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Effect of Traditional Household Textures on Tactile Hypersensitivity and Eating Behavior among Children with Autism Spectrum Disorder

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Abstract: ***Aim: The aim of the study is to find out the effect of traditional household textures on tactile hypersensitivity and eating behavior among children with autism spectrum disorder. Objectives: 1) To assess the level of tactile hypersensitivity among children with autism spectrum disorder by using Short Sensory Profile. 2) To assess the eating behavior by using Brief Autism Mealtime Behavior Inventory scale. 3) To evaluate the effect of traditional household textures on tactile hypersensitivity and eating behavior among children with autism spectrum disorder. Methodology: The study design was quasi experimental research design. A total of 30 participants with age group of 3 to 5 years were selected based on inclusion criteria through convenience sampling technique. The participants were equally divided into an experimental group (n=15) and a control group (n=15). Pre-test assessments were conducted for both groups using the Short Sensory Profile and Brief Autism Mealtime Behavior Inventory scale (BAMBI). The experimental group received traditional household texture for a period of 8 weeks, 3 sessions per week, each session 45 minutes, whereas the control group received conventional therapy. Post-test was conducted for both control and experimental group using Short Sensory Profile and Brief Autism Mealtime Behavior Inventory scale. The data were collected and statistically analyzed. Result: Statistical significance was found in the experimental group compared to the control group for tactile hypersensitivity (t=8.9188, p=0.0001) and eating behaviour (t=8.9904, p=0.0001) with regard to the effect of traditional household textures. Conclusion: The study concludes that traditional household textures have a statistically significant effect in reducing tactile hypersensitivity and improving eating behavior in children with autism spectrum disorder.***

Keywords: Traditional household textures, tactile hypersensitivity, eating behavior, autism spectrum disorder, short sensory profile, Brief autism mealtime behavior inventory.

1. Introduction

According to the World Health Organization (WHO), Autism Spectrum Disorders (ASD) are neurodevelopmental disorders, meaning they are caused by abnormalities in the way the brain develops and works. Autism spectrum disorder is a biologically based neurodevelopmental disorder with core deficits in two domains: social communication/interaction, and restrictive, repetitive patterns of behavior (Indian Academy of Pediatrics). It is characterised by some degree of difficulty with social interaction and communication. Other characteristics are atypical patterns of activities and behaviours, such as difficulty with transition from one activity to another, a focus on details, and unusual reactions to sensations.

The exact causes of ASD are unknown. Some studies say that it may be due to genetic factors (family history, chromosomal abnormalities), intra-uterine infection, prenatal causes (environmental factors, viral infections), and postnatal causes (encephalitis, meningitis). Epidemiology data shows that ASD prevalence varies globally, with estimates of about 1 in 31 children in the US and 1 in 68 in India. INDIA-2025 analysis estimates ASD prevalence at approximately 1.2% to 1.5% among children aged 2-9, which translates to about 1 in 68 children, aligning with previous findings. Globally, the prevalence of ASD is approximately 1 in 127 people, with an estimated 61.8 million individuals on the spectrum in 2021. Rates vary by region and sex, with higher rates reported in males in developed countries: 1,064.7 per 1,00,000 males and 508.1 per 1,00,000 females. ASD is diagnosed more frequently in males than in females.

According to Jean Ayres (sensory integration theory), tactile hypersensitivity occurs because the brain pays too much attention to light touch and protective sensations from the skin, interpreting ordinary, non-threatening touch (like a clothing tag or a gentle brush) as a potential threat, triggering a fight, flight, or freeze response. Touch is important for the infant during feeding because touch sensation helps the infant to suck and later to chew and swallow food; infants with poorly functioning tactile systems may have difficulty sucking and subsequently may not enjoy the texture of solid food. Tactile perception develops gradually after birth, and hypersensitivity to touch is common among people within groups with neurodevelopmental disability such as autism.

One reason touch is important for psychosocial development is that it triggers the release of oxytocin, a hormone that promotes attachment and bonding, and a feeling of safety and wellbeing, working in concert with other hormones including vasopressin in the regulation of arousal (Taylor, 2014). These two hormones are related to the emotional window of tolerance for touch. The need for the study is that children with ASD often show atypical eating behavior; this behavior can vary from mild food preferences to severe feeding difficulties. The causes of eating behavior involve a complex interaction between neurological, sensory, behavioral, and psychological factors.

Eating behavioural problems in Autism Spectrum Disorder

(ASD) refer to persistent and clinically significant difficulties related to food intake, including food selectivity, restricted food variety, rigidity around mealtime routines, sensory-based food refusals, and atypical eating patterns, which arise from the core characteristics of ASD such as sensory sensitivities, insistence on sameness, and behavioural rigidity. These difficulties can impact nutrition, growth, family functioning, and overall health.

Using traditional household textures such as grains, pulses, rice, lentils, sand, flour, fabrics, and natural sensory materials has shown promising effectiveness in reducing tactile hypersensitivity and improving eating behaviours among children with Autism Spectrum Disorder. These textures provide a low-cost, familiar, and culturally relevant sensory exposure, allowing gradual desensitization to touch through structured play activities like scooping, pouring, squeezing, and sorting. Regular engagement with varied textures enhances tactile tolerance, supporting better regulation of sensory input and reducing defensive responses. As children become more comfortable with touch, they often demonstrate greater willingness to explore new food textures, leading to increased food acceptance, reduced food refusal, and more flexible eating patterns. Thus, integrating household-texture sensory activities into intervention programs can strengthen both sensory processing and mealtime adaptability, contributing to healthier and more varied eating behaviours in children with ASD.

Children with Autism Spectrum Disorder (ASD) often experience tactile hypersensitivity, a sensory processing difficulty where ordinary touch sensations may feel uncomfortable, distressing, or even painful. This tactile defensiveness significantly impacts their daily functioning, particularly eating behavior, leading to food refusal, texture-based selectivity, and limited dietary variety. While several sensory integration approaches exist, many involve structured, clinic-based interventions that may not be accessible or affordable for all families. There is a growing interest in using simple, low-cost, home-based strategies to manage sensory issues, yet evidence on their effectiveness remains limited.

Traditional household textures such as cotton fabrics, wooden utensils, jute mats, or natural fiber materials are common, culturally relevant, and easily accessible. These textures can be incorporated into daily routines and sensory play in a non-threatening, familiar environment, potentially offering therapeutic benefits. Hence, an attempt has been made with traditional household textures to reduce tactile hypersensitivity and eating behavior in children with Autism Spectrum Disorder.

2. Hypothesis

Alternate Hypothesis
There is a significant effect of traditional household textures on tactile hypersensitivity and eating behavior among children with autism spectrum disorder.

Null Hypothesis
There is no significant effect of traditional household textures on tactile hypersensitivity and eating behavior among children with autism spectrum disorder

3. Methodology

The purpose of this study is to determine the effect of traditional household textures on tactile hypersensitivity and eating behaviour in children with autism spectrum disorder.

Research Design The research design was Quasi experimental design.

Sampling Technique Convenient sampling technique was adopted.

Sampling Size Totally 30 participants were selected.
- 15 in control group.
- 15 in experimental group.

Study Setting The study was conducted in Agaram hospital in Salem and Hopes clinic in Salem.

Duration of the Study The duration of the study was six months.

Selection Criteria

Inclusion Criteria:
- Children diagnosed as ASD by clinical psychologist or psychiatrist to be included.
- Both male and female with ASD to be included.
- The ASD children with age group of 3-5 years to be included.
- Individuals with a score of above 20 on the Short Sensory Profile will be included.
- Children who score above 39 on the Brief Autism Mealtime Behavior Inventory will be included.

Exclusion Criteria:
- Those parents who have not given consent for this study will be excluded.
- Children with other co-morbid conditions will be excluded: Epilepsy, ADHD, ID.
- Other medical conditions will be excluded (Constipation, skin allergy, esophagus difficulties).
- Children with severe ASD will be excluded.

Variables

Independent Variable: Traditional household textures.

Dependent Variable: Tactile hypersensitivity and Eating behavior.

Tools Used:
- Short Sensory Profile.
- Brief Autism Mealtime Behavior Inventory (BAMBI).

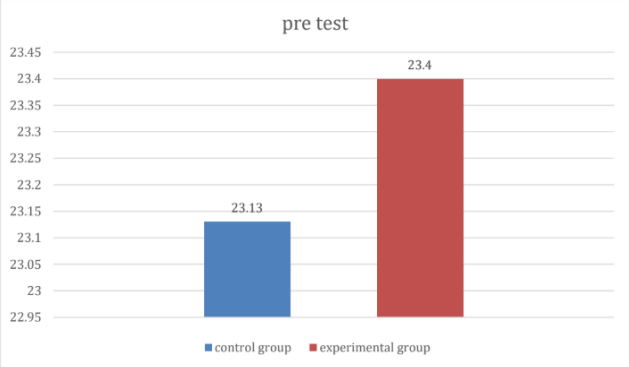
Procedure
This study was a quasi experimental research design. A total of 30 participants were selected based on inclusion criteria through convenience sampling technique. Samples were

taken from Agharam A Centre for Speech and Hearing Hospital, Salem, and Hopes Child Development and Learning Centre, Salem. The participants were equally divided into an experimental group (n=15) and a control group (n=15). Pre-test assessments were conducted for both groups using the Short Sensory Profile and BAMBI scale. The experimental group received traditional household texture for a period of 8 weeks, 3 sessions per week, each session 45 minutes, whereas the control group received standard occupational therapy. Post-test was conducted for both control and experimental group using Short Sensory Profile and BAMBI scale. The data were collected and statistically analyzed.

4. Data Analysis and Results

Table 1: Comparison between pre-test scores of control and experimental group on Short Sensory Profile Scale

Group	Test	Mean	SD	t-value	p-value
Control Group	Pre Test	23.13	1.92	0.3696	0.7145
Experimental Group	Pre Test	23.40	2.03		

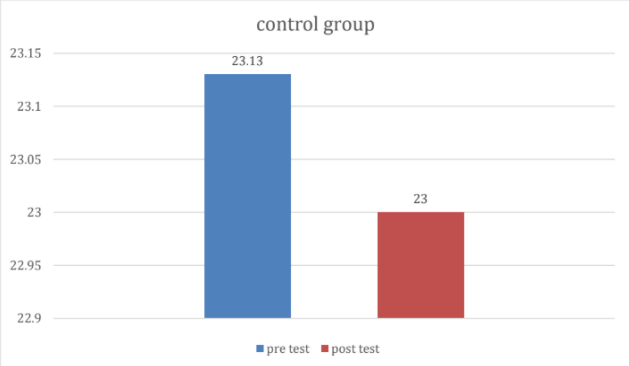


Graph 1

Table 1 and Graph 1 shows the comparison of pre-test values of control group and experimental group; score mean values are 23.13 and 23.40 respectively. The calculated 't' value is 0.3696 and 'p' value is 0.7145, which shows it is not statistically significant.

Table 2: Comparison between pre-test and post-test scores of control group on Short Sensory Profile Scale

Group	Test	Mean	SD	t-value	p-value
Control Group	Pre Test	23.13	1.92	1.4676	0.1643
Control Group	Post Test	23	2		

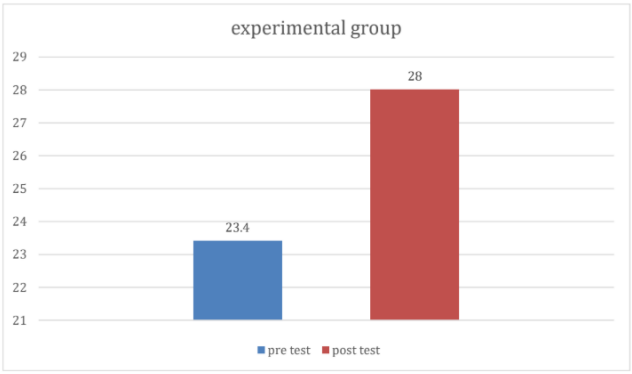


Graph 2

Table 2 and Graph 2 shows comparison of control group pre and post test score mean values, which are 23.13 and 23 respectively. The calculated 't' value is 1.4676 and 'p' value is 0.1643, which shows it is not statistically significant and there is no significant difference between pre-test and post-test values of the control group.

Table 3: Comparison between pre-test and post-test scores of experimental group on Short Sensory Profile Scale

Group	Test	Mean	SD	t-value	p-value
Experimental Group	Pre Test	23.40	2.03	10.8711	0.0001
Experimental Group	Post Test	28	0.85		

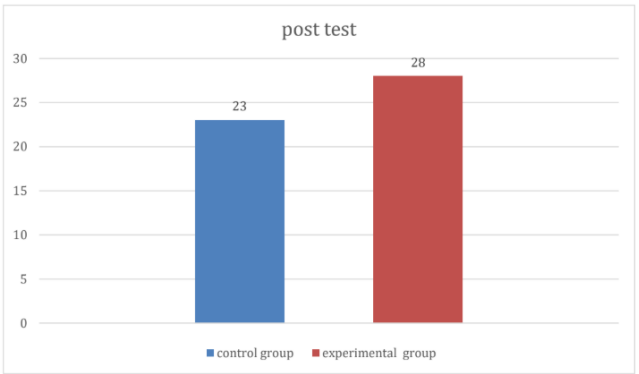


Graph 3

Table 3 and Graph 3 shows the comparison of experimental group pre and post test score mean values, which are 23.40 and 28 respectively. The calculated 't' value is 10.8711 and 'p' value is 0.0001, which shows that it is statistically significant and the experimental group has significant improvement.

Table 4: Comparison between post-test scores of control and experimental group on Short Sensory Profile Scale

Group	Test	Mean	SD	t-value	p-value
Control Group	Post Test	23	2	8.9188	0.0001
Experimental Group	Post Test	28	0.85		

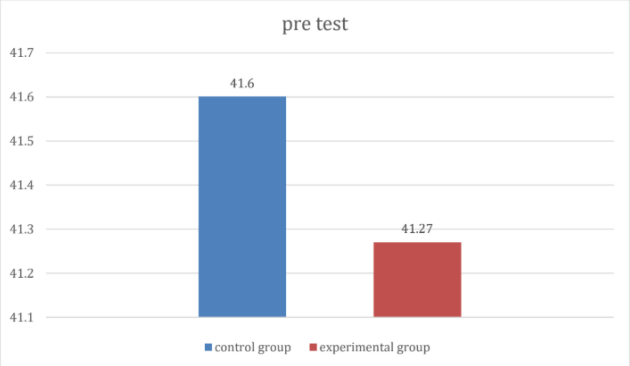


Graph 4

Table 4 and Graph 4 shows comparison of post-test values of control and experimental group; score mean values are 23 and 28 respectively. The calculated 't' value is 8.9188 and 'p' value is 0.0001, which shows it is statistically significant and the experimental group has significant improvement.

Table 5: Comparison between pre-test scores of control and experimental group on BAMBI Scale

Group	Test	Mean	SD	t-value	p-value
Control Group	Pre Test	41.60	1.84	0.4770	0.6370
Experimental Group	Pre Test	41.27	1.98		

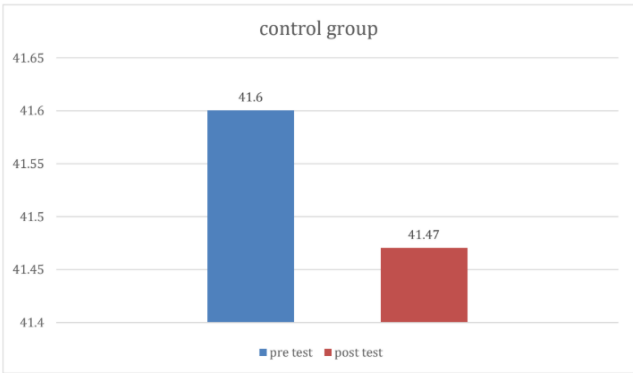


Graph 5

Table 5 and Graph 5 shows the comparison of pre-test values of control group and experimental group; score mean values are 41.60 and 41.27 respectively. The calculated 't' value is 0.4770 and 'p' value is 0.6370, which shows it is not statistically significant.

Table 6: Comparison between pre-test and post-test scores of control group on BAMBI Scale

Group	Test	Mean	SD	t-value	p-value
Control Group	Pre Test	41.60	1.84	1.4676	0.1643
Control Group	Pre Test	41.47	1.77		

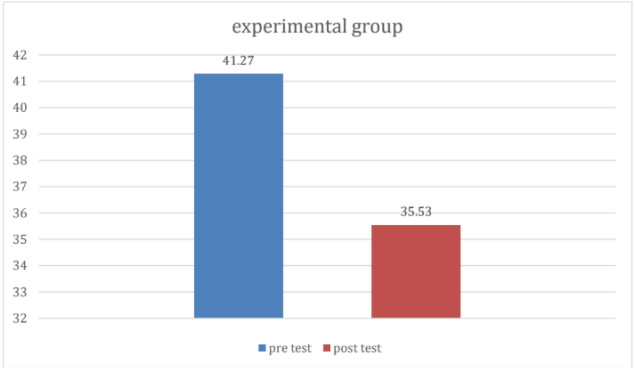


Graph 6

Table 6 and Graph 6 shows comparison of control group pre and post test score mean values, which are 41.60 and 41.47 respectively. The calculated 't' value is 1.4676 and 'p' value is 0.1643, which shows it is not statistically significant and there is no significant difference between pre-test and post-test values of the control group.

Table 7: Comparison between pre-test and post-test scores of experimental group on BAMBI Scale

Group	Test	Mean	SD	t-value	p-value
Experimental Group	Pre Test	41.27	1.98	23.1026	0.0001
Experimental Group	Post Test	35.53	1.85		

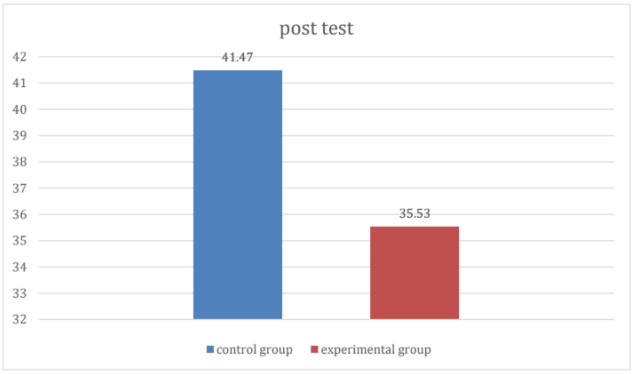


Graph 7

Table 7 and Graph 7 shows the comparison of experimental group pre and post test score mean values, which are 41.27 and 35.53 respectively. The calculated 't' value is 23.1026 and 'p' value is 0.0001, which shows that it is statistically significant and the experimental group has significant improvement.

Table 8: Comparison between post-test scores of control group and experimental group on BAMBI Scale

Group	Test	Mean	SD	t-value	p-value
Control Group	Post Test	41.47	1.77	8.9904	0.0001
Experimental Group	Post Test	35.53	1.85		



Graph 8

Table 8 and Graph 8 shows comparison of post-test values of control and experimental group; score mean values are 41.47 and 35.53 respectively. The calculated 't' value is 8.9904 and 'p' value is 0.0001, which shows it is statistically significant and the experimental group has significant improvement.

5. Discussion

A total of 30 participants were selected based on inclusion criteria through convenience sampling technique. The participants were equally divided into two groups. Experimental group (n=15) and a control group (n=15). Pre-test assessments were conducted for both groups using the Short Sensory Profile and BAMBI scale. The experimental group received traditional household texture for a period of 8 weeks 3session per week each session will be 45 minutes, whereas the control group received conventional occupational therapy. Post-test will be conducted for both control and experimental group with using Short sensory profile and BAMBI scale. The following are the outcomes of the study:

Tactile Hypersensitivity: TABLE 1 and GRAPH 1 show the comparison of pre-test tactile hypersensitivity scores between the control group and the experimental group. The mean values were 23.13 for the control group and 23.40 for the experimental group, with a 't' value of 0.3696 and a 'p' value of 0.7145. Since the p-value is greater than the level of significance, the difference between the groups was not statistically significant. This indicates that both groups were comparable at baseline and were considered homogeneous prior to the intervention.

Table 2 and Graph 2 show the comparison of pre-test and post-test tactile hypersensitivity scores within the control group. The mean values were 23.13 (pre-test) and 23 (post-test), with a 't' value of 1.4676 and a 'p' value of 0.1643, showing no statistically significant difference. This indicates that the control group did not show notable improvement without the traditional household texture intervention.

Table 3 and Graph 3 show the comparison of pre-test and post-test tactile hypersensitivity scores of the experimental group. The mean values were 23.40 (pre-test) and 28 (post-test), with a 't' value of 10.8711 and a 'p' value of 0.0001. Since the result is highly significant, it shows that the experimental group demonstrated a significant reduction in tactile hypersensitivity following exposure to traditional household textures. These findings are supported by Kristin R. et al. (2016), who reported that using meaningful, sensory-rich activities such as pretend play increased engagement and reduced avoidance among children with sensory sensitivity. Similarly, the present study demonstrates that familiar household textures help children with ASD desensitize gradually and improve tactile tolerance. Further support comes from the work of Sharon Cermak et al. (2010), who emphasized the role of sensory processing differences in food selectivity and daily functioning in children with ASD. Their study highlights the importance of sensory-based interventions—consistent with the improvements observed in the present experimental group.

Table 4 and Graph 4 show the comparison of post-test tactile hypersensitivity scores between the control and experimental groups. The mean values were 23 for the control group and 28 for the experimental group, with a 't' value of 8.9188 and a 'p' value of 0.0001, indicating a highly significant difference. This reflects that the experimental group, which received the traditional household texture intervention, showed substantially greater improvement compared to the control group.

Eating Behavior: Table 5 and Graph 5 show the comparison of pre-test eating behavior scores between the control group and the experimental group. The mean values were 41.60 (control) and 41.27 (experimental) with a 't' value of 0.4770and a 'p' value of 0.6370, indicating no significant difference. Therefore, both groups were comparable and homogeneous regarding baseline eating behaviors.

Table 6 and Graph 6 show the comparison of pre-test and post-test eating behavior scores in the control group. The mean values were 41.60 (pre-test) and 41.47 (post-test) with a 't' value of 1.4676 and a 'p' value of 0.1643, indicating no significant improvement. The lack of change suggests that the control group did not benefit from traditional household texture exposure.

Table 7 and Graph 7 show the comparison of pre-test and post-test scores of the experimental group for eating behavior. The mean values were 41.27 (pre-test) and 35.53(posttest), with a 't' value of 23.1026 and a 'p' value of 0.0001, which is highly statistically significant.

This demonstrates that children in the experimental group exhibited substantial improvement in eating behaviors, likely due to desensitization, increased tactile tolerance, and reduced aversion to varied textures. These results align with findings from Jessica Baraskewich et al. (2021), who reported that feeding problems in children with ASD are often linked to sensory sensitivities. Reducing tactile defensiveness can therefore improve food acceptance-matching the improvements observed in the experimental group. Additionally, Antonella Lamboglia et al. (2023) emphasized the importance of understanding sensory-driven mealtime behaviors through validated tools like BAMBI. Their findings support the idea that sensory-based interventions, such as traditional household textures, can help modify adverse feeding patterns.

TABLE 8 and GRAPH 8 show the comparison of post-test eating behavior scores of the control and experimental groups. The mean values were 41.47 (control) and 35.53(experimental), with a 't' value of 8.9904 and a 'p' value of 0.0001, showing a significant difference. This result indicates that the experimental group showed greater improvement in eating behaviors, demonstrating the effectiveness of the intervention.

6. Conclusion

The findings of this study concluded that traditional household textures are effective in reducing tactile hypersensitivity and improving eating behavior among children with Autism Spectrum Disorder. Therefore, the null hypothesis is rejected and the alternate hypothesis is accepted, demonstrating that sensory-based exposure using familiar household textures produces meaningful behavioral and sensory improvements.

References

[1] Baraskewich, J., von Ranson, K. M., McCrimmon, A., & McMorris, C. A. (2021). Feeding and eating problems in children and adolescents with autism: A scoping review. Autism, 25(6), 1505–1519.
[2] 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.
[3] Chistol, L. T., Bandini, L. G., Must, A., Phillips, S., Cermak, S. A., & Curtin, C. (2018). Sensory sensitivity and food selectivity in children with autism spectrum disorder. Journal of Autism and Developmental Disorders, 48(2), 583–591.
[4] Christopher, S. (2019). Touch hypersensitivity in

children with autism—An analysis. International Journal of Research and Analytical Reviews, 6(2), 616–622.

[5] Kim, A.-R., Kwon, J.-Y., Yi, S.-H., & Kim, E.-H. (2021). Sensory based feeding intervention for toddlers with food refusal: A randomized controlled trial. Annals of Rehabilitation Medicine, 45(5), 393–400.

[6] Lamboglia, A., Romano, R., Valente, D., Berardi, A., Cavalli, G., Giovannone, F., Sogos, C., Tofani, M., & Galeoto, G. (2023). Brief autism mealtime behavior inventory (BAMBI): Italian translation and validation. Children, 10(7), Article 1201.