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Assessing Teachers in Hyderabad, India On School-Based Feeding Skills in Children with Special Needs in the Age Range Of 3-12 Years: A Questionnaire-Based Study

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Abstract

Schools greatly assist functioning for children with special needs aged between three to twelve years old because this age marks the shift from early childhood years towards middle childhood. To investigate school-based feeding skills in children with special needs aged between 3-12 years, exploring the medical, nutritional, feeding, and psychological/behavioural challenges and examining the contribution of teachers in developing such skills. This study was conducted in two phases. In the first phase, the pre-existing questionnaire tools, the (1)STEP Questionnaire and (2) School Based Feeding Record and Plan , were modified and then contextualized and validated for the Indian context. Validation was conducted with speech-language pathologist and special educator experts. Then, in the second phase, the validated questionnaire was distributed to 60 special school teachers of children with special needs. Face-to-face interviews and questionnaires in the form of google forms were also used to gather data, which were then analysed using SPSS (version 21). The results showed that difficulties in feeding children with special needs were more complex than previously thought. Issues such as mouth control, swallowing reflex, sensitive to touch, and behavioural challenges during the parent mealtime were among the major complaints. Teachers noted that the severe feeding difficulties had the following major consequences for children with special needs: risk of nutritional deficiency, health problems, classroom absence, and the inability to participate and talk with peers. The results underlined the importance of conducting school-based assessment to detect challenges and provide support in the most effective way. The research advocates for the inclusion of feeding assessment and intervention within the school to enhance the health, autonomy, and community participation of children with disabilities. There must be teamwork among educators, therapists, and parents to develop individual-focused strategies. The results also justify the addition of feeding objectives in the school health policy and IEPs.

Keywords: Feeding Skills, School-based Assessments, Special Needs, Questionnaire, Teachers' Perspectives

1. Introduction

Feeding is critical in shaping a child's growth and development while also having an impact on their health, social relationships, and overall well-being. Most children develop feeding skills as they interact with their caregivers, attend mealtimes, and view other children. In contrast, for children with special needs, gaining such competencies poses significant difficulties that go beyond normal developmental delays. stated that such challenges may stem from specific factors like a delay in development, muscular challenges or weak core strength, some form of brain damage newborn stroke, or issues associated with the five senses—especially vision and hearing which strengthen over time [1-3]. Thus, making feeding a primary concern from both a health perspective as well as academically and therapeutically. Classrooms serve as unique social settings where young kids tend to spend extended amounts of time including attending meals and snack breaks. Schools greatly assist functioning for children with special needs aged between three to twelve years old because this age marks the shift from early childhood years towards middle childhood. Throughout this developmental stage it is anticipated that students evolve by increasing autonomy with self-feeding skills, socially appropriate behaviours during meal times, along controlling various textures and food types presented. Among children with special needs, feeding difficulties include a broad range of issues like oral-motor dysfunction, chewing or swallowing difficulties (dysphagia), textural or taste sensory hypersensitivities, poor postural stability during feeding, various behaviours that make eating difficult, and the inability to self-feed using utensils. These challenges create barriers in self-nutrition and participation

in schooling activities with peers which in turn affects their academic, physical maturation milestones, further stunting their development psychosocial health.

In school everybody works together for the students such as teachers and special education instructors to therapists and even family members so they can work on skills needed for feeding through assessment while providing holistic care that incorporates learning alongside essential skills needed in everyday life. That said there are gaps between theoretical frameworks used by specialists in these environments since feeding is least looked into school settings as many schools prioritize academics above all else disregarding basic independent skills like feeding which fosters independence and health along with social interaction. Evaluated feeding in children with special needs and found that among children with special needs, feeding difficulties include a broad range of issues like oral-motor dysfunction, evaluating school-based feeding competency is essential for shaping bespoke intervention strategies tailored to the multidisciplinary challenges posed by children with special needs [4]. Such evaluation also aids in integrating goals set within education and health frameworks, thereby ensuring holistic support. Furthermore, prompt diagnosis and intervention concerning feeding difficulties can reduce the risk of undernutrition, aspiration, social withdrawal, dependence on caregivers, and incessant reliance on caregiving assistance—improving life quality and fostering school inclusion. Feeding challenges for children with special needs stem from various medical issues such as oral motor function, neurological, and developmental concerns. As noted by, children with cerebral palsy, Down syndrome, and those with craniofacial anomalies suffer from structural and neurological deficits which impact the phases of swallowing [3]. Highlighted the impact of dysphagia and delayed oral motor skills on feeding in children with neurological disabilities [5]. A systematic review by found that children with cerebral palsy as well as other motor disorders demonstrated feeding challenges such as poor chewing, choking, and extended feeding durations [5]. These studies justify the need for early school-based evaluations, particularly with concerns for medically fragile learners. In a systematic review of 39 studies, found that more than 85% of children with cerebral palsy demonstrated clinical features of dysphagia and poor feeding performance [5]. Due to ineffective feeding practices, children with special needs often have poor nutrition. Found that 43% of children with intellectual disabilities were at risk of malnutrition primarily because of behavioural challenges at meals [6]. Stressed that undernutrition in school-age children with cerebral palsy was often overlooked [7]. investigated 100 children with cerebral palsy and found that over 40% were either underweight or showed poor growth [7]. Active participation in school tackles routine and structured tasks, made easier with some level of independence and considered feeding interventions in the school setting and concluded that logistic and structural feeding intervention plans boost peer integration and participation [7]. Showed that therapy increases participation in the feeding tasks of using the utensils, chewing, and swallowing, and even improves their coordination [8].

Cermak, Curtin and Bandini (2020) showed that children with competent feeding skills showed higher levels of participation and engagement during school meals and during recess, which sheds light on the importance of independent feeding skills on the social-emotional domain [9]. They also implemented a feeding competence scale on a sample of 60 children with developmental disabilities studying them in inclusive classroom settings. Psychological and sensory related issues contribute to the feeding disorders of children with autism and other developmental delays. Children with Autism Spectrum Disorder (ASD) were found to have sensory aversions as well as rigid food preferences which posed nutritional risk explain how feeding multidisciplinary teams, which include SLPs, OTs, and school nurses, administer risk screening questionnaires to evaluate children's feeding skills [10]. All forms of feeding impairment limit a child's ability to take part in school routines. Noted children with feeding difficulties showed limited engagement in participatory peer-group functions [11]. Noted feeding problems were associated with inattention to class work and academic stagnation [12]. They underscored that educational attainment and social participation among children with disabilities enhance when schools adopt targeted participation-based feeding interventions the schools employ staff training feeding programs. These findings strongly recommend school-based policies to incorporate the feeding programs.

1.1. Need of the study

Evaluation of feeding skills in children with special needs, especially within the school context, is essential for their growth and health as well as engagement in daily school activities. Feeding as a need serves more than just biology; it encompasses a child's physiological nurturing, cognitive functioning, socialization, autonomy, and mental wellness. For children with disabilities like autism spectrum disorder (ASD), Cerebral Palsy, Down Syndrome, Intellectual Disabilities or other developmental delays, feeding challenges are prevalent, posing considerable barriers to their health and inclusion in educational settings. For children aged 3-12 years old, the school setting is one of the primary places where they attend for an extended period of time. Schools provide not only academic classes but work with children on functional self-feeding skills and mealtime participation. Hence, there is a need to evaluate the role of teachers in special needs schools.

The Need for The Study Was Also to Address and Evaluate Feeding Skills in The Context of These Specific Factors:

1. Achieving Nutritional and Health Objectives

Children who experience feeding challenges are likely to suffer from undernourishment and poor growth. These children face health risks like malnutrition, dehydration, aspiration, choking hazards, or a need for tube feeding. An organized evaluation of feeding competences in school helps identify these risks early on so that appropriate measures can be taken to protect the child's health.

2. Supporting Engagement in Learning Activities

Effective feeding directly affects a child's energy levels, attention span, and mental capabilities which all influence learning. Children with unmet feeding requirements are likely to fall below grade level or miss class often because of low energy. This would help educators understand the barriers posed by inadequate feeding skills that demand attention thus providing necessary adjustments assists the child academically.

3. Encouraging Self-Sufficiency and Development of Practical Skills

Self-feeding is essential to help cultivate independence and self-worth therefore constitutes basic life skills. Delays in the development of self-feeding skills leads to loss of confidence especially among children with special needs, resulting in higher dependence on caregivers. School based assessment sheds light on a child's capabilities and helps tailor interventions around

4. Improving Social Inclusion and Inter-Peer Relationships

Various meals offer children an opportunity to socialize as they practice communication, taking turns and even some aspects of culture. Socially restricted or isolated children suffering from certain types of feed difficulty may miss out on peer feeding interactions. School based assessments are helpful in identifying such children who require support so that they can participate in group meals, interaction with peers, as well as inclusion in the school community.

5. Encouraging Multidisciplinary Teamwork

The assessment will also help the team that includes teachers, special educators, speech language therapists, occupational therapists, family members and health care providers within one team. Schools along with families and allied health teams through careful observation and evaluation of access to qualitative feeding skills are able to design child-cantered multidisciplinary intervention plans which address feeding problems at all levels systematically.

6. Proactive Strategies to Combat Long-Term Health Issues

In a timely manner acts aimed at resolving the issue will be provided within earlier defined frameworks when these difficulties are identified in schools in children of age 3-12 years. Early access minimizes the likelihood of long-term impacts on health like reduced ability to function independently and adverse negative emotional responses towards nourishment types such as refusal or aversion behaviours.

Evaluative systems will also contribute to the development of school's health policies, the allocation of resources, and implementing programs through their evaluation components. These assessments demonstrate the need for particular staff training, construction changes in the facilities, and the incorporation of skill feeding within IEPs for children with special needs.

2. Methodology

2.1 Participants

Sixty special school teachers of children with special needs including children Cerebral Palsy, Hearing Impairment and childhood disabilities were included for the study. The teachers were selected from different special needs school from the city of Hyderabad. The age range of the children were from 3 to 12 years. The study adhered with the Institute Ethical Standards. Ethical clearance has been granted by the relevant institutional ethics committees (IRB no: NAISH/RES/DISS/IRB/2023-25/07). All participants were duly informed regarding, the voluntary nature for participation, possibility to withdraw at any time without consequences and details around responses submission including confidentiality, anonymity provisions

3. Materials

3.1. The study was conducted in two phases

Phase 1: Development and Validation of a compiled pre-existing Questionnaire for the Indian context. Few questions were taken from The STEP Questionnaire, a screening instrument for eating disorders (1) and Questionnaire on School-Based Nutrition (2) and then it was subjected to validation by experts.

Phase 2: Administration of Questionnaire on teachers of special schools of children with special needs in the age range of 3 to 12 years.

Phase 1

This questionnaire was assembled by formulating pertinent questions on feeding skills, food choices, behaviour during meals, multitasking during the meal period, and help needed in school-based meals based on numerous published articles along standardized clinical tools pertaining to children with special needs as well as other developmental disabilities.

To maintain uniformity and ease in understanding among participants, the questionnaire was constructed in English.

Step 1: Formulation of the Questionnaire

The questionnaire was developed consisting of questions categorized into 4 main domains Medical, Nutrition, Feeding and Psychological relevant to the Indian context. It also consisted Appendix A (Feeding objectives and modifications) and Appendix B (Record and Document Food Preferences). The questionnaire for the teachers had simple terminologies and sentence structure that even laymen could easily understand them.

Step 2: Expert Validation

The developed questionnaire was given to 3 Speech-Language Pathologists (SLPs) with more than five years of clinical experience in paediatric feeding disorders, along with 5 special education teachers, assessed both content and face validity of the questionnaire.

Each expert assessed the items on the questionnaire based on their relevance and clarity using a 4-point Likert scale (1_4). (0= not understandable, 1=need to change terminology and structure, 2 = need to change sentence, 3 =

quiet understandable, 4= understandable).

The researcher placed a validity score percentage of 60 % and above. When the tool obtained an overall expert validation score of over 60%, its content validity for the Indian context was confirmed.

Phase 2

Administration of the questionnaire

The questionnaire was administered on 60 teacher/ caregiver of students with special needs. A face to face interview was conducted as well as google forms were provided by the researcher to the teachers of the students with special needs. The interview was conducted in English and/or Indian Language. The responses from the teachers were recorded in the questionnaire at the same time.

Analysis

The data was subjected to statistical analysis for frequency and percentages using SPSS version 21.

4. Results and Discussions

The descriptive statistics for frequency and percentages were computed for every variable of the questionnaire. The graphical representation cluster bar diagram and pie chart was carried out for the same. The statistical analysis was done using SPSS 21. Sixty teachers were asked to report the frequency of several health-related symptoms they experience, using a scale that included Never, Occasionally, Often, and Sometimes.

Questions	Never	Occasionally	Often	Sometimes	Total
1.Constipation (difficulty passing stools)?	11(18.3%)	26(43.3%)	4(6.7%)	19(31.7%)	60
2.Gastric Reflux (food or stomach acid coming back into the mouth or throat)	33(55.0%)	14(23.3%)	1(1.7%)	12(20.0%)	60
3.Gastric Emptying/Motility Disorder (Food passes slowly through the intestines or stomach.)	44(73.3%)	6(10.0%)	1(1.7%)	9(15.0%)	60
4.Oral/Pharyngeal/Esophageal Dysphagia (problems with swallowing — mouth, throat, or food pipe)?	29(48.3%)	8(13.3%)	10(16.7%)	13(21.7%)	60
5.Frequent Diarrhea (frequent loose stools)?	47(78.3%)	3(5.0%)	1(1.7%)	9(15.0%)	60
6.Cyclical or Intermittent Vomiting (vomiting that comes and goes in throughout the day or night)?	43(71.7%)	4(6.7%)	1(1.7%)	12(20.0%)	60
7.Pulmonary/Respiratory Issues (lung or breathing problems)?	47(78.3%)	6(10.0%)	1(1.7%)	6(10.0%)	60
8.Issues with Kidney Function (problems related to how the kidneys work)?	58(96.7%)	1(1.7%)	1(1.7%)	0	60

Table 1: Descriptive Statistics of Frequency and Percentages of Specific Condition Affecting Feeding

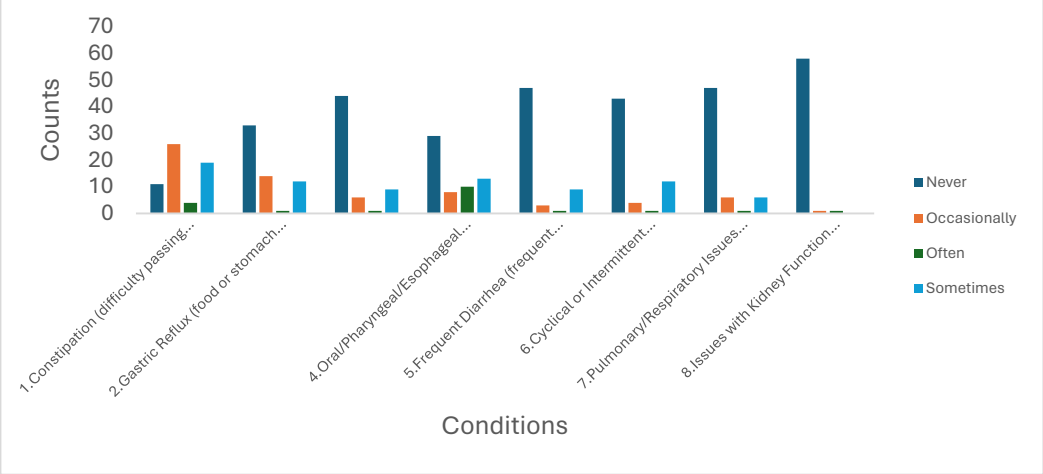

Figure 1: Shows the Frequency for the Conditions

From the Table 1 and Fig.1, The findings indicate that most participants generally did not frequently experience serious health issues, but some gastrointestinal problems were more commonly reported than others.

• **Constipation (Difficulty Passing Stools):** A considerable number of participants reported experiencing constipation at least sometimes. Specifically, 43% of participants experienced it occasionally, and about 32% reported it sometimes. Only a small number (7%) experienced constipation often, while 18% never experienced it. This suggests that constipation is a moderately common issue in the studied population.

• **Gastric Reflux (Acid Coming Back into the Mouth or Throat):** More than half of the participants (55%) did not experience gastric reflux at all. However, around 23% reported occasional reflux, and 20% sometimes experienced this discomfort. Very few (1.7%) experienced it often, indicating that while not highly prevalent, gastric reflux is a noticeable problem for some.

• **Gastric Emptying or Motility Disorders:** A significant majority (73%) never faced this issue, while 15% reported experiencing it sometimes. Only a few participants (10% occasionally, 1.7% often) reported motility-related symptoms, implying this condition is relatively rare in the sample.

• **Swallowing Difficulties (Oral/Pharyngeal/Oesophageal Dysphagia):** Nearly half (48%) of participants reported never having difficulty swallowing, but 22% experienced this sometimes and 17% experienced it often. This suggests that swallowing difficulties are more prevalent compared to other severe symptoms.

• **Frequent Diarrhoea:** The majority of participants (78%) never experienced frequent diarrhoea, while 15% experienced it sometimes. Only 3 individuals (5%) reported occasional diarrhoea, and 1.7% experienced it often. This indicates that frequent diarrhoea is not a common problem among the participants.

• **Cyclical or Intermittent Vomiting:** Most participants (72%) did not experience vomiting at all. However, 20% reported vomiting sometimes and 7% occasionally. Only a small proportion (1.7%) experienced it often.

• **Respiratory Issues (Lung or Breathing Problems):** A large majority of 78% never experienced respiratory issues, and 10% experienced them occasionally or sometimes. Only 1.7% experienced them often, suggesting these issues are rare in the sample.

• **Kidney Function Problems:** Nearly all participants (97%) reported never experiencing any kidney-related problems, with only 1.7% experiencing them occasionally or often. No participants reported experiencing it sometimes, indicating kidney dysfunction is extremely rare in this group.

Table 2 and Figure 2 present the distribution of responses regarding students' dietary needs, food allergies, and related safety measures

Questions	Yes	No	Total
1.Does student have a special diet (including cultural/ religious dietary guidelines)?	28(46.7%)	32(53.3%)	60
2. Does student have food allergies/ sensitivities?	15(25.0%)	45(75.0%)	60
3. If yes, is there a food allergy safety/action plan on file?	10(16.7%)	50(83.3%)	60
4. Are school purchasing foods to accommodate?	12(20.0%)	48(80.0%)	60
7. If special foods are brought in or purchased, are they stored to ensure allergen and general food safety?	41(68.3%)	19(31.7%)	60
Action steps	41(68.3%)	19(31.7%)	60

Table 2: Descriptive statistics of Frequency and Percentages of Nutrition

• **Special Diet Requirements:** Nearly half of the students (46.7%) reported having a special diet due to cultural, religious, or other dietary guidelines, while 53.3% did not. This highlights the importance of schools being mindful of diverse dietary practices among students.

• **Food Allergies or Sensitivities:** About one-fourth of the students (25%) reported having food allergies or sensitivities, whereas the majority (75%) did not. Although fewer students fall into this category, it remains a critical issue requiring attention, given the potential health risks of allergic reactions.

• **Food Allergy Safety/Action Plans:** Only 16.7% of students had a food allergy safety or action plan in place, compared to 83.3% who did not. This indicates a gap in formal safety planning for students with allergies, which may expose them to unnecessary risks.

• **School Efforts to Purchase Foods for Accommodation:** The data shows that 20% of schools made specific purchases to accommodate students' dietary needs, while 80% did not. This suggests that schools may not be consistently prioritizing special dietary requirements in their procurement processes.

• **Storage and Safety of Special Foods:** A positive finding is that 68.3% of schools ensured proper storage of special foods brought in or purchased to maintain allergen safety and general food safety standards. However, 31.7% did not have such measures, which may compromise student health.

• **Action Steps Taken:** Similarly, 68.3% reported that action steps were taken to address nutrition and safety issues,

while 31.7% indicated no action steps in place.

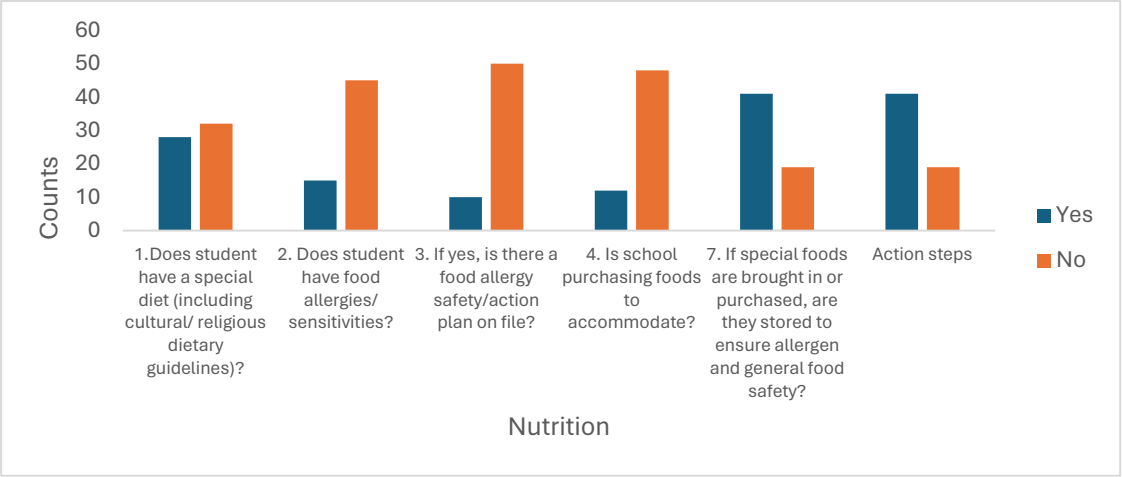

Figure 2: Represents the Cluster bar Diagram for the Frequency of Various Responses on Nutrition

This section explores whether students require special food preparation for safe eating and details the types of food modifications needed for both solids and liquids.

Response	Frequency	Percentage
Yes	39	65.0
No	21	35.0
Total	60	100.0

Table 3.1: Represents the Frequency and Percentage for the Queries Does Student Need Special Food Preparation for Safe Eating? Was an MBS Completed?

Response	Frequency	Percentage
All/No Restrictions	3	5.0
Easy to chew	6	10.0
Easy to chew; Puréed	1	1.7
Easy to chew; Soft & Bite-sized	8	13.3
Minced & Moist	2	3.3
Minced & Moist; Pureed	3	5.0
Regular	3	5.0
Regular; Easy to chew	2	3.3
Regular; Soft & Bite-sized	1	1.7
regular; Soft & Bite-sized; Pureed	1	1.7
Soft & Bite-sized	16	26.7
Soft & Bite-sized; Liquidized	1	1.7
Soft & Bite-sized; Minced & Moist	7	11.7
Soft & Bite-sized; Minced & moist; Puréed	2	3.3
Soft & Bite-sized; Pureed	3	5.0
Unknown	1	1.7
Total	60	100.0

Table 3.2: Represents the Frequency and Percentage of Responses for Solid Intake

Response	Frequency	Percentage
All/No Restrictions	2	3.3
All/No Restrictions; Extremely thick; Moderately thick; Mildly thick; Slightly thick; Thin	1	1.7
Extremely thick	1	1.7
Extremely thick; Slightly thick	1	1.7
Extremely thick; Thin	1	1.7
Mildly thick	9	15.0
Moderately thick	8	13.3
Moderately thick; Mildly thick	1	1.7
Moderately thick; Mildly thick; Slightly thick; Thin	1	1.7
Moderately thick; Thin	1	1.7
Slightly thick	6	10.0
Slightly thick; Thin	1	1.7
Thin	27	45.0
Total	60	100.0

Table 3.3: Represents the Frequency and Percentage of Responses for Liquid Intake

As shown from the Tables above, out of the **60 students surveyed,** a significant majority of 65% (39 students) required special food preparation to ensure safe eating. Only **35% (21 students)** did not require any special preparation. This highlights that a large portion of students depend on tailored food preparation methods, emphasizing the need for careful planning in school nutrition services.

As seen in Table 3.2 for types of solid food modifications. It is shown that the analysis of solid food preparation reveals diverse needs among students:

• The most common modification was Soft & Bite-sized food, reported by 27% (16 students).
• Other common needs included Easy to chew & Soft & Bite-sized (13.3%) and Soft & Bite-sized Minced & Moist (11.7%).
• A smaller number of students required other combinations such as All/No restrictions (5%), Minced & Moist (3.3%), and Pureed (1.7%).
• There were also complex combinations like Minced & Moist Pureed (5%) and Soft & Bite-sized Pureed (5%).
• A small percentage (1.7%) had unknown requirements.

This variety indicates that students' solid food needs are highly individual, requiring flexible and well-documented food preparation practices.

As shown in Table 3.3 for types of liquid food modifications, the study showed that:

• The majority of students (45% or 27 individuals) required thin liquids, which is the least restrictive form.
• The next most common category was Mildly thick liquids (15%) followed by Moderately thick liquids (13.3%).
• Less common needs included Slightly thick liquids (10%) and other combinations such as Extremely thick, moderately thick + Mildly thick + Slightly thick + Thin (each at 1.7%).
• Only 3.3% (2 students) reported having All/No restrictions.

This reflects the varied requirements for liquid consistency among students to support safe swallowing and prevent choking or aspiration.

The following Table 3.4 examined whether food service staff are adequately trained to prepare and handle modified diets required by students.

Response	Count	Percentage
Yes	38	63.3
No	22	36.7
Total	60	100.0

Table 3.4: Shows the Frequency and Percentage for the Query - If a Modified Diet is Required, is Food Service Trained?

As seen in Table 3.4, out of the **60 participants, 63.3% (38 individuals)** reported that the food service personnel were trained to manage modified diets. However, **36.7% (22 individuals)** indicated that the food service staff were not trained.

These finding highlights that while a majority of schools provide proper training to their food service teams, a

significant proportion (more than one-third) still lack sufficient training to safely handle and prepare modified diets. This gap poses potential risks to students who require specific dietary modifications, underscoring the need for more systematic training programs to ensure safety and nutritional adequacy.

Response	Count	Percentage
Yes	41	68.3
No	19	31.7
Total	60	100.0

Table 3.5: Descriptive Statistics of Frequency and Percentage of Student Special Positioning to Be Safe While Eating

From the Table 3.5 we can see that a significant majority of **68.3% (41 students)** required special positioning during mealtime to safely consume their food. Only **31.7% (19 students)** did not require any special positioning.

Response	Count	Percentage
Yes	52	86.7
Unknown (if yes, explain below)	1	1.7
No	7	11.7
Total	60	100.0

Table 3.6: Descriptive Statistics of Frequency and Percentage of The Responses for The Query" Does Student Require Assistance or Monitoring to Be Safe While Eating"?

From the Table 3.6 we can see that an overwhelming majority of **86.7% (52 students)** were regularly monitored during eating to maintain safety. A small proportion, **11.7% (7 students)**, were not monitored. Additionally, **1.7% (1 student)** had an unknown monitoring status, which requires further clarification.

Response	Count	Percentage
Yes, with requires assistance for utensils feeding (explain below)	16	26.7
Yes, with special or modified utensils, dishes, and /or equipment (explain below)	18	30.0
Yes, with special or modified utensils, dishes, and /or equipment (explain below); Yes, with requires assistance for utensils feeding (explain below)	3	5.0
Yes, with standard utensils and dishes	18	30.0
No	5	8.3
Total	60	100.0

Table 3.7: Descriptive Statistics of Frequency and Percentage of The Responses for The Query Can the Student Self-Feed?

From Table 3.7, it is seen that out of 60 students, 30% (18 students) were able to self-feed using special or modified utensils, dishes, and/or equipment, while another 30% (18 students) could self-feed using standard utensils and dishes. Additionally, 26.7% (16 students) were able to feed themselves but required assistance with handling utensils. A smaller group, 5% (3 students), needed both special or modified equipment and assistance with utensil use. Only 8.3% (5 students) were unable to self-feed at all. These results highlight that the majority of students can self-feed to some extent, although many require modifications or assistance, indicating the importance of personalized support strategies to promote independence and ensure safe and effective feeding practices.

In the current research, gastrointestinal problems emerged as the most frequently stated medical complaints. In fact, 43.3% of the children in the study had constipation on rare occasions, 31.7% had it on infrequent occasions, and 6.7% had it on a regular basis. Conversely, more serious problems such as gastric motility and kidney disorders were much more uncommon, being reported by less than 5% of the respondents. These results corroborate previous research showing gastrointestinal disorders, and especially constipation and reflux, as frequently occurring in children with developmental disabilities [12,13]. It is appreciated that constipation disrupts the appetite and food intake, and even participation during mealtimes which is more common in children with developmental disorders, and impacts their growth and development. In addition, the data that 38.4% of the participants reported having difficulty swallowing supports previous work by Lefton-Greif (2008), which

argued that children with neurological and developmental disabilities, who encounter dysphagia, need the assistance of caregivers at home and at school because it remains a serious health issue in their population.

In the nutrition domain, almost half (46.7%) of the students were on special diets, mostly for cultural or religious reasons, while 25% were on special diets for allergies or intolerances. Of particular concern was the preparedness and action planning, where only 16.7% reported having a safety or action plan. Equally alarming, 80% of schools did not purchase food to meet these needs. This gap illuminates the absence of planning and systematic preparedness for children with particular and complex nutritional needs. This is not the first time these issues have been documented. noted that ignoring food restrictions is detrimental to the nutritional sufficiency and health of a child [14]. Similarly, stressed that children with special needs are more likely to experience a restricted variety of diets, and the absence of adequate organizational support tends to worsen the problems related to feeding [15]. These findings support the proposition that schools need to implement and monitor policies related to food safety and management of food allergens, in line with the international feeding guidelines [3]. The study population seems to have feeding skills difficulties. 65% of students needed specially prepared food, and 68.3% needed specially prepared positioning for meals. Moreover, 86.7% needed constant supervision during the feeding process. These results back the work of who pointed out that children with neurodevelopmental conditions often need more than one approach to feeding for safety and efficiency [3,16]. In this study, while 30% could self-feed using standard utensils, 56.7% needed modified utensils or assistance, suggesting that feeding independence can be achieved but only if there is systematic support. In a culmination of studies [17].

The study involved looking at the health problems, the dietary measures, nutrition changes, and support systems of 60 school-going children with special needs. Health-related conditions: The most prevalent was constipation which was occasionally reported or even 75 percent of teachers had reported. Other GI issues, including gastric reflux (20% sometimes, 23% occasionally) and swallowing (22% sometimes, 17% often) were also observed. Less common were such conditions as diarrhoea, vomiting, respiratory complications, kidney dysfunction. Dietary requirements and food allergies: almost a half of the students (47) had special diets based on cultural motives, religious motives, or health motives. A quarter (25) of them had food allergies or rights but only 17% possessed an official safety/action plan. Although 20 percent of the schools bought special foods to accommodate them, more percent (68) maintained the correct storage and food safety. Feeding skill requirements: Food special preparation: Three-quarters of students had to modify their diets, and the most prevalent modification of solid food was soft and bite-sized. Modifications of liquids: 45% was prescribed thin liquids, which is followed by mildly thick liquid (15%) and moderately thick liquid (13%). Food service training: 63 percent of schools indicated that they had trained food service staff though 37 percent of schools did not possess the necessary training. Safety during feeding: Positioning: 68 percent of students had to have special positioning in order to eat safely. Tracking: 87 percent needed help or supervision when eating. Self-feeding: The majority of students had the ability to self-feed using regular utensils (30%), adapted utensils/equipment's (30%). Approximately a quarter of them had to be assisted and only four out of 100 were unable to feed themselves.

5. Conclusion

The results indicate that a large percentage of children with special need must have special dieting, adjustments of foods, and constant assistance when having meals. Whereas certain health issues like constipation and challenges with swallowing were frequent, medical complications were not severe as compared to normal. Nonetheless, there are weaknesses in terms of allergy safety planning, food service training and accommodative systematically in schools. In sum, it is apparent that the study recommends the significance of:

1. The personalized feeding approaches to the health and cultural/religious dietary needs.
2. Improved training of the school food service personnel to manage modified diets safely.
3. written action plans and surveillance among allergic and feeding-at-risk children.
4. The issue of independence should be promoted with the use of adaptive equipment and the supervision of movement to promote self-feeding skills.

These strategies can and must be put in place to maintain safe, inclusive, and supportive mealtime practices of children with special needs at school [13].

Declarations

Ethics approval and consent to participate

Ethical clearance has been granted by the relevant institutional ethics committees (IRB no: NAISH/RES/DISS/IRB/2023-25/07).

Consent for publication: Consent taken from teachers to participate and that the study will be published.

Availability of data and materials: available on request

Competing interests- The authors declare no conflict of interest.

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Authors' contributions

Dr. Reeny Roy contributed to the major part of the study by preparing the manuscript, the topic and reviewing articles. Ms. Priyanka Kumari contributed to collecting the making of the questionnaire and collecting the data from the teachers of special needs school.

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References

1. Matson, J. L., & Fodstad, J. C. (2009). The treatment of food selectivity and other feeding problems in children with autism spectrum disorders. Research in Autism Spectrum Disorders, 3(2), 455-461.
2. Kovacic, K., Rein, L. E., Szabo, A., Kommareddy, S., Bhagavatula, P., & Goday, P. S. (2021). Pediatric feeding disorder: a nationwide prevalence study. The Journal of Pediatrics, 228, 126-131.
3. Arvedson, J. C. (2008). Assessment of pediatric dysphagia and feeding disorders: clinical and instrumental approaches. Developmental disabilities research reviews, 14(2), 118-127.
4. Dodrill, P., & Gosa, M. M. (2015). Pediatric dysphagia: physiology, assessment, and management. Annals of Nutrition and Metabolism, 66(Suppl. 5), 24-31.
5. Benfer, K. A., Weir, K. A., Bell, K. L., Ware, R. S., Davies, P. S., & Boyd, R. N. (2016). Longitudinal study of oropharyngeal dysphagia in preschool children with cerebral palsy. Archives of physical medicine and rehabilitation, 97(4), 552-560.
6. Kinnear, D., Morrison, J., Allan, L., Henderson, A., Smiley, E., & Cooper, S. A. (2018). Prevalence of physical conditions and multimorbidity in a cohort of adults with intellectual disabilities with and without Down syndrome: cross-sectional study. BMJ open, 8(2), e018292.
7. Sullivan, P. M. (2009). Violence exposure among children with disabilities. Clinical child and family psychology review, 12(2), 196-216.
8. Lockner, D. W., Crowe, T. K., & Skipper, B. J. (2008). Dietary intake and parents' perception of mealtime behaviors in preschool-age children with autism spectrum disorder and in typically developing children. Journal of the American Dietetic Association, 108(8), 1360-1363.
9. Cermak, S. A., Curtin, C., & Bandini, L. G. (2010). Food selectivity and sensory sensitivity in children with autism spectrum disorders. Journal of the American dietetic Association, 110(2), 238-246.
10. Lund, C. M. (2021). Physiological stability during oral feeding in preterm infants: Associations with feeding behaviors and cues (Doctoral dissertation, Northern Illinois University).
11. Jansen, E., Williams, K. E., Mallan, K. M., Nicholson, J. M., & Daniels, L. A. (2018). Bidirectional associations between mothers' feeding practices and child eating behaviours. International Journal of Behavioral Nutrition and Physical Activity, 15(1), 3.
12. Field, D., Garland, M., & Williams, K. (2003). Correlates of specific childhood feeding problems. Journal of paediatrics and child health, 39(4), 299-304.
13. Benjasuwantep, B., Chaithirayanon, S., & Eiamudomkan, M. (2013). Feeding problems in healthy young children: prevalence, related factors and feeding practices. Pediatric reports, 5(2), 38.
14. Chatoor, I., & Ganiban, J. (2003). Food refusal by infants and young children: Diagnosis and treatment. Cognitive and behavioral practice, 10(2), 138-146.
15. Volkert, V. M., & Vaz, P. C. (2010). Recent studies on feeding problems in children with autism. Journal of applied behavior analysis, 43(1), 155-159.
16. Lefton-Greif, M. A., Okelo, S. O., Wright, J. M., Collaco, J. M., McGrath-Morrow, S. A., & Eakin, M. N. (2014). Impact of children's feeding/swallowing problems: validation of a new caregiver instrument. Dysphagia, 29(6), 671-677.
17. Goday, P. S., Huh, S. Y., Silverman, A., Lukens, C. T., Dodrill, P., Cohen, S. S., ... & Phalen, J. A. (2019). Pediatric feeding disorder: consensus definition and conceptual framework. Journal of pediatric gastroenterology and nutrition, 68(1), 124-129.