

Feeding difficulties in preschool children at an early childhood education school

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Abstract

Feeding difficulties are any problem that negatively affects the process of parents or caregivers providing food or nutrients to the child. The objective of this work was to investigate eating difficulties in preschool children at a municipal early childhood education school in Uruguaiana/RS. The study was approved by the Research Ethics Committee and carried out between October and November 2022. All parents or guardians of children (n=70) who attended school, aged 4-5 years, were invited to participate in the research. Everyone received the Free and Informed Consent Form, as well as the research questionnaire. The instrument used was the Brazilian Infant Feeding Scale (EBAI), which has 14 questions regarding children's nutrition. Descriptive statistics were performed in terms of frequency and analysis of variance (ANOVA) was performed for comparisons between sexes ($p<0.05$). 31 responses were obtained from parents regarding children's nutrition. The data revealed that 9.68% (n=3) had some degree of feeding difficulty, 3.33% (n=1) with a severe degree and 6.45% (n=2) with a moderate degree. The remaining children (n=28) also presented behaviors related to feeding difficulties, however, without enough scores to be classified as having feeding difficulties. The most frequently described behaviors were: the caregiver using distractions or going after the child to make them eat, feeding time around 31-60 minutes or more, child who nauseates, spits or vomits with some type of food and the negative influence of food in family relationships. Thus, a low percentage of feeding difficulties was observed in the studied population, in accordance with the literature studied.

Keywords: Eating Behavior. Food Selectivity. Preschool. Child Nutrition.

INTRODUCTION

Feeding difficulties (FD) are understood as any problem that negatively affects the process of parents or caregivers providing food or nutrients to the child¹. It is estimated that feeding difficulties may occur in 20–35% of the general pediatric population with neurotypical development². In the preschool population, values between 14 and 50% of feeding

difficulties were observed³. However, there is a difference between a child having some feeding difficulties and being classified as having feeding difficulties; For this reason, the Brazilian Society of Pediatrics describes that only 1 to 5% of children meet the criteria defined for feeding difficulties⁴.

FD is divided into two large groups according

to its origin: 1) Organic - related to food allergy, celiac disease, gastroesophageal reflux disease, and 2) Behavioral - divided into three categories: child who eats little, who eats little variety and/or who is afraid of eating as a result of a traumatic event experienced⁵. Identifying them as soon as possible can avoid several problems, as in the long term they can have negative consequences for the child, thus impacting cognitive, nutritional and emotional development⁶.

Children who have FDs can experience diverse consequences, including lower than ideal weight for age, reduced speed of weight gain or even weight loss, cognitive losses, reduced bone mass and metabolic disorders⁷. Other consequences found in children aged between 4 and 8 years who have FDs were a high prevalence of inadequacies in calcium, iron, zinc and vitamin A, which can also lead to immunological damage and anemia⁷.

Studies on feeding difficulties include investigations into the areas of food neophobia, which involves resistance to consuming or unwillingness to try unfamiliar foods⁸, as well as aspects that improve food intake in children with food selectivity⁹ and also on the family influence on children's consumption¹⁰. Such studies are important and are related to the different aspects and approaches that involve feeding difficulties.

METHODOLOGY

A descriptive, quantitative study was developed that investigated the prevalence of eating difficulties in children at a public preschool in Uruguaiana/RS. The research was carried out using a self-completion questionnaire by the parents/caregivers of these children. The data collection period was between October and November 2022.

The location was chosen, firstly, because it is a small preschool, with only 70 students, all between the ages of 4 and 5. There was an element of convenience and personal interest

To investigate eating difficulties, the Montreal Children's Hospital Feeding Scale (MCH-FS) was developed in Canada, which underwent cross-cultural adaptation to Brazil and was called the Brazilian Infant Feeding Scale (EBAI), developed for children between six months and six years and eleven months of age². Validation showed a good level of confidence and good internal consistency (Cronbach's $\alpha=0.79$). The scale has been used in different countries, such as Thailand¹¹ and Poland¹², but no studies have yet been found that use the scale to assess feeding difficulties in children in Brazil.

The MCHS-FS scale has been validated in different child populations. Van Dijk¹³ observed that children with autism spectrum disorder (ASD) had more symptoms related to eating difficulties than the general child population. One of the characteristics is the meal time, which tends to be shorter¹⁴. In children with Down syndrome, research carried out with parents showed higher values of food refusal and negative affect during meals¹⁵.

To date, there are no published data on eating difficulties using the EBAI scale in Brazil. In this sense, the objective of this work was to investigate feeding difficulties in preschoolers at a municipal early childhood education school in Uruguaiana/RS.

as the field researcher studied at this school in the past. The target population for the development of the research were parents/caregivers of children who attended school. All parents/caregivers of students attending the school were invited to participate. Parents who were unable to respond due to cognitive difficulties and/or did not know how to read or write were excluded. During the data collection period, there were no children with ASD and/or pathologies that could interfere with eating behavior, however, if present,

they would not be included in the study.

Initially, a first conversation was held with the school principal/coordination to present the research and invite participation. After acceptance by the school, dates were scheduled to approach parents, at the children's entry and/or exit times from school. At this point, a brief presentation by the researcher was made, an explanation about the study was made and parents were invited to participate in the research.

Parents/caregivers who agreed to participate received an informed consent form (ICF) to sign. After returning the signed ICF, each person received the research questionnaire. Participants were able to answer the questionnaire as soon as they received it, or they could answer it at home. In this case, the deadline for returning the completed questionnaire was 3 days.

The research instrument was the EBAI², which has 14 questions regarding the child's eating behavior at mealtimes. It must be answered by the child's parents/caregivers, and includes questions about the duration of meals, the child's chewing or sucking skills, the relationship between parents/caregivers

and the child at mealtime and parental concerns regarding their feeding. Each question in the questionnaire has a scale with 7 answer variations, numbered from 1 to 7. For each answer there is a score that, in the end, classifies the individual in the degree of eating difficulty (FD). Scores equal to or less than 60 are not considered as FD. Scores between 61-65 are interpreted as mild FD, between 66 and 70 as moderate FD and above 70 as severe difficulty¹⁶.

For statistical analysis, Microsoft Office Excel software, version 16.66.1 for Mac, was used. Descriptive statistics were performed, with data presented in terms of frequency, and analysis of variance (ANOVA) was performed for comparisons between genders, with a significance level of $p < 0.05$.

The research was approved by the ethics and human research committee of the Federal University of Pampa (CAAE: 56691922.0.000.5323). At the end of the research, participants received written guidance on healthy eating for children and on managing feeding difficulties. The material was prepared by the research team and distributed to parents by the school management.

RESULTS

Of the 70 students enrolled, it was possible to deliver the questionnaire to 62 parents or guardians. Of these, 35 completed questionnaires were returned. There were no explicit refusals regarding the research, however, 27 parents took the questionnaires home and did not return them, perhaps due to forgetfulness, lack of interest or even the children's absence from school on the days of data collection. The field researcher remained at the entrance and exit of the school for 3 days to provide encouragement and receive responses. Of the responses, there were still 4 losses due to the lack of signature from pa-

rents or guardians. Therefore, responses from 31 parents or guardians were included in the research. The age range of the children indirectly involved in the study was 4-5 years old. Of the total number of children, 21 (67.74%) were female and 10 (32.26%) were male.

Figure 1 shows the scores of the 31 preschoolers included in the research. It was observed that the prevalence of feeding difficulties – a score equal to or greater than 61 – was 9.68%. Among the children who were not classified as having FD – a score equal to or less than 60 – it was observed that 64.5% (n=20) were between the score 50-57.

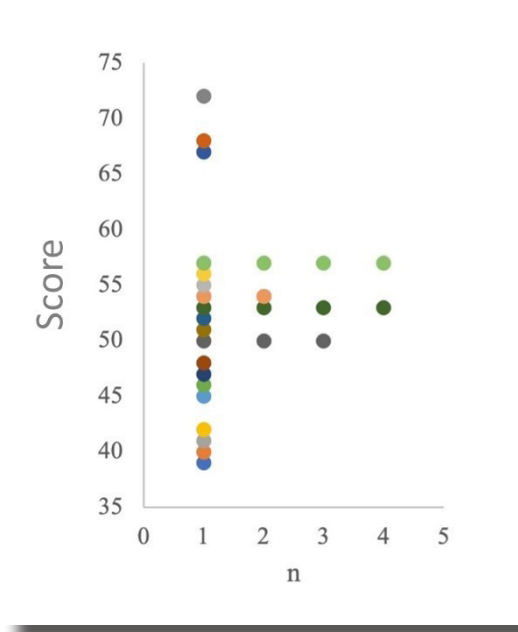


Figure 1 - Score of preschoolers (n=31) from an early childhood education school in Uruguaiiana, RS, Brazil, on the Brazilian Infant Feeding Scale (EBAI) - 2022.

The classification of degrees of eating difficulties according to gender is shown in Table 1. Among girls, 6.45% had moderate FD and, among boys, 3.22% had severe FD. No significant difference was observed between the two ($p>0.05$).

Table 1 - Degree of eating difficulties among preschoolers (n=31) from a preschool in Uruguaiiana, RS, Brazil, according to EBAI - 2022.

	Female n (%)	Male n (%)	Total n (%)
Did not present any difficulties	19 (61.29)	9 (29.03)	28 (90.32)
Moderate Difficulty	2 (6.45)	0 (0)	2 (6.45)
Severe Difficulty	0 (0)	1 (3.22)	1 (3.22)
Total (%)	21 (67.74)	10 (32.26)	31 (100%)

The descriptions of the characteristics of the difficulties observed in children who had a moderate or severe degree are described in Table 2.

Table 2 - Feeding difficulties observed by parents of preschool children with moderate and severe feeding difficulties (n=3) at a school in Uruguaiana, RS, Brazil, 2022.

Feeding difficulty	Moderate (n)	Severe (n)
Refusal to eat at the beginning of meals	2	1
Nausea, spits or vomits some type of food	2	1
The guardian needs to follow the child or use distractions	2	1
The child's chewing or sucking ability is very poor	2	1
The child's feeding negatively influences their family relationships	2	1
The child keeps food in the mouth without swallowing	1	1
The guardian must force the child to eat or drink	1	1
Feeding takes around 31-60min or more	1	0
The child throws tantrums, makes a mess, acts bratty during meals	1	1
Takes 11-20min to eat meals	1	1

It was observed that children with severe feeding difficulties had 10 behaviors related to eating difficulties, and children with moderate eating difficulties had 7 and 9.

Although more than 90% of children were

not classified as having feeding difficulties, reports from family members demonstrated that there are some behaviors/situations related to feeding difficulties at mealtimes, as shown in Table 3.

Table 3 - Most frequent eating difficulties observed by parents of preschoolers (n=31) at a school in Uruguaiana, RS, Brazil, 2022.

Eating difficulties	n	%
The caregiver needs to follow the child or use distractions	15	48.39
Feeding takes around 31-60min or more	11	35.48
Nausea, spits or vomits some type of food	11	35.48
The child's feeding negatively influences their family relationships	11	35.48
Caregiver's concern regarding the child's nutrition	10	32.26

to be continued...

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Eating difficulties	n	%
Child's behavior during the meal	8	25.81
The child's feeding influences your relationship with them	8	25.81

In total, 30 (96.77%) of parents or caregivers reported one or more behaviors characteristic of feeding difficulties, especially the use of distractions at mealtime, excessive time at the table, children's rejection

of specific foods and influence negative impact on food in family relationships. The results found will be presented to the school with guidance available to parents on managing behaviors.

DISCUSSION

A low prevalence of FDs was observed according to EBAI. It is estimated that 8 to 50% of children have FD, and more than half of parents describe that their children are selective or eat little¹⁷. Although the majority of these children are mildly affected by FD⁴, a small percentage have a serious eating disorder¹⁸. However, higher percentages of eating difficulties have already been observed, as in the study by Diniz² who found mild FD in 27.9% of cases, moderate in 17.6% and severe in 33.8%. However, in this study, the sample was made up of parents/caregivers of children who were undergoing treatment for FD or who had been referred for speech therapy evaluation for this reason². Due to this bias, the prevalence of FDs was expected to be higher than in the general population. It has been described, for example, that children with ASD are five times more likely to have feeding problems when compared to children with neurotypical development¹⁹.

In general, children with feeding difficulties present several characteristic behaviors together, such as little appetite, refusal to eat, lack of interest in food, tantrums when eating, demanding rituals at the table and long meals²⁰⁻²¹. Furthermore, if we consider that on average children receive 4 meals a day, the set of behaviors related to FDs combined with the frequency of manifestations can make fa-

mily life during meals quite challenging and trigger maternal dissatisfaction with their children's feeding²⁰⁻²¹.

For behavioral feeding difficulties, management should include both behavioral and environmental issues. Behaviors already described in the literature, such as pressure exerted by the family for the child to eat or meal replacements, can interfere in an even more negative way in the child's relationship with food, increasing aversion to food or generating anxiety at meal times²⁰⁻²³. The home environment, which includes the food available for consumption, also influences children's feeding⁷⁻²⁴. In conduct, it is necessary that there is a welcome from the family followed by guidance on how to conduct meals, how to provide pleasant moments, in peaceful environments and in company, in order to positively influence food consumption⁷.

Although more than 90% of the children who participated in the survey were not classified as having feeding difficulties, reports from family members demonstrated that there are some behaviors/situations related to feeding difficulties present at mealtimes. Almost 50% (48.39%) of parents or caregivers need to follow their child or use distractions (such as toys, TV) during the meal to get them to eat. The time of feeding must be without distractions²⁵, so that parents/caregivers are involved

with the act of feeding, providing adequate modeling and encouraging the child to eat alone in a healthy way. Regarding the use of screens, in 2019 the WHO prepared a guide in which the recommendation for screens (television, video games and others) is a maximum of 1 hour per day for children aged 2 to 5 years, however, they should not be used in the meal times, according to the Brazilian Society of Pediatrics²⁶. Furthermore, the use of television seems to influence the consumption of more caloric and less nutritious foods, which can lead to both excess weight and losses in the supply of nutrients that are essential for the adequate development and growth of children²⁷.

The Brazilian Infant Feeding Scale (EBAI) characterizes difficulty in feeding meals that last longer, 31 minutes or more². In this work, more than 35% of parents or caregivers identified this problem in their children. A study carried out in Portugal observed that children between six months and six years of age initially showed signs of appetite and, after starting the meal, refused – probably related to satiety – between 21 and 31 minutes after starting the meal²⁸, indicating, in a way, that this would be the time limit for a meal for children in this age group. In situations where meal time is excessive, the guideline is that meals are structured throughout the day - in such a way that they promote hunger before eating and consequent satisfaction after eating - and with a time limited to 15 minutes until the beginning of the meal and another 20 minutes after the child starts eating; if they do not eat during this period, the meal must be removed²⁹.

Another behavior reported by parents was that the child nauseates, spits or vomits with

some type of food at mealtime. In some cases, nausea may be related to a previous traumatic eating event, such as the child being forced to eat something they didn't like or eating more than necessary²⁹. The approach in these cases is to remove the food causing nausea from the child, and test other possibilities, such as serving a minimum amount on the plate and offering foods that are more similar to the foods the child knows and likes²⁹. A technique that can assist in this process is food chaining, which consists of introducing new foods through foods accepted by the child with the aim of promoting pleasurable eating experiences³⁰. The use of pressure and/or coercion for the child to eat should be avoided, as, in addition to damaging the family relationship²⁹, it can prevent the development of signs of hunger and satiety³¹⁻³².

It is important to know that eating difficulties are common in young children and can persist throughout childhood, but if managed well they can be overcome⁷. Parents' understanding of the stages of child development, the child's temperament and food preferences can influence both their relationship and the meals themselves³¹⁻³². Some parental attitudes such as setting an example, eating the same food that is offered to the child, making food accessible, promoting contact with healthy foods off the table, making less accepted foods available at meals along with preferred foods, repeating the offering of foods in different times and preparations, having family meals, as well as understanding that sometimes the child may not be hungry or unwilling to eat and accepting variations in the usual quantity can encourage the acceptance of new foods^{5,33}.

CONCLUSION

A low prevalence of feeding difficulties was found in preschoolers at a public school in Uruguaiiana, according to the Brazilian Infant Feeding Scale, with no significant di-

fference between girls and boys. The greatest difficulties reported by parents referred to the use of distractions for the child to eat, the presence of nausea and/or vom-

ting during meals, excessive time at the table and the negative influence of food on family relationships.

The limitations of this study refer to the fact that it includes a population from a

specific region and a low number of participants, which does not represent all children in this age group. Even so, the work is relevant as it reflects the situation of this specific population.

CREdiT author statement

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All authors read and agreed to the published version of the manuscript.

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