CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH

By

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APPROVAL

We, the undersigned, declare that we have thoroughly reviewed and recommended to the Faculty of Medicine, University of Dhaka, the approval of this dissertation entitled, **CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH.**

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DECLARATION

I, Robayat Alam Rohan, hereby declare that no individual component of my research project would inflict harm against others. All data and references in this study have been precisely cited. Consequently, any discourse pertaining to this research initiative is solely mine, and I accept full responsibility for any inaccuracies present in the paper.

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DEDICATION

"Indeed, my prayers, sacrifices, life, and death are solely for Almighty Allah, the Lord of the universe.

Also to my mother, honorable supervisor and close friends…"

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LIST OF ABBREVIATION

ADHD	Attention-Deficit Hyperactivity Disorder
ASHA	American Speech-Language-Hearing Association
BPFAS	Behavioural Pediatrics Feeding Assessment Scale
BHPI	Bangladesh Health Professions Institute
CDC	Centers for Disease Control and Prevention
CI	Confidence Interval
CVI	Content Validity Index
CRP	Center for the Rehabilitation of the Paralyzed
ICC	Intraclass Correlation Coefficient
IOC	Item Objective Congruence
IQR	Interquartile Range
IRB	Institutional Review Board
MCH-FS	Montreal Children's Hospital Feeding Scale
PEDI-EAT-10	Pediatric Eating Assessment Tool - 10 Item Screener
PediEAT	Pediatric Eating Assessment Tool
PediEAT-Bd	Pediatric Eating Assessment Tool - Bengali Version
PCC	Pearson Correlation Coefficient
PRO	Patient Reported Outcome
S-CVI/Ave	Scale Level Content Validity Index/Average
SCC	Spearman's Correlation Coefficient
SD	Standard Deviation
SLT	Speech & Language Therapist / Speech & Language Therapy
SPSS	Statistical Package for the Social Sciences (IBM Statistical Software)

UTI	Urinary Tract Infection
VFSS	Video Fluoroscopic Swallowing Study
FEES	Fiberoptic Endoscopic Evaluation of Swallowing
GI / GIT	Gastrointestinal Tract
PFD	Pediatric Feeding Disorder
ICFQ	International Children's Fitness Questionnaire
NeoEAT	Neonatal Eating Assessment Tool
InfantEAT	Infant Eating Assessment Tool

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ABSRACT

Pediatric feeding challenges impact 25-50% of usually developing children and up to 80% of those with neurodevelopmental abnormalities, resulting in growth delays, nutritional deficiencies, and familial stress. The lack of culturally tailored instruments in Bangladesh impedes prompt evaluation. For children between the ages of 6 months and 7 years old, parents can use the Pediatric Eating Assessment Tool (PediEAT), a 10-item screening tool that uses a Likert scale from 0 to 5 to assess physiological symptoms, maladaptive behaviors, selective eating, and oral processing. For use in Bangladesh, this project intends to linguistically validate PediEAT and translate it into Bangla (PediEAT-Bd). To create and validate a Bangla version of PediEAT via comprehensive cross-cultural adaptation and psychometric evaluation for the assessment of feeding and swallowing difficulties in children with suspected dysphagia. In accordance with the 8-step principles of Cruchinho et al. (2024), the adaptation process encompassed forward and backward translation, expert synthesis, and cognitive pre-testing. Content validity was evaluated by four experts utilizing Item-Objective Congruence (IOC ≥0.5; S-CVI/Ave=0.93). A cross-sectional field study was conducted at CRP-Bangladesh and WMTS, including 165 participants, comprising 55 patients with eating difficulties (e.g., cerebral palsy, speech delay; 58.2% diagnosed) and 110 healthy controls, aged between 6 months and 7 years, with 52.1% being male. Caregivers completed the PediEAT-Bd assessment. Psychometric analysis demonstrated strong validity and reliability metrics. Cronbach's α was 0.954, with pre- and post-test internal consistency values of 0.780 and 0.801, respectively. Test-retest reliability was high (ICC=0.996). Spearman's item-total correlations ranged from 0.540 to 0.727, indicating substantial item validity. Patients scored significantly higher on assessments compared to controls.

PediEAT-Bd is a reliable and valid screening tool for speech-language therapists and pediatricians in Bangladesh, aiding in early detection and intervention assessment to improve child outcomes. Future studies should assess its responsiveness.

Keywords: *Cross-Cultural Adaptation, Linguistic Validation, Pediatric Eating Assessment Tool, Dysphagia, Patient Reported Outcome (PRO).*

CHAPTER 1 INTRODUCTION

1.1 Introduction

The process of eating is a complicated and dynamic action necessitating muscular mobility, coordination, and effective interaction between individuals who provide care and the infant's environment. (Kerwin, 1999) Challenges in eating encompass all feeding difficulties, irrespective of their source, severity, or impact. Eating disorders vary from minor selective eating to extreme food rejection that compromises nutritional health. (Yang, 2017) Growth spurts happen to kids between the ages of one and six, during which time their social and cognitive skills advance quickly. (Bailey and others, 2021) Feeding problems originate from a complex mixture of various factors, including medical concerns (such as anatomical abnormalities, cardiac disorders, breathing and digestive problems, dietary allergies, behavioral and environmental factors, psychological aspects (like parents' concern and the parent-child dynamic), skill deficiencies, and challenges in sensory processing. (Goday et al., 2018) A new systematic investigation revealed that 42% of infants encountered some kind of eating difficulties throughout the initial quarter of life. (Pados et al., 2021) Inadequate eating habits result in numerous negative effects on the population, including poor health, stunted growth, reduced productivity, cognitive impairment, and untimely death. Poor dietary intake can lead to adverse effects on health for children under five, specifically from the time of conception until the initial twenty-four months or within the first thousand days of their existence. These adverse health issues may result in cognitive and physical impacts. (Martorell, 2017) Swallowing and feeding difficulties, which directly affect the nutritional responsibilities of the parents, will influence the guardian-child relationship. (Bourin et al., 2012)

A wide variety of instruments are accessible for looking at children who suffer from eating disorders. The Pediatric Eating Assessment Tool (PediEAT) relies on parent-reported measures and represents, at present, the instrument most widely validated. (Alavi et al., 2022) The shorter PEDI-EAT-10 is available as a screening instrument. (Georgiou et al., 2024) Behavioural Pediatrics Feeding Assessment Scale (BPFAS) (Alexander et al., 2017) is an examiner-administered, parent-defined instrument for review of difficulty with feeding behavior. (Allen et al., 2015) MCH eating test is a

bilingual screening comprising fourteen items for identifying nutritional issues among kids between the ages of six months & six years of age. (Ramsay et al., 2011) (Park et al., 2024) So far, the most regularly utilized equipment for examining children's feeding issues have been the video fluoroscopic eating test (VFSS) (Arvedson & Lefton-Greif, 1998) as well as the FEES (Miller & Willging, 2019).

PediEAT is designed for completion by main caretakers who are familiar with the child's usual dietary habits, most commonly parents but potentially other primary caregivers (S. M. Thoyre et al., 2014). PediEAT helps find kids who need an individualized eating evaluation early on, helps organize therapies, along with keeps track of how well the treatment works. (Pados et al., 2018) PediEAT serves as a research-based instrument designed for parents of kids who are in between six months to seven years age (Park, Thoyre, et al., 2018) who are now ingesting solid meals. It contains several issues that aim to improve the assessment process. This screening is composed of four subscales that are each specific to a particular area of feeding symptoms: Physiologic Symptoms- Coordination of swallowing, respiratory signs during feeding, gastrointestinal symptoms (e.g., gagging, vomiting, tiredness) Maladaptive Eating Behaviors- refusal to eat food, tantrums, aggression (hitting, kicking, etc. to others), food rejection, stress reactions, and highly specific food preferences. Selective/Restrictive Eating- dislike of specific textures, temperatures, or ways of serving food Oral Processing- such as pocketing food between cheeks, requiring reminders to chew, utilizing fingertips to manipulate food and engaging in prolonged mastication without the intention to swallow. (Pados et al., 2018) (Park et al., 2024) Comparing each child’s score to these normative benchmarks helps clinicians make decisions. Scores surpassing the 90th percentile indicate a great deal of worry that requires rapid attention and are used as an impartial tool for testing to make things easier evaluation from a clinical standpoint and the formulation of procedures for therapy; they do not provide test results. (Pados et al., 2018)

It was developed through a rigorous, multi-phase process including: Item generation from parent descriptions, literature review, and existing instruments. Expert content validation via Content Validity Index (CVI). Parent cognitive interviews to refine clarity and format. Readability testing ensured a < 5th-grade reading level (S. M. Thoyre et al., 2014). Each question commences with the prefix "My child..." and requests parents assess behaviors using a Six-point Likert scale (Never, Rarely,

Occasionally, Frequently, Usually, Always)(Park et al., 2024), with respondents directed to reflect on common behavioral patterns (Thoyre et al., 2014). The tool is intended for use by primary caregivers acquainted with the child's feeding habits and necessitates approximately 10-12 minutes for completion. It facilitates the detection of children displaying problematic eating habits or symptoms that regular clinical observation could overlook. It offers an in-depth evaluation of eating issues, encompassing perceptual and behavioral parameters, in addition to physiological swallowing safety. It can longitudinally follow modifications to problematic eating signs, aiding with the guidance and evaluation of treatment impacts (Park et al., 2018). The questionnaire is composed at a reading level below fifth grade to guarantee accessibility for various audiences.

When there are worries regarding a child's feeding and swallowing, SLTs are generally the first allied health experts to be called; they can tell the difference between regular changes in early feeding and indicators that something might be wrong and need help. (Garcia, 2024) Early identification by SLTs can help to prevent consequences including malnutrition, repeated respiratory infections, and developmental delays (Bunová, 2018).

It seems that there is currently an Argentine variant for PediEAT that will be utilized as a form of screening (De Las M Ruiz Brunner et al., 2023) and there is another proof that The adapted and socially customized Persian version of the PediEAT is authentic and dependable. (Alavi et al., 2022).

1.2 Significance of Study

In a developing nation like Bangladesh, suitable evaluation of pediatric nutrition and nutrition evaluation are indispensable. In our country, there are very few feeding and eating assessment tools available for different conditions in our language and cultural context. There is currently no simple way to measure the effectiveness of pediatric nutrition therapy treatments and evaluate feeding issues in children ages 6 months to 7 years. Standardized screening instruments for evaluating eating in children are minimal. For accurate evaluation of eating behaviors and swallowing problems in child, we desperately need a standardized and culturally appropriate assessment tool. To ensure reliable care and excellent treatment outcomes in pediatric feeding intervention, it is essential to have an effective evaluation plan that uses standardized tools that are appropriate for the culture. Research shows that children who have trouble eating are more likely to get sick and have developmental problems because there aren't enough resources for evaluating them. In Bangladesh, difficulties with feeding children are common and affect many areas of children's and families' lives, such as their growth, mental health, and nutritional status. PediEAT is a systematic parent-reported tool made just for measuring the effects of food problems on children's development. It can properly quantify the results of pediatric feeding therapy. Speech & language therapists (SLTs) and pediatric healthcare specialists in Bangladesh think that this tool is an excellent way for families with kids who have trouble eating to keep track of their fears and problems. This tool can help both families and practitioners keep track of treatment progress and learn more about the eating situation. A culturally suitable and linguistically tested feeding evaluation tool is urgently required for professional advancement in Bangladeshi pediatric medical care. The findings from this study will help to establish trustworthy standards for child eating assessment and therapy, ultimately enhancing the standard of care for Bangladeshi kids who have eating and alimentary problems. A version of the PediEAT that incorporates amendments from this study will be an essential tool for health professionals in pediatrics and speech & language therapy practices to identify children with eating problems in Bangladesh and obtain timely intervention. Therefore, when evaluating pediatric clients with feeding concerns, linguistic validation and cross-cultural adaptation are crucial because they help ensure appropriate evaluation.

1.3 Aim

There is no Bangla version of Pediatric Eating Assessment Tool (PediEAT) in Bangladesh. The study's overarching goal is to investigate the Bangla version of Pediatric Eating Assessment Tool conducting linguistic validation & cross-cultural adaptation.

1.4 Objectives

1.4.1 General Objective

Linguistic validation and cross-culture adaptation of Pediatric Eating Assessment Tool (PediEAT) as a Bangla version inside the Bangladeshi environment to assess child dysphagia patient.

1.4.2 Specific Objectives

- To conduct linguistic validation of PediEAT into Bangladeshi context.
- To conduct cross culture adaptation of PediEAT into Bangladeshi context.

1.5 Literature Review

Eating is a highly complex activity that involves the main and periphery nerve systems, the cardiovascular system, the GI tract, and the oropharyngeal mechanism. The support for this whole operation comes from craniofacial structures and musculoskeletal systems. This process needs to be coordinated, which means those participants to learn and grow in competence in areas that are relevant to a kid's age, stage of development, and physical condition. Any problem with all these systems poses grave danger for the health and welfare of infants with eating disorders (Goday et al., 2018).

Eating disorders in children are characterized by inappropriate oral intake that does not conform to developmental norms and is linked to issues across several domains, encompassing interpersonal, psychological, feeding, nutritional, and medical aspects of communication (Pergeline et al., 2025) (Goday et al., 2018). The prevalence of diet issues in children influences between twenty-five (25%) and fifty percent (50%) of the young people across the general population. Children with growth-oriented disabilities: Identifies a calculation of prevalence within the range of (33-80%) in the minor patient population that has been diagnosed with neurodevelopmental disorders or growth-oriented disabilities, such as autism. (Bachmeyer, 2009) 20 to 60 percent of parents report worries about the eating problem during pediatric evaluations. (Fisberg, 2018) Currently, In juvenile feeding disorders, low oral intake is the primary reason for particular growth failure and failure to thrive. PFD is associated with slower weight gain, inability to reach expected growth velocity for age, and poor linear growth in children. Within the overall group of children diagnosed with PFD, the nutritional domain has the highest prevalence of impairment Nearly half of the children diagnosed with eating problems (46.6%) and this is likely secondary to another underlying domain deficit. (Yang, 2017) (Galai et al., 2022)

PFD can lead to poor growth and potential neurocognitive disability in the child, causing lack of appetite, malnutrition, inadequate achievement of feeding milestones, and dietary selectivity. (Dharmaraj et al., 2023) (Yang, 2017) These eating and digestive disorders can disrupt certain elements of interpersonal competencies and behavior, trigger stressful situations during dinner with relatives, and have a psychosocial impact on the child. In children with PFDs, issues with age-appropriate skills can lead to limitations on the ability to engage in and participate in social activities and typical

childhood activities. (Goday et al., 2018) Cognitive impairment at age 11 in the absence of psychosocial stress can be associated with childhood malnutrition. (Liu et al., 2003)

The ability of malnutrition to affect neurocognitive development in children has been shown to be both direct, as an influence on brain structure development, and indirect as a modification of the experiences of children's cognitions. Insufficient essential micronutrients availability for cell growth resulting from malnutrition modifies cell numbers, migration, synaptogenesis and neurotransmission. (Cakir et al., 2019)

Eating problems might create stresses in family, which adversely influences the health of the parents and the family in general. (Gosa et al., 2020) Standardized instruments will provide uniformity in measuring feeding disorders across healthcare providers and consequently, provide uniformity as well as decrease the chances of the various branches having divergent diagnoses. Not only functional impairment but also social involvement and the caregiver/child perspective are also increasingly reported using instruments, because they are beneficial to family-oriented care. High-accuracy assessment programs are useful in developing an effective intervention because the root causes of a particular disorder are addressed (malnutrition, oral motor impairment, or behavioral feeding issues). Eating difficulties, particularly more inconspicuous or insidious disorders, are overlooked or vaguely defined, and subsequent help and bad results are obtained. (Arts-Rodas & Benoit, 1998)

Other than the Pedi-EAT Children's hunger, oral motor and sensory functions, eating habits, feeding tactics, mother worries, and family emotions are some of the categories assessed by the 14-item MCH-FS, which is administered to children between the ages of six months to six years. (Ramsay et al., 2011) Child eating habits and parental attitudes towards mealtime techniques are the foci of the 25-item BPFAS, a parent-report measure for evaluating feeding issues in children 12–23 months. (Allen et al., 2015) For children under the age of four, the International Children's Fitness Questionnaire (ICFQ) offers yes/no format.(Haissa et al., 2025) Feeding efficiency, oral-pharyngeal-esophageal function, sensory response, baby regulation, energy stability, and feeding flexibility are all assessed using the NeoEAT, which is a parent-reported evaluation tool. (Cerchiari et al., 2023) Newly created to evaluate sensory abnormalities in swallowing, gastroesophageal/gastrointestinal, and bottle-feeding as

well as newborn dysregulation, exhaustion, and physiologic instability is the InfantEAT. (Cerchiari, Giordani, et al., 2023)

With high levels of internal consistency and test-retest reliability, the Pedi-EAT has undergone rigorous validation, and excellent discriminative validity to detect eating disorders and swallowing disorders in most populations/demographics and across most languages. This is a parent-reported screening tool, which is easy to administer in a typical healthcare setting and gathers information on the eating habits of the child, on the insight of those closest to the child- their parents and other caretakers—who, as a result, possess the most up-to-date and relevant information regarding the child. Pediatric devices like Pedi-EAT can help screen and identify children at risk of eating and swallowing disorders within a relatively short time. This will help them get referred to a specialist to be further tested and treated before their problems escalate. A validated, standardized questionnaire can help clinicians and researchers to compare reliably across different demographics and conditions the patient's symptoms and outcomes and progress. (Marshall et al., 2023) It enables observing the outcomes of patients objectively, the reaction to the treatment, and feeding behavior change in time. This makes it easier to practice evidence-based and promote constant quality improvement. (Desai et al., 2022)

The Pediatric Eating Assessment Tool (PediEAT) is a standardized tool for screening and evaluating swallowing and eating issues in children. It has strong psychometric properties, reliable functionality, proven clinical relevance, and is gaining cross-cultural validation. Its use is expanding in various settings. The first step was the item generation based on expert judgment and on the literature, followed by the use of cognitive interviews and content validation in order to reach complete coverage of the relevant feeding behaviors and symptoms along multiple domains, thus demonstrating face and content validity in caregiver reports of infants and young children. Subsequent clinimetric assessments and validation literature show that the factor structures are aligned with feeding skills and symptom domains. They also demonstrate that the scales used in pediatric feeding problem situations are convergently valid. (Marshall et al., 2023) (Onesimo et al., 2023)

1.5.1 Pediatric Eating Assessment Tool (Pedi-Eat), Validation and Adaptation related articles in different languages

Author(s) & year	Study purpose	Methodological description (including design, sampling, data collection, analysis, and location)	Participants (including male and female), gender range, and type of difficulties	Key findings
Alavi S.F., 2022	To translate, culturally adapt, and determine psychometric properties of the Persian version of the Pediatric Eating Assessment Tool (PediEAT) for children aged 6 months–7 years.	• **Design:** Multilingual instrument development, culture adaptation, and cross-sectional psychometric research. • **Sampling:** Research in Shahrekord, Iran, using convenience sampling to compare parents of children with and without feeding issues. • **Data collection**: Four step translation and adaptation (forward translation, expert panels for face/content validity, backward translation, and cognitive interviews with parents) followed by online administration of the PediEAT Persian to caregivers. • **Analysis:** Utilization of content validity indices, kappa, known group and criterion validity, internal consistency (Cronbach's alpha), and test–retest reliability (intraclass correlation coefficient) via SPSS. • **Location:** Rehabilitation Sciences and Social Welfare Univ.	203 children aged 6 months–7 years; 100 boys and 103 girls. 160 without feeding problems (community sample from kindergartens, playhouses, preschools). 43 with feeding problems diagnosed by pediatricians (e.g., trouble initiating or continuing eating, gagging or vomiting with food, refusal to eat, aversive mealtime behaviors) and without major medical conditions such as gastrointestinal disease, hypothyroidism, or failure to thrive.	With a scale level content validity index of 0.95 or higher, all items demonstrated satisfactory content and face validity. All PediEAT subscales and the overall score were considerably higher in children with feeding problems compared to those without problems, confirming the recognized group validity. Nearly all children (approximately 91%) with feeding difficulties were properly diagnosed by pediatricians, indicating good criterion validity. With a total scale Cronbach's alpha of 0.921 and subscales ranging from 0.753-0.922, the internal consistency was good to outstanding, and the test-retest reliability was excellent, with an ICC of 0.987. Researchers found that children who speak Persian who are between the ages of 6 months and 7 years old who have feeding issues responded well to the Persian PediEAT.

Pediatric Eating Assessment Tool (Pedi-Eat), Validation and Adaptation related articles in different languages

Author(s) & year	Study purpose	Methodological description (including design, sampling, data collection, analysis, and location)	Participants (including male and female), gender range, and type of difficulties	Key findings
Ruiz Brunner M., 2024.	To obtain an Argentinian Spanish version of the PediEAT that is transculturally adapted, culturally appropriate, and semantically equivalent to the original tool for screening pediatric feeding problems.	• **Design:** Cognitive interviews administered before a test and expert evaluations of content validity were part of a cross-cultural adaptation study. • **Sampling:** Purposive sampling of Argentine health professionals for the expert panel and heterogeneous caregivers of children 6 months–7 years for pre-testing. • **Data collection:** **Phase 1:** Eight experts (nutritionists, pediatricians, speech therapist, psychologist, occupational therapist) reviewed the Spanish PediEAT and proposed linguistic and cultural changes using a structured checklist. **Phase 2:** Eighteen caregivers completed the draft Argentinian version and participated in virtual cognitive interviews to assess comprehension, irritation, and clarity, leading to further item refinement. • **Analysis:** Qualitative analysis of expert and caregiver feedback; descriptive statistics for participant characteristics; iterative modification of items until semantic and cultural equivalence was achieved. • **Location:** Argentina (universities and hospitals in Córdoba.	**Expert panel**: 8 health professionals (3 nutritionists, 2 pediatricians, 1 speech therapist, 1 psychologist, 1 occupational therapist) with 5–17 years of experience in pediatric feeding. **Caregivers for pre-test:** 18 caregivers (14 women, 4 men) aged roughly 19–56 years, varying education levels, caring for children aged 6 months–7 years with typical development and with disabilities, spanning malnutrition to obesity. **Children represented in pre-test:** both typically developing and with disabilities; used to ensure the tool's applicability across a range of feeding difficulties, though specific diagnoses were not detailed.	• Expert review led to modification of 36 of 80 items, mainly to replace words with terms common in Argentina, add clarifying phrases or examples, and adjust syntax while preserving original meanings. • Cognitive interviews resulted in changes to 11 additional items; most remaining items were reported as easy to understand, and problematic items were clarified. • The final Argentinian

Table 1: Pediatric Eating Assessment Tool (PediEAT), Validation and Adaptation in different languages

1.6 Operational Defintion

1.6.1 Cross-Cultural Adaptation

Cross-cultural adaptation seeks to align source and target versions of questionnaires so they convey equivalent meanings, idiomatic expressions, experiential elements, and core ideas. (Beaton et al., 2000)

For the current study, researchers applied this approach to develop a Bangla adaptation of the Pedi-EAT suitable for local use among the intended group.

1.6.2 Linguistic Validation

Linguistic validation encompasses translation procedures and evaluative checks to refine questionnaire language for cultural and linguistic fit within a specific population. (Chapelle & Voss, 2021)

Here, the process guided the full translation of Pedi-EAT into Bangla, aiming to enhance comprehension for Bangla-speaking respondents.

1.6.3 Pediatric Eating Assessment Tool

For the purpose of assessing feeding issues in children who are six months to seven years old and have started eating solid foods, the PediEAT collects information from parents using ten items. Each of the four categories—physiologic symptoms, difficult eating behaviors, limited or choosy eating, and oral motor skills—is assessed using a scale that reflects the frequency and impact of the symptoms. (Thoyre et al., 2017)

Subscale totals help gauge feeding issue severity, where elevated scores signal more pronounced difficulties. Thoyre et al. (2017) established the tool's strong test-retest reliability for tracking behaviors over time. Clinicians and researchers apply it to screen for cases needing specialized feeding or swallowing assessments outside standard speech-language therapy roles and to evaluate treatment progress.

Investigators adapted and linguistically validated PediEAT for Bangla-speaking children with dysphagia, noting its concise format compared to lengthier alternatives while addressing diverse feeding concerns.

1.6.4 Dysphagia

Dysphagia involves impaired swallowing of liquids, solids, or mixed consistencies, often stemming from disrupted transfer between the pharynx and esophagus. (Azer et al., 2023)

Diagnostic methods include video fluoroscopy (VFSS) and fiberoptic endoscopic evaluation (FEES). Oropharyngeal forms arise from oral or pharyngeal dysfunction, causing swallowing delays, while esophageal variants hinder bolus passage through the esophagus. (Azer et al., 2023; Helliwell et al., 2023; Da Silva et al., 2010)

1.6.5 Patient Reported Outcome (PRO)

This word was selected by the investigators because the translated tool's results were helpful for the patients' self-reports. The improvement in the patient's condition is readily apparent.

When it comes to making decisions about care, patient reported outcome assessments give an objective means to determine if a change in therapy will improve an individual's life (Ahmed et al., 2012).

CHAPTER 2 METHODOLOGY

2.1 Study Design

An adaptation study design based on cross-sections was used by the investigator. An adaptation research design is primarily utilized for the validation, adaptation, and development of measuring or assessment instruments. Kesmodel (2018) describes a cross-sectional design that involves assessing reliability and validation studies, which include the comparison of measurement instruments and the evaluation of disease prevalence, as well as the characteristics, attitudes, and knowledge of patients and healthcare professionals. In this work, the investigator employed this study design for the validation and adaptation of the PediEAT scale into a Bangla form.

2.2 Sample Selection

2.2.1 Study Setting

Participating institutions included WMTS, the Center for the Rehabilitation of the Paralyzed (CRP) pediatric unit, the Speech and Language Therapy (SLT) clinical department, and a non-governmental organization. (Crp-bangladesh.org, 2019) Therapy for children with food and eating disorders has been effectively provided by these SLT services for a long time. These locations were chosen for data collection because they were accessible to children with disabilities and their caregivers, and because there were enough eligible participants to fill out the surveys.

2.2.2 Study Population

People involved This study included two groups of children: one group consisted of normally growing children who had never had issues swallowing or feeding, and the other group included children who had oropharyngeal dysphagia and were suspected or proven to have these conditions. There was a wide age range among the subjects, from six months to seven years. Only patients whose primary caregivers could read and write Bangla were considered for this study. Patients were clinically referred for a feeding or swallowing evaluation if there was clinical indication of problems or if parents were concerned. Children included in the healthy control group had to meet certain criteria: they had to be of appropriate developmental age, not have any neurological impairments, and not have reported feeding problems. Everyone whose WMTS child did not have any issues with eating was considered for recruitment. (Alavi et al., 2022)

2.2.3 Sampling Procedure

Using purposive sampling, a non-probability sampling strategy, the investigator choose participants at random who met the inclusion and exclusion criteria. (DePoy & Gitlin, 1998).

Using purposive sampling to obtain a sample from a population is a simple and effective method. Both the time and money saved are substantial. (Hicks, 2000)

2.2.4 Sample Size

Researcher Suzanne M. Thoyre stated that a minimum of 100–200 participants, split evenly between clinical and non-clinical groups, and 5–20 individuals per item were required. In this study, individuals were randomly allocated to either the parent group or the male adult group. As a sample, 55 children had trouble swallowing and 110 individuals were considered healthy. There was no member in either group who was not less than eighteen years old. This language validation was carried out by nine respectable, Truthful individuals with extensive knowledge of translation (both ways), synthesis, expert panel assessment, and all aspects of translation. During the testing period, little samples were gathered because of time constraints.

2.2.5 Rationale for the sample size

Cruchinho et al. (2024) states that when doing factor analysis, researchers can employ 5 to 10 individuals per item on the instrument. According to recommendations, validation study can be sufficiently precise with up to four controls per case (Suissa, 1999; CDC, 2012), which is in line with the patient-to-control ratio of about 1:2.

2.2.6 Inclusion Criteria

For patient

- Age: 6 months to 7 years.
- Parents may express their worries about their child's eating habits if they see that their child has problems beginning or finishing meals, gags or vomits as meals approach the area around their lips, refuses to eat, is distressed by the scent of food, or exhibits improper behaviors at mealtimes, such as turning their head, throwing a tantrum, or weeping.
- Diagnosed conditions affecting feeding
- Caregiver fluent in Bangla (native speaker)

- Caregiver ability to read and write Bangla
- Child must be developmentally capable of attempting oral feeding
- Willingness to provide informed consent
- Parents age limit were up to 18 years (Belafsky et all., 2008)

For healthy peoples group

- Age: 6 months to 7 years.
- No reported feeding concerns or difficulties
- No coughing, choking, or gagging during meals, food refusal, texture restrictions, or selective eating beyond typical development, structural airway/swallowing abnormalities
- No chronic medical conditions affecting feeding
- Caregiver fluent in Bangla (native speaker) and having the ability to read and write Bangla
- Child must be developmentally capable of attempting oral feeding
- Willingness to provide informed consent
- Parents age limit were up to 18 years (Belafsky et all., 2008)

2.2.7 Rational of Inclusion Criteria

For patients

Investigator accompanied inclusion criteria for select suitable participants. The selection focused on feeding problems with apparent clinical markers and isolation of these from comorbidities (e.g., not a GI, celiac, UTIs, hypothyroidism or failure to thrive) for psychometric validation purposes via PediEAT. Sampling the clinical settings CRP secured representation of confirmed cases, whereas native Bangla-speaking parents and age/solid food criteria were relevant to the target population of the tool (6 months-7 years old, according to the original PediEAT), making possible cultural adjustment and known group differentiation. A relatively normal pattern of development excluded confounding from disabilities, therefore conforming to our study aim, which was designed to test the tool for use in typically developing children with isolated feeding concerns. (Alavi et al., 2022)

Similar studies were done by Alavi et al., (2022): De Las M Ruiz Brunner et al., (2023).

For normal children

The capacity of the PediEAT to distinguish between groups was demonstrated by the control group, which consisted of normally growing children without a feeding history. These children were recruited from community settings such as schools to compare with the clinical cases (t-tests indicated substantial score differences, $p<0.001$).

With age, language, and solid food intake matching the patient group and original tool standards, construct validity was ensured using convenience sampling, which approximated real-world prevalence. (Alavi et al., 2022)

2.2.8 Exclusion Criteria

For patient and normal

- Those children who didn't meet inclusion criteria
- The age range for children is less than six months and more than seven years.
- Young ones who have not yet started eating foods that is hard to chew.
- Children with a history of major health problems that have an impact on their ability to eat, such as metabolic disorders or severe gastrointestinal ailments, which are unrelated to feeding difficulties.
- Non-native speakers in cases when the veracity of the parent's account is in doubt.
- Kids whose guardians or parents refuse to fill out the form or provide their permission.

2.2.9 Rationale of Exclusion Criteria

In view of the fact that software evaluates issues to do with oral processing of solid foods, mealtime behaviors and these skills relevant to this developmental phase, it is appropriate for use with children aged six months to seven years to those who eat semi-solid/solid food. To preserve the PediEAT and its results for psychometric comparison, we only included infants already on solid foods in the survey. This way we could inquire about chewing, swallowing of solids and texture selectivity without having to worry about wrong answers.

Similar studies were done by Alavi et al., (2022): De Las M Ruiz Brunner et al., (2023).

2.3 Data Collection

My research method relied on participant-initiated surveys to collect data. The study's subjects were surveyed using what is essentially a questionnaire.

Using CRP's pediatric evaluation instrument, all patients were diagnosed by clinical speech-language therapists (SLTs).

2.3.1 Data Collection Instruments

The investigator collected data through a consent form, a semi-structured questionnaire (demographic), and the linguistically validated PediEAT, which contains 10 tasks that need to be evaluated using a 6-point scale that includes 6 labels (0-5), where '0 = No problem' and '4 = Always,' resulting in a range of 0-50. Also consists of 3 interpretations of the total PediEAT, where 0-9 is low risk (no further evaluation needed). 10-24: Moderate risk; ≥25: High risk (refer for comprehensive assessment). (Thoyre et al., 2014). The investigator also used a pen, pencil, paper, pen drive, recorder, clipboard, and consent form for the data collection area.

2.3.2 Data Collection Procedure

This study employed traditional linguistic verification, mirroring the procedure of Piault et al. (2012), which encompassed four stages: linguistic modification, validity of content assessment, and finalization of the suggested survey for interviews, tailored to the context of Bangladesh.

Beaton et al. (2000) published a guideline, and numerous research have been conducted according to this guideline, which advocated an adaptation strategy. This study employed a six-step strategy for the linguistic validity and adaptation to culture of the survey within the setting of Bangladesh.

2.4 Data Analysis

2.4.1 Statistical Testing

In order to achieve its objectives, this study primarily considered reliability and validity. This inquiry utilized five tests: item object congruence (IOC), Cronbach's alpha, inter-class correlation coefficient (ICC), Pearson correlation coefficient (PCC), Spearman's correlation coefficient (SCC), and the Mann-Whitney U test. We used IBM SPSS (Statistical Package for the Social Sciences), version 25, for our statistical purposes.

You can find all the statistics below:

Name of the Test	Purpose	Result
Item Objective Congruence (IOC)	Bangla version was validated using content validity through IOC scoring. To judge language and cultural appropriateness.	Acceptable value 0.05≤ 1
Cronbach's alpha	(A reliability coefficient score of ≥ 0.5 was used to measure the PediEAT-Bd's internal consistency.)	a ≥ 0.5, Acceptable a≥ 0.7, Good a ≥ 0.9, Excellent
Inter- class Correlation Coefficient (ICC)	Calculated between the pre and post-test which assess Test-retest reproducibility.	ICC=≥0.5, Good ICC= ≤0.5, Weak
Pearson Correlation Coefficient (PCC)	Calculated between the pre and post-test which assess Test-retest reproducibility.	r=≥0.2, Acceptable r=≥ 0.5, Good
Spearman's Correlation Coefficient (SCC)	In order to establish a relationship between the Total PediEAT-Bd and each PediEAT-Bd item, which is utilized to estimate construct validity. A p-value less than 0.01 was deemed statistically significant, and all statistical tests were two-tailed.	p <0.01, Significant
Mann-Whitney U Test	Continuous variables between problematic participants and healthy participants were compared to find significant difference	Significant Difference by median number, p<0.001

Table 2: Statistical Testing

2.4.2 Ethical Consideration

Following approval by both the IRB and the ethics committee of the Centre for the Rehabilitation of the Paralysed (CRP), the study was given the green light by the Bangladesh Health Professions Institute (BHPI). Approval for this study was obtained via email from the original author of PediEAT and the clinical speech and language therapy (SLT) section of CRP in Savar. The patient was told verbally and given a written record sheet outlining the study's purpose, the participant's consent to participate, and the investigator's involvement. Patients were given the assurance that the study would not cause any harm to their physical or mental health, as it was not an experimental study and the investigator only needed six minutes to complete the questionnaire. Signatures or fingerprints were used to obtain participants' consent. Every participant was made aware that they might stop participating or decline to answer any question at any point throughout the research. Observed stringent security measures to safeguard the confidentiality of all respondent information, including name, address, phone number, and email address.

2.4.3 Informed Consent

The investigator gave the interviewees a detailed explanation of the study and verbally promised that their information would be treated confidentially and not exploited in any way. Before participants took part in the test, the researcher gave them a formal consent form to sign. Also, the permission form bore the investigator's signature. Participation in this study cannot result in any direct benefit to the sample, as the investigator has made sure. This research will not only directly help them, but it will also indirectly help others in the future. Since there have been some discreet and delicate examinations into these matters, no ethical dilemma has emerged in light of all these standards and ideals. Everyone involved was aware that they might stop participating and withdraw their consent at any moment without any consequences.

2.5 Cross-cultural adaptation & validation process

Tools can be validated and adapted into a cultural setting using a variety of processes. The four-step process outlined in the World Health Organization's Translation Guidelines (WHO, n.d.) includes the following steps: forward translation, back-translation by an expert panel, pre-testing, cognitive interviewing, and the final version. Expert committee evaluation for conceptual, experiential, idiomatic, and semantic equivalence is another step in the adaptation process, as is back-translation (Guillemin et al., 1993). Full validation and cross-cultural adaptation, according to a well-known standard, requires six stages: forward translation, synthesis of translated versions, back translation, expert committee, pre-testing, and developer document submission (Beaton et al., 2000).

In order to modify and validate PediEAT in the context of Bangladesh, the investigator followed a conventional procedure. Cruchinho et al. (2024) states that there are eight steps to the procedure, including contextual validation in the context of Bangladesh, linguistic translation, content validity examination, and psychometric property analysis.

Here, both validation and adaptation steps were given below-

The Following Step is:

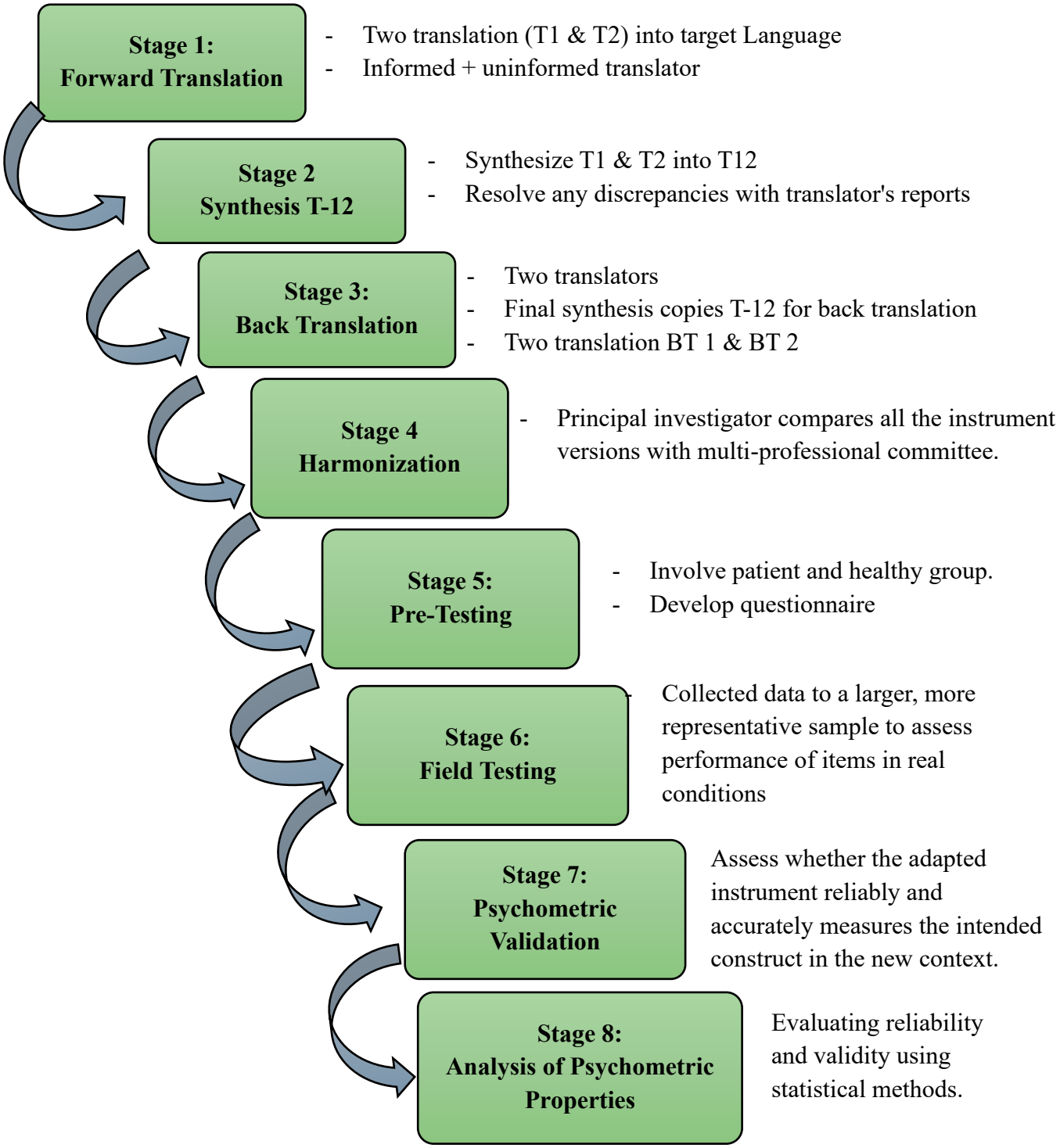


Figure 1 Process of Cross-cultural adaptation and linguistic validation of Pediatric Eating Assessment Tool (PediEAT)

Following the established principles laid out by Cruchinho et al. (2024), the Pediatric Eating Assessment Tool (PediEAT) was adapted for use in the Bangladeshi environment. The original PediEAT analyzed problematic eating features, therefore the translation from English to Bangla was not a literal match. Instead, it aimed to preserve linguistic, phonetic, and cultural modifications.

Transcribing the original PediEAT instructions into Bangla was the initial step in the translation process. The PediEAT, which was not translated directly by the advance translators, contained ten questions that preserved certain problematic eating elements, such as physiologic symptoms, maladaptive eating behaviors, selective/restrictive eating, and oral processing. We conceptually translated all of the other words in PediEAT into Bangla as well.

All of the modified translated words and sentences were double-checked in the second stage, synthesis, by talking it over with the principal investigator and translators. We resolved all the inconsistencies with great care, keeping in mind the importance of phonetic balance, semantic clarity, and therapeutic usefulness within the Bangladeshi setting.

In the third stage, known as "back translation," the PediEAT synthesized in Bangla was independently translated into English. In the fourth stage, called "harmonization," the forward translators, synthesizer, back translators, and experienced speech and language therapists who made up the principle investigator's expert committee reviewed all of the translated forms and finalized the pre-final version by harmonizing the back translated version with the original PediEAT.

To improve clinical clarity and maintain internal consistency with international eating assessment terminology, the expert's recommended English technical eating terms can be kept in parentheses with their Bangla equivalents at this point.

The penultimate step of the adaption process is pre-testing. A small sample size was used to evaluate clarity, comprehensibility, and convenience of administration using the pre-final version of PediEAT. Participants reported no significant difficulties in using the PediEAT tool, and its ease is both culturally and organically suited for the people of Bangladesh.

CHAPTER 3 RESULTS

This chapter represents the outcome of adaptation and validation steps conduct throughout the study shown in table, bar chart and pie chart.

3.1 Demographic Information of the Participants

3.1.1 Distribution of Patient and Healthy Child Group According to their Age

Age Group		
	Frequency	Percent
6-15months	12	7.3
15-30months	28	17.0
2.5-7years	125	75.8
Total	165	100.0

Child Gender		
	Frequency	Percent
Boy	86	52.1
Girl	79	47.9
Total	165	100.0

Educational Qualification of Child		
	Frequency	Percent
Not_Enrolled	123	74.5
Pre_Primary_School	40	24.2
Primary_School	2	1.2
Total	165	100.0

Table 3 Distribution of Child's age group, gender, educational qualification

The result shows the demographic information of the child in three parts were showed also for category (age group, gender, educational qualification) in this study. We started by classifying the kids into three age brackets: 6–15 months, 15–30 months, and 2.5-7 years. The eldest age group, which included children aged 2.5 to 7, comprised 125 individuals, or 75.8% of the overall sample. As a counterpoint, 17.0% of the sample consisted of 28 children aged 15–30 months, while the youngest age group comprised just 12 children (7.3% of the total) aged 6–15 months. With a mean coded age-group score of 2.68 and a standard deviation of 0.603, it can be deduced that the majority of individuals tended to cluster toward the upper age category, with relatively little variation.

In the second part although there was a slight male predominance, the gender distribution was almost exactly the same in every other respect. There were 165 kids altogether, with 79 girls making up 47.9% of the population and 86 boys 52.1%. The sample was nearly evenly distributed between males and females based on the coded gender variable, which had a mean of 1.48 and a standard deviation of 0.501.

In the third part at the time that this information was gathered, the vast majority of the children had not yet begun attending any kind of formal educational institution. There were a total of 165 people, and out of those, 123 (74.5%) were not enrolled in school, 40 (24.2%) were attending pre-primary, and only two (1.2%) were officially enrolled in primary school. Consistent with the young age of the participants included in the study, the sample was concentrated at the lower end of the educational spectrum with a mean coded educational status of 1.27 and a standard deviation of 0.47.

3.1.2 Medical diagnosis of Children

Medical Diagnosis of Children		
	Frequency	Percent
Present	96	58.2
Not Present (normal)	69	41.8
Total	165	100.0

Table 4 Medical diagnosis of Children

Within this sample of 165 children, medical diagnosis is a prominent characteristic: 96 children (58.2%) had a documented medical diagnosis, whereas 69 children (41.8%) had no identified medical condition. This means that in your study, children with a diagnosed condition form the majority, but a substantial group almost two out of every five are typically developing in terms of medical history, which is important for comparing feeding outcomes across clinical and non-clinical groups. With a variance of 0.245 and a standard deviation of 0.495, the 165 instances with valid data show that there is some variation in the answers, but that one group (children with a diagnosis) clearly predominates.

The frequency table shows that 58.2% of children had at least one medical diagnosis recorded, which you can interpret as more than half of the sample presenting with a clinical condition potentially relevant to feeding. In contrast, 41.8% of children had no documented medical diagnosis, representing a sizable comparison group that can help you understand how feeding difficulties differ between children with and without medical conditions.

3.1.3 Distribution of different types of diseases present in children

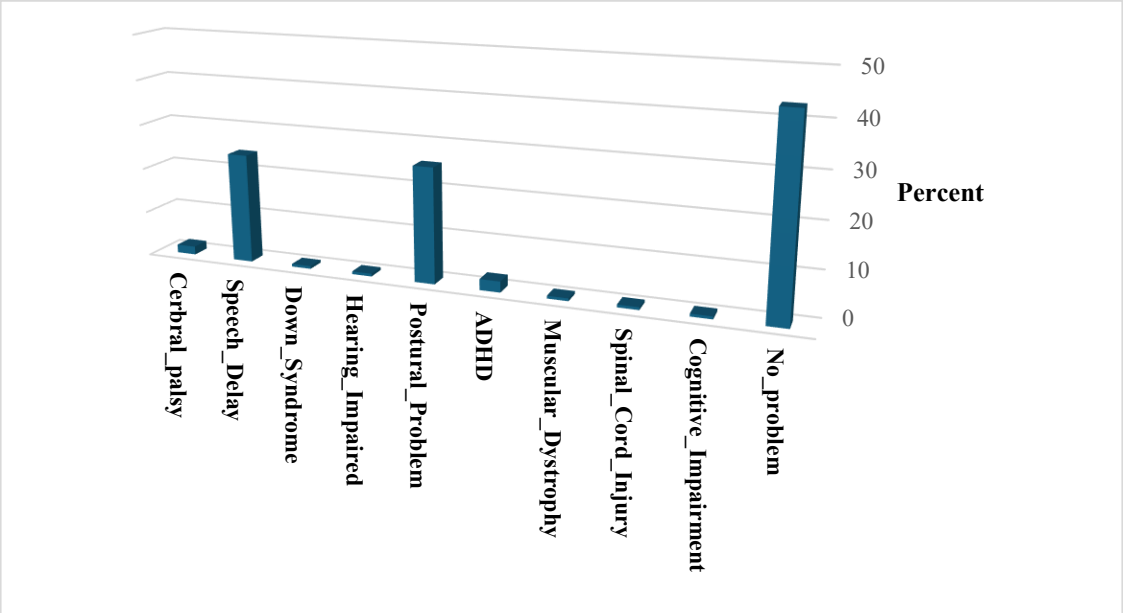


Figure 2 Diseases present in children

Nearly 50% of youths in this group had no medical evaluation while experiencing developmental, neuromuscular, and sensory issues. The top two most common issues were postural issues (25.5%) and speech delay (24.2%), with other diagnoses accounting for less than 3% of responses. Of the 165 children in the sample, 43.0% (71 children) did not report any issues. Among the remaining 94 children (57.0%), 57% had a major illness or developmental/neurological diagnosis, indicating a medical concern. After no problem, 40 (24.2%) children had speech delay, the second biggest percentage. Questionnaire on strengths and weaknesses The findings in Part 2 ADHD in 4 children (2.4%) and reduced cognitive ability in 1 child (0.6%) constitute a minority but clinically significant neuro-developmental cohort.

Postural difficulties were the most prevalent disorder, affecting 42 children (25.5%), including those with motor or positional issues that could compromise feeding and swallowing. Cerebral palsy (1.8%), muscular dystrophy (0.6%), and spinal cord damage (0.6%) were not common but serious neurological disorders. Only one instance (0.6%) of hearing loss was observed, showing minimal sensory impairment prevalence in this population. With only one child (0.6%) discovered, adaptive disorders connected to developmental delay, such as Down syndrome, were rare.

3.1.4 Distribution of Birth Order and Problems occurred during the birth of the children

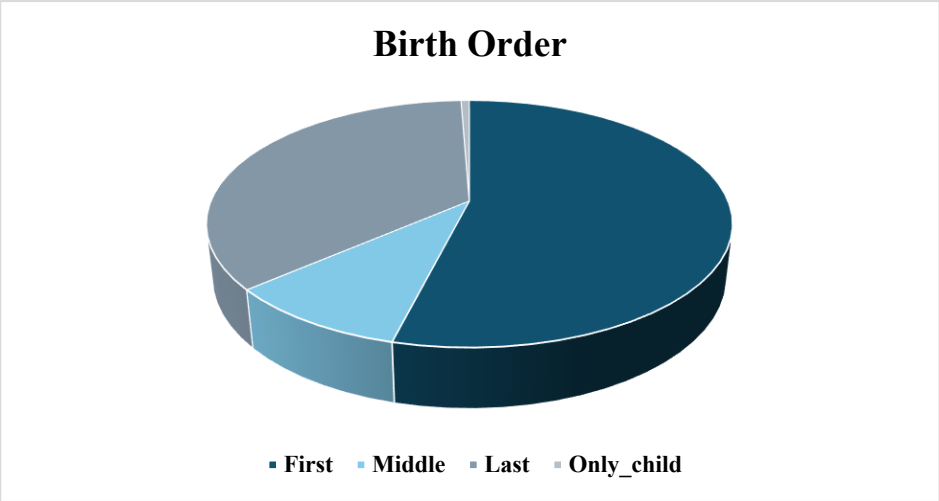


Figure 3 Birth Order in children

The biggest category consists of first-born children; 89 out of a total of 164 (or 53.9% of the total) fall into this category. Out of the total number of children, 59 (or 35.8%) are the last-born, 16 (9.7%) are the middle-born, and only one (0.6%) is an only child.

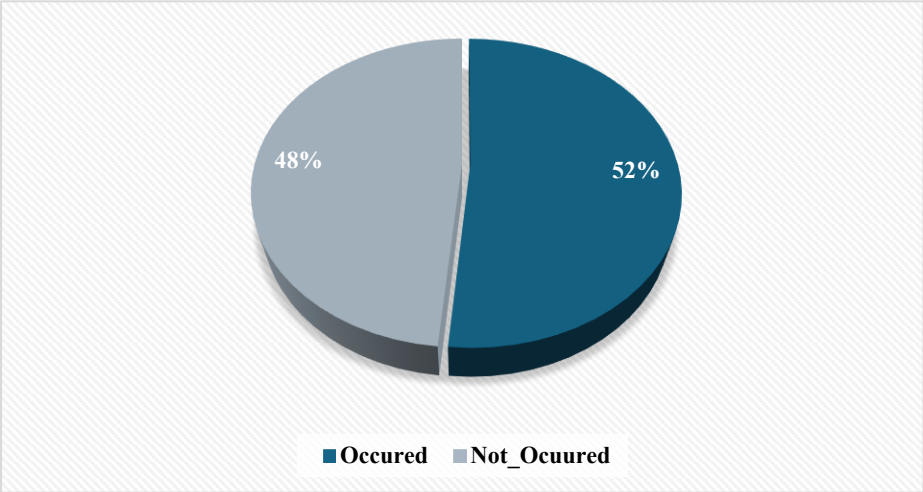


Figure 4 Problems occurred during the birth of the children

Slightly more than fifty percent of the children, 85 out of 165 (51.5%), were reported to have had some form of problem during birth. The remaining 80 children (48.5%) had no documented complications at birth, meaning nearly half of the sample began life without any reported perinatal difficulties.

3.1.5 Distribution of Type of problem occurred during birth in Children

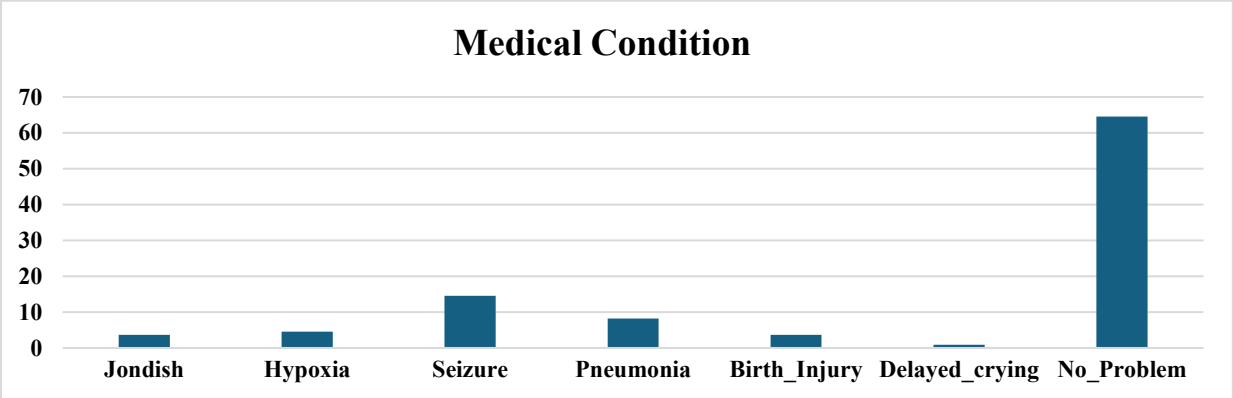


Figure 5 Type of problem occurred during birth in Normal group

"No Problem" is the most populous category, with 71 out of 110 children (64.5%). A robust "medically uncomplicated" comparison group was provided by the fact that over two thirds of the children with data available did not have a recorded medical condition such as hypoxia, seizure, or infection in the early period. Sixteen children (14.5%) had seizures, making it the most common type of early medical condition. Nine children (8.2% of the total) have been diagnosed with pneumonia, five with hypoxia (4.5%), four with jaundice ("Jaundice") and one with birth injury (3.6%); one child (0.9%) has experienced delayed crying; this represents a small but clinically significant subset that may be at greater risk due to neurological or respiratory issues.

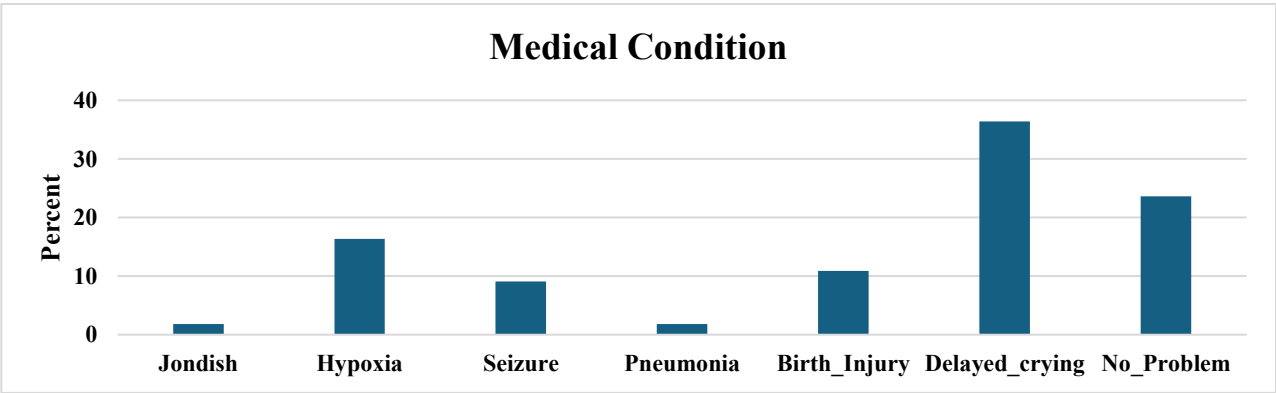


Figure 6 Type of problem occurred during birth in Problematic group

Delayed crying, recorded in 20 children (36.4%), is the most common early condition and often indicates prenatal distress or adjustment. Hypoxia, birth injury, and seizures affected 9 (16.4%), 6 (10.9%), and 5 (9.1%), respectively. Jaundice (“Jondish”) and pneumonia impacted 1 (1.8%), indicating a smaller but clinically significant group with neurological or respiratory vulnerabilities. In contrast, 13 of 55 children (23.6%) were classed as “No Problem,” implying they were born without medical issues.

3.1.6 Distribution of Birth Status in Children

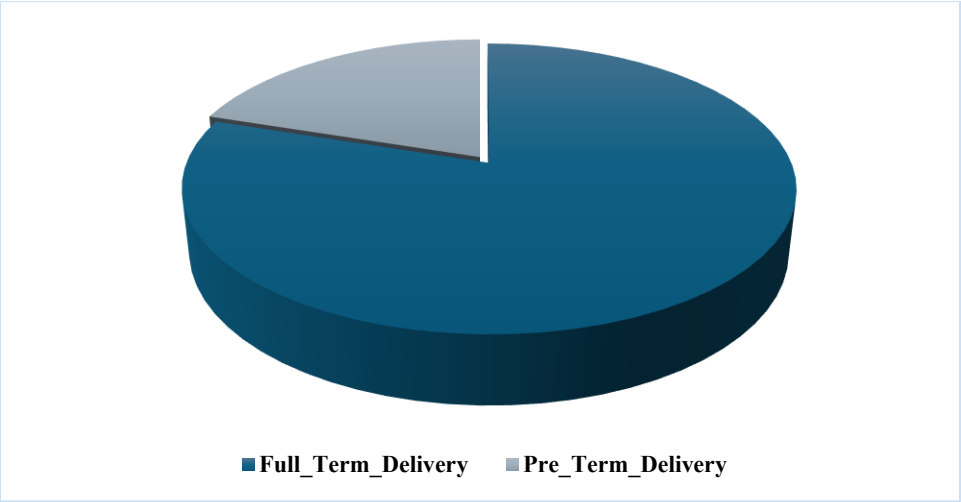


Figure 7 Birth Status in Normal group

In this subsample of 110 children, 88 (or 80.0%) were born at full term. About one-fifth of the infants in your study were born prematurely, putting them at increased risk for feeding and developmental issues in the future. Twenty-two children were born prematurely, accounting for 20.0% of the total.

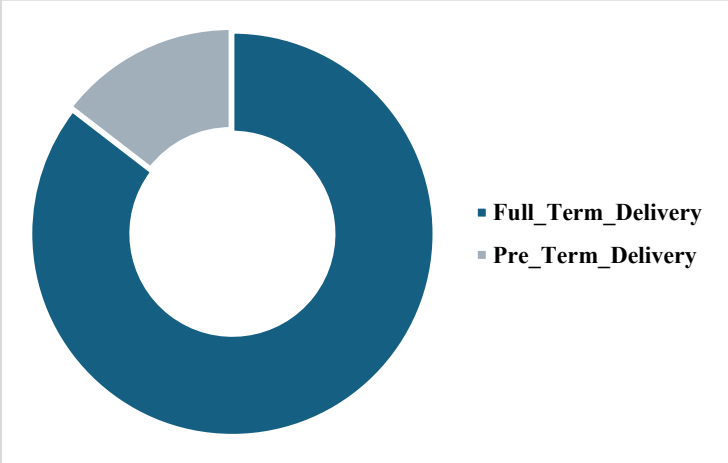


Figure 8 Birth Status in Problematic group

Of the 55 children in the subsample, 85.5% (47 out of 55) were born at full term. A clinically significant consideration regarding eating, growth, and neurodevelopment is that nearly one out of every seven infants in this cohort was born prematurely, despite the fact that only eight children (14.5%) were born preterm.

3.1.7 Distribution Types of Delivery

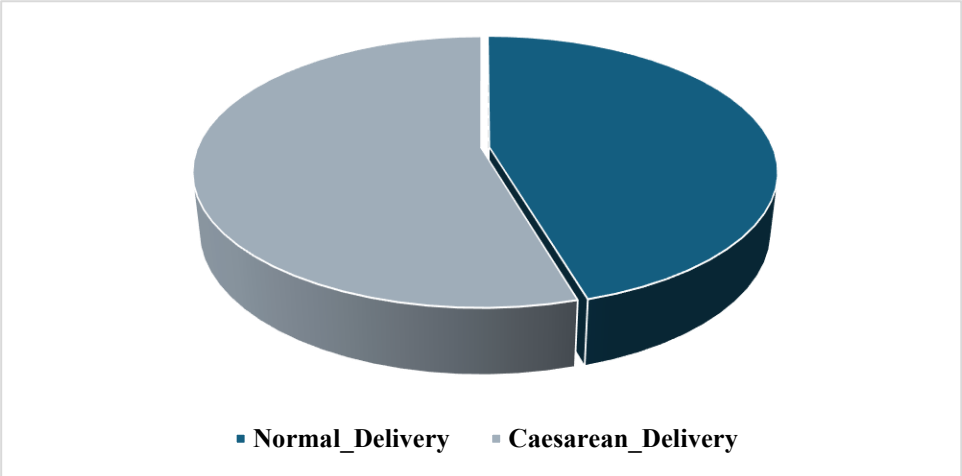


Figure 9 Types of Delivery in Normal Group

Among these 110 infants, 60 were delivered via cesarean section, accounting for 54.5% of the sample. The remaining 50 children (45.5%) were delivered via spontaneous vaginal birth, suggesting that a non-surgical delivery was the norm for almost 50% of the families surveyed.

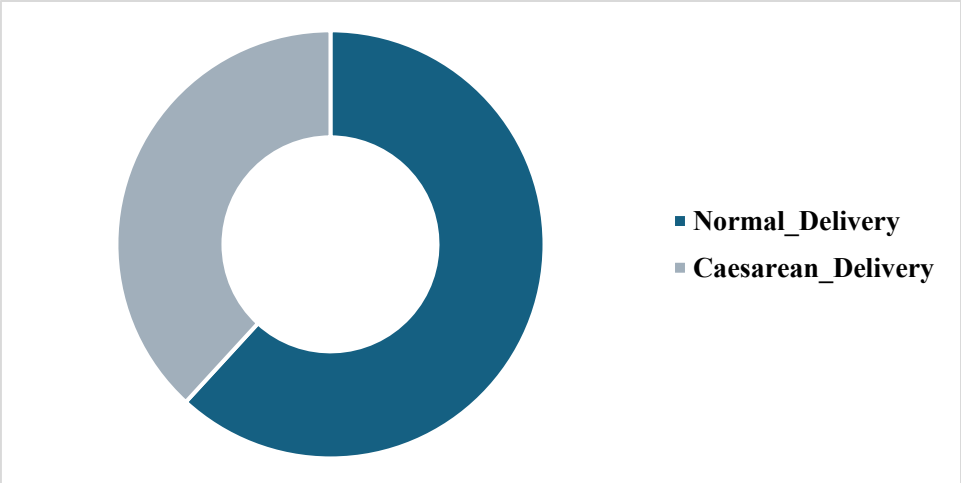


Figure 10 Types of Delivery in Problematic Group

Within this cohort, 34 children were delivered via normal vaginal birth, accounting for 61.8% of the subsample. Of the remaining 21 children (38.2%), about two out of every five births were conducted via caesarean section.

3.1.8 Distribution of Breastfeeding Times in Children

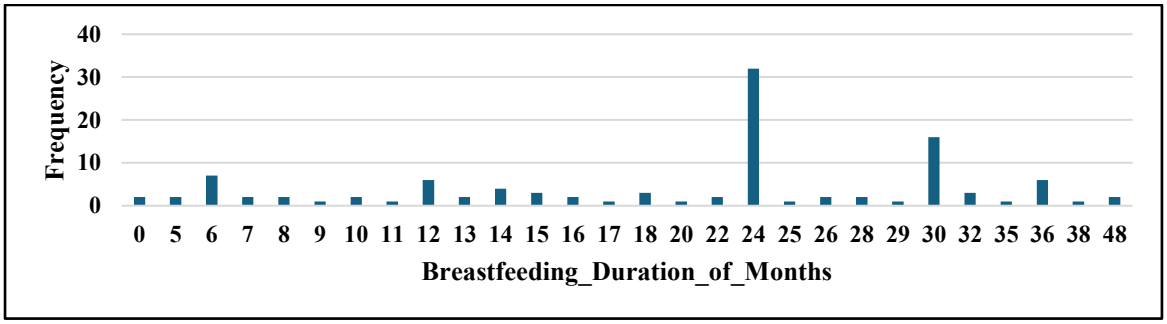


Figure 11 Breastfeeding Times in Normal Group

Few children breastfed for 0 months (2, 1.8%), and few stopped during the first year, with scattered examples at 5–12 months. Breastfeeding frequency gradually increases in the second year of life (12-24 months): 6 children (5.5%), 4 for 14 months (3.6%), and 3-4 for most periods between 15 and 18 months. Many caregivers extended breastfeeding beyond "exclusive breastfeeding" recommendations, incorporating it into toddlerhood. The highest peak was at 24 months, with 29.1% of children (32 children) nursed for two years. 16 children (14.5%) nursed for 30 months, with more at 32, 35, 36, 38, and 48 months, showing protracted nursing up to 4 years.

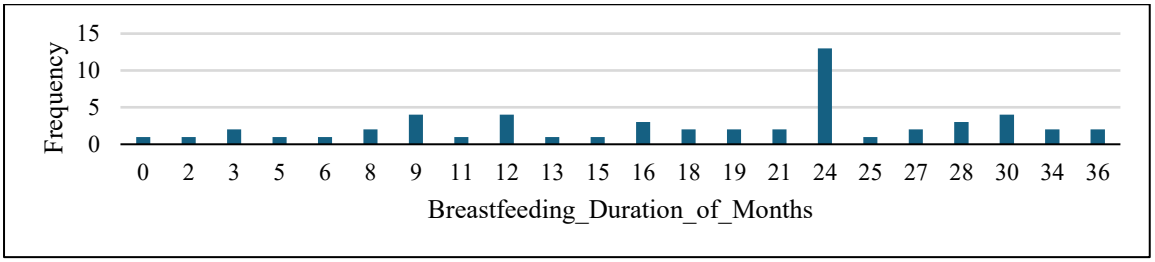


Figure 12 Breastfeeding Times in Problematic Group

Early cessation was rare; just one kid (1.8%) was never nursed, and most continued breastfeeding after 6–8 months. There are scattered cases at 2, 3, 5, 6, 8, 9, 11, and 12 months within the first year, typically involving 1-4 children. Many families continued nursing for 13–21 months, with minor clusters at 12 months (4 children, 7.3%), 16 months (3 children, 5.5%), 18 months (2 children, 3.6%), and 19–21 months (2–3 children each). 13 children (23.6%) nursed for exactly two years, with the most common period being 24 months. Beyond this, a significant number of children breastfed for 27, 28, 30, 34, and 36 months, usually with 2–4 children at each period, indicating protracted nursing into the third year.

3.1.9 Distribution of Complementary Feeding Times in Children

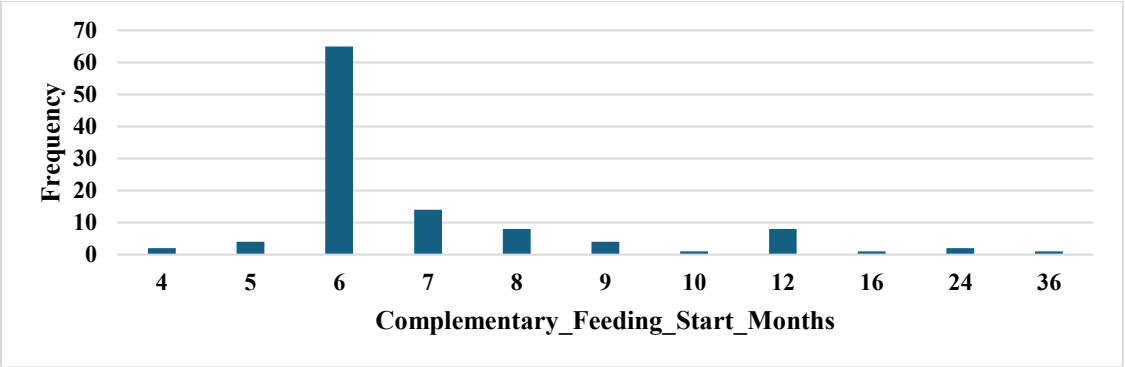


Figure 13 Complementary Feeding Times in Normal Group

There is a large amount of variability indicated by the standard deviation of 4.072 when looking at the complementary feeding start age data, which pertains to 110 children. The majority (59.1%) began at 6 months, whereas a small percentage (12.7%) began at 7 months and a smaller percentage (7.3%) began at 8 months. Present at 4 months was 1.8% and at 5 months it was 3.6%. Potentially influenced by cultural or medical considerations, some children waited longer than 8 months to begin feeding; for example, 7.3% began at 12 months and others at 16, 24, and 36 months.

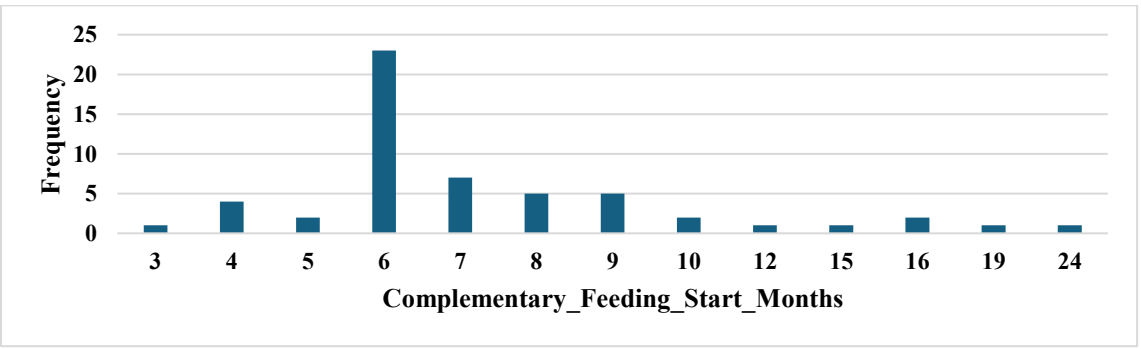


Figure 14 Complementary Feeding Times in Problematic Group

The 55 children included in the complementary feeding data set had start ages between 3 and 24 months, and all of them had full reporting. Most babies started eating at 6 months, followed by 12.7 percent at 7 months, 9.1 percent at 8 months, and 41.8 percent at 9 months. Between 6 and 9 months, more than two-thirds started eating supplemental foods. Due to medical, parental, or cultural reasons, some children started solids earlier than others; as an illustration, one infant began at three months, four at four months, and two at five months. At 10, 12, 15, 16, 19, and 24 months, however, other children began later than anticipated.

3.1.10 Distribution of Children with and without feeding difficulties

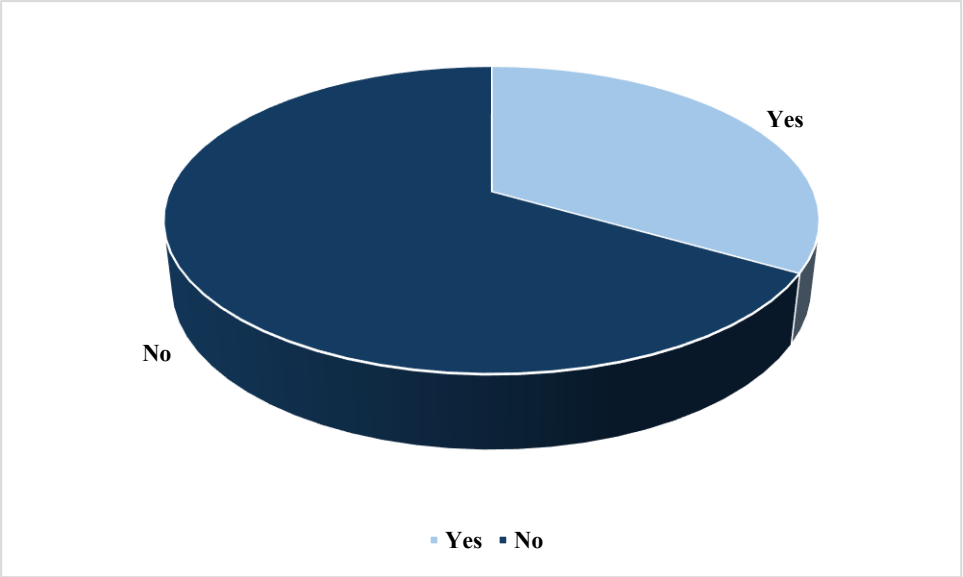


Figure 15 Children with and without feeding difficulties

It was reported by caregivers that a total of fifty-five children, or 33.3% of the total, were currently experiencing issues with feeding. All of the remaining 110 children, which accounts for 66.7% of the total, were reported as having no current eating problems. This indicates that feeding concerns are present in a sizeable percentage of the children in your clinical and community sample, but they are not completely prevalent. The amount of dispersion that exists between the two response alternatives (which are "Yes" and "No") is shown by the standard deviation value of 0.473, which suggests that both categories are well represented.

3.1.11 Distribution of Children with different types of feeding difficulties

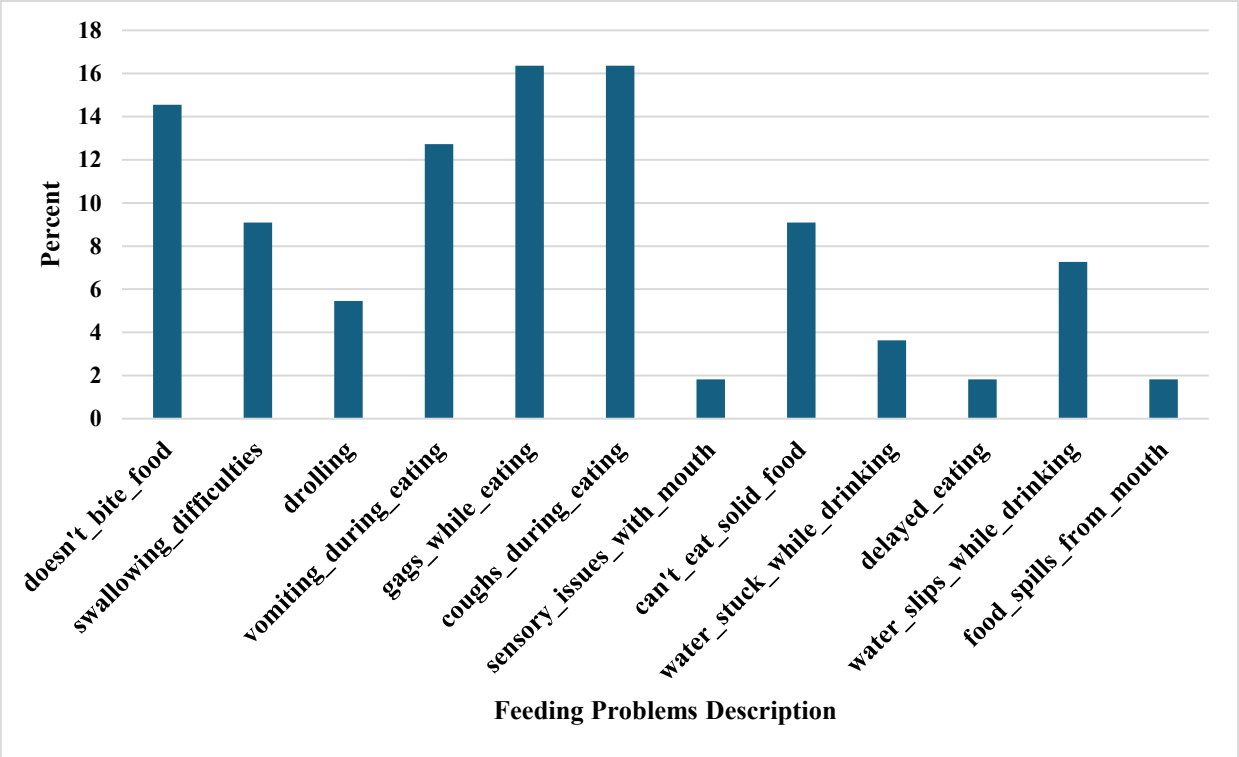


Figure 16 Children with different types of feeding difficulties

The predominant descriptions are "gags while eating" and "coughs during eating," each documented for 9 youngsters (16.4%). These symptoms indicate that caregivers frequently concern themselves with choking or airway obstruction during meals, underscoring the importance of a dysphagia-focused examination. Swallowing difficulties are noted in 5 youngsters (9.1%), contributing to the cohort with evident safety or efficiency issues. Eight youngsters (14.5%) are characterized as "doesn't bite food," indicating restricted chewing abilities or an aversion to handling textured foods. Additional oral motor difficulties encompass drooling (3 children, 5.5%), water retention when drinking (2 children, 3.6%), water escaping from the mouth (4 children, 7.3%), and food egress from the mouth (1 child, 1.8%), all indicative of inadequate oral seal, tongue dexterity, or coordination. Five children (9.1%) are classified as unable to consume solid meals, potentially indicating texture aversion, delayed advancement to solid foods, or underlying motor issues. Further concerns encompass vomiting during meals (7 children, 12.7%), delayed eating (1 child, 1.8%), and oral sensory difficulties (1 kid, 1.8%), indicating that certain children exhibit pronounced negative reactions or discomfort upon the introduction of food.

3.2 Feature Distribution of the Participants

3.2.1 Distribution of Parents Age Group

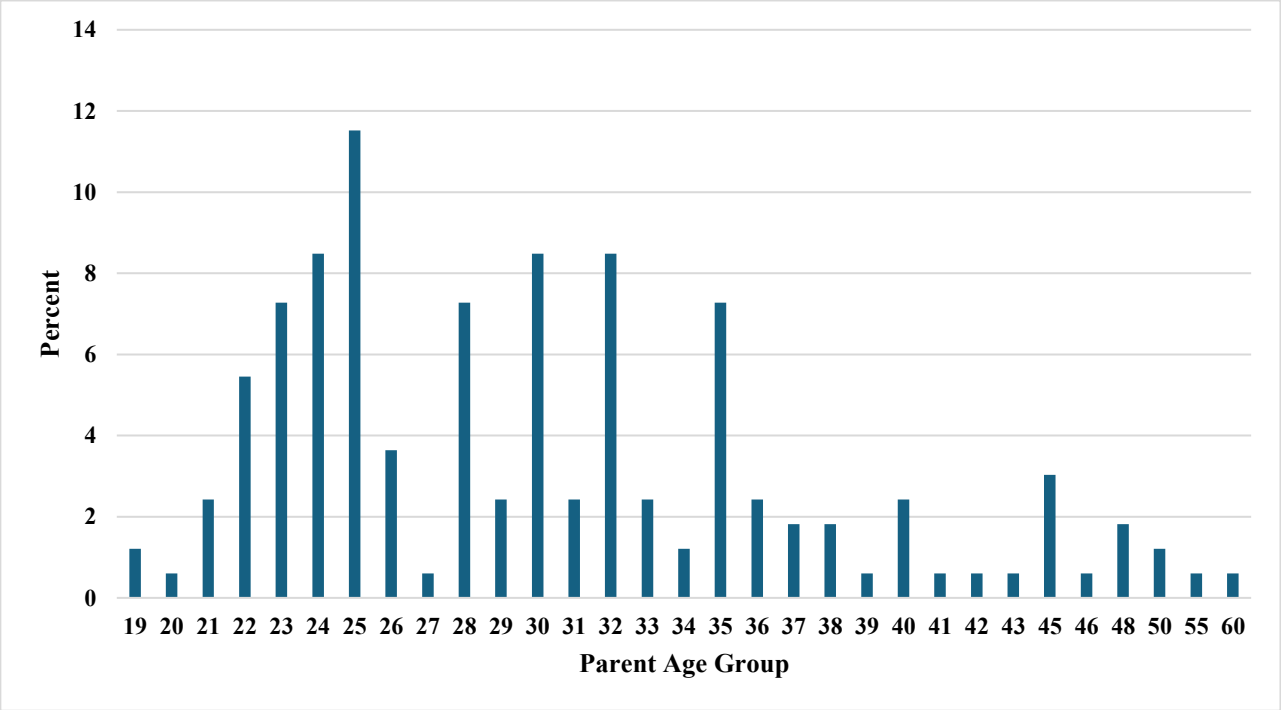


Figure 17 Parents Age Group

As is normal for people raising children, most of the parents were in their twenties or early to mid-thirties. By way of illustration, fifty parents (or approximately 30.3% of the total) fall within the 23–25 age bracket, and another fifty-six parents (or about 33.9% of the total) fall within the 30-35 age bracket; so, over two thirds of the sample falls within this 23–35 age range. Consistent with demographic data in comparable pediatric research, this trend indicates that the majority of children in the study are being cared for by parents in their early to mid-adulthood. It is clear that parents who are adolescents or very young adults are not prevalent in this sample because only a tiny percentage of parents were younger than 23 years old (2 at 19, 1 at 20, 4 at 21, and 9 at 22). Similarly, parents who were more than 40 years old were extremely uncommon; there were a handful of instances at45,48, and 50 years old, and a single case at41,42,43,46,55, and 60 years old. These cases accounted for less than 10% of the total sample. The distribution of ages is largely concentrated in early and middle adulthood, however there are a few children whose parents are much older.

3.2.2 Distribution of Different types of Relationship Status with Child

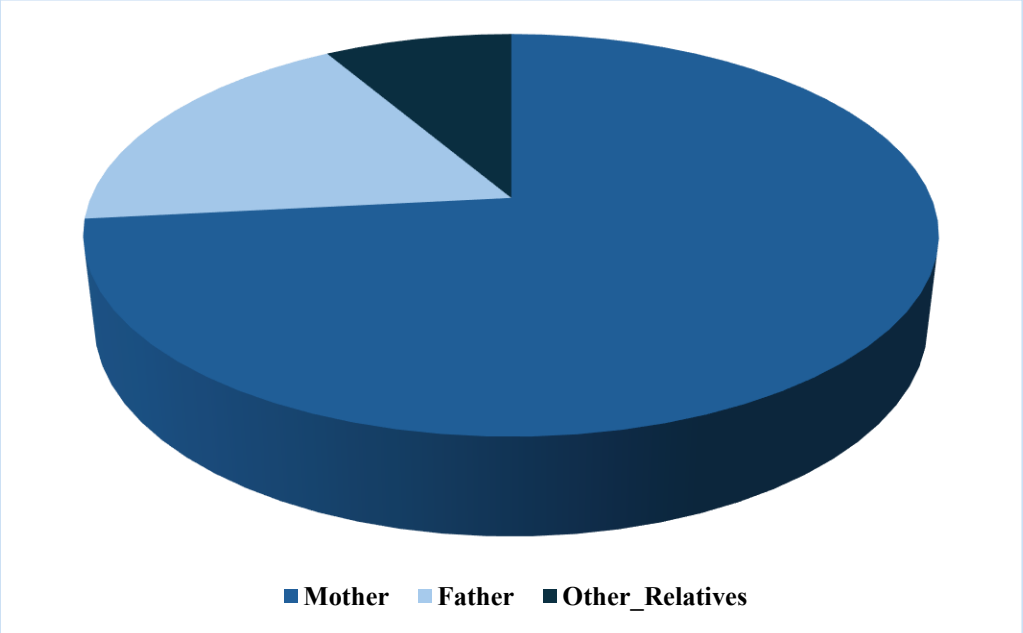


Figure 18 Different types of Relationship Status with Child

In the field of pediatric and feeding research, the majority of responders were mothers, which is reflective of the fact that women are often the primary caregivers for small infants. To be more specific, 121 of the respondents (73.3% of the total) were mothers, 30 of the respondents (18.2%) were fathers, and 14 of the respondents (8.5%) were other relatives such as grandparents, aunts, or uncles. Together, these individuals made up the entire sample.

3.2.3 Distribution of Educational Qualification of Parents

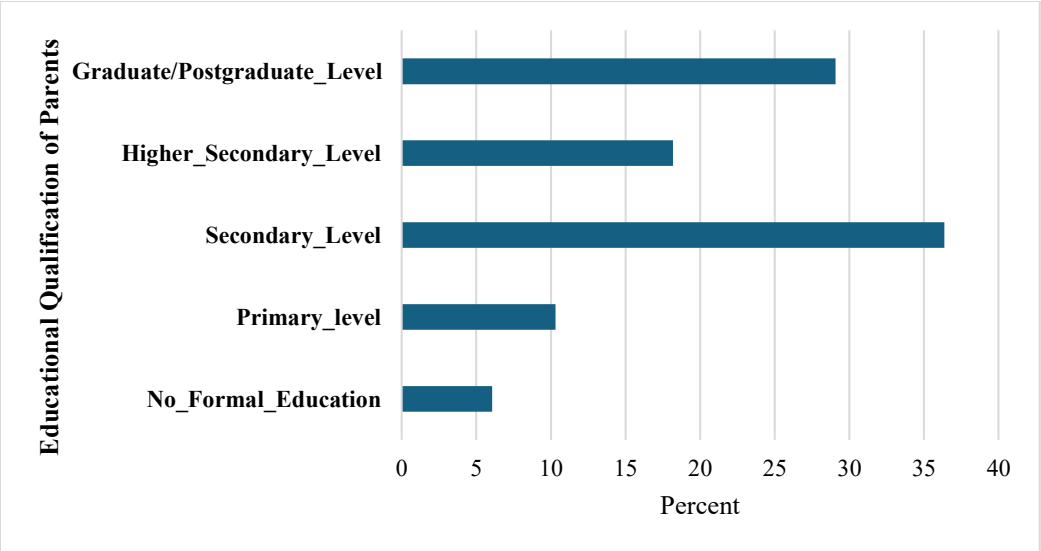


Figure 19 Educational Qualification of Parents

Only ten parents, or 6.1%, did not have any formal education, while seventeen parents, or 10.3%, had education up to the primary level. Together, these two percentages represent approximately one-sixth of the sample with little formal schooling. The largest single group consisted of parents who had completed intermediate or secondary schooling (n = 60, 36.4%), followed by thirty parents (18.2%) who had completed higher secondary education, and then forty-eight parents (29.1%) who had completed graduate or postgraduate degrees. As a result, roughly two-thirds of parents had completed at least secondary school. This is significant since higher levels of parental education are frequently linked to improved results for children in terms of their health, nutrition, and development.

3.3 Validation (Content Validation)

3.3.1 IOC Score in first trial for Content Validity

IOC Scoring for Different Age Group

Q. No.	IOC Score 6-15 Months	IOC Score 15-30 Months	IOC Score 2.5-7 Years	Accepted (+) / Rejected (-)
1	1.00	0.67	0.67	+
2	0.67	1.00	1.00	+
3	0.67	1.00	1.00	+
4	1.00	1.00	1.00	+
5	1.00	1.00	1.00	+
6	1.00	0.67	1.00	+
7	0.67	1.00	1.00	+
8	1.00	1.00	1.00	+
9	1.00	1.00	1.00	+
10	1.00	0.67	0.67	+

Table 5: IOC Scoring for Different Age Group

Overall Content Validity Summary

Aggregate Results Across All Age Groups

Age Group	Total Items	Items Accepted	S-CVI/Ave
6-15 months	10	10 (100%)	0.93
15-30 months	10	10 (100%)	0.93
2.5-7 years	10	10 (100%)	0.93
Overall	**30**	**30 (100%)**	**0.93**

Table 6: Overall Content Validity Summary

Item-Level Analysis

Items with Perfect Agreement (IOC = 1.00): 24 items across all versions demonstrated perfect expert consensus, indicating strong relevance to the objective of identifying problematic pediatric feeding symptoms. Items with Adequate Agreement (IOC = 0.67): 6 items (all above the 0.50 threshold) showed adequate relevance, with one expert providing a more conservative rating. These items were retained as they meet the acceptance criterion. Items Requiring Revision (IOC < 0.50): None. All 30 items across the three age groups exceeded the minimum threshold for acceptance. The PediEAT-10 Item Screener demonstrates excellent content validity across all three age groups with an aggregate S-CVI/Ave of 0.93 (≥0.90 benchmark). (Polit et al., 2007)

3.3.2 Features of PediEAT (Healthy Group & Patient Group)

PEDIEAT	HEALTHY GROUP (N=110)			PATIENT GROUP (N=55)		
ITEMS	Mean ± SD	Median	IQR	Mean ± SD	Median	IQR
ITEM-1	0.62±0.85	0.00	(0.0-1.0)	3.40±1.08	3.00	(3.0-4.0)
ITEM -2	0.53±0.85	0.00	(0.0-1.0)	3.67±1.02	4.00	(3.0-5.0)
ITEM -3	0.63±0.83	0.00	(0.0-1.0)	3.29±1.10	3.00	(2.0-4.0)
ITEM -4	0.65±0.75	0.50	(0.0-1.0)	3.47±1.10	3.00	(3.0-4.0)
ITEM -5	0.75±0.82	1.00	(1.0-2.0)	3.51±1.02	4.00	(2.5-4.0)
ITEM -6	1.03±0.94	1.00	(1.0-2.0)	3.02±1.21	3.00	(2.0-4.0)
ITEM -7	0.52±0.71	0.00	(0.0-1.0)	3.27±1.08	3.00	(3.0-4.0)
ITEM -8	0.74±0.87	0.00	(0.0-1.0)	3.42±1.10	3.00	(3.0-4.0)
ITEM -9	0.58±0.81	0.00	(0.0-1.0)	3.22±1.26	3.00	(2.0-4.0)
ITEM -10	0.35±0.58	0.00	(0.0-1.0)	2.71±1.38	3.00	(2.0-4.0)
TOTAL SCORE	6.37±3.85	5.00	(4.0-8.0)	32.98±4.12	33.00	(30.0-36.0)

Table 7: Descriptive statistics of PediEAT items for healthy and patient groups

Note: SD = Standard Deviation; IQR = Interquartile Range (displayed as 25th percentile—75th percentile); scores on the PediEAT items range from 0 to 5, where 0 indicates no difficulty and 5 indicates severe difficulty.

The study indicates a notable difference in Total PediEAT scores between healthy children and those affected by nutrition disorders. The healthy group obtained a mean score of 6.37 ± 3.85, whereas the patient group demonstrated a mean of 32.98 ± 4.12, thereby illustrating the PediEAT's effectiveness in distinguishing feeding development issues. Reduced variability in patient scores indicates a more consistent presentation of dietary difficulties relative to the broader diversity observed within the healthy cohort. Individual questions within the PediEAT exhibited differing levels of sensitivity, with Question-2 displaying the greatest variation (3.14 points), whereas Question-6 showed some convergence between groups (1.99 points). Overall, the findings demonstrate the instrument's efficacy in detecting feeding concerns across diverse infant populations.

3.4 Reliability

Internal consistency reliability

It evaluates the extent to which a test effectively measures various constructs and provides consistent scores.

Test-retest method

In this method, the same test is given at several times and the results are compared. (Henson, 2001)

3.4.1 Internal Consistency

For the final PediEAT-Bd, To measure the psychometric details, Cronbach's α was employed. A method for determining a set's dependability by observing the degree to which its individual parts are interdependent. We will soon be doing the Reliability Test.

3.4.1.1 Cronbach's α of PediEAT (Internal Consistency)

Measure	PediEAT- (Original)	PediEAT-Bd (pre)	PediEAT-Bd (post)
Cronbach's α	**0.95**	**0.780**	**0.801**

Acceptable Range (α = >0.7 - acceptable, α = >0.8 - Good, α = >0.9 - excellent)

Table 8: Cronbach's α of PediEAT

The original tool had a good score of internal consistency (Cronbach's α) of 0.95, however the pre and post PediEAT-Bd scores were 0.780 and 0.801, respectively.

3.4.1.2 Comparison of Different Internal Consistency of Others Adapted Version of PediEAT

Measure	PediEAT (Original)	PediEAT (Original)-Bd
Cronbach's α	0.95	0.954
	Persian	**Arabic**
	0.74	0.986

*PediEAT = Pediatric Eating Assessment Tool

Table 9: Comparison of different Internal Consistency of other adapted versions of PediEAT

The results revealed a comparison between PediEAT in Bangla and other translated versions of the test. The Cronbach's alpha for all versions is more than 0.7. Thus, there was strong internal consistency between all PediEAT versions.

3.4.1.3 PediEAT Internal Consistency and Reliability Analysis

Cronbach's α (if each item eliminates)		
PediEAT- Bd	**Eliminated Item No**	**Cronbach's α**
1	Q1	0.948
2	Q2	0.947
3	Q3	0.949
4	Q4	0.947
5	Q5	0.946
6	Q6	0.954
7	Q7	0.947
8	Q8	0.948
9	Q9	0.949
10	Q10	0.951

Table 10: Cronbach's alpha coefficient (if each item eliminates) for PediEAT scale

Overall Cronbach's α for the complete 10-item PediEAT scale = 0.954; N = 165; All items are retained as no elimination improves reliability. The results show that when any item is removed, the value of Cronbach's alpha decreases. As a result, the reliability is enhanced without any elements being eliminated.

3.4.2 Test-retest Reproducibility

Twenty parents of children with dysphagia who took the PediEAT-Bd again for testing purposes provided data for the test-retest reliability of the instrument by means of inter-item correlation with the help of the Intraclass Correlation Coefficient (ICC), Pearson Correlation Coefficient (PCC), and Spearman's Correlation Coefficient (SCC) (r-value).

3.4.2.1 Test–retest reliability (ICC) of the PediEAT-Bd

Statistic	Value
N (pairs)	20
Time interval	2 weeks
ICC model	Two-way mixed, consistency, average measures
ICC	0.996
95% CI	0.990–0.998
p-value	<0.001

Table 11 Test–retest reliability (ICC) of the PediEAT-Bd

Twenty caregivers were studied to determine the Bangla PediEAT's test-retest reliability. Each caregiver was given the questionnaire twice, two weeks apart. Excellent temporal stability was indicated by the intraclass correlation coefficient (ICC, two way mixed, consistency, average measures) of 0.996 (95% CI 0.990-0.998, $p < 0.001$). Cronbach's alpha for both measures was 0.996, which lends credence to the overall score's repeatability.

3.4.2.2 Difference between other study

Scale	Occasion	Cronbach’s α
Bangla PediEAT	Time 1	0.780
Bangla PediEAT	Time 2	0.801
Bangla PediEAT total (test–retest pair)	ICC	0.996
Persian PediEAT	ICC	0.987

Table 12 Difference between other study of Cronbach’s α PediEAT

3.4.2.3 Spearman's Correlation between Total PediEAT Score and Each Item

To examine how each PediEAT item relates to the total PediEAT score, we calculated their Spearman's rank-order correlations. The item discrimination and item-total connections were evaluated using Spearman's Correlation Coefficient (SCC) in this investigation. The results are presented in the table that follows.

Question No.	Spearman's rho (r)	p-value (Sig. 2-tailed)
ITEM 1	0.667	0.000
ITEM 2	0.699	0.000
ITEM 3	0.676	0.000
ITEM 4	0.714	0.000
ITEM 5	0.727	0.000
ITEM 6	0.540	0.000
ITEM 7	0.700	0.000
ITEM 8	0.627	0.000
ITEM 9	0.659	0.000
ITEM 10	0.617	0.000

*Correlation is significant at the level <0.01 (2-tailed)

Note: SCC = Spearman's Correlation Coefficient; N = 165 participants

Table 13: Spearman's Correlation between Total PediEAT Score and Each Question

PediEAT showed that there were considerable connections between the total score and individual questions, with item-total correlations ranging from 0.54 to 0.73. All of these associations were statistically significant at $p < 0.01$. All 10 questions had substantial correlations with the total score ($p < 0.001$), with Questions 5 ($r = 0.727$), 4 ($r = 0.714$), and 2 ($r = 0.699$) showing the highest correlations. This consistent strength across all items underscores robust item-total relationships, with even the lowest correlating Question 6 ($r = 0.540$) maintaining significance. Overall, the findings provide strong psychometric evidence for the PediEAT's validity in assessing pediatric feeding problems, effectively differentiating between varying levels of difficulties and correlating with the severity of overall feeding problems.

3.4.2.4 Pearson Correlation Coefficient (PCC) and Intraclass Correlation Coefficient (ICC) between Pre and Post-test Scores of the PediEAT

PediEAT Item	Pearson's r (p-value)	ICC (95% CI)
TOTAL SCORE	0.992	0.988 (0.976–0.995)
ITEM 1	0.969	0.963 (0.910–0.985)
ITEM 2	0.984	0.984 (0.960–0.994)
ITEM 3	0.993	0.993 (0.982–0.997)
ITEM 4	0.940	0.940 (0.855–0.976)
ITEM 5	0.951	0.951 (0.878–0.980)
ITEM 6	0.960	0.956 (0.890–0.982)
ITEM 7	0.976	0.976 (0.937–0.990)
ITEM 8	1.000	1.000
ITEM 9	0.917	0.917 (0.805–0.966)
ITEM 10	0.974	0.974 (0.931–0.990)

*Acceptable (r) value = 0.2+, Acceptable ICC = 0.15+ *Good (r) value = 0.5+, Good ICC = 0.5+

Table 14: Test–Retest Reliability of the PediEAT: Pearson Correlation and ICC Values

The total PediEAT score showed excellent test–retest reproducibility with a Pearson's r of 0.992 and an ICC of 0.988 (95% CI: 0.976–0.995Items 2 (Pharyngeal phase, r = 0.984, ICC = 0.984), 3 (Positioning, r = 0.993, ICC = 0.993), 7 (Mealtime duration, r = 0.976, ICC = 0.976), 8 (Food selectivity, r = 1.000, ICC = 1.000), and 10 (Weight gain, r = 0.974, ICC = 0.974) demonstrated excellent test–retest reproducibility with ICC values ≥ 0.97 and Pearson correlations ≥ 0.97. These items show outstanding stability and consistency across repeated administrations. Items 1 (oral phase, r = 0.969, ICC = 0.963), 4 (self-feeding, r = 0.940, ICC = 0.940), 5 (sensory response, r = 0.951, ICC = 0.951), 6 (parental stress, r = 0.960, ICC = 0.956), and 9 (choking/gagging, r = 0.917, ICC = 0.917) demonstrated good test–retest reproducibility with ICC values ranging from 0.91 to 0.96 and Pearson correlations from 0.917 to 0.969. These items meet acceptable reliability thresholds (ICC ≥ 0.75) and contribute meaningfully to scale reproducibility.

3.4.3 Criterion-Based Validity

When comparing the PediEAT-Bd scores of children with dysphagia to those of healthy children, the results of the inter-item correlation revealed by the Mann-Whitney U test demonstrated that the PediEAT-Bd met its criterion-based validity.

3.4.3.1 Significant difference between Patient group and Healthy group of PediEAT (Mann-Whitney U Test)

PediEAT	Healthy group Median (Mean ± SD)	Patient group Median (Mean ± SD)	p-value (Mann–Whitney U)
Q1	0 (0.62 ± 0.85)	3 (3.40 ± 1.17)	$p < 0.001$
Q2	0 (0.53 ± 0.73)	3 (3.67 ± 1.04)	$p < 0.001$
Q3	0 (0.63 ± 0.83)	3 (3.29 ± 1.09)	$p < 0.001$
Q4	0.5 (0.65 ± 0.75)	3.0 (3.47 ± 1.10)	$p < 0.001$
Q5	0.5 (0.75 ± 0.89)	3.5 (3.51 ± 1.03)	$p < 0.001$
Q6	1.0 (1.03 ± 0.94)	3.0 (3.02 ± 1.21)	$p < 0.001$
Q7	0 (0.52 ± 0.71)	3.0 (3.27 ± 1.08)	$p < 0.001$
Q8	0 (0.74 ± 0.87)	3.0 (3.42 ± 1.10)	$p < 0.001$
Q9	0 (0.58 ± 0.81)	3.0 (3.22 ± 1.26)	$p < 0.001$
Q10	0 (0.35 ± 0.58)	3.0 (2.71 ± 1.38)	$p < 0.001$

Table 15 Mann-Whitney U Test between Patient group and Healthy group of PediEAT

The correlation is significant at $p < 0.001$ (two-tailed).

PediEAT scores between healthy children and children with feeding difficulties for each of the ten items. In every case, the patient group has a higher median and higher mean score than the healthy group, Patient group people's median 3, mean ± SD (3.40 ± 1.17) and healthy group people's median 0, mean ± SD (0.62 ± 0.85), $p < 0.001$. indicating more frequent or severe feeding problems across all domains assessed All Mann–Whitney U p-values are below 0.001, showing that these differences are statistically highly significant and unlikely to be due to chance.

CHAPTER 4 DISCUSSION

The Pediatric Eating Assessment Tool (PediEAT), which has been translated into Bangla and validated before, was used to assess children for feeding and swallowing issues in this study. The children's ages varied from six months to seven years. It assesses oral processing abilities, physiological symptoms, selective/restrictive eating, and maladaptive eating patterns. Clinicians and families can benefit from this translation since it fills a need in the literature by offering a culturally acceptable tool for standardized pediatric nutrition assessment that was previously unavailable in Bangla.

Half of the 165 kids in the study struggled with eating, while the other half were developing normally and had no issues at all. There was a small male majority among those in the impacted group, yet 58.2% had medical diagnoses. A total of 75.6% of the participants were in the 2.5–7-year-old age bracket, with an average age of 2.68 years. The most prevalent diagnoses were postural problems (25.5% of cases) and speech delay (24.2% of cases). According to earlier studies, neurodevelopmental and motility impairments are complicated etiologies that frequently lead to feeding problems in children. Importantly, hypoxia and seizures occurred during birth in 51.5% of diagnosed children, increasing the likelihood of feeding issues. The majority of caregivers were young people, with a majority of women (73.3%) and a strong educational background (63%), which led to better health and developmental results for the children.

Using the six-step Cruchinho approach, the Bangla translation and adaption of the PediEAT was brought to cultural and semantic equivalency. At first, a single version (T12) was able to be created by combining two bilingual forward translations (T1 and T2) thanks to the consensus of the expert panel. To ensure conceptual equivalence, two separate translators (BT1 and BT2) then performed back-translations. The translations were evaluated based on their idiomatic expression, cultural appropriateness, and language clarity. Furthermore, in order to make the content more understandable for caregivers from diverse educational backgrounds who speak Bangladeshi, several technical phrases were revised. (such “likes” instead of “prefers”, “throws out” instead of “gags”, “cleans” instead of “clear”, “normal” instead of “usual”, “vomits” instead of “throws up”, “To Breathe” instead of “To catch breath”, “low” instead of “quite”,

“stubborn to” instead of “insists”, “crispy food” instead of “crackers”, “food chair” instead of “high chair”)

For content validity, four raters utilized the Item Objective Congruence (IOC) scoring method. All 30 items in the three versions that were tailored to different age groups (6-15 months, 15-30 months, and 2.5-7 years) achieved IOC scores of ≥0.5, and when all three versions were merged, an S-CVI of 0.93 showed that there was high agreement, which is excellent. For twenty-four items, or 80% of the total, the experts had full agreement (IOC = 1.00); for six issues, a score of 0.67 indicated appropriate relevance. It surpasses the acceptability threshold for scale-level content validity of 0.90, which is met by other PediEAT translations (such as Farsi) (Polit et al., 2007).

Using Cronbach's alpha, the Bangla PediEAT-Bd's internal consistency was evaluated. The results showed good consistency with a pre-test α of 0.780 and a post-test α of 0.801. The α of 0.954 for a 10-item screener indicates high reliability, on par with other translations like the original English, Persian, and Arabic versions. As stated in the study of Alavi et al. (2022), The significance of keeping all 10 items for internal consistency was highlighted by analyses that indicated eliminating any item would reduce total alpha. The results of 20 caregiver-child pairs' test-retest repeatability over a 2-week period showed an intraclass correlation coefficient (ICC) of 0.996 (95% CI 0.990-0.998, $p < 0.001$), along with a Pearson correlation ($r = 0.992$), which suggests great stability over time. The fact that the Bangla version keeps stable scores throughout repeated administrations is demonstrated by this ICC value, which exceeds that reported in the Persian PediEAT validation (ICC = 0.987) (Alavi et al., 2022). The individual items displayed ICC values between 0.917 and 1.000 (r values 0.917-1.000). The items concerning placement, pharyngeal function, and food selectivity displayed the most consistent results. There was high item-total discrimination, as indicated by Spearman rank-order correlations of individual items with the total PediEAT-Bd score ranging from 0.54 to 0.73 ($p < 0.001$). Question 5 ($r = 0.727$), question 4 ($r = 0.714$), and question 2 ($r = 0.699$) had the strongest relationships with respect to the physiological symptoms of dysphagia and mealtime stress. The psychosocial character of Question 6, which dealt with parental stress while feeding, was shown by its weaker correlation ($r = 0.540$). All four of these domains—oral motor, physiologic, behavioral, and psychosocial—are highlighted by these results in pediatric feeding disorders (Goday et al., 2018).

Significant differences ($p < 0.001$) were seen across all 10 items in the sick and healthy control groups as per the Mann-Whitney U test. The median score for the healthy group was 0.0, but it was 3.0 for the ill group, indicating a substantial differential. The patient group's pediatric eating scores were nearly five times higher (mean 32.98 ± 4.12) than the healthy group's (mean 6.37 ± 3.85). Aligning with validation findings in other contexts, this distinction supports the criterion-based validity of the Bangla PediEAT in discriminating between child with and without eating difficulties (Alavi et al., 2022; Ruiz Brunner et al., 2024).

Score interpretation guidelines classify risk levels as 0-9 (no further evaluation), 10-24 (moderate risk), and ≥25 (high risk that requires complete investigation). The majority of patients were moderate to high risk, whereas 86% of healthy people were low risk, confirming these cut-off values for clinical decision-making in Bangladeshi Speech and Language Therapists.

The items on the tool were developed at a fifth-grade reading level, which presented challenges to caregivers with various degrees of literacy throughout both the pre- and field-testing phases. Some questions concerning comparable physiological symptoms were perceived as overlapping, and caregivers with lower literacy levels considered questions concerning abstract mealtime concepts to be unclear. The development of visual aids or vocal guidelines for populations in Bangladesh and comparable situations with low literacy rates may be the subject of future effort. This study adheres to Crochinho principles for cross-cultural adaptation, featuring interdisciplinary expert panels, robust content validity (S-CVI/Ave = 0.93), high internal consistency (α = 0.954), and outstanding test-retest reliability (ICC = 0.996). It also clearly distinguishes between clinical and nonclinical groups. A big sample from diverse Bangladeshi pediatric healthcare settings improves local generalizability. The Bangla PediEAT gives speech-language therapists, pediatricians, and family healthcare workers a validated, efficient tool for early identification of at-risk children, standardized documentation of feeding concerns, and objective treatment progress tracking to improve pediatric feeding and swallowing care in Bangladesh. This instrument addresses the acknowledged lack in culturally relevant assessment tools and may reduce intervention delays and enhance developmental and nutritional outcomes for Bangladeshi children with feeding issues.

CHAPTER 5 LIMITATIONS & RECOMMENDATIONS

5.1 Limitations

There were some limitations in this study. These are:

- The investigator was unable to facilitate the attendance of one expert panel at the conference due to their distance from the study location.
- Limited time and resources significantly impacted the study.
- The investigator endeavored to elucidate the terms and conditions to the illiterate parents of the patients. Caregivers were required to read and write in Bangla, so excluding illiterate or low-literacy parents and perhaps restricting generalizability to more impoverished families. There appears to be considerable risk about prejudice.
- The design was cross-sectional, with a brief test-retest interval; hence, long-term stability and responsiveness to intervention were not assessed.
- The investigator collected samples from two sections of the Centre for the Rehabilitation of the Paralysed (Speech and Language Therapy Department and Pediatric Unit) and the William and Marie Taylor School, which do not accurately represent the Bangladeshi population, presenting a potential limitation of this study.
- This may have substantially impacted the outcome of the comprehension assessment during cognitive debriefing, due to cultural disparities throughout the country's regions.
- All data were reported by caregivers, lacking instrumental or objective feeding assessments (e.g., VFSS, FEES) as a gold standard, potentially introducing reporting bias.

5.2 Recommendations

When the research was finished, the investigator would like to propose some recommendation.

- This tool has been developed in the Bangladeshi context (Bangla version), hence no further Bangla translation is necessary in subsequent studies.
- PediEAT-Bd is a straightforward and efficient instrument for doctors to comprehend how pediatric patients see their feeding issues. Clinicians can utilize the tool as a diagnostic instrument for pediatric dysphagia patients.
- In future research, the PediEAT-Bd version may serve as a screening instrument for individuals at risk of developing dysphagia at an early age. PediEAT-Ba can be utilized in a diverse array of patient populations across various cultures and regions in Bangladesh.

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ANNEXURES

Annexure-1

Approval from IRB

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

Ref: CRP-BHPI/IRB/ 09/2025/1167 Date: 15.09.2025

To
Robayat Alam Rohan
4th Year B.Sc. in Speech & Language Therapy
Session: 2020-21, DU Reg. No.: 14316, Student ID: 132000298
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Subject: Approval of the thesis proposal ""Cross-Cultural Adaptation and Validation of Pediatric Eating Assessment Tool (PediEat) In Context of Bangladesh."- by the ethics committee.

Dear Robayat Alam Rohan,
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 and Md. Mizanur Rahman, Assistant Professor of Speech and Language Therapy Department, BHPI as thesis supervisor. The Following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation proposal
2	Questionnaire (English & Bangla version)
3	Information sheet & consent form.

The purpose of the study is to adapt and validate PediEat tool in Bangla conducting linguistic validation and cross-cultural adaptation. The study involves answering a PediEat questionnaire that may take five to seven minutes and the feeding behaviors of children with PediEat and have no likelihood of any harm to the participants and have possibility of benefiting patients with their feeding behaviors. The members of the Ethics committee have approved the study to be conducted in the presented form at the meeting held at 08:30 AM on May 21, 2025 (49th IRB meeting) at BHPI.

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

Best regards,

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

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Annexure-2(A)

Demographic Information Form

Child's Information

- Child's Age (in years/months): _____
- Child's Gender: ☐ Male ☐ Female
- Birth order: ☐ First ☐ Middle ☐ Last ☐ Only child
- Educational Status: ☐ Not enrolled ☐ Pre Primary school ☐ Primary school
- Diagnosis (if any): _____

Parent/Guardian Information

1. Relationship to child: ☐ Mother ☐ Father ☐ Other (specify: _____)
2. Age: _____
3. Occupation: _____
4. Education level:
   - ☐ No formal education
   - ☐ Primary
   - ☐ Secondary
   - ☐ Higher Secondary
   - ☐ Graduate/Postgraduate
5. Residence: ☐ Urban ☐ Semi-Urban ☐ Rural

Medical/Feeding Background

- Was the child born: ☐ Full-term ☐ Pre-term
- Mode of delivery: ☐ Normal ☐ Caesarean
- Any significant medical condition (past or present): _____
- Feeding history:
  - Exclusive breastfeeding duration: _____ months
  - Complementary feeding started at: _____ months
  - Any current feeding difficulties? ☐ Yes ☐ No (If yes, specify: _____)



PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT)
10-ITEM SCREENER
6–15 months old

Directions: We are interested in learning about the eating behaviors of your child. When filling this out, think about what is typical for your child at this time.

My child…	Never	Almost Never	Some times	Often	Almost Always	Always
1. prefers to drink instead of eat	☐	☐	☐	☐	☐	☐
2. gags with textured food like coarse oatmeal	☐	☐	☐	☐	☐	☐
3. gags with smooth foods like pudding	☐	☐	☐	☐	☐	☐
4. sounds gurgly or like they need to cough or clear their throat during or after eating	☐	☐	☐	☐	☐	☐
5. coughs during or after eating	☐	☐	☐	☐	☐	☐
6. burps more than usual while eating	☐	☐	☐	☐	☐	☐
7. moves head down toward chest when swallowing	☐	☐	☐	☐	☐	☐
8. throws up during mealtimes	☐	☐	☐	☐	☐	☐
9. throws up between meals (from 30 minutes after the last meal until the next meal)	☐	☐	☐	☐	☐	☐
10. has food or liquid come out of nose when eating	☐	☐	☐	☐	☐	☐

SCORING INSTRUCTIONS

If any response falls in the shaded zone, the child requires further evaluation and the parent or caregiver should be asked to complete the full version of the Pediatric Eating Assessment Tool (PediEAT).

2023-2-25

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PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT)
10-ITEM SCREENER
15-30 months old

Directions: We are interested in learning about the eating behaviors of your child. When filling this out, think about what is typical for your child at this time.

My child…	Never	Almost Never	Some times	Often	Almost Always	Always
1. gags with smooth foods like pudding	☐	☐	☐	☐	☐	☐
2. sounds gurgly or like they need to cough or clear their throat during or after eating	☐	☐	☐	☐	☐	☐
3. coughs during or after eating	☐	☐	☐	☐	☐	☐
4. burps more than usual while eating	☐	☐	☐	☐	☐	☐
5. gets watery eyes when eating	☐	☐	☐	☐	☐	☐
6. moves head down toward chest when swallowing	☐	☐	☐	☐	☐	☐
7. throws up during mealtime	☐	☐	☐	☐	☐	☐
8. aches back during or after meals	☐	☐	☐	☐	☐	☐
9. needs to take a break during the meal to rest or catch their breath	☐	☐	☐	☐	☐	☐
10. sounds different during or after a meal (for example, voice becomes hoarse, high-pitched, or quiet)	☐	☐	☐	☐	☐	☐

SCORING INSTRUCTIONS

If any response falls in the shaded zone, the child requires further evaluation and the parent or caregiver should be asked to complete the full version of the Pediatric Eating Assessment Tool (PediEAT).

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PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT)
10-ITEM SCREENER
2.5 – 7 years old

Directions: We are interested in learning about the eating behaviors of your child. When filling this out, think about what is typical for your child at this time.

My child…	Never	Almost Never	Some times	Often	Almost Always	Always
1. gags with smooth food like pudding	☐	☐	☐	☐	☐	☐
2. insists on being fed by the same person(s)	☐	☐	☐	☐	☐	☐
3. has to be reminded to chew food	☐	☐	☐	☐	☐	☐
4. shows more stress during meals than during non-meal times (whines, cries, gets angry, tantrums)	☐	☐	☐	☐	☐	☐
5. refuses to eat	☐	☐	☐	☐	☐	☐
6. is willing to feed self (if younger in age, holds cup, feeds self crackers)	☐	☐	☐	☐	☐	☐
7. throws up during mealtime	☐	☐	☐	☐	☐	☐
8. arches back during or after meals	☐	☐	☐	☐	☐	☐
9. gets tired from eating and is not able to finish	☐	☐	☐	☐	☐	☐
10. gags when it is time to eat (for example, when they see food or when placed in high chair)	☐	☐	☐	☐	☐	☐

SCORING INSTRUCTIONS

If any response falls in the shaded zone, the child requires further evaluation and the parent or caregiver should be asked to complete the full version of the Pediatric Eating Assessment Tool (PediEAT).

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PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT)

10-ITEM SCREENER

৬-১৫ মাস বয়স

নির্দেশনা: আমরা আপনার শিশুর খাদ্য সংক্রান্ত আচরন সম্পর্কে জানতে আগ্রহী। আপনার শিশু এই বয়সে যেভাবে সাধারণত খায়, তা চিন্তা করে পূরণ করুন।

আমার শিশু...	কখনোই না	প্রায় কখনোই না	মাঝে মাঝে	প্রায়	প্রায় সবসময়	সবসময়
১। খাবার খাওয়ার পরিবর্তে পানি পান করতে পছন্দ করে।	□	□	□	□	□	□
২। মোটা দানাদার মতো মিশ্রণের খাবার (যেমন: যবের গুঁড়া) খেলে ওয়াক করে।	□	□	□	□	□	□
৩। পুডিং এর মতো মসৃণ খাবার খেলে ওয়াক করে।	□	□	□	□	□	□
৪। খাবার খাওয়ার সময় বা পরে গড়গড় শব্দ হয় অথবা কাশি দিতে হবে বা গলা পরিষ্কার করতে হবে এমন মনে হয়।	□	□	□	□	□	□
৫। খাবার খাওয়ার সময় অথবা পরে কাশি হয়।	□	□	□	□	□	□
৬। খাবার খাওয়ার সময় স্বাভাবিকের চেয়ে বেশী ঢেঁকুর তুলে।	□	□	□	□	□	□
৭। খাবার গিলার সময় মাথা বুকের দিকে নামিয়ে ফেলে।	□	□	□	□	□	□
৮। খাবার খাওয়ার সময় বমি করে।	□	□	□	□	□	□
৯। দুই খাবারের মাঝে বমি করে।(শেষ খাবার খাওয়ার ৩০ মিনিট পর থেকে পরবর্তী খাবার খাওয়া পর্যন্ত।)	□	□	□	□	□	□
১০। খাবার খাওয়ার সময় খাবার বা পানি নাক দিয়ে বের হয়ে আসে।	□	□	□	□	□	□

স্কোরিং নির্দেশাবলী

যদি কোনও প্রতিক্রিয়া ছায়াযুক্ত অঞ্চলে পড়ে, তবে শিশুটির আরও মূল্যায়ন প্রয়োজন এবং পিতামাতা বা সেবাদানকারী পেডিয়াট্রিক ইটিং অ্যাসেসমেন্ট টুল (PediEAT)-এর সম্পূর্ণ সংস্করণটি সম্পূর্ণ করতে অনুরোধ করা হল।

PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT)

10-ITEM SCREENER

(১৫-৩০) মাস বয়স

নির্দেশনা: আমরা আপনার শিশুর খাদ্য সংক্রান্ত আচরন সম্পর্কে জানতে আগ্রহী। আপনার শিশু এই বয়সে যেভাবে সাধারণত খায়, তা চিন্তা করে পূরণ করুন।

আমার শিশু...	কখনোই না	প্রায় কখনোই না	মাঝে মাঝে	প্রায়	প্রায় সবসময়	সবসময়
১। পুডিং এর মতো মসৃণ খাবার খেলে ওয়াক করে।	☐	☐	☐	☐	☐	☐
২। খাবার খাওয়ার সময় বা পরে কাশি দিতে হবে বা গলা পরিষ্কার করতে হবে তাই গড়গড় শব্দ করে এমন মনে হয় ।	☐	☐	☐	☐	☐	☐
৩। খাবার খাওয়ার সময় বা পরে কাশি হয় ।	☐	☐	☐	☐	☐	☐
৪। খাবার খাওয়ার সময় স্বাভাবিকের চেয়ে বেশি ঢেঁকুর তুলে।	☐	☐	☐	☐	☐	☐
৫। খাবার খাওয়ার সময় চোখে পানি আসে ।	☐	☐	☐	☐	☐	☐
৬। খাবার গিলার সময় মাথা বুকের দিকে নামিয়ে ফেলে।	☐	☐	☐	☐	☐	☐
৭। খাবার খাওয়ার সময় বমি করে।	☐	☐	☐	☐	☐	☐
৮। খাবার খাওয়ার সময় বা পরে পিঠ বাকিয়ে ফেলে।	☐	☐	☐	☐	☐	☐
৯। খাবার খাওয়ার সময় বিশ্রাম অথবা শ্বাস নেওয়ার জন্য বিরতির প্রয়োজন হয়।	☐	☐	☐	☐	☐	☐
১০। খাওয়ার সময় বা পরে গলার আওয়াজ ভিন্ন হয়।(যেমন: কর্কশ কন্ঠস্বর, উচ্চস্বর বা নিচু হয়ে যাওয়া)	☐	☐	☐	☐	☐	☐

স্কোরিং নির্দেশাবলী

যদি কোনও প্রতিক্রিয়া ছায়াযুক্ত অঞ্চলে পড়ে, তবে শিশুটির আরও মূল্যায়ন প্রয়োজন এবং পিতামাতা বা সেবাদানকারী পেডিয়াট্রিক ইটিং অ্যাসেসমেন্ট টুল (PediEAT)-এর সম্পূর্ণ সংস্করণটি সম্পূর্ণ করতে অনুরোধ করা হল।

PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT)

10-ITEM SCREENER

(২.৫-৭) বছর বয়স

নির্দেশনা: আমরা আপনার শিশুর খাদ্য সংক্রান্ত আচরন সম্পর্কে জানতে আগ্রহী। আপনার শিশু এই বয়সে যেভাবে সাধারণত খায়, তা চিন্তা করে পূরণ করুন।

আমার শিশু...	কখনোই না	প্রায় কখনোই না	মাঝে মাঝে	প্রায়	প্রায় সবসময়	সবসময়
১। পুডিংয়ের মত মসৃণ খাবার খাওয়ার সময় ওয়াক করে।	☐	☐	☐	☐	☐	☐
২। একই ব্যক্তির কাছে খাবার খাওয়ার জন্য জিদ করে ।	☐	☐	☐	☐	☐	☐
৩। খাবার চিবানোর কথা মনে করিয়ে দিতে হয়।	☐	☐	☐	☐	☐	☐
৪। খাবার খাওয়ার সময় অন্যান্য সময়ের তুলনায় অতিরিক্ত খিটমিট করে।(ঘ্যান ঘ্যান করে, রেগে যায়, মেজাজ দেখায়)	☐	☐	☐	☐	☐	☐
৫। খাবার খেতে অস্বীকার করে ।	☐	☐	☐	☐	☐	☐
৬। নিজের ইচ্ছায় খেতে চায়।(যদি বয়স কম থাকে তবে কাপ ধরতে পারে, মচমচে শুকনা খাবার খায়)	☐	☐	☐	☐	☐	☐
৭। খাবার খাওয়ার সময় বমি করে।	☐	☐	☐	☐	☐	☐
৮। খাবার খাওয়ার সময় বা পরে পিঠ বাকিয়ে ফেলে।	☐	☐	☐	☐	☐	☐
৯। খাবার খেতে খেতে ক্লান্ত হয়ে যায় ফলে খাবার শেষ করতে পারে না।	☐	☐	☐	☐	☐	☐
১০। যখনই খাওয়ার সময় হয়, তখনই ওয়াক করে। (যেমন: যখন সে খাবার দেখে বা তাকে খাবারের চেয়ারে বসানো হয়)	☐	☐	☐	☐	☐	☐

স্কোরিং নির্দেশাবলী

যদি কোনও প্রতিক্রিয়া ছায়াযুক্ত অঞ্চলে পড়ে, তবে শিশুটির আরও মূল্যায়ন প্রয়োজন এবং পিতামাতা বা সেবাদানকারী পেডিয়াট্রিক ইটিং অ্যাসেসমেন্ট টুল (PediEAT)-এর সম্পূর্ণ সংস্করণটি সম্পূর্ণ করতে অনুরোধ করা হল।

Annexure-3(A)

Consent form English

Assalamualaikum/Namaskar,

My name is Robayat Alam Rohan, and I am conducting this study for a Bachelor project study titled "Cross-Cultural Adaptation and Validation of Pediatric Eating Assessment Tool (PediEAT) In Context of Bangladesh" from Bangladesh Health Professions Institute (BHPI), affiliated with the Faculty of Medicine, University of Dhaka. I would like to invite you to participate in my research study. This interview will take a maximum of three to five minutes.

I would like to inform you that your participation is a purely academic study and will not be used for any other purpose. The researcher is not directly related to the Centre for the Rehabilitation of the Paralysed (CRP), so your participation in the research will have no impact on your present or future practice in this area. 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 interview.

If you have any queries about the study or your rights as a participant, you may contact researcher Robayat Alam Rohan & supervisor Mizanur Rahman, Assistant Professor, Bangladesh Health Professions Institute, about the research process or obtain answers to any questions regarding the research project.

Do you have questions before I start?

So may I have your consent to proceed with the interview? YES/NO

Signature of the participant: Phone number:	Date:
Signature of the researcher:	Date:

Annexure-3(B)

Consent form Bangla

আসসালামুয়ালাইকুম/নমস্কার,

আমার নাম রোবায়াত আলম রোহান, এবং আমি ঢাকা বিশ্ববিদ্যালয়ের মেডিসিন অনুষদের অধিভুক্ত বাংলাদেশ হেলথ প্রফেশনস ইনস্টিটিউট (বিএইচপিআই) থেকে "বাংলাদেশের প্রেক্ষাপটে পেডিয়াট্রিক ইটিং অ্যাসেসমেন্ট টুল (PediEAT) এর ক্রস-কালচারাল অ্যাডাপটেশন অ্যান্ড ভ্যালিডেশন" শীর্ষক একটি ব্যাচেলর প্রকল্প অধ্যয়নের জন্য এই গবেষণাটি পরিচালনা করছি। আমি আপনাকে আমার গবেষণায় অংশগ্রহণের জন্য আমন্ত্রণ জানাতে চাই। এটি সর্বোচ্চ তিন থেকে পাঁচ মিনিট সময় নেবে।

আমি আপনাদের অবগত করতে চাই যে, আপনাদের অংশগ্রহণ একটি বিশুদ্ধ একাডেমিক শিক্ষা ছাড়া অন্য কোনো উদ্দেশ্যে ব্যবহার করা হবে না। গবেষনাটি (সিআরপি) সাথে সরাসরি সম্পর্কিত নয়, তাই গবেষণায় আপনার অংশগ্রহণ বর্তমান বা ভবিষ্যতে এখানে প্র্যাকটিসে কোনও প্রভাব ফেলবে না। আপনার দেওয়া সমস্ত তথ্য গোপন রাখা হবে এবং কোনো প্রকাশনা বা রিপোর্টে আপনার নাম অজ্ঞাত থাকবে। এই গবেষণায় আপনার অংশগ্রহণ ঐচ্ছিক এবং আপনি এই সাক্ষাৎকারের চলাকালীন যেকোনো সময় আপনি নিজের নাম প্রত্যাহার করতে পারেন।

আপনার যদি এই গবেষণার ব্যাপারে অথবা অংশগ্রহণকারীর অধিকার সম্পর্কে যদি কোনও প্রশ্ন থাকে তবে আপনি গবেষক রোবায়াত আলম রোহান এবং, বাংলাদেশ হেলথ প্রফেশনালস ইনস্টিটিউটের সহকারী অধ্যাপক তত্ত্বাবধায়ক মিজানুর রহমান এর সাথে যোগাযোগ করতে পারেন বা গবেষণা প্রকল্প সম্পর্কিত যে কোনও প্রশ্নের উত্তর পেতে পারেন।

আমি শুরু করার পূর্বে আপনার কি কোন প্রশ্ন আছে?

আমি কি আপনার আনুমতি পেতে পারি সাক্ষাৎকারটি শুরু করার জন্য? হ্যাঁ/না

অংশগ্রহণকারীর স্বাক্ষর মোবাইল নাম্বার	তারিখ
গবেষকের স্বাক্ষর	তারিখ

Annexure-4

Permission Letter

Date: 16.07.25

To

The Head

Department of Speech & Language Therapy

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka-1343, Bangladesh

Subject: **Prayer for Seeking Permission to Conduct the Research Project.**

Sir,

With due respect, I state that I am a 4th-year student of B.Sc. in the Speech & Language Therapy Department, Session: 2020-21, at Bangladesh Health Professions Institute (BHPI), the academic institute of Centre for the Rehabilitation of the Paralysed (CRP). I am sincerely seeking your permission to conduct my research project, which is required for the partial fulfillment of the degree of B.Sc. in Speech and Language Therapy. The title of the research project is "**Cross-Cultural Adaptation and Validation of Pediatric Eating Assessment Tool (PEDIEAT) in Context of Bangladesh**." The purpose of the study is to conduct adaptation and linguistic validation of the "Pediatric Eating Assessment Tool (PEDIEAT)."

Now I am seeking your kindness to approve me conducting the research project, and I would like to ensure that anything about my research project will not be harmful to the participants.

Therefore, I pray and hope that you will be kind enough to grant me permission to conduct the research project.

Yours obediently

Robayat Alam Rohan

Robayat Alam Rohan

4th-year student of the B.Sc. in Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Head of the Department	Comment
Md. Sazzad Hossain Assistant Professor & Head Department of Speech and Language Therapy Bangladesh Health Professions Institute (BHPI) CRP, Savar, Dhaka	Permission has been granted. 16/7/25

Md. Sazzad Hossain
Asst. Professor & Head
Department of Speech and Language Therapy
Bangladesh Health Professions Institute (BHPI), CRP

Annexure-5

Invitation and Acceptance letter For translation

Invitation and Acceptance letter for Forward Translation

Date: 02.07.2025

To

Shamima Islam Nipa

Lecturer-Rehabilitation Science

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Invitation Letter

Dear maam,

Assalamualaikum

My name is Robayat Alam Rohan, and I am a student of B.Sc. in the Department of Speech & Language Therapy at the Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH"**. Based on my research study, I have to select two resource persons to translate my research questionnaire. Hereby, I believe you are the potential resource person to help me in this regard.

It would be a great pleasure and appreciation to me if you would kindly cooperate with me to translate on an unpaid volunteer basis for the greater benefit of Speech & Language Therapy services.

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan
Session: 2020-21
4th year B.Sc. in Speech & Language Therapy
Bangladesh Health Professions Institutes (BHPI)
CRP, Savar, Dhaka
Email: rohanthexplorer2003@gmail.com

Signature of Supervisor

Date: 02.07.2025

To

Shamima Islam Nipa

Lecturer-Rehabilitation Science

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Invitation Letter

Dear maam,

Assalamualaikum

My name is Robayat Alam Rohan, and I am a student of B.Sc. in the Department of Speech & Language Therapy at the Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH"**. Based on my research study, I have to select two resource persons to translate my research questionnaire. Hereby, I believe you are the potential resource person to help me in this regard.

It would be a great pleasure and appreciation to me if you would kindly cooperate with me to translate on an unpaid volunteer basis for the greater benefit of Speech & Language Therapy services.

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

Session: 2020-21

4th year B.Sc. in Speech & Language Therapy

Bangladesh Health Professions Institutes (BHPI)

CRP, Savar, Dhaka

Email: rohanthexplorer2003@gmail.com

Signature of Supervisor

Date: 02.07.2025

To

Md. Monir Hossain

Lecturer

Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Invitation Letter

Dear Sir,

Assalamualaikum

My name is Robayat Alam Rohan, and I am a student of B.Sc. in the Department of Speech & Language Therapy at the Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH"**. Based on my research study, I have to select two resource persons to translate my research questionnaire. Hereby, I believe you are the potential resource person to help me in this regard.

It would be a great pleasure and appreciation to me if you would kindly cooperate with me to translate on an unpaid volunteer basis for the greater benefit of Speech & Language Therapy services.

Best regards,

Robayat Alam Rohan

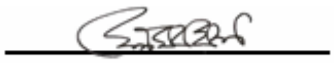
Session: 2020-21

4th year B.Sc. in Speech & Language Therapy

Bangladesh Health Professions Institutes (BHPI)

CRP, Savar, Dhaka

Email: rohanthexplorer2003@gmail.com



Signature of Supervisor

Date: 03/09/25

Robayat Alam Rohan

4th year, Roll-18

Speech & Language Therapy Department,

Bangladesh Health Professions Institute (BHPI)

Letter of Acceptance

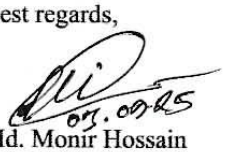
Dear Robayat Alam Rohan,

I hope that your research study goes well.

Thank you for inviting me to participate in your research work. I am writing to confirm my acceptance in response to your invitation. I always prefer to do this kind of participation and hope it will be a significant contribution to the corporation for your study. I agree to work on a volunteer basis. Thanks again, and I am grateful for the invitation.

I look forward to writing with you to make your study successful. I appreciate your positive initiative for your professional advancement.

Best regards,



Md. Monir Hossain

Lecturer

Speech & Language Therapy Department

Bangladesh Health Professions Institute

CRP-Chapain, C R P Rd, Savar 1343

Invitation and Acceptance letter for Synthesis

Date: 02.07.2025

To

Nure Naznin

Assistant Professor

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Invitation Letter

Dear Maam,

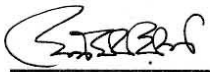
Assalamualaikum

My name is Robayat Alam Rohan, and I am a student of B.Sc. in the Department of Speech & Language Therapy at the Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH"**. Based on my research study, I have to select two resource persons to translate my research questionnaire. Hereby, I believe you are the potential resource person to help me in this regard.

It would be a great pleasure and appreciation to me if you would kindly cooperate with me to translate on an unpaid volunteer basis for the greater benefit of Speech & Language Therapy services.

Best regards,

Robayat Alam Rohan
Session: 2020-21
4th year B.Sc. in Speech & Language Therapy
Bangladesh Health Professions Institutes (BHPI)
CRP, Savar, Dhaka
Email: rohanthexplorer2003@gmail.com



Signature of Supervisor

Date: 13.9.25

Robayat Alam Rohan

4th year, Roll-18

Speech & Language Therapy Department,

Bangladesh Health Professions Institute (BHPI)

Letter of Acceptance

Dear Robayat Alam Rohan,

I hope that your research study goes well.

Thanks for your invitation for your research work. I am writing to confirm my acceptance in response to your invitation. I always prefer to do this kind of participation and I hope it will be a significant contribution to the corporation for your study. I agree to work on a volunteer basis.

Thanks again, and I am grateful for the invitation.

I look forward to writing with you to make your study successful. I appreciate your good initiative for your professional advancement.

Regards,



Nure Naznin

Assistant Professor

Department of Speech & Language Therapy

Bangladesh Health Professions Institute (BHPI)

Invitation and Acceptance letter for Back Translation

Date: 02.07.2025

To

Shamima Islam Nipa

Lecturer-Rehabilitation Science

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Invitation Letter

Dear maam,

Assalamualaikum

My name is Robayat Alam Rohan, and I am a student of B.Sc. in the Department of Speech & Language Therapy at the Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN CONTEXT OF BANGLADESH"**. Based on my research study, I have to select two resource persons to translate my research questionnaire. Hereby, I believe you are the potential resource person to help me in this regard.

It would be a great pleasure and appreciation to me if you would kindly cooperate with me to translate on an unpaid volunteer basis for the greater benefit of Speech & Language Therapy services.

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

Session: 2020-21

4th year B.Sc. in Speech & Language Therapy

Bangladesh Health Professions Institutes (BHPI)

CRP, Savar, Dhaka

Email: rohanthexplorer2003@gmail.com

Signature of Supervisor

Date: 13/9/25

Robayat Alam Rohan

4th year, Roll-18

Speech & Language Therapy Department,

Bangladesh Health Professions Institute (BHPI)

Letter of Acceptance

Dear Robayat Alam Rohan,

I hope that your research study goes well. Thanks for your invitation for your research work. I am writing to confirm my acceptance in response to your invitation. I always prefer to do this kind of participation and hope it will be a significant contribution to your study and the corporation. I agree to work on a volunteer basis.

Thanks again, and I am grateful for the invitation.

I look forward to writing with you to make your study successful. I appreciate your good initiative for your professional advancement.

Regards,

Fabiha Alam

Fabiha Alam

Assistant Professor

Department of Physiotherapy

Bangladesh Health Professions Institute (BHPI)

Date: 13.9.25

To

Sanjida Subahan

Assistant Professor,

Speech and Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Invitation Letter

Dear Ma'am,

Assalamualaikum

My name is Robayat Alam Rohan, and I am a student of B.Sc. in the Speech & Language Therapy Department, Bangladesh Health Professions Institute (BHPI), the academic institute of CRP. I am studying in 4th year, and as per the curriculum, I have to conduct research titled "CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN THE CONTEXT OF BANGLADESH." Based on my research study, I have to select two resource persons for back translation who can translate the questionnaire back to English and can give unbiased feedback on my research questionnaire. Hereby, I believe you are the potential resource person to help me in this regard.

It would be a great pleasure and appreciation to me if you would kindly cooperate with me to synthesize as an unpaid volunteer for the greater benefits of Speech & Language Therapy service.

Best regards,

Robayat Alam Rohan

Session: 2020-21

4th year B.Sc. in Speech & Language Therapy

Bangladesh Health Professions Institutes (BHPI)

CRP, Savar, Dhaka

Email: rohanthexplorer2003@gmail.com

Signature of Supervisor

Date: 14/9/25

Robayat Alam Rohan

4th year, Roll-18

Speech & Language Therapy Department,

Bangladesh Health Professions Institute (BHPI)

Letter of Acceptance

Dear Robayat Alam Rohan,

I hope that your research study goes well. Thanks for your invitation for your research work. I am writing to confirm my acceptance in response to your invitation. I always prefer to do this kind of participation and hope it will be a significant contribution to your study and the corporation. I agree to work on a volunteer basis.

Thanks again, and I am grateful for the invitation.

I look forward to writing with you to make your study successful. I appreciate your good initiative for your professional advancement.

Regards,

Sanjida Subahan

Assistant Professor

Speech and Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

Annexure-6

Invitation and Acceptance letter for Expert Panel and IOC Scoring

Date: 15.09.25

To

Tahmina Sultana

Senior Consultant

Speech & Language Therapy Department

CRP, Savar, Dhaka

Dear Maam,

Assalamualaikum,

I am Robayat Alam Rohan, a student of B.Sc. in the Department of Speech & Language Therapy, Bangladesh Health Professions Institute-BHPI (academic institute of CRP). I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN THE CONTEXT OF BANGLADESH."** To successfully achieve stage four of the tools adaptation process, I am going to arrange an expert panel discussion meeting. The expected role of the expert panel in this meeting will be

- To consolidate all the versions of the questionnaire
- To develop what would be considered the pre-final version of the questionnaire for field testing.

Now, I am seeking your kind and volunteer participation in an expert panel discussion meeting with four resource individuals to score Item Objective Congruence (IOC) and finalize my adapted version for field testing. It would be a great pleasure and appreciation to me if you would kindly cooperate with me by participating in the expert panel discussion meeting. The approximate date, time, and venue are listed below.

Date: 18/09/2025

Time: 10.30 am to 11.30 am

Venue: BHPI, Room No-103

CRP, Savar, Dhaka

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

DU Registration No: 14316

Session: 2020-21

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

BHPI, CRP, Savar, Dhaka

E-mail: rohanthexplorer2003@gmail.com

Phone number: 01620410669

Signature of Supervisor

Tahmina (1379)
15/9/25

Acceptance of Expert Panel Member

Date: 15.09.25

To

Nahid Parvez

Assistant Professor

Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Dear Sir,

Assalamualaikum,

I am Robayat Alam Rohan, a student of B.Sc. in the Department of Speech & Language Therapy, Bangladesh Health Professions Institute-BHPI (academic institute of CRP). I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN THE CONTEXT OF BANGLADESH."** To successfully achieve stage four of the tools adaptation process, I am going to arrange an expert panel discussion meeting. The expected role of the expert panel in this meeting will be

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Date: 18/09/2025

Time: 10.30 am to 11.30 am

Venue: BHPI, Room No-103

CRP, Savar, Dhaka

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

DU Registration No: 14316

Session: 2020-21

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

BHPI, CRP, Savar, Dhaka

E-mail: rohanthexplorer2003@gmail.com

Phone number: 01620410669

Signature of Supervisor

Acceptance of Expert Panel Member

Date: 15.09.25

To

Nure Naznin

Assistant Professor

Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Dear Maam,

Assalamualaikum,

I am Robayat Alam Rohan, a student of B.Sc. in the Department of Speech & Language Therapy, Bangladesh Health Professions Institute-BHPI (academic institute of CRP). I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN THE CONTEXT OF BANGLADESH."** To successfully achieve stage four of the tools adaptation process, I am going to arrange an expert panel discussion meeting. The expected role of the expert panel in this meeting will be

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Date: 18/09/2025

Time: 10.30 am to 11.30 am

Venue: BHPI, Room No-103

CRP, Savar, Dhaka

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

DU Registration No: 14316

Session: 2020-21

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

BHPI, CRP, Savar, Dhaka

E-mail: rohanthexplorer2003@gmail.com

Phone number: 01620410669

Signature of Supervisor

Acceptance of Expert Panel Member

Date: 15, 09, 25

To

Sanjida Subahan

Assistant Professor

Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Dear Maam,

Assalamualaikum,

I am Robayat Alam Rohan, a student of B.Sc. in the Department of Speech & Language Therapy, Bangladesh Health Professions Institute-BHPI (academic institute of CRP). I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN THE CONTEXT OF BANGLADESH**." To successfully achieve stage four of the tools adaptation process, I am going to arrange an expert panel discussion meeting. The expected role of the expert panel in this meeting will be

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Date: 18/09/2025

Time: 10.30 am to 11.30 am

Venue: BHPI, Room No-103

CRP, Savar, Dhaka

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

DU Registration No: 14316

Session: 2020-21

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

BHPI, CRP, Savar, Dhaka

E-mail: rohanthexplorer2003@gmail.com

Phone number: 01620410669

Signature of Supervisor

Acceptance of Expert Panel Member

Date. 15.09.25

To

Md. Monir Hossain

Lecturer

Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Dear Sir,

Assalamualaikum,

I am Robayat Alam Rohan, a student of B.Sc. in the Department of Speech & Language Therapy, Bangladesh Health Professions Institute-BHPI (academic institute of CRP). I am studying in 4th year, and as per the curriculum, I have to conduct research titled **"CROSS-CULTURAL ADAPTATION AND VALIDATION OF PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) IN THE CONTEXT OF BANGLADESH."** To successfully achieve stage four of the tools adaptation process, I am going to arrange an expert panel discussion meeting. The expected role of the expert panel in this meeting will be

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- To develop what would be considered the pre-final version of the questionnaire for field testing.

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Date: 18/09/2025

Time: 10.30 am to 11.30 am

Venue: BHPI, Room No-103

CRP, Savar, Dhaka

Best regards,

Robayat Alam Rohan

Robayat Alam Rohan

DU Registration No: 14316

Session: 2020-21

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

BHPI, CRP, Savar, Dhaka

E-mail: rohanthexplorer2003@gmail.com

Phone number: 01620410669

Signature of Supervisor

Acceptance of Expert Panel Member

Annexure-7

Permission Letters for Data Collection:

22nd September 2025.

The Head

Department of Speech & Language Therapy

Centre for the Rehabilitation of the Paralysed (CRP)

Savar. Dhaka-1343

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

Sir,

With due respect, I state that I am a 4th-year student of B.Sc. in the Speech & Language Therapy Department, Session: 2020-21 at Bangladesh Health Professions Institute (BHPI), the academic institute of the Centre for the Rehabilitation of the Paralysed (CRP). I am sincerely seeking your permission to collect data for my research project as the partial fulfillment of the requirement for the degree of B.Sc. in Speech and Language Therapy. The title of the research project is "**Cross-Cultural Adaptation and Validation of Pediatric Eating Assessment Tool (PediEat) In Context of Bangladesh.**" The purpose of the study is to explore the Bangla version of the PediEat screening tool by conducting linguistic validation and cross-cultural adaptation.

Now I am seeking your kindness to approve my application to collect data for a research project, and I would like to ensure that any of my research project will not be harmful to the participants and confidentiality will be maintained for each participant.

So, I therefore pray and hope that you would be kind enough to grant me the permission to conduct the data collection successfully as part of my academic requirement.

Your obediently

Robayat Alam Rohan

Robayat Alam Rohan

4th-year student of the B.Sc. in Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Head of the Department	Comments
Tahmina Sultana Consultant & Head Department of Speech and Language Therapy Centre for the Rehabilitation of the Paralysed (CRP) Savar, Dhaka-1343	Forwarded for permission Sir. 23/9/25 Tahmina Sultana Consultant & Head Department of Speech and Language Therapy CRP, Savar, Dhaka

Forwarded
Sam
22/9/25.

22nd September 2025.

The Principal

William and Marie Taylor School (WMTS)

The Inclusive School of CRP

CRP, Savar, Dhaka-1343, Bangladesh

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

Sir,

With due respect, I state that I am a 4th-year student of B.Sc. in the Speech & Language Therapy Department, Session: 2020-21 at Bangladesh Health Professions Institute (BHPI), the academic institute of the Centre for the Rehabilitation of the Paralysed (CRP). I am sincerely seeking your permission to collect data for my research project as the partial fulfillment of the requirement for the degree of B.Sc. in Speech and Language Therapy. The title of the research project is "**Cross-Cultural Adaptation and Validation of Pediatric Eating Assessment Tool (PediEat) In Context of Bangladesh.**" The purpose of the study is to explore the Bangla version of the PediEat screening tool by conducting linguistic validation and cross-cultural adaptation.

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Your obediently

Robayat Alam Rohan

Robayat Alam Rohan

4th-year student of the B.Sc. in Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Principal	Comments
Md. Abdullah Al Zubayer Principal William and Marie Taylor School(WMTS) The Inclusive School of CRP CRP, Savar, Dhaka-1343, Bangladesh	Permitted for Data collection from WMTS. 23-9-25 MD. ABDULLAH AL ZUBAYER Principal William and Marie Taylor School CRP-Savar, Dhaka-1343

Forwarded
24/9/25

Date: 24/9/25

Head of the Department

Pediatric Unit

Centre for the Rehabilitation of the Paralysed (CRP)

Savar. Dhaka-1343

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

Sir,

With due respect, I state that I am a 4th-year student of B.Sc. in the Speech & Language Therapy Department, Session: 2020-21 at Bangladesh Health Professions Institute (BHPI), the academic institute of the Centre for the Rehabilitation of the Paralysed (CRP). I am sincerely seeking your permission to collect data for my research project as the partial fulfillment of the requirement for the degree of B.Sc. in Speech and Language Therapy. The title of the research project is "**Cross-Cultural Adaptation and Validation of Pediatric Eating Assessment Tool (PediEat) In Context of Bangladesh.**" The purpose of the study is to explore the Bangla version of the PediEat screening tool by conducting linguistic validation and cross-cultural adaptation.

Now I am seeking your kindness to approve my application to collect data for a research project, and I would like to ensure that any of my research project will not be harmful to the participants and confidentiality will be maintained for each participant.

So, I therefore pray and hope that you would be kind enough to grant me the permission to conduct the data collection successfully as part of my academic requirement.

Your obediently

Robayat Alam Rohan

Robayat Alam Rohan

4th-year student of the B.Sc. in Speech & Language Therapy Department

Bangladesh Health Professions Institute (BHPI)

CRP, Savar, Dhaka

Head of the Department	Comments
Hosneara Perveen Pediatric unit Centre for the Rehabilitation of the Paralysed (CRP) Savar, Dhaka-1343	He will collect data from this Department. please help him. 24-9-25

Forwarded
24/9/25

Annexure-8

Permission Letter from the Original Author of Pediatric Eating Assessment Tool

Request for Permission to Use PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) 10 for Research Purposes Inbox ×

Rohan <rohanthexplorer2003@gmail.com> Mon 23 Jun, 12:31
to thoyre

Dear sir,

I hope this email reaches you in good health. I would like to ask for permission to use the PediEAT-10 in my present research project. I would like your permission to use the PediEAT-10 since it would be a useful tool for my research. I know the importance of using tools properly, so I would be happy to share more about my research and how the PediEAT-10 will be used. If there are any official steps or prerequisites for getting authorization to use the PediEAT-10 for this purpose, do let me know.

I appreciate your thought and time. I eagerly await your reply.
Thanks for taking the time to read this.

Sincerely yours,
Robayat Alam Rohan
B.Sc. in Speech & Language Therapy
Bangladesh Health Professions Institute
Central for the Rehabilitation of the Paralyzed
Savar, Dhaka, Bangladesh
LinkedIn profile: https://www.linkedin.com/in/robayat-alam-rohan-34a55a20a/

Thoyre, Suzanne M <thoyre@email.unc.edu> Thu 26 Jun, 01:15
to me

Thank you for your interest in feeding and your care for children and their families. Yes, of course you have our permission. I wish you all the best on your research. I have attached the PediEAT screeners because in the past they have been confused with the PediEAT-10 by Soyer et al. 2017. I also do not see a translation agreement with us - have you worked with us to translate into your language? Could you be using the PediEAT-10 by Soyer and not the 10-item PediEAT screener?

Sue

From: Rohan <rohanthexplorer2003@gmail.com>
Sent: Monday, June 23, 2025 2:31 AM
To: Thoyre, Suzanne M <thoyre@email.unc.edu>
Subject: Request for Permission to Use PEDIATRIC EATING ASSESSMENT TOOL (PEDIEAT) 10 for Research Purposes

You don't often get email from rohanthexplorer2003@gmail.com. Learn why this is important

3 attachment • Scanned by Gmail

