in the study (Hamid et al; 2020). In addition, in Edirne, Turkey Inan et al; (2007) reported a link between constipation and male gender. In this study father’s age range (28 – 42) 35.46 ± 3.886 years and maximum graduate fathers are 38.5%; this finding is corroborated by a research done by Khan, et al; in 2024 where they found that

fathers with child with autism between the ages of 22 and 35 years and most fathers were graduate or more than that. In this study mothers mean age were (25 – 35) 30.62 ± 3.22 years. Mother's age is supported by another study where they found that mothers at birth 31.16 years have 1.3 times chance to have a child with autism. In case of education most of the mothers completed higher secondary education (38.5%). The number of post graduate mothers is also not less (30.8%). Conversely, another study exemplify that a third of mothers completed secondary education to some degree, and most belonged to the middle or upper middle class. Besides that all the mothers attended in this study were housewife that is also supported by DCunha et al; in 2023 and Appak et al; in 2017. Alongside it is supported by same research that revealed mothers with housewife have 2.3 times chance to diagnose autism (Hamid et al; 2020). A study from India found that half of constipated children's mothers were housewife (DCunha et al; 2023). In this study 76.9% mothers had cesarean section where 23.1% were normal spontaneous delivery. Conversely, a research outlined from a survey data that 53.18 % women done normal delivery at home specially at rural areas (Fatima et al; 2024). Another research mentioned normal delivery rate as 44.82% (Afaya et al; 2024). But over time the percentages of cesarean section raising specially in non-rural area (32.73%) (Kundu et al; 2024).

Siblings of autism child can contribute enhancing attitudinal, social and specific play skills improvement by constructive education and training to siblings (Weisberg et al; 2024) & (McDowell et al; 2024). Compared to siblings one and two in the family, the percentage of children without siblings (53.8%) was greater in this research. Besides that autism child's have both (23.1%) one sibling and (23.1%) two siblings in their family. A research indicated that siblings of autism child suffered from emotional attachments and interaction difficulties (Park et al; 2023) & (Constantino et al; 2010). However, in this study, the majority of families consisted of three members (38.5%). Four and five family members consisting have same percentages (23.1%). Apart from that, there is just one family, with a maximum of nine members. But contradictorily a thesis indicated that autism became more common in extended family than a small member family (Khan et al; 2024).

Furthermore, families in this study earn between 15,000 and 100,000 Taka each month. Though two different studies show reverse findings. One study found autism mostly found in low income families where another study indicate it more common in high income families (Khan et al; 2024) & (Akhter et al; 2024).

Among 13 children of the study most of them go to school on foot (69.2%) and by rickshaws (30.8%) rather than using other transports. This findings also supported by another study conducted in China where they found that 71% students walk for go and back from school (Li et al; 2023). On foot medium and cycling are the most popular non-motorized forms of transportation in South Asia. However, other socioeconomic factors, such as total distance traveled, age, gender, education, duration, and a family's monthly income, can also have an impact on school transportation (Chaudhry et al; 2023) & (Shbeeb & Awad, 2013). In the same research (Chaudhry et al; 2023) they mentioned many families use rickshaws, private car, and public bus for transportation. Bhuiya et al., in 2022 also supported that private car and rickshaws are the most essential choice for special needs in Bangladesh. But in China, Fushun area mothers from lower income families preferred bus than any other transportation (Cheng et al; 2016). In Bangladesh a research carried out by Hossain et al; in 2022 found that most of the toilets are Asian than western in Dhaka city. Pit latrine is also common in rural areas in Bangladesh. But due to fear of darkness, toilet hole and inaccessible feet place many children preferred open defecation among 3–7 year old children (Huda et al; 2021) & (Bauza et al; 2020). But in this study 61.5% of the children's use western commode and rest of the 38.5% children's use Asian commode. Inversely, a study done at Turky found that most of the constipated child used western commode than potty and squatting pan (Appak et al; 2017). In case of nutritional food intake this study mentioned that 53.8% families ensure combination of all food types in their families. But children with autism avoid many textural foods due to sensitive to specific food items (Li et al; 2024). A study based on school based secondary data held among eight countries of South - East Asian mentioned that mental stress associated with insufficient fruit and vegetable intake where odds ratio were 1.20 and 1.17 at 95% confidence interval (Shawon et al; 2023). A meta-analysis and comprehensive review done by Sikorski et al; in 2023 among forty seven countries described that East Asia and Southeast Asia people intake greater amount of meat, fish,

fruit, and vegetable than other regions of the world. Besides that a study found that functional constipated child takes fewer amounts of vegetable and fruits than healthy controls (Appak et al; in 2017).

In spite all of that, A cross – sectional study conducted at Dhaka Bangladesh among 5 – 16 years old children, where 11% of the total population met Rome IV criteria of FC, and they found association for constipation within retaining stool, liquid consumption, and passed screen time more than 2 hours per day (Benzamin et al; 2022).

Most of the respondents do not use osmotic laxatives to manage constipation for their children. In this study in case of stool type the calculated value is more than the tabulated value ($9.76 > 2.21$) at 12 degrees of freedom where p value was significant $0.000 < 0.05$. But research demonstrated that as first line therapy during toilet training, osmotic laxatives and lifestyle modifications are also essential. In addition, it's crucial to consume enough fluids and fiber as well (Tran et al; 2023). A comprehensive review done by Vriesman et al; in 2020 discussed that functional constipation can be managed by dietetically treatment, specific instructions and attitudinal therapy, medical interventions, and operative treatment, and an application of mechanical, chemical, and electrical modalities to identify how the nervous system operates. For reducing constipation another study done by Williams et al; in 1995 recommended that children with more than 5 years should intake 0.5 kg fiber within 24 hours for reducing constipations. Another study done in Netherlands also supported the findings of this study that education and modification of behavioral issues of toilet training that encouragement required to sit in toilet at least 2 – 3 times in a day after every meal that prevents any kind of injury in anal area and improved stool frequency as well (Plas et al; 1997). One study mentioned that elimination of cow's milk from daily food menu reduces constipation (van Der Schoot et al; 2023), (Crowley et al; 2013) & (Irastorza et al; 2010). In this study mothers were also educated to remove cow's milk from their children's food menu. Furthermore, WHO recommended physical activity duration more than one hour a day also educated to mothers for reducing constipation (Driessen et al; 2013). Besides that, a study conducted by DCunha et al; in 2023 among Indian children's identified that roughly half of mothers

of children with ASD thought that attempts to pass stools on a regular basis should be rewarded with positive reinforcement.

If there is an interruption in nervous system that enhance, ensure and process sensory stimulus. That interruption can cause inappropriate modulation of sensory stimulus and finally affects behavioral responses (Waterhouse et al; 1996). A child with autism may suffer from receiving sensory stimulus or may face difficulties to tolerate sensation (Lane et al; 2019). Sensory hyper-reactivity and hypo – reactivity were most common in autism populations than any other conditions like ADHD or ID. Because of this, GI problems affected autistic children more frequently (Martínez-González et al; 2024). On the other hand, in case of sensory hyper-reactivity, item number 1, 3, 4, 5, 8, 9 of this research demonstrated highly significant to intervention than other items. So, it means that the intervention significantly related to an association between pre and post experimental group in terms of hyper active behavior after intervention. A research on school going autism children demonstrated correlation that stool withholding behavior associated with sensory hyper-reactivity responses, parenting style and activity participation (Osmanlı & Şahin, 2024). Through toilet training intervention the withholding behavior reduced significantly ($0.008<0.05$) in the study. Tran et al; in 2023 discussed that functional constipation management can be associated with effective stress less toilet training, reducing withholding behavior and with the use of medication . Many child prefers to defecate in cloth, floor or in public place instead of rest room. Nearly thirty percent children defecate in their cloth rather than using restroom (Shepard & Nyquist, 2024). When these constipation-related behaviors and sensory integration were addressed and multidisciplinary treatment provided then the defecation behavior improved (Shepard & Nyquist, 2024). Inappropriate defecation behavior was also significantly ($0.003<0.05$) reduced in this study when mothers received thorough education. For constipation many autism child only complete their urination in toilet but avoid defecation (Arguello et al; 2024). In this study the behavior to perform defecation in toilet improved significantly ($0.003<0.05$) after intervention. For prolong constipation children avoids urination as well (Akama et al; 2024). If appropriate fiber intake, liquid intake and appropriate toilet sitting behavior can enhance, it reduce constipation (Austin et al; 2024). In this study child refusal tendency to use toilet reduce significantly ($0.008<0.05$). Pain associated

with defecation common in many children (Sjödahl et al; 2024). Increased defecation related painful behavior might be related with repeated stool passing in dress (Beaudry-Bellefeuille et al; 2017). In this research, mother indicated that this unusual feelings reduce significantly (0.008<0.05) after intervention. Osmanlı,& Şahin, mentioned in 2024 that in school settings many children not interested to use toilet. On the other hand, defecation outside of home behavior also improved among the children where significant value 0.008 is less than 0.05. Overall, it can say that sensory integration, different lifestyle modifications and positive reinforcement can manage these behaviors associated with constipation (Vriesman et al; 2020) & (Tran et al; 2023).

Beaudry - Bellefeuille and Lane (2017) mentioned that among children with FC experienced much higher levels of sensory over-responsiveness compared to children without developmental disorders. So, finally it can say that children who have constipation may have unusual defecation habits that are linked to sensory hyper-reactivity. It's acknowledged that older children also go through FDD. In addition, no instrument that addresses both sensory and bowel issues was found (Atladottir et al; 2013). A research done by Little et al; in 2019 that was cross-sectional, found a relationship that long time persisting constipation raised sensory hyper-reactive behavior by refusing regular food, and overreacting to touches and visual activity. Another research disseminated that hyper-reactive behavior associated with emotional anxiousness in different social contexts (Williams et al; 2021). A research done by Kay in 2002 found relationships that in toileting skills; defecation, urination, lowers half dressing ability and hygiene behavior are influenced by sensory processing ability (Kay, 2002).

This studies correlation findings between mothers age and children changed behavior was not statistically significant where r = -.505, and p value 0 .079 > 0.05. This findings supported by a cross sectional type of research that toilet appropriate behavioral learning was not correlated with mothers age (Kostekci et al; 2023). A recent prospective cohort type research of 2024 conducted at 14 years duration in China found that children's intellectual development was independently correlated with older mother age, but not with attitudinal issues. Conversely, a higher risk of psychological and attitudinal issues

was found to be independently correlated with advanced father's age (Wan et al; 2024). Contrarily, children appear to exhibit fewer attitudinal, interactional, and affective issues as mother age increases. These findings have been longitudinally validated for the age range of three to fifteen years (Barnes et al; 2014) & (Aasheim et al; 2012).

In this study families monthly income was not statistically significant with children changed behavior as r = -.156, and p value 0 .610 > 0.05. Contradictorily, a study conducted at Turkey found that families with lower incomes than expenses showed a higher constipation rate, while families with incomes that were equal to or higher than expenses showed a lower constipation rate (Appak et al; 2017).

On the other hand, In case of mothers educational background researcher found nearly high level correlation and statistically significant with changed behavior where r = .859 and p value 0.05.

A research that is cross-sectional done by DCunha et al; in 2023 mentioned that mother with prominent knowledge had better way of thinking to change behavior of their child where r was 0.408 and 0.179 respectively. But Sawyer et al; 2023, Appak et al; in 2017 and Kilincaslan et al; 2014 indicated that there was an association of constipation with low education, low socioeconomic status and poor point view of mothers. Contradictorily, Chang et al; in 2024 denied that mothers educational background do not play significant role for changed behavior of constipation. In sum up, for achieving toilet appropriate behavior among children's, educated mothers play significant role for toilet training (Tarigan et al; 2022).

Overall, it can be said that constipated stool consistency can be controlled, after delivering the toilet training education to mothers. The research findings also showed significant improvement in terms of improving defecation appropriate behavior for only sensory hyperactivity than sensory hypo reactive behavior. Besides that, the findings demonstrated moderate to high level correlated with mothers' educational background than maternal age and families' monthly income.

In summary, the research findings and discussion presentation that draws comparisons and contrasts with previous studies conducted in other nations will help health

professionals, the beneficiaries group, and the general public comprehend the significance of toilet training interventions for children.

Implications and applications of this research

The main beneficiaries group of people of this thesis is children with autism and children suffering from defecation problems associated without sensory problems.

Due to sensory hyper – reactivity or hypo reactivity when children suffered from inappropriate defecation related problems this developed training intervention will help mothers to behave, feed and attitude with children appropriately that will help to manage them functional constipation gradually.

This research finding will give impact on professional practice of Gastroenterologist, Nutritionist and Occupational Therapy practice referral, and behavior development among constipated children.

In spite of autism population this intervention can also impact on normally developing children's functional constipation.

Toilet training is very usual in most of the countries. But for constipated autism children mothers have to keep in mind some special considerations because of their sensory and behavioral issues. In spite of presenting several methods, the guidelines were not used by mothers and even pediatric professionals paid no attention to use this. Inefficient training without standard guidelines can create problems for child and parents. The problems can be continuous bedwetting, problem in bowel and bladder muscles that obstructs voluntary voiding, soiling cloths frequently, and lack of interest to use restroom (Mukhtarovich et al; 2023). Due to sensory hyper reactivity or hypo reactivity a child can suffer from FDD. Continuous defecation difficulties might increase behavioral or attitudinal issues. As autism child face difficulties to express their emotions and feelings, this defecation discomfortness raise their anxiousness and that overall impact their performance. Even in some cases if toilet training not started earlier that can defect urinary tract (Kopač, 2024). This research finding will help health professionals and beneficiaries group of people about the importance of defecation problems, functional constipation and toilet training

management. In Bangladeshi context it's difficult to corroborate occupational therapist and gastroenterologists for working on sensory integration therapy, children eating behavior, food habit and constipation management. Through this research findings there can be a strong bridge of practice and collaboration with other professionals for ensuring autism child's optimum occupational performance. This study will also help occupational therapist and gastroenterologists for planning and educating regarding defecation and urination issues. Findings of this research will increase concerns and awareness on developing effective routine for toileting activities. Through this research finding appropriate referral can also be established. In every hospital, and special or inclusive school, if there can be referral system then these defecation issues can be managed easily. Furthermore, able-bodied children can also benefit from active national policy that promotes nutrition for all, including those who are able or especially able in central or remote areas of Bangladesh.

CHAPTER-VI CONCLUDING REMARKS

6.1 Conclusion

From this study we may conclude that the group has improvement after toilet training intervention to children with defecation problem in contrast with traditional occupational therapy. In addition to that, toilet-training programme based on family education and attitudinal intervention work best for dealing with behaviors associated with defecation difficulties to those children who have hyper-sensitivity to sensory stimulation. Though there are some contradictory opinions for using medications for softening stools but lifestyle modifications are the standard treatments for functional constipation in children. As per to this study it become prominent that the identified toilet related behavioral changes are associated with mothers educational status than mothers age, and monthly income of family.

6.2 Limitation of the study

There are some limitations that have found in the study. Most serous limitation was the limited sample size of the study. It was difficult to access the mothers whose child age was within 3 – 6 years that are applicable to use the questionnaires. Adequate sample size is highly impact on the significance of the results and validity of drawn conclusions. Further, the study had to apply nonparametric test for some analysis due to this less number of sample. If the study had a sufficient number of samples, the comparison between the groups within the study may also have more strong result. Another limitation of this study including children's only from Sonirvor and Prottasha special needs school. Multicenter trial with randomization will give more strength to present the study. Besides this as in this study there was no randomization and control that might create biasness on results. Thus generalization of the study might affect to implement the result in different contexts and for different populations. There are so many factors that impact participation in toilet training among autism population, however this study only focused on sensory

feature of the environment or defecation related activity. During the study investigators found it was really very difficult task to find participants who match with the criteria for inclusion and exclusion and was not able to achieve exact number of study participants. The study does not capture the details and specifics regarding broad range of socio-demographic information. Besides, if this study can conduct combined with gastroenterologist then functional constipation identification or screening can be more valid. However, there is an insufficient measure with proper validation that can accurately identify sensory problems related to defecation that might be affecting children with FDD's involvement in age- and health-appropriate toileting practices limits clinical practice in this area.

6.3 Recommendations

Hence there are no such effective values as per toilet training effectiveness in Bangladesh, the study recommended future researches. This study only considers the children who were engaged in school settings. Nevertheless, the study recommending the future researches to conduct on different organizations or schools that worked on rehabilitation.

Single treatment often not worked but combined with pharmacological and non-pharmacological intervention works many cases. Another importance is than Asian peoples are often dependent on direct medication rather than nutritional or behavioral intervention. Prolong medication exposure can make many secondary complications among children. Thus this training intervention can make help to parents and children’s.

This research finding can bring potential impact in clinical practice of clinicians through providing toilet training interventions.

Findings of this study can contribute advocacy and networking among different professional and beneficiaries group of people through sharing the importance of constipation management.

In policy making this study will more aware policy makers to give importance on this constipation among children

In special or inclusive school setting practice this training intervention can help children's to improve their self – care performance, emotional care, and ultimately change their quality of life. Appropriate referral to professionals need to be more effective for the improvement of quality of life of autism children.

Parents of children with defecation difficulties should be more aware about the effect of constipation as because, prolong time constipation increased more psychological distress and dependency on family and society.

Since there aren't many studies on potty training among autism kids in south Asian context, the study recommending future investigators to conduct more research in this area with large number of samples to have more accurate conclusions.

Besides this, if future studies conduct with randomization and with control group by Randomized Controlled Trial then effectiveness of toilet training program would be more fruitful because in this study there was no randomization and control group.

Last but not the least, collaboration with gastroenterologist will help to produce more reliable results.

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APPENDICES

APPENDIX – A: Consent form (English)

Consent Form

Assalamu Alaikum, I am Naznin Akhter, M.Sc. in Rehabilitation Science student, BHPI, CRP, Savar, Dhaka-1343. I am asking you to participate in a research study. This form is designed to give you information about this study. My thesis title is "Effectiveness of toilet training program for children with Autism". The purpose of the study is to identify the effectiveness of toilet training program. This will take approximately 30 - 35 minutes. During the interview period if you fell any emotional disturbance, social and economic risk and any other discomfort physical risk please tell me, I will stop the interview immediately. I am committed that the study will not harmful or risk for you. There is no payment for taking part in the study. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don't like or do not want to answer during interview. If you have any query about the study or your right as a participant, you may contact with me or my supervisor Muhammad Millat Hossain, Associate Professor, Course & Project Coordinator, Regional Inter-professional Master's program in Rehabilitation Scienc BHPI, CRP, Savar, Dhaka. Do you have any questions before I start?

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

YES ☐ NO ☐

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

Signature of the Participant & Date: …….

Signature of the Witness & Date: ……

APPENDIX - B: Consent Form (Bengali)

সম্মতি পত্র

আসসালামু আলাইকুম, আমি নাজনীন আক্তার, পার্ট ২, মাস্টার অফ সাইন্স ইন রিহ্যাবিলিটেশনের ছাত্রী, বাংলাদেশ হেল্‌থ প্রফেশন্স ইনস্টিটিউট (বি এইচ পি আই), পক্ষাঘাতগ্রস্থদের পূনর্বাসন কেন্দ্র (সিআরপি), সাভার, ঢাকা - ১৩৪৩। এই কোর্সের অংশ হিসাবে আবশ্যকভাবে একটি গবেষণা কর্ম সম্পাদন করতে হয়। আমি আপনাকে এই গবেষণায় অংশগ্রহন করার জন্য আমন্ত্রন করছি। গবেষণার বিষয় হচ্ছে অটিজম আক্রান্ত শিশুর জন্য টয়লেট প্রশিক্ষণ শিক্ষার কার্যকারিতা নিয়ে। এই গবেষণার উদ্দেশ্য হলো অটিজমে আক্রান্ত শিশুদের জন্য টয়লেটিং প্রোগ্রামের কার্যকারিতা জানতে পারা। এতে আনুমানিক ৩০ - ৩৫ মিনিট সময় লাগতে পারে।

এই গবেষণায় অংশগ্রহণ সম্পূর্ন আপনার ইচ্ছাকৃত। আপনি যে কোন সময় আপনার অংশগ্রহণ প্রত্যাহার করতে পারবেন। সাক্ষাৎ কারের সময় যদি আপনি কোন মানসিক বিপর্যয়, সামাজিক ও অর্থনৈতিক ঝুকি এবং অন্য কোন অস্বস্তিকর শারীরিক ঝুকিতে পরে থাকেন তবে আমাকে বলবেন, আমি অবিলম্বে প্রোগ্রামটি বন্ধ রাখব। আমি প্রতিশ্রুতিবদ্ধ যে গবেষনাটি আপনার জন্য ক্ষতিকর বা ঝুঁকিপূর্ণ হবে না। ইহা আপনার শিশুর টয়লেটিং কর্মক্ষমতাকে প্রভাবিত করে স্বাবলম্বী হতে সাহায্য করবে । গবেষণায় অংশগ্রহণের জন্য কোন উপহারের ব্যবস্থা নেই। তবে গবেষণা থেকে প্রাপ্ত ফলাফল চিকিৎসককে কার্যকর চিকিৎসা দিতে সাহায্য করবে।

গবেষণার সাথে সম্পর্ক যুক্ত এবং আপনার কাছ থেকে প্রাপ্ত তথ্য গোপনীয়তার সাথে রাখা হবে, শুধু গবেষক এবং তার তত্ত্বাবধায়ক তথ্য গুলো ব্যবহার করতে পারবেন। আপনার এবং আপনার শিশুর পরিচয় গবেষণার কোথাও প্রকাশ করা হবে না। গবেষণা সংক্রান্ত আপনার যদি কোন রুপ প্রশ্ন থাকে তাহলে আমাকে দ্বিধাহীনভাবে জিজ্ঞাসা করতে পারেন। এই গবেষণায় আপনার অংশগ্রহন হবে স্বেচ্ছাকৃত এবং আপনি কোন নেতিবাচক ফলাফল ছাড়া এই গবেষণায় যে কোন সময় নিজেকে প্রত্যাহার করতে পারবেন । এ ছাড়া আপনি পছন্দ করেন না এমন নির্দিষ্ট প্রশ্নের উত্তর না দেয়ার অধিকার আপনার আছে । যদি আপনার আর কিছু জানার আগ্রহ থাকে থাকে তবে আমাকে বা আমার সুপারভাইজার সহকারি অধ্যাপক মোঃ মিল-াত হোসাইন, প্রকল্প ও কোর্স সমন্বয়কারী, মাস্টার অফ সাইন্স ইন রিহ্যাবিলিটেশেন, সিআরপি, সাভার, ঢাকা ১৩৪৩ যোগাযোগ করতে পারেন । শুর করার আগে আপনার কোন প্রশ্ন থাকলে জিজ্ঞেস করতে পারেন ।

আপনার সম্মতি থাকলে আমি কি আপনার সাক্ষাৎ শুরু করতে পারি ?

হ্যাঁ ☐ না ☐

তদন্তকারীর স্বাক্ষর এবং তারিখ: _____

অংশগ্রহণকারীর স্বাক্ষর এবং তারিখ: _____

সাক্ষীর স্বাক্ষর এবং তারিখ: _____

APPENDIX – C: Socio-demographic Questionnaire (English)

Socio-demographic questionnaire:

Research questionnaire:

Childs name:

Age:

Interview date:

Phone no. :

Address:

In the following question tick the appropriate answer of the question:

No.	Questions	Answer	Put a tick Mark inside box
1.	Childs Gender	1. Boy	☐
		2. Girl	☐
2.	Class	……	
	Mothers age	…….years……months…..days	
3.	Fathers age	…….years……months…..days	
4.	Parents marital status	1. Married	☐
		2. Divorced/separated	☐
		3. Widowed	☐
5	Mother's educational qualification	1. Illiterate	☐
		2. Literate	☐
		3. Primary	☐
		4. SSC	☐
		5. HSC	☐
		6. GRADUATE	☐
		7. Post – graduate	☐
6	Fathers educational	1. Illiterate	☐

	qualification	2. Literate	☐
		3. Primary	☐
		4. SSC	☐
		5. HSC	☐
		6. GRADUATE	☐
		7. Post – graduate	☐
7	Mothers employment	……..	
8	Fathers employment	……..	
9	No. of siblings	……..	
10	No. of family member	……	
11	Type of delivery	1. Normal	☐
		2. C- section	☐
12	Household income (per month)	……tk	
13	Types of toilet (for child)	1. Western	☐
		2. Asian	☐
		3. Baby potty	☐
14	Types of transportation to go to school		
		1. On foot	☐
		2. Bicycle	☐
		3. Public bus	☐
		4. Private car	☐
		5. Rickshaw	☐
		6. Others	☐
15	What is the combination of fish, meat, vegetables, nuts, milk and fruit in daily food?		
		1. Daily	☐
		1. Sometimes	☐
		2. Rarely	☐
		4. Not ever	☐
16	Do you use stool softener drugs to manage your child's constipation?	1. Daily	☐
		2. Sometimes	☐
		3. Rarely	☐
		4. Not ever	☐

APPENDIX – D: Socio-demographic questionnaire (Bengali)

সামাজিক জনসংখ্যা সংক্রান্ত প্রশ্নাবলী

গবেষণার প্রশ্নাবলীঃ

সন্তানের নামঃ

বয়সঃ

সাক্ষাৎকারের তারিখঃ

মোবাইল নম্বরঃ

ঠিকানাঃ

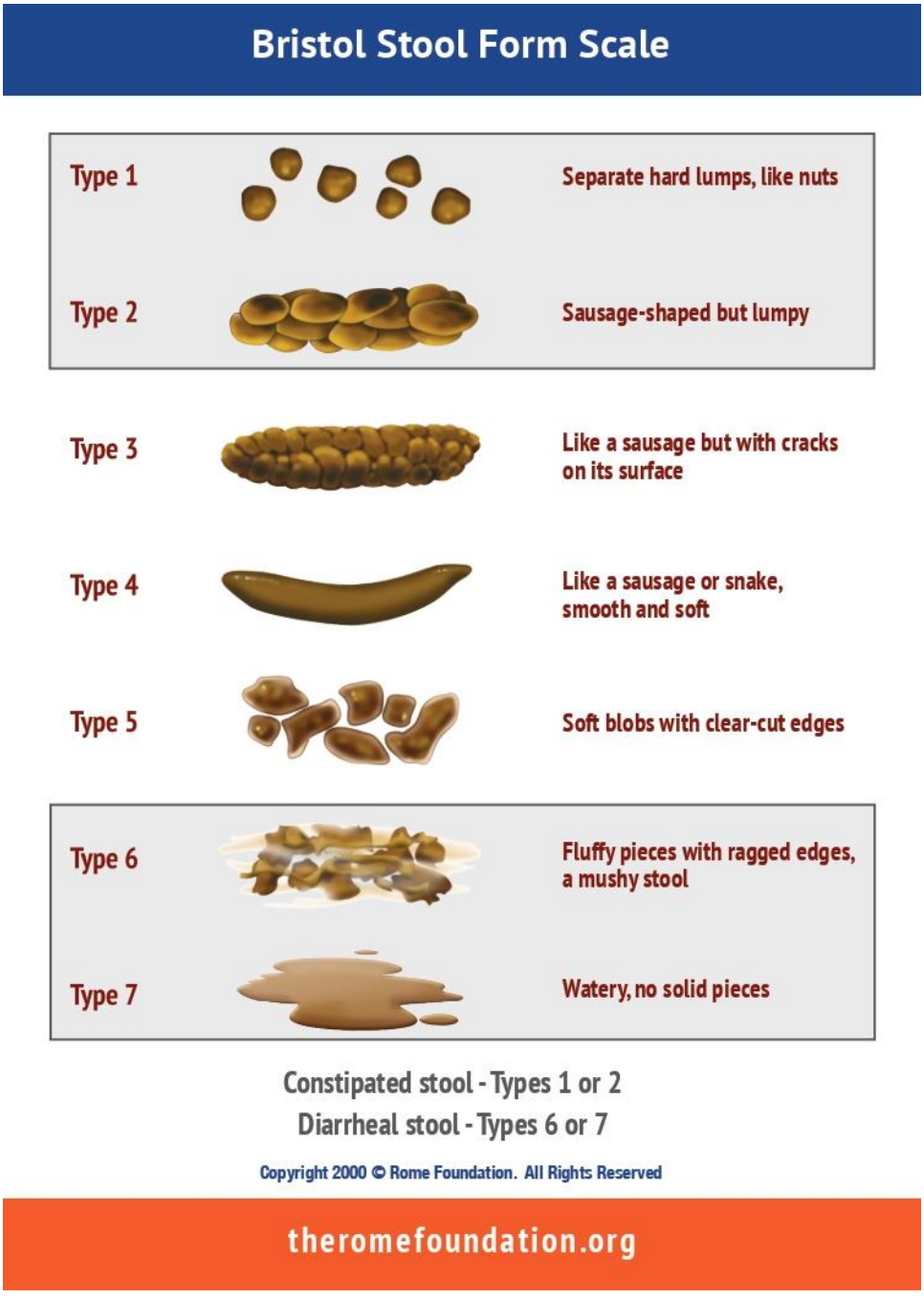
নিচের প্রশ্নের উপযুক্ত উত্তরে টিক দিন:

নং	প্রশ্নাবলী	উত্তর	সঠিক উত্তরের বক্সের ভিতরে একটি টিক চিহ্ন দিন
১।	সন্তানের লিঙ্গ	১) ছেলে	☐
		২) মেয়ে	☐
২।	শ্রেণি	.....	
২।	মায়ের বয়স	.....বছর .....মাস.....দিন	
৩।	বাবার বয়স	.....বছর .....মাস .....দিন.....	
৪।	পিতামাতার বৈবাহিক অবস্থা	১) বিবাহিত	☐
		২) তালাকপ্রাপ্ত / পৃথক	☐
		৩) বিধবা	☐
৫।	মায়ের শিক্ষাগত যোগ্যতা	১) নিরক্ষর	☐
		২) সাক্ষর	☐
		৩) প্রাথমিক	☐

		৪) মাধ্যমিক	☐
		৫) উচ্চ মাধ্যমিক	☐
		৬) স্নাতক	☐
		৭) স্নাতকোত্তর	☐
৬।	বাবার শিক্ষাগত যোগ্যতা	১) নিরক্ষর	☐
		২) সাক্ষর	☐
		৩) প্রাথমিক	☐
		৪) মাধ্যমিক	☐
		৫) উচ্চ মাধ্যমিক	☐
		৬) স্নাতক	☐
		৭) স্নাতকোত্তর	☐
৭।	মায়ের পেশা	.....	
৮।	বাবার পেশা	.....	
৯।	ভাই – বোন র সংখ্যা		
১০।	পরিবারের সদস্য সংখ্যা	.....	
১১।	প্রসবের ধরন	১) স্বাভাবিক	☐
		২) সি – সেকশন	☐
	পরিবারের আয় (মাসিক)	.....টাকা	
১৬।	টয়লেটের ধরন (শিশুর জন্য)	১) ওয়েস্টার্ন কমোড	☐
		২) এশিয়ান টয়লেট	☐
		৩) বাচ্চাদের পটি	☐
১৭।	স্কুলে যাতায়াতের মাধ্যম	১) হেঁটে	☐
		২) সাইকেলে	☐

		৩) পাবলিক বাসে	☐
		৪) ব্যক্তিগত গাড়ীতে	☐
		৫) রিকশায়	☐
		৬) অন্যান্য	☐
১৮।	দৈনন্দিন খাবারে মাছ, মাংস, শাকসবজি, বাদাম, দুধ এবং ফলের সমন্বয় কি ধরনের ?	১) নিয়মিত	☐
		২) মাঝে মাঝে	☐
		৩) হঠাৎ	☐
		৪) কখনও না	☐
১৯।	মল নরম করার কোন ওষুধ কি ব্যবহার করেন ?	১) নিয়মিত	☐
		২) মাঝে মাঝে	☐
		৩) হঠাৎ	☐
		৪) কখনও না	☐

APPENDIX – E: Bristol Stool Form Scale (English)

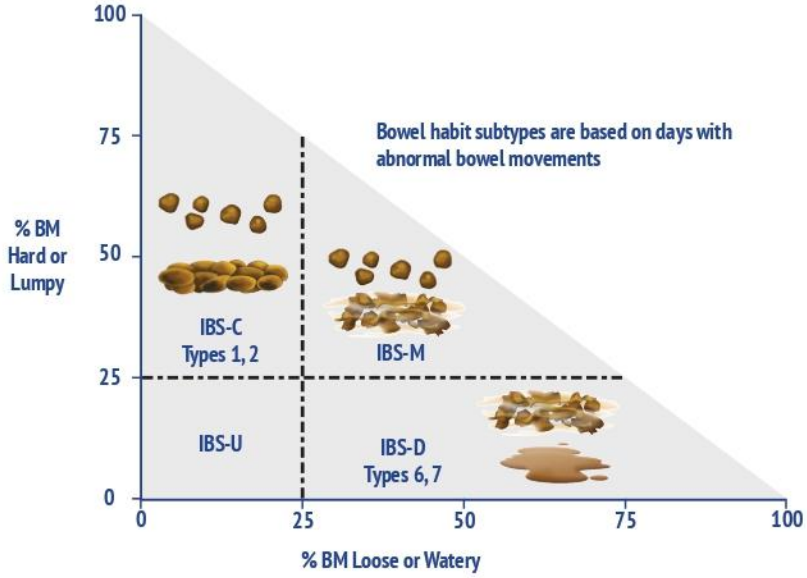


Rome IV Criteria for Irritable Bowel Syndrome

Recurrent abdominal pain on average at least 1 day/week in the last 3 months, associated with two or more of the following criteria:

- Related to defecation
- Associated with a change in frequency of stool
- Associated with a change in form (appearance) of stool

Rome IV IBS Subtypes



IBS Subtypes are based on >25% of abnormal BM (types 1,2 or 6,7)

- IBS-C Types 1, 2 not 6, 7 >25%
- IBS-D Types 6, 7 not 1, 2 >25%
- IBS-M Types 1, 2 and 6, 7 >25%
- IBS-U No Type >25%

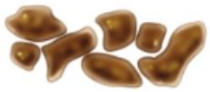
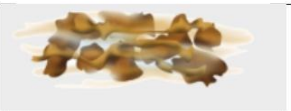
IBS-C: IBS with predominant constipation
IBS-D: IBS with predominant diarrhea
IBS-M: IBS with mixed bowel habits
IBS-U: IBS unclassified

ROME FOUNDATION

theromefoundation.org

APPENDIX – F: Bristol Stool Form Scale (Bengali)

ব্রিস্টল স্টুল ফর্ম স্কেল

ধরন ১		আলাদা শক্ত অংশ, বাদামের মতো
ধরন ২		সসেজ আকৃতির কিন্তু দলাপূর্ণ
ধরন ৩		একটি সসেজের মত কিন্তু এর পিঠে চিড় খাওয়ানো
ধরন ৪		সসেজ বা সাপের মতো, মসৃণ এবং নরম
ধরন ৫		নরম ফোটা সাথে স্পষ্ট কিনারাযুক্ত
ধরন ৬		নরম অংশ সাথে গলিত কিনারা সহ, একদম নরম মল
ধরন ৭		তরল, কোন কঠিন অংশ নেই

কোষ্ঠকাঠিন্য মল - ধরন ১ বা ২

ডায়রিয়া মল - ধরন ৬ বা ৭

ইরিটেবল বাওয়েল সিনড্রোমের জন্য রোম IV মানদণ্ড

গত ৩ মাসে গড়ে কমপক্ষে ১ দিন/ সপ্তাহে বারবার পেটে ব্যথা, নিম্নলিখিত মানদণ্ডের দুটি বা তার বেশি সঙ্গে যুক্ত:

- মলত্যাগের সাথে সম্পর্কিত
- বারবার মল সংঘটনের পরিবর্তনের সাথে যুক্ত
- মলের আদর্শ আকার পরিবর্তনের সাথে যুক্ত

APPENDIX – G: Toilet Training Protocol (English)

Toilet training protocol

A. Education about the effect of constipation on ASD children:

Chronic constipation is common among children with ASD and is associated with more severe hyperactivity, anxiety, irritability, and repetitive behaviors. Young autistic children with chronic constipation display higher urinary, and foecal concentrations of p-cresol (acidic in nature), an aromatic compound produced by gut bacteria, known to negatively affect brain function. Acute p-cresol administration enhances anxiety, hyperactivity and stereotypic behaviors, while blunting social interaction (Turriziani et al; 2021)

B. Education for food

i) Identify food that increases the risk of allergy that must need to be avoided.

ii) Identify specific time when child has the high chance to grow acidity on specific food

iii) **Educate to provide magnesium oxide or high fiber rich foods to improve stool frequency (van der Schoot et al; 2023).**

Food	Time
Different seeds eg; flaxseeds (tishi), cereal	**Any time**
Different nuts eg; Cashews (not more than 4 – 5 pieces), Raisins	**between breakfast and lunch**
Different vegetables e.g Spinach, Broccoli, Potato, Carrot, Tomatoes, Cucumber, Bottle gourd, Lady's fingers radishes, Cabbage	**Any time**
Different fruits eg; Banana, Avocado, Apple, dates, watermelon	**between breakfast and lunch**
Plant based milk eg; coconut milk, soya milk, almond milk, oat milk, pea milk	**evening to night time**
Different sea fishes or fishes eg; Salmon, sardine	**Any time**
Probiotic food (that have live microorganisms) e.g	**Any time**

homemade soup, use of cheese,	
Boiled-down Rice (jao vat), brown rice	**Anytime**

iv) Reducing dietary fiber intake for 6 months and stool frequency increased eg; Cows' milk intolerance has been linked to chronic constipation Clinical trials have also shown that removing cows' milk from the diet of children with chronic constipation increases the number of bowel movements (

v) On average recommend for drinking water, children aged 4–13 years a total of 258 ml/d of water.

Water intake by age

Age in years	**Number of 8 oz cups**
4	1 liter
5	1.25 liter
6	1.5 liter
7	1.75 liter
8	2 liter
9 and older	2 liter
Eight 8 oz cups = 2 liters	

vi) **Ensure sufficient physical exercising regularly**. Physically active for >1 hour/day as recommended by the WHO eg; dancing, cycling, walking/ running

vii) Additionally, children with physical activity of more than the WHO recommendation of 60 min/day had significantly less functional constipation in the fourth year of life

viii) Education about the role of withholding behavior

ix) Encourage child to attempt to defecate at least two or three times daily (after each meal), has been found to prevent the occurrence of fecal impaction and to decrease the risk of fecal incontinence.

x) Ensure engagement of activities of daily living as much as possible

xi) Use low commode instead of high commode.

xii) Positive reinforcement for performing toileting activities (eg. Well – done, high-five, praise verbally)

xiii) Reduce physical and verbal prompts gradually (Total, Maximum, Moderate, Minimum, Supervision/verbal, independent)

xiv) If profound understanding problem child will first follow a teddy is enjoying his/her potty time and gradually make potty time enjoyable.

APPENDIX – H: Toilet Training Protocol (Bengali)

অটিজম শিশুদের উপর কোষ্ঠকাঠিন্যের প্রভাব সম্পর্কে শিক্ষা:

দীর্ঘস্থায়ী কোষ্ঠকাঠিন্য অটিজম আক্রান্ত শিশুদের মধ্যে সাধারণ এবং এটি আরও গুরুতর হাইপারঅ্যাকটিভিটি, উদ্বেগ, বিরক্তি এবং পুনরাবৃত্তিমূলক আচরণের সাথে যুক্ত। দীর্ঘস্থায়ী কোষ্ঠকাঠিন্যে আক্রান্ত অল্পবয়সী অটিস্টিক শিশুদের মূত্রনালী এবং পি-ক্রেসোল (প্রকৃতিতে অ্যাসিডিক) এর মল ঘনত্ব দেখা যায়, যা অন্ত্রের ব্যাকটেরিয়া দ্বারা উৎপাদিত একটি সুগন্ধযুক্ত যৌগ, যা মস্তিষ্কের কার্যকারিতাকে নেতিবাচকভাবে প্রভাবিত করে। তীব্র p-cresol প্রশাসন উদ্বেগ, হাইপারঅ্যাকটিভিটি এবং স্টেরিওটাইপিক আচরণ বাড়ায় যা সামাজিক দক্ষতাকে ভোঁতা করে।

খাবারের শিক্ষা

১। এমন খাবার সনাক্ত করুন যা অ্যালার্জির ঝুঁকি বাড়ায় যা অবশ্যই এড়ানো উচিত।

২। নির্দিষ্ট সময় চিহ্নিত করুন যখন শিশুর নির্দিষ্ট খাবারে অ্যাসিডিটি হওয়ার উচ্চ সম্ভাবনা থাকে।

৩। নিয়মিত বিভিন্ন স্বাদের অনুভুতি যুক্ত খাবার দিন। যেমন – টক, ঝাল, মিষ্টি, তিতা, নুনতা

৪। মল ফ্রিকোয়েন্সি উন্নত করতে ম্যাগনেসিয়াম অক্সাইড বা উচ্চ ফাইবার সমৃদ্ধ খাবার দিন।

খাবার	দিনের সময়
জাও ভাত, বাদামী চাল	দিনের যে কোনো সময়
বিভিন্ন বীজ যেমন; তিশির বীজ (তিশি)	দিনের যে কোনো সময়
বিভিন্ন বাদাম যেমন; কাজু (দিনে ৪ – ৫) টুকরার বেশি নয়), কিশমিশ	সকালের নাস্তা এবং দুপুরের খাবারের মধ্যে
বিভিন্ন সবজি যেমন পালং শাক, ব্রকলি, আলু, গাজর, টমেটো, শসা, করলা, ঢেঁড়স, মূলা, বাঁধাকপি।	যেকোন সময়
বিভিন্ন ফল যেমন; কলা, অ্যাভোকাডো, আপেল, খেজুর, তরমুজে	সকালের নাস্তা এবং দুপুরের খাবারের মধ্যে

উদ্ভিদ ভিত্তিক দুধ যেমন; নারকেল দুধ, সয়া দুধ, বাদাম দুধ, ওট দুধ, মটর দুধ	সন্ধ্যা থেকে রাত পর্যন্ত
বিভিন্ন সামুদ্রিক মাছ বা মাছ যেমন; ইলিশ, সার্ডিন	যেকোন সময়
প্রোবায়োটিক খাবার (যেগুলোতে জীবন্ত অণুজীব রয়েছে) যেমন ঘরে তৈরি স্যুপ, পনির)	যেকোন সময়

৫। ক্লিনিকাল ট্রায়ালগুলি দেখিয়েছে যে দীর্ঘস্থায়ী কোষ্ঠকাঠিন্যে আক্রান্ত শিশুদের খাদ্য থেকে গরুর দুধ অপসারণ করলে মলত্যাগের সংখ্যা বৃদ্ধি পায়।

৬। পর্যাপ্ত পরিমানে পানি দিন, গড়ে ৪-১৩ বছর বয়সী শিশুদের মোট ২৫৮ মিলি/ডি পানি পান করার পরামর্শ দেওয়া হয়।

প্রতিদিন বয়স অনুযায়ী পানি পান করা

বয়স বছরে	পানির পরিমান (লিটার)
৩	০.৯
৪	১
৫	১.২৫
৬	১.৫
৭	১.৭৫
৮	২
৯ বা ওপরে	২

অন্যান্য

১। নিয়মিত পর্যাপ্ত শারীরিক চর্চা নিশ্চিত করুন। WHO দ্বারা সুপারিশকৃত > ১ ঘন্টা/দিনের জন্য শারীরিকভাবে সক্রিয় থাকা। যেমন; নাচ, সাইকেল চালানো, হাঁটা/ দৌড়ানো। উপরন্তু, ৬০ মিনিট/দিনের WHO সুপারিশের চেয়ে বেশি শারীরিক কার্যকলাপ সহ শিশুদের জীবনের চতুর্থ বছরে উল্লেখযোগ্যভাবে কম কার্যকরী কোষ্ঠকাঠিন্য ছিল

2. মল আটকে রাখার আচরণকে অনুৎসাহিত করা।

৩। শিশুকে দিনে অন্তত দুই বা তিন বার মলত্যাগ করানোর চেষ্টা করতে হবে (প্রতি বেলা খাবার পরে), যা মল দিয়ে আঘাতের ঘটনা এবং মল অসংযম হওয়ার ঝুঁকি কমাবে ।

২। যতটা সম্ভব দৈনন্দিন জীবনযাত্রার কার্যকলাপে সংযুক্ত থাকতে নিশ্চিত করুন ।

৩। হাই কমোডের পরিবর্তে লো কমোড ব্যবহার করুন।

৪। টয়লেটিং ক্রিয়াকলাপ সম্পাদনের জন্য নিজের মনোবল ঠিক রাখতে হবে এবং সন্তানের সাথে ইতিবাচক আচরণ করুন (যেমন। হাই - ফাইভ, মৌখিকভাবে প্রশংসা, খুব ভাল হয়েছে, আবার চেষ্টা করি)।

৫। টয়লেটিং ক্রিয়াকলাপ সম্পাদনের জন্য শারীরিক এবং মৌখিক সাহায্য ধীরে ধীরে কমাতে হবে। সবচেয়ে বেশি সাহায্য থেকে, মাঝারি, সর্বনিম্ন, মৌখিক, এবং সবশেষে নিজে নিজে করবে।

৬। গভীরভাবে বুঝতে সমস্যা হলে শিশু প্রথমে একটি টেডিকে অনুসরণ করবে যা তার পটির সময় উপভোগ করছে দেখবে এবং ধীরে ধীরে টয়লেটের সময়কে আনন্দদায়ক করে তুলবে।

APPENDIX - I: TOILET HABIT PROFILE QUESTIONNAIRE – R2 (English)

Sensory issue	Item#	Behavior related to pooping	Frequency of the behavior	
			1 POINT	2 POINTS
HYPER	1	My child hides to poop.	Frequently or always □	Never or rarely □
HYPER	2	My child asks for a diaper when he feels the need to poop.	Frequently or always □	Never or rarely □
HYPER	3	My child prefers to poop in his clothing although the potty or toilet is nearby.	Frequently or always □	Never or rarely □
HYPER	4	My child refuses to sit on the potty or the toilet to poop, but will accept to pee in the potty or toilet.	Frequently or always □	Never or rarely □
HYPER	5	My child refuses or seems uncomfortable sitting on the toilet or potty for both peeing and pooping, even at home.	Frequently or always □	Never or rarely □
HYPER	6	My child withholds poop or resists the urge to poop.	Frequently or always □	Never or rarely □

HYPER	7	My child follows an **unusual** ritual when pooping which involves **actions or places** not typically associated with pooping or with the age of the child.	Frequently or always □	Never or rarely □
	7ª	Explain your child´s ritual:		
HYPER	8	My child seems to feel pain when pooping, even if the poop is soft.	Frequently or always □	Never or rarely □
HYPER	9	My child refuses to poop outside of the home.	Frequently or always □	Never or rarely □
HYPER	10	My child shows exaggerated disgust at the smell of his poop.	Frequently or always □	Never or rarely □
HYPER	11	My child refuses to wipe or be wiped after pooping.	Frequently or always □	Never or rarely □
HYPER	12	My child shows fear or refusal related to certain features of the bathroom, such as fear of flushing the toilet.	Frequently or always □	Never or rarely □

HYPER	13	My child needs to pay attention to something else while pooping (a book, a game); this seems to help him/her tolerate the sensation of pooping.	Frequently or always □	Never or rarely □
HYPER	14	My child is sensitive to taste and/or food textures making it difficult to accept laxative medicine or high fiber foods.	Frequently or always □	Never or rarely □
HYPER/ EP	15	My child felt the urge to poop very early (younger than 12 months). My child would grunt in a certain way and I would sit him/her on the potty to poop.	Frequently or always □	Never or rarely □
Hypo/PP	16	My child does not seem to feel the urge to poop.	Frequently or always □	Never or rarely □
Hypo/PP	17	My child does not realize he/she has soiled (poop) his/her clothes or is not upset by soiling.	Frequently or always □	Never or rarely □

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Additional items for the Hyporeactive/Perception problems section

Hypo/PP	18	My child seems more aware of the urge to poo (and/or pee) when naked or wearing light clothing.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
	18a	Poo ☐ Pee ☐ Both ☐		
Hypo/PP	19	My child seems to feel the need to poo (and/or pee) at the last minute, when there is little time left to get to a toilet.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
	19a	Poo ☐ Pee ☐ Both ☐		
Hypo/PP	20	My child seems confused about internal bodily sensations. For example, he/she doesn't seem to differentiate between hunger a stomach-ache or the urge to poo.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
Hypo/PP	21	My child seems to feel the urge to poo mostly in their belly instead of in their bum.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
Hypo/PP	22	When my child poos in the toilet, he/she doesn't seem to feel the passage of the poo. For example, he/she looks in the toilet to check if there is poo.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
Hypo/PP	23	My child doesn't seem to know how to push the poo out.	Frequentemente ou sempre ☐	Nunca ou raramente ☐

Hypo/PP	24	After trying to poo in the toilet, but without pooing, my child poos in his/her clothing minutes after getting up from the toilet.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
Hypo/PP	25	My child has difficulty feeling the urge to poo (or pee) when in a busy environment or concentrating on a task or a game.	Frequentemente ou sempre ☐	Nunca ou raramente ☐
Hypo/PP	25a	Poo ☐ Pee ☐ Both ☐		

Hyper: sensory hyper-reactivity

Hyper/EP: sensory hyper-reactivity/enhanced perception

Hypo/PP: sensory hypo-reactivity/poor perception

APPENDIX - J: TOILET HABIT PROFILE QUESTIONNAIRE – R2 (Bengali)

টয়লেট হাবিট প্রোফাইল কুসসেনিয়ার

সেন্সরি সমস্যা	ধরন	টয়লেট বিষয়ক আচরণ	আচরণের পুনরাবৃত্তি	
			১ পয়েন্ট	২ পয়েন্ট
হাইপার	১	আমার সন্তান মলত্যাগ করার সময় লুকিয়ে থাকে।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	২	আমার সন্তান যখন মলত্যাগ করার প্রয়োজন অনুভব করে তখন সে একটি ডায়াপার চায়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	৩	আমার সন্তান তার পোশাকে মলত্যাগ করতে পছন্দ করে যদিও পটি বা টয়লেট কাছাকাছি।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	৪	আমার সন্তান পটি বা টয়লেটে প্রস্রাব করতে চায়, কিন্তু মলত্যাগ করতে চায় না ।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	৫	আমার সন্তান পটি বা টয়লেটে প্রস্রাব এবং মলত্যাগ করার ক্ষেত্রে অস্বস্তিবোধ করে অথবা করতেই চায় না, এমনকি বাড়িতে থাকা সত্ত্বেও ।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	৬	আমার সন্তান মলত্যাগ আটকে রাখে বা মলত্যাগ করার বেগকে চেপে রাখে।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	৭	আমার সন্তান মলত্যাগ করার সময় একটি অস্বাভাবিক রীতি অনুসরণ করে যার মধ্যে এমন কাজ বা স্থান জড়িত যা সাধারণত মলত্যাগের সাথে বা বাচ্চার বয়সের সাথে সম্পর্কিত নয়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
	৭ ক	আপনার সন্তানের পদ্ধতি ব্যাখ্যা করুন:		
হাইপার	৮	আমার সন্তান মলত্যাগ করার সময় ব্যথা অনুভব করে, এমনকি যদি মলত্যাগ নরমও হয়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	৯	আমার সন্তান বাড়ির বাইরে মলত্যাগ করতে চায় না।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	১০	আমার সন্তান তার মলত্যাগের গন্ধে অতিরিক্ত ঘৃণা দেখায়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	১১	আমার সন্তান মলত্যাগের পর শৌচ করতে চায় না ।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	১২	আমার সন্তান বাথরুমের কিছু বৈশিষ্ট্যের সাথে সম্পর্কিত ভয় বা অস্বীকৃতি দেখায়, যেমন টয়লেট ফ্লাশ করার ভয়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার	১৩	আমার সন্তানের মলত্যাগের সময় অন্য কিছুতে মনোযোগ দেয়া	বারবার বা	কখনও না বা

		প্রয়োজন (একটি বই, একটি খেলা); এটি তাকে/তার মলত্যাগের অনুভূতি সহ্য করতে সহায়তা করে বলে মনে হয়।	সবসময় ☐	প্রায়ই ☐
হাইপার	১৪	আমার সন্তান স্বাদ এবং/অথবা খাবারের টেক্সচারের প্রতি সংবেদনশীল যার ফলে রেচক ওষুধ বা উচ্চ আঁশযুক্ত খাবার গ্রহণ করা কঠিন।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপার/ ইপি	১৫	আমার সন্তান খুব তাড়াতাড়ি মলত্যাগ করার তাগিদ অনুভব করে (১২ মাসের কম বয়সী)। আমার সন্তান একটি নির্দিষ্ট শব্দের মাধ্যমে আমাকে মলত্যাগের তাগিদ বোঝায় এবং আমি তাকে পটিতে মলত্যাগের জন্য বসাই।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	১৬	আমার সন্তান মলত্যাগ করার তাগিদ অনুভব করে বলে মনে হয় না।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	১৭	আমার সন্তান বুঝতে পারে না যে সে তার জামাকাপড়ে টয়লেট করেছে এবং এটি তাকে মর্মাহত / ভাবান্তর করে না ।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	১৮	আমার সন্তান খালি গায়ে বা হালকা পোশাকে মলত্যাগ (এবং/অথবা প্রস্রাব) করার তাগিদ সম্পর্কে আরও বেশি সচেতন বলে মনে হয়।	বারবার বা সবসময়	কখনও না বা প্রায়ই
	১৮ ক	– মলত্যাগ ☐ – প্রস্রাব ☐ – উভয় ☐		
হাইপো / পিপি	১৯	আমার সন্তানের শেষ মুহূর্তে মলত্যাগ (এবং/অথবা প্রস্রাব) করার প্রয়োজন অনুভব করে, যখন টয়লেটে যাওয়ার জন্য অল্প সময় বাকি থাকে।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
	১৯ ক	– মলত্যাগ ☐ – প্রস্রাব ☐ – উভয় ☐		
হাইপো / পিপি	২০	আমার সন্তান অভ্যন্তরীণ শারীরিক সংবেদন সম্পর্কে বিভ্রান্ত বলে মনে হয়। উদাহরণস্বরূপ, সে ক্ষুধা এবং পেট-ব্যথা বা মলত্যাগের তাগিদে পার্থক্য করতে পারে না বলে মনে হয় ।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	২১	আমার সন্তানের মনে হয় বেশিরভাগ সময় পশ্চাদ্দেশের তুলনায়	বারবার বা	কখনও না বা

		তাদের পেটে মলত্যাগ করার তাগিদ অনুভব করে।	সবসময় ☐	প্রায়ই ☐
হাইপো / পিপি	২২	আমার সন্তান যখন টয়লেটে মলত্যাগ করতে যায় , তখন দেখে মনে হয় সে মল বের করার অনুভূতি বোঝে না। উদাহরণ স্বরূপ, সে টয়লেটে মল আছে কিনা তা পরীক্ষা করে দেখে।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	২৩	আমার সন্তান কিভাবে চাপ দিয়ে মলত্যাগ করতে হয় তা জানে না বলে মনে হয়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	২৪	আমার সন্তান টয়লেটে মলত্যাগ করার চেষ্টা করার পর, না করে টয়লেট থেকে ওঠার কয়েক মিনিট পর তার পোশাকে মলত্যাগ করে।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	২৫	ব্যস্ত পরিবেশে বা কোনো কাজ বা খেলায় মনোনিবেশ করার সময় আমার সন্তানের মলত্যাগ বা প্রস্রাব করার তাগিদ অনুভব করতে অসুবিধা হয়।	বারবার বা সবসময় ☐	কখনও না বা প্রায়ই ☐
হাইপো / পিপি	২৫ ক	- মলত্যাগ ☐ - প্রস্রাব ☐ - উভয় ☐		

হাইপারঃ অনুভূতিতে অতিমাত্রায় সংবেদনশীল

হাইপার/ ইপিঃ অনুভূতিতে অতিমাত্রায় সংবেদনশীল/ বর্ধিত পারসেপশন

হাইপো / পিপিঃ অনুভূতিতে কমমাত্রায় সংবেদনশীল/ ত্রুটিপূন পারসেপশন

APPENDIX – K: IRB Approval Letter

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

Ref: CRP-BHPI/IRB/10/2023/739 Date: 15/10/2023

To
Naznin Akhter
M.Sc. in Rehabilitation Science
Session: 2021-2022
Student ID: 181210139
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal "Effectiveness of Toilet Training Program for Children with Autism" by ethics committee.

Dear Naznin Akhter,
Congratulations.
The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the principal investigator.
The Following documents have been reviewed and approved:

Sl. No.	Name of the Documents
1	Research Proposal
2	Questionnaire (English & / Bengali version)
3	Information sheet & consent form.

The purpose of the study is to identify the effectiveness of toilet training program for children with Autism, an experimental study that will take approximately for 2 months. Participants can willingly participate in the study. There will be no physical or psychological harm to the participants. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 8.30 AM on 8th April, 2023 at BHPI (35th IRB Meeting).

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

Best regards,

Muhammad Millat Hossain
Associate Professor and Course Coordinator, MRS
Member Secretary, Institutional Review Board (IRB)
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

সিআরপি-চাপাইন, সাভার, ঢাকা-১৩৪৩, বাংলাদেশ। ফোন: +৮৮ ০২ ২২৪৪৪৫৪৬৪-৫, +৮৮ ০২ ২২৪৪৪১৪০৪, মোবাইল: +৮৮ ০১৭৩০ ০৫৯৬৪৭
CRP-Chapain, Savar, Dhaka-1343, Bangladesh. Tel: +88 02 224445464-5, +88 02 224441404, Mobile: +88 01730059647
E-mail : principal-bhpi@crp-bangladesh.org, Web: bhpi.edu.bd

APPENDIX – L: Tool Approval Letter from Author (THPQ -R)

Clínica de Terapia Ocupacional Pediátrica Beaudry-Bellefeuille

14-05-2023

I hereby authorize Naznin Akhter, Clinical Occupational Therapist, Master Candidate of Science in Rehabilitation coordinated by Millat Hossein (Bangladesh Health Professions Institute, Center for the Rehabilitation of the Paralysed, Dhaka, Bangladesh), to translate and use the Toileting Habit Profile Questionnaire-2nd revision (THPQ-R2) for a study.

The THPQ-R has been systematically developed and validated to measure a broad range of challenging defecation behaviors potentially linked to sensory hyperreactivity (items 1 to 15) in children aged 3 to 6 years[1,2]. The THPQ-R2 includes an extended section of items related to issues in hypo-reactivity, perception, and praxis (items 16-25)[3]. Please keep in mind that the use of this questionnaire is for this purpose. For example, it may be that children with autism are failing to toilet according to age and social expectations due to sensory problems which could explain their refusal or inability to toilet train. Documenting possible gastrointestinal issues such as constipation is key, given that this may be an underlying factor impacting toileting training.

As author of the original questionnaire, I reserve all rights on any translation and cultural adaptions made to any of the versions of the THPQ. I would appreciate to be consulted and included as an author on any publications that may derive from the study.

Isabelle Beaudry Bellefeuille, PhD

Clínica de Terapia Ocupacional Pediátrica Beaudry-Bellefeuille
C/Marques de Santa Cruz, 7, 1E
33007 Oviedo (Spain)

1.Beaudry-Bellefeuille I, Bundy A, Lane A, Ramos Polo E, Lane SJ. The toileting habit profile questionnaire: Examining construct validity using the Rasch model. British Journal of Occupational Therapy. 2019;82(4):235-247. doi:10.1177/0308022618813266

2.Beaudry-Bellefeuille I, Lane A, Ramos-Polo E, Lane SJ. Examining Hyper-Reactivity to Defecation Related Sensations in Children with Functional Defecation Disorders. Ann Colorectal Res. 2019;7(4):1-7.

3. Beaudry-Bellefeuille I, Almeida A, Sousa D, Lopes I, Encarnação V, Ramos-Polo E. The toileting habit profile questionnaire-2nd revision; Preliminary validity. Manuscript in preparation.

APPENDIX – M: Data Collection Permission Letter

18th November, 2023
The Principal
Prottasha Centre for Autism Care
Dogormora, Savar, Dhaka-1343

Subject: Seeking permission for data collection to conduct research project for children with autism.

Dear Sir,

With due respect and humble submission to state that I am a student of M.Sc. in Rehabilitation Science program at Bangladesh Health Professions Institute (BHPI) an academic institute of CRP under Faculty of Medicine of University of Dhaka (DU). This is a 2 year full time course under the project of "Regional Inter – professional Master's program in Rehabilitation Science" funded by SAARC Development Fund (SDF). I have to conduct a thesis entitled **"Effectiveness of toilet training program for children with Autism"** under honorable supervisor, Muhammad Millat Hossain, Associate Professor, Project & Course Coordinator, Dept. of Rehabilitation Science, (BHPI), Savar, Dhaka. The purpose of the study is to identify the effectiveness of toileting program for children with Autism. A standardized questionnaire will be used that will take approximately 30 minutes per week for 2 months to identify the effect of the group among children with autism in a specialized center. Data collector will receive informed consents from all participants. Every data collected will be kept confidential.

Therefore I look forward to having your kind approval to start data collection. I would like to assure that anything of the study will not be harmful for the participants.

Sincerely yours,

Naznin Akhter
Session: 2021 – 22, Student ID: 181210139, DU registration no: 1932
Student of M. Sc. in Rehabilitation Science (MRS)
BHPI, CRP, Savar, Dhaka-1343

Recommendations from the principal of **Prottasha Centre for Autism Care:** I hope this study will contribute better Performance for our special child.

Attachment: Thesis proposal including Bengali version questionnaire, demographic information sheet & consent form.

18.11.2023
Principal
Prottasha Centre for Autism Care
CRP Road, Savar, Dhaka.

18th November, 2023
The Managing Director
Therapist Point and Shonirvor Special School for Autism & Neurodevelopmental Disorder
Dogormora, Savar, Dhaka-1343

Subject: Seeking permission for data collection to conduct research project for children with autism.

Dear Sir,

With due respect and humble submission to statethat I am a student of M.Sc. in Rehabilitation Science program at Bangladesh Health Professions Institute (BHPI) an academic institute of CRP under Faculty of Medicine of University of Dhaka (DU). This is a 2 year full time course under the project of "Regional Inter – professional Master's program in Rehabilitation Science" funded by SAARC Development Fund (SDF). I have to conduct a thesis entitled "**Effectiveness of toilet training program for children with Autism**" under honorable supervisor, Muhammad Millat Hossain, Associate Professor, Project & Course Coordinator, Dept. of Rehabilitation Science, (BHPI), Savar, Dhaka. The purpose of the study is to identify the effectiveness of toileting program for children with Autism. A standardized questionnaire will be used that will take approximately 30 minutes per week for2 months to identify the effect ofthe group among children with autism in a specialized center. Data collector will receive informed consents from all participants. Every data collected will be kept confidential.

Therefore I look forward to having your kind approval to start data collection. I would like to assure that anything of the study will not be harmful for the participants.

Sincerely yours,

Therapist Point AR Foundation Date: 18/11/23 Signature Special School

Naznin Akhter
Session: 2021 – 22, Student ID: 181210139, DU registration no: 1932
Student of M. Sc. in Rehabilitation Science (MRS)
BHPI, CRP, Savar, Dhaka-1343

Recommendations from the managing director of Therapist Point and Shonirvor Special School for Autism & Neurodevelopmental Disorder: This study will be helpful to our organization for better understanding about child with ASD

Attachment: Thesis proposal including Bengali version questionnaire, demographic information sheet & consent form.

18/11/23

Md. Nayem Nizam Majumde
B.Sc OT (CRP, DU), MDS (JU-incourse
Senior Occupational Therapist & MI
Therapist Point & Shonivor Special Scho