ARTICLE

Factors associated with mealtime behaviors among Filipino children aged 3–11 years old diagnosed with autism spectrum disorder using the Filipino version of the Brief Autism Mealtime Behavior Inventory (BAMBI) questionnaire: a cross-sectional study

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OBJECTIVES: This study aimed to identify risk factors associated with problematic mealtime behaviors in Filipino children aged 3-11 years diagnosed with ASD and to validate the Filipino-translated Brief Autism Mealtime Behavior Inventory (BAMBI) for clinical use. The study examined demographics, socioeconomic status, and clinical characteristics of children with ASD in relation to feeding difficulties.

MATERIALS AND METHODS: A cross-sectional study was conducted with 166 caregivers of Filipino children with ASD at the Philippine Children's Medical Center. The BAMBI questionnaire, translated and validated into Filipino, was administered among patients evaluated under the Section of Neurodevelopmental Pediatrics. Content validity was established through neurodevelopmental pediatric experts, while face validity was achieved with feedback from 17 caregivers during the pilot test. Descriptive statistics and logistic regression were performed to identify the factors.

RESULTS: The Filipino-translated BAMBI demonstrated good content and face validity based on reviews and pilot testing. The tool showed acceptable internal consistency, with a Cronbach's alpha of 0.75, indicating good reliability. Seventy-seven percent (77%) of participants scored above the threshold for problematic mealtime behaviors, with multivariate analysis revealing a significant association between these behaviors and sensory sensitivities (OR = 3.0, 95% CI: 1.2 to 7.3, p = 0.0150). Additional factors, such as dietary habits and familystructure, also showed trends toward significance but did not reach statistical significance.

CONCLUSIONS AND RECOMMENDATIONS: This study validates the Filipino BAMBI as a reliable tool for assessing mealtime behaviors in children with ASD, highlighting the high prevalence of feeding problems in this population. Sensory sensitivities emerged as a significant factor contributing to problematic mealtime behaviors, underscoring the importance of incorporating sensory processing strategies in interventions. Further research should explore other contributing factors, such as dietary habits and family dynamics, to develop more comprehensive, tailored interventions for children with ASD and their families.

KEYWORDS: *Autism spectrum disorder, mealtime behaviors, feeding difficulties, BAMBI, parent questionnaire, risk factors*

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INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental condition characterized by persistent deficits in social communication and interaction, as well as restricted, repetitive patterns of behaviors, interests, and activities. [1] Children with ASD exhibit varying degrees of rigidity, communication difficulties, and social engagement, along with diverse psychiatric comorbidities. The prevalence of ASD is approximately 1 in 36 children in the United States, with boys being nearly four times more likely to be diagnosed than girls. Globally, ASD prevalence ranges from 0.4% to 1.7%, and in Southeast Asia, it is estimated at six per 1,000 individuals.[2-4] In the Philippines, while recent prevalence studies are limited, it was estimated that ASD affected at least 500,000 children in 2012 [3], and the Philippine Children's Medical Center (PCMC) had an ASD census of 2,592 patients from 2013 to 2022, with nearly more than 50% of yearly consultations compared to other diagnoses. Among the population, 82% were males and 79% were classified as level 3 requiring very substantial support in social communication and restrictive, repetitive behaviors. Additionally, many children with ASD also have co-occurring behavioral characteristics that significantly affect their ability to function in school, at home and in the community. Among these behavioral issues, feeding problems are one of the most common associated with ASD children [5], occurring in up to 46-89% of this population, which is significantly higher than the prevalence in typically developing children. These feeding issues can include selective eating, sensory sensitivities to food, rigid routines, communication challenges, and behavioral problems, leading to nutritional deficiencies and increased mealtime stress for both the child and the caregiver.[6] The etiology of feeding problems in ASD is multi-factorial, involving behavioral, physiological, and emotional factors. However, there is a lack of research on the potential predictors or contributing factors to feeding problems among Filipino children diagnosed with ASD, highlighting the need for further study in this area. Additionally, there is no established consensus on how to properly screen for feeding problems in this population, and no locally accessible questionnaire has been developed to standardize the data collected on feeding behaviors in patients with ASD.

Feeding difficulties are prevalent in children with ASD, with picky eating, food selectivity, texture preferences, and challenges eating in regular settings being commonly reported.[7-10] Factors associated with these mealtime behaviors include oral sensory processing, severity of autism symptoms, age, speech impairment, restricted interests, sensory sensitivities, and demographic characteristics such as gender and food preferences.[11-16] Addressing feeding

difficulties within the family and home setting, through parent education and the use of effective mealtime parenting techniques, can have a positive impact on mealtime behavior.[17-19] Further research is needed to understand the unique feeding challenges encountered by Filipino children with ASD, as well as the factors that contribute to the development of problematic mealtime behaviors in this population.

The Brief Autism Mealtime Behavior Inventory (BAMBI) is a validated assessment tool specifically designed to evaluate mealtime behaviors in children with ASD. The 18-item parent-report questionnaire has demonstrated good internal consistency, test-retest reliability, and construct validity across multiple languages, including Brazilian Portuguese, Vietnamese, Chinese, and Italian. Research has employed the BAMBI to identify feeding issues, such as limited food variety and food refusal, among children with ASD in various cultural contexts. A cutoff score of 34 has been established to identify children with ASD experiencing significant feeding difficulties. [20-24]

This study aims to determine the risk factors associated with problematic mealtime behaviors of Filipino children aged 3-11 years diagnosed with ASD at PCMC, using the Filipino version of the BAMBI questionnaire. By identifying these risk factors, clinicians can better understand how feeding issues relate to poor nutrition and weight outcomes, contributing to more effective interventions. The study also aims to meet several specific objectives, including identifying the demographics, socioeconomic status, patient characteristics, and caregiver characteristics of Filipino children diagnosed with ASD. Another objective is to assess the most common mealtime and feeding behaviors, such as food selectivity, disruptive behaviors, food refusal, and mealtime rigidity, among Filipino children with ASD using an 18-item informant-reported questionnaire. Finally, through statistical analysis, the study will explore whether patient and caregiver factors correlate with problematic mealtime behaviors. The findings of this research may lead to the development of a locally validated assessment tool to evaluate feeding behavior in ASD patients in the Philippines. Moreover, the insights gained can guide the creation of targeted nutrition education programs aimed at promoting healthy feeding habits and supporting the multidisciplinary management of feeding difficulties among children with ASD and their families.

Materials and Methods

This study utilized a cross-sectional design to investigate the factors influencing mealtime behaviors in Filipino children aged 3-11 years diagnosed with autism spectrum disorder (ASD) at the Philippine Children's Medical Center (PCMC). Data collection

was conducted in two phases using a validated questionnaire. The PCMC Neurodevelopmental Pediatrics service and private outpatient clinics, where the study was conducted, cater to a wide range of children requiring neurodevelopmental evaluation, including those diagnosed with ASD. These services are staffed by board-certified neurodevelopmental pediatricians and fellows-in-training who are under their direct supervision. The team is skilled in conducting developmental evaluations, which include the use of validated tools and evidence-based practices. PCMC is a tertiary pediatric hospital with well-established neurodevelopmental services and a high volume of referrals from across the Philippines, making it an ideal setting to answer the study's objectives.

In Phase 1, the focus was on the development and validation of the Filipino-translated version of the Brief Autism Mealtime Behavior Inventory (BAMBI). The content validity of the translated tool was evaluated by three neurodevelopmental pediatricians, while face validation was conducted with a sample of 17 caregivers from the PCMC Neurodevelopmental Pediatrics OPD through pilot testing. The sample size for this phase was determined using the formula for Cronbach's alpha reliability, assuming a 95% confidence level, 90% power, and an expected Cronbach's alpha of 0.70. Based on these parameters, the minimum sample size for pilot testing a questionnaire with 18 items is 17. This calculation is based on the null hypothesis for Cronbach's alpha set at 0.0 and the alternative hypothesis at 0.70. Importantly, participants involved in this phase were excluded from the main study to avoid bias.

$$n = \left[\left\{ \left(\frac{2k}{k-1} \right) \left(Z_{\alpha/2} + Z_{\beta} \right)^2 \right\} \Big/ \ln(\delta) \right] + 2,$$

$$\delta = \frac{1 - CA0}{1 - CA1} = \frac{1 - 0.00}{1 - 0.70}$$

$$n = \left[\left\{ \left(\frac{2(18)}{18-1} \right) (1.96 + 1.282)^2 \right\} \Big/ \ln(3.33)^2 \right] + 2 = 17.38 \approx 17$$

Phase 2 involved the administration of the validated Filipino-translated BAMBI to a larger group of participants. This phase includes the recruitment of caregivers from the PCMC NDS OPD, following the inclusion and exclusion criteria stated in the succeeding paragraphs. The completion of the translated and validated version of the BAMBI questionnaire by the caregiver will be assisted by the primary investigator. . For Phase 2, the sample size of 156 was calculated for logistic regression analysis, ensuring a robust dataset. The sample size was based on the study by Lukens (2015)[20] on the BAMBI questionnaire, where the estimated proportion of mealtime behavior problems in children with autism was 0.68 (68 out of 108). Using a desired 95% confidence level and a 10% margin of error for the confidence interval, the sample size

was 156. In the univariate analysis, only variables with a p-value <0.20 were included in the multivariate run.

$$n = 10 \times K/P = 10 \times 5/0.32 \approx 156$$

K is the number of independent variables in the multivariate run

P proportion of patients without mealtime behavior which is 00.32

Participants were recruited from the Neurodevelopmental Pediatrics private and service clinics at PCMC, ensuring the integrity and relevance of the data collected based on strict inclusion and exclusion criteria. Caregivers who met the criteria completed the Filipino-translated BAMBI during their child's consultation or follow-up visit. The administration of the questionnaire took approximately 15 minutes per participant, with data collected providing crucial insights into the mealtime behaviors of children with ASD. This information contributed to the study's broader aims of identifying factors influencing problematic mealtime behaviors in the Filipino context.

To be included in the study, caregivers had to be responsible for Filipino pediatric patients aged 3-11 years diagnosed with ASD according to DSM-5 TR criteria. These patients should have been evaluated at the Neurodevelopmental Pediatrics clinic at PCMC. Additionally, caregivers were primarily responsible for the child for at least six months prior to participation.

The exclusion criteria ruled out caregivers who had not been the primary caregiver for the minimum duration. Children diagnosed with genetic syndromes (i.e.. Rett Syndrome, Fragile X Syndrome, or Tuberous Sclerosis among others), as were patients undergoing nutritional treatment, and those diagnosed with sensory or physical impairments were excluded from the study.

The primary tool used in the study was the BAMBI, a widely recognized parent-report questionnaire developed by Dr. Coleen Lukens. Permission was obtained from Dr. Lukens to translate BAMBI into Filipino. The 18-item questionnaire was designed to assess various mealtime behaviors in children with ASD, with a focus on three domains: Limited Variety, Food Refusal, and Features of Autism.

The translation of BAMBI followed a rigorous process to ensure both linguistic accuracy and cultural relevance. Two independent bilingual translators initially translated the original English version into Filipino. This was followed by back-translation by two other translators who were blinded to the original version. A multidisciplinary panel composed of developmental pediatricians, psychologists, and language experts reviewed the forward and back translations to ensure conceptual and

and contextual equivalence. The pre-final version of the tool was then subjected to cognitive debriefing through pilot testing among Filipino caregivers of children with ASD, who provided feedback on the clarity, comprehensibility, and cultural appropriateness of the items. Based on this feedback, final refinements were made to produce the validated Filipino version of the questionnaire. Items on the BAMBI are rated on a 1–5 Likert scale (1 = "Never" to 5 = "Always"), with selected items reverse-scored to minimize response bias.

The three domains assessed by BAMBI include Limited Variety, which measures a child's reluctance to try new foods or respond to changes in food preparation (e.g., items 10, 11, 13, 14, 15, 16, 17, 18). Food Refusal captures instances when a child outright rejects food (e.g., items 1, 2, 4, 7, 8), and Features of Autism focuses on autism-specific behaviors that may occur during meals (e.g., items 3, 5, 6, 9, 12).

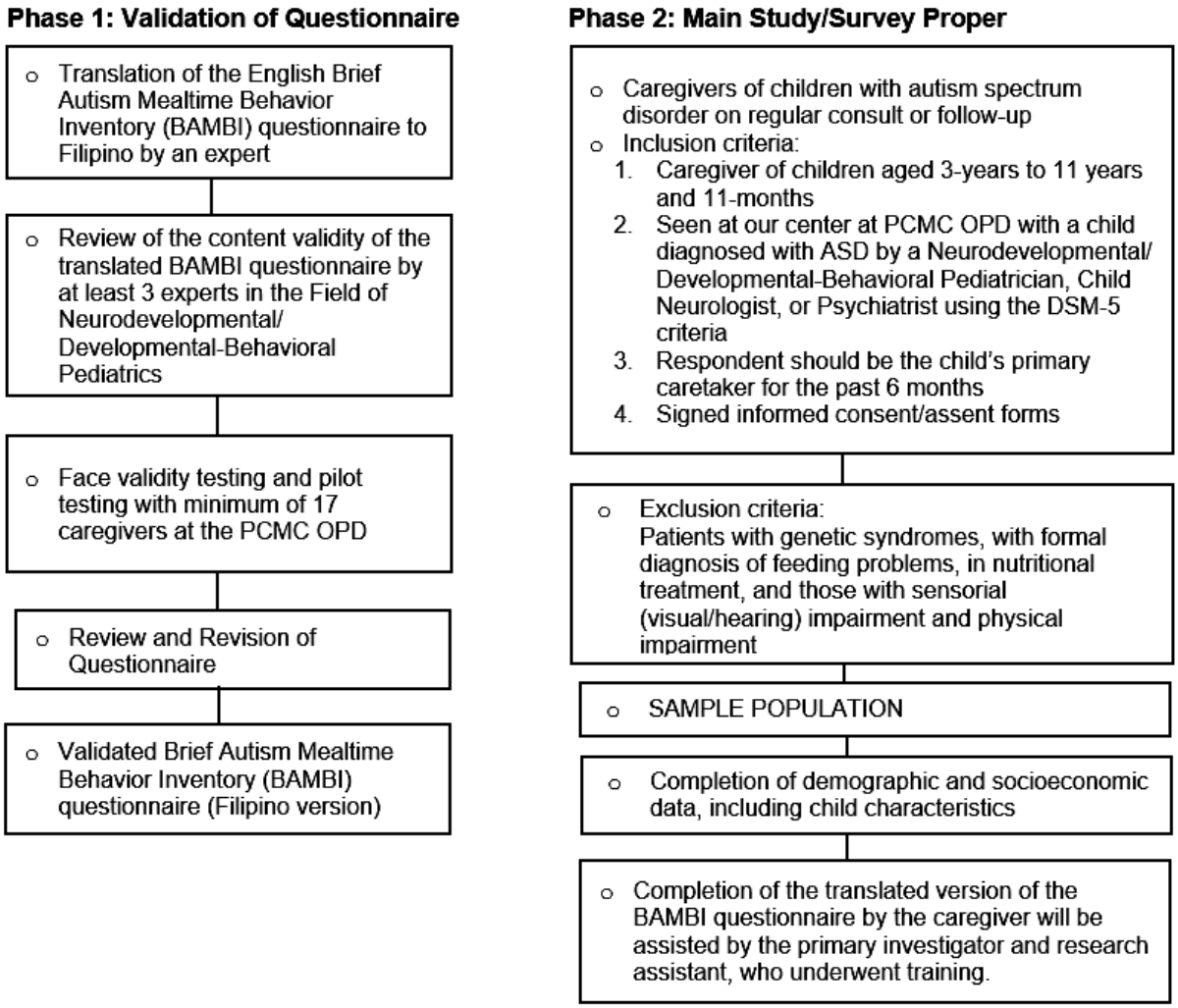
The BAMBI questionnaire has been validated in several languages, consistently showing good internal consistency, with Cronbach's alpha scores ranging from 0.71 to 0.86. The Filipino version aimed to meet similar standards through the validation process outlined below. Currently, there are no established cutoff scores for the three subdomains of the BAMBI questionnaire, which assess limited variety, food refusal, and features of autism. For this study, a suggested overall cutoff score of 34 for clinical use [21] was utilized to identify children with ASD who exhibit significant feeding difficulties and problematic mealtime behaviors.

To ensure the relevance and clarity of the translated BAMBI, the Content Validity Index (CVI) was used to assess agreement among three neurodevelopmental pediatric experts. While the use of five or more experts is generally recommended for content validation, three experts were consulted for this study based on their experience and expertise in the assessment and management of children with ASD. A CVI threshold of 0.99 was used to determine strong agreement, ensuring that the tool was adequately evaluated for its ability to capture important aspects of mealtime behaviors among children with ASD. Future studies may consider involving a larger panel of experts to further enhance the validation process.

For face validity, a group of 17 caregivers of children with ASD was asked to review the translated questionnaire. These caregivers provided feedback on the clarity and cultural relevance of the items, helping to refine the tool for use in the main study.

Finally, to assess the internal consistency of the Filipino BAMBI, Cronbach's alpha was calculated using data from the pilot group of 17 participants. This measure of reliability ensured that the translated tool met the required standards for use in research settings.

Figure 1. Flowchart of Research Methodology



Data analysis involved summarizing the clinical characteristics of the participants using descriptive statistics. Continuous demographic data were presented as means and standard deviations, while categorical data were reported as frequencies and percentages. The BAMBI scores were also presented as means and standard deviations for each Likert scale item, and frequencies and percentages for items that were answerable by "yes" or "no." Additionally, BAMBI scores were categorized into binary data using a cut-off score of > 34. The cut-off score of 34 for categorizing problematic mealtime behavior was adopted based on the study by DeMand (2015)[21], who explored the factor structure of the BAMBI and recommended this threshold for clinical use. While no established cut-off scores exist for the three subdomains of the BAMBI (limited variety, food refusal, and features of autism), the overall BAMBI score was utilized in this study to identify children

with ASD who exhibit significant feeding difficulties and problematic mealtime behaviors. However, the limitations of relying on this cut-off were acknowledged, as incorrect thresholds could introduce exposure misclassification bias. Despite this, the use of this validated cut-off score enhanced the study's ability to identify clinically relevant feeding difficulties in this population.

To determine the factors associated with BAMBI scores (categorized as Poor/ Good Mealtime Behavior), univariate and multivariate logistic regression analyses were applied. Only variables from the univariate analysis with a p-value of <0.20 were included in the multivariate regression. The level of significance was set at 5%.

Content validity and face validity of the translated questionnaire were assessed as outlined above. Test-retest reliability was not performed, as internal consistency (measured using Cronbach's alpha) was deemed sufficient for the purposes of this study, particularly since the questionnaire was only translated and not newly developed. All valid data were included in the analysis, and no missing variables were replaced or estimated.

To address self-selection and reporting biases, participants were recruited from the Neurodevelopmental Pediatrics OPD, with efforts made to ensure a diverse sample from various socio-economic backgrounds. While participation was voluntary, it is acknowledged that caregivers who chose to participate may have had a particular interest in mealtime behaviors, introducing potential self-selection bias. To minimize reporting bias, caregivers were provided clear instructions for completing the BAMBI questionnaire, which was also translated into Filipino to ensure cultural relevance and understanding. Despite these efforts, limitations remain due to the nature of self-reported data.

This study adhered to stringent ethical guidelines to safeguard the rights and well-being of participants. It received review and approval from the Philippine Children's Medical Center Institutional Research and Ethics Committee (IRB-EC) prior to commencement. In addition, full compliance with the Data Privacy Act was ensured, guaranteeing the protection of participants' personal information. Confidentiality of all data collected was strictly maintained, with access limited to the primary investigator, co-investigator, and research assistant. Informed consent was obtained from the caregivers of children diagnosed with Autism after being fully briefed on the study's objectives. Participation was voluntary, with no payment provided. In case of life-threatening events or injury, the investigator retained the authority to withdraw participants to ensure their safety, and participants had the right to withdraw at any

time without affecting their access to further services. Caregivers will be given access to the study results, along with appropriate recommendations from the primary investigator. All key personnel involved in the study completed Good Clinical Practice (GCP) training. There were no conflicts of interest declared by the investigator or research team, ensuring transparency and integrity throughout the study.

RESULTS

Validation Results

The Content Validity Analysis was conducted by three neurodevelopmental pediatricians, 18 items from the mealtime behavior questionnaire were assessed for relevance. Each item was rated using a four-point Likert scale. The content validity was quantified using the Item-Content Validity Index (I-CVI) and the Scale-Content Validity Index (S-CVI), which measure the degree to which the items and the overall scale are judged as relevant by the experts.

Each item received a CVI score of 1.0, indicating full agreement among the experts regarding the relevance of all 18 items. The overall I-CVI of 100% signifies that all the individual items met the established criteria for relevance. Similarly, the S-CVI of 1.0 indicates that the entire scale achieved excellent content validity. (Table Appendix A.1) These results suggested that all items within the instrument were deemed valid by the expert reviewers and should be retained for further use. No revisions to the items were recommended, as the current version of the questionnaire demonstrated strong alignment with the intended content validity criteria.

For face validity, 17 caregivers of children with ASD were engaged to review the translated questionnaire. Their feedback focused on the clarity and cultural relevance of the items, enabling the research team to refine the instrument appropriately for use in the main study.

To evaluate the internal consistency of the Filipino BAMBI, Cronbach's alpha was computed using data collected from the pilot group of 17 participants. The resulting Cronbach's alpha of 0.7505 indicated an acceptable level of internal consistency for the research instrument, suggesting that the items within the questionnaire reliably measure the intended constructs. While a Cronbach's alpha of 0.80 is generally considered ideal for good internal consistency, the value of 0.7505 is still within an acceptable range, demonstrating sufficient reliability for the instrument's use. Moreover, the 95% lower confidence limit of 0.7020 further supports the instrument's reliability, meeting the necessary standards for use in research settings (Table Appendix B.1).

An analysis of the effect of dropping individual variables revealed that removing any of the 18 attributes did not lead to a

significant increase in reliability. Specifically, the change in Cronbach's alpha for each attribute demonstrated that none contributed to a noteworthy enhancement in the internal consistency of the questionnaire. For instance, removing Question 1 (Q1) resulted in a decrease of 0.01894 in alpha, while Question 15 (Q15) increased it by only 0.01688. Consequently, it was concluded that all items should remain intact within the instrument. Overall, the findings affirm that the Filipino BAMBI is a reliable tool for assessing problematic mealtime behaviors in children with ASD.

Results of Survey Proper

This first table outlines the socio-demographic and clinical characteristics of the study participants, providing detailed insights into their age, gender, birth order, case status, and severity levels of ASD among others. (Table 1.A) The computed minimum sample size for this study was 156, but a total of 166 caregiver respondents were included, providing a sufficient sample size for the analysis. Many of the respondents had children aged 3 to 5 years and 11 months (46.4%), followed by those aged 6 years to 8 years and 11 months (31.9%). Majority of the patients were male (77.1%), and the distribution between new (51.2%) and follow-up cases (48.8%) was nearly equal. Notably, 47.6% of the children were first-born or the only child. The severity of ASD was predominantly categorized as Level 3 for both social communication (52.9%) and restrictive repetitive behaviors (51%).

Additionally, a significant portion of the patients, 75.3%, exhibited accompanying language impairment, while 44.4% had intellectual impairment. Sensory sensitivities were observed in 68.7% of the children, with auditory (21.7%) and taste (17.5%) sensitivities being the top two most common; and 25.5% had co-morbid conditions, with 16.3% diagnosed with ADHD, 7.1% with epilepsy, and 2.1% with low vision or refractive errors.

Regarding dietary habits, 71.1% of the children typically consumed three meals a day, while 5.4% reported eating only once daily. The most common number of snacks consumed per day was two (56.6%), while 12.7% had only one. In terms of therapy, 59% of the children underwent occupational therapy, and 38.6% participated in speech and language therapy. Only 6% had received physical therapy, and 24.7% were not enrolled in any educational program. Among those in educational settings, 36.7% attended special education (SPED) programs, while 38.6% were enrolled in regular schools, with programs that may be adapted or designed to be inclusive. Children taking medication as supplements comprised 15.7%.

Most caregivers were aged 31 to 40 years (47%), followed by 27.1% aged 41 to 50 years. Most caregivers were female (94%),

primarily mothers (82.5%). The primary caregiver was often both the mother and their partner (44%), while 38.6% identified as the sole caregiver. Regarding the duration of direct care, 92.8% reported caring for their child for more than 36 months. In terms of educational attainment, 32.5% of caregivers were college graduates, while 24.7% completed high school. Employment status indicated that 57.2% were unemployed, and 28.9% were employed. The monthly family income primarily fell between 10,000 to 20,000 PHP (30.3%) or less than 10,000 PHP (28.9%). Typically, one parent was employed (65.1%), and 38.6% of households had three or more children.

Table 1.A. Description of the Study Population- Caregivers and Children with ASD

	All
Variables	**n = 166**
Age of Child	
3 to 5 years and 11 months old	77 (46.4)
6 years to 8 years and 11 months old	53 (31.9)
9 years to 11 years and 11 months old	36 (21.7)
Gender of child	
Male	128 (77.1)
Female	38 (22.9)
Classification	
New	85 (51.2)
Follow-up	81 (48.8)
Birth Order	
First born/ only child	79 (47.6)
Second born	42 (25.3)
Third born or greater	45 (27.1)
Autism Spectrum Disorder Level In Social Communication	
Level 1	23 (14.6)
Level 2	51 (32.5)
Level 3	83 (52.9)
Autism Spectrum Disorder Level In Restrictive Repetitive Behaviors	
Level 1	24 (15.3)
Level 2	53 (33.8)
Level 3	80 (51)
With Accompanying Language Impairment	
Yes	122 (75.3)
No	40 (24.7)
With Accompanying Intellectual Impairment	
Yes	71 (44.4)
No	89 (55.6)
Child shows sensitivity to different sensory inputs	
Yes	114 (68.7)
No	52 (31.3)

Co-morbid conditions	
With Comorbid	36 (25.5)
ADHD	23 (16.3)
Epilepsy	10 (7.1)
Cerebral Palsy	1 (0.7)
Visual Impairment	3 (2.1)
Number of Meals a day	
One	9 (5.4)
Two	9 (5.4)
Three	118 (71.1)
More than 3	30 (18.1)
Number of snacks a day	
One	21 (12.7)
Two	94 (56.6)
Three	25 (15.1)
More than 3	26 (15.7)
Underwent Occupational Therapy (OT)	
Yes	98 (59)
No	68 (41)
Underwent Speech and Language Therapy (ST)	
Yes	64 (38.6)
No	102 (61.4)
Underwent Physical Therapy (PT)	
Yes	10 (6)
No	156 (94)
Educational Program Enrolled in	
Not Enrolled	41 (24.7)
SPED School	61 (36.7)
Regular School	64 (38.6)
Child is on medication	
Yes	26 (15.7)
No	140 (84.3)
Age of caregiver	
20 to 30 years old	33 (19.9)
31 to 40 years old	78 (47)
41 to 50 years old	45 (27.1)
51 to 60 years old	9 (5.4)
More than 60 years old	1 (0.6)
Gender of the caregiver	
Male	10 (6)
Female	156 (94)
Relationship to child	
Mother	137 (82.5)
Father	7 (4.2)
Others	22 (13.3)

Primary caregiver	
Myself	64 (38.6)
Myself and Partner	73 (44)
Other family members	22 (13.3)
Others/Guardian	3 (1.8)
Yaya/Helper	4 (2.4)
Duration of Direct Care of Child	
6-12 months	5 (3)
13-24 months	2 (1.2)
25-36 months	5 (3)
More than 36 months	154 (92.8)
Marital Status	
Married	99 (59.6)
Common-law	25 (15.1)
Widowed/Separated	13 (7.8)
Others	29 (17.5)
Educational attainment	
Elementary Undergraduate	1 (0.6)
Elementary Graduate	1 (0.6)
High School Undergraduate	10 (6)
High School Graduate	41 (24.7)
Vocational	16 (9.6)
Vocational Undergraduate	4 (2.4)
College Undergraduate	25 (15.1)
College Graduate	54 (32.5)
Post-graduate	14 (8.4)
Employment status	
Unemployed	95 (57.2)
Employed	48 (28.9)
Self-employed	23 (13.9)
Monthly Family Income	
< P10,000	41 (28.9)
P 10,000 - 20,000	43 (30.3)
P20,000 - 30,000	26 (18.3)
P30,000 - 40,000	6 (4.2)
P40,000 – 50,000	7 (4.9)
P50,000 - 60,400	1 (0.7)
> P60,000	18 (12.7)
Number of parents working	
None	13 (7.8)
One	108 (65.1)
Two	45 (27.1)
Number of children in the household	
None	1 (0.6)
One	52 (31.3)
Two	49 (29.5)
Three or more	64 (38.6)

Factors Associated with Problematic Mealtime Behaviors

The proportion of children with a BAM-BI score >34, indicating problematic mealtime behaviors, was 128 out of 166 (77.1%). Table 1.B. and Table 4 show that child sensitivity to sensory stimuli was a significant factor (p=0.0057), with children who exhibit sensory sensitivities being 2.88 times more likely to have problematic mealtime behaviors (95% CI: 1.4 to 6.1) compared to those without sensitivities. Other factors were not statistically significant, although the child's gender approached significance (p=0.0620), with males being 2.14 times more likely (95% CI: 1.0 to 4.8) to display problematic behaviors. Similarly, several additional factors were examined for their potential association with mealtime behaviors, including the number of snacks consumed per day, enrollment in a SPED program, caregiver educational attainment, and family structure. Although these factors did not achieve statistical significance, they were included in the multivariate analysis (Table 5) to enhance understanding of the variables influencing mealtime behaviors in children. This broader exploration allows for consideration of potential influences that may inform future

Table 1.B. Overall number with poor/good mealtime behavior based on BAMBI cut-off score

	BAMBI Score	
	> 34	**≤ 34**
Variables	**128**	**38**
Age of Child		
3 to 5 years and 11 months old	63 (49.2)	14 (36.8)
6 years to 8 years and 11 months old	39 (30.5)	14 (36.8)
9 years to 11 years and 11 months old	26 (20.3)	10 (26.3)
Gender of child		
Male	103 (80.5)	25 (65.8)
Female	25 (19.5)	13 (34.2)
Classification		
New	63 (49.2)	22 (57.9)
Follow-up	65 (50.8)	16 (42.1)
Birth Order		
First born/ only child	62 (48.4)	17 (44.7)
Second born	31 (24.2)	11 (28.9)
Third born or greater	35 (27.3)	10 (26.3)
Autism Spectrum Disorder Level In Social Communication		
Level 1	17 (14.2)	6 (16.2)
Level 2	37 (30.8)	14 (37.8)
Level 3	66 (55)	17 (45.9)
Autism Spectrum Disorder Level In Restrictive Repetitive Behaviors		
Level 1	16 (13.3)	8 (21.6)
Level 2	40 (33.3)	13 (35.1)
Level 3	64 (53.3)	16 (43.2)

With Accompanying Language Impairment		
Yes	93 (75)	29 (76.3)
No	31 (25)	9 (23.7)
With Accompanying Intellectual Impairment		
Yes	53 (43.1)	18 (48.6)
No	70 (56.9)	19 (51.4)
Child shows sensitivity to different sensory inputs		
Yes	95 (74.2)	19 (50)
No	33 (25.8)	19 (50)
Co-morbid conditions		
With Comorbid	27 (25.2)	9 (26.5)
ADHD	18 (16.8)	5 (14.7)
Epilepsy	6 (5.6)	4 (11.8)
Cerebral Palsy	1 (0.9)	0 (0)
Visual Impairment	3 (2.8)	0 (0)
Number of Meals a day		
One	8 (6.3)	1 (2.6)
Two	9 (7)	0 (0)
Three	89 (69.5)	29 (76.3)
More than 3	22 (17.2)	8 (21.1)
Number of snacks a day		
One	16 (12.5)	5 (13.2)
Two	69 (53.9)	25 (65.8)
Three	19 (14.8)	6 (15.8)
More than 3	24 (18.8)	2 (5.3)
Underwent Occupational Therapy (OT)		
Yes	74 (57.8)	24 (63.2)
No	54 (42.2)	14 (36.8)
Underwent Speech and Language Therapy (ST)		
Yes	52 (40.6)	12 (31.6)
No	76 (59.4)	26 (68.4)
Underwent Physical Therapy (PT)		
Yes	8 (6.3)	2 (5.3)
No	120 (93.8)	36 (94.7)
Educational Program Enrolled in		
Not Enrolled	29 (22.7)	12 (31.6)
SPED School	51 (39.8)	10 (26.3)
Regular School	48 (37.5)	16 (42.1)
Child is on medication		
Yes	20 (15.6)	6 (15.8)
No	108 (84.4)	32 (84.2)
Age of caregiver		
20 to 30 years old	28 (21.9)	5 (13.2)
31 to 40 years old	59 (46.1)	19 (50)
41 to 50 years old	33 (25.8)	12 (31.6)
51 to 60 years old	7 (5.5)	2 (5.3)
More than 60 years old	1 (0.8)	0 (0)
Gender of the caregiver		
Male	8 (6.3)	2 (5.3)
Female	120 (93.8)	36 (94.7)

Relationship to child		
Mother	106 (82.8)	31 (81.6)
Father	5 (3.9)	2 (5.3)
Others	17 (13.3)	5 (13.2)
Primary caregiver		
Myself	50 (39.1)	14 (36.8)
Myself and Partner	57 (44.5)	16 (42.1)
Other family members	16 (12.5)	6 (15.8)
Others/Guardian	2 (1.6)	1 (2.6)
Yaya/Helper	3 (2.3)	1 (2.6)
Duration of Direct Care of Child		
6-12 months	3 (2.3)	2 (5.3)
13-24 months	2 (1.6)	0 (0)
25-36 months	3 (2.3)	2 (5.3)
More than 36 months	120 (93.8)	34 (89.5)
Marital Status		
Married	75 (58.6)	24 (63.2)
Common-law	20 (15.6)	5 (13.2)
Widowed/Separated	10 (7.8)	3 (7.9)
Others	23 (18)	6 (15.8)
Educational attainment		
Elementary Undergraduate	0 (0)	1 (2.6)
Elementary Graduate	0 (0)	1 (2.6)
High School Undergraduate	7 (5.5)	3 (7.9)
High School Graduate	33 (25.8)	8 (21.1)
Vocational	11 (8.6)	5 (13.2)
Vocational Undergraduate	2 (1.6)	2 (5.3)
College Undergraduate	20 (15.6)	5 (13.2)
College Graduate	44 (34.4)	10 (26.3)
Post-graduate	11 (8.6)	3 (7.9)
Employment status		
Unemployed	74 (57.8)	21 (55.3)
Employed	35 (27.3)	13 (34.2)
Self-employed	19 (14.8)	4 (10.5)
Monthly Family Income		
< P10,000	34 (30.4)	7 (23.3)
P 10,000 - 20,000	34 (30.4)	9 (30)
P20,000 - 30,000	19 (17)	7 (23.3)
P30,000 - 40,000	4 (3.6)	2 (6.7)
P40,000 – 50,000	5 (4.5)	2 (6.7)
P50,000 - 60,400	1 (0.9)	0 (0)
> P60,000	15 (13.4)	3 (10)
Number of parents working		
None	11 (8.6)	2 (5.3)
One	82 (64.1)	26 (68.4)
Two	35 (27.3)	10 (26.3)
Number of children in the household		
None	1 (0.8)	0 (0)
One	44 (34.4)	8 (21.1)
Two	33 (25.8)	16 (42.1)
Three or more	50 (39.1)	14 (36.8)

Analysis of BAMBI Questionnaire Attributes

The findings from the BAMBI questionnaire reveal insights into children's eating behaviors, particularly regarding food refusal and limited variety. The attribute associated with food refusal that recorded the highest mean score of 1.96 (out of a maximum score of 5.0) pertains to the tendency of children to expel food they have eaten. In terms of autism-related attributes, the most frequently noted negative behavior, with a mean score of 2.22, highlights children's refusal to eat foods requiring substantial chewing. Conversely, positive attributes showed higher mean scores, such as 3.06 for "My child remains seated at the table until the meal is finished" and 3.31 for "My child is flexible about mealtime routines." Regarding limited variety, the most significant negative attribute is reflected in a mean score of 3.38 for children disliking certain foods and refusing to eat them.

Table 2. Mean Scores of BAMBI Questionnaire Attributes

	Mean	**SD**
Food Refusal		
My child cries or screams during mealtimes (Umiiyak o sumisigaw ang aking anak tuwing oras ng pagkain.)	1.50	0.91
My child turns his/her face or body away from food (Inilalayo ng aking anak ang kaniyang mukha o katawan sa pagkain.)	1.82	1.12
My child expels (spits out) food that he/she has eaten (Iniluluwa ng aking anak ang pagkaing kaniyang kinain.)	1.96	1.12
My child is disruptive during mealtimes (Nakakaabala ang aking anak tuwing oras ng pagkain (itinutulak/itinatapon ang kagamitan, pagkain)	1.46	0.94
My child closes his/her mouth tightly when food is presented (Mahigpit na isinasara ng aking anak ang kaniyang bibig kapag may ipinakiki-tang pagkain.)	1.74	1.15
Features of Autism		
My child remains seated at the table until the meal is finished* (Nananatiling nakaupo sa mesa ang aking anak hanggang sa matapos ang oras ng pagkain.)	3.06	1.40
My child is aggressive during mealtimes (Agresibo ang aking anak tuwing oras ng pagkain (nananakit, naninipa, nangangalmot ng iba)	1.34	0.84
My child displays self-injurious behavior during mealtimes (Nakasasakit sa sarili ang aking anak habang oras ng pagkain (sinasaktan ang sarili, kinakagat ang sarili).)	1.25	0.82
My child is flexible about mealtime routines* (Kayang umangkop ng aking anak pagdating sa mga nakasanayang paraan ng pagkain (hal. oras ng pagkain, puwesto kung saan kumakain, pagkakaay-os ng lugar).)	3.31	1.45

My child refuses to eat foods that require a lot of chewing (Tumatanggi ang aking anak na kumain ng pagkaing nangangailangan ng maraming pagnguya (hal. kumakain lamang ng malambot o kinatas na pagkain).)	2.22	1.20
Limited Variety		
My child is willing to try new foods* (Handang sumubok ang aking anak ng bagong pagkain.)	2.76	1.27
My child dislikes certain foods and won't eat them (May mga inaayawang partikular na pagkain ang aking anak at hindi niya ito kakainin.)	3.38	1.20
My child prefers the same foods at each meal (Mas gusto ng aking anak ng parehong pagkain sa bawat oras ng pagkain.)	2.67	1.40
My child prefers "crunchy" foods (Mas gusto ng aking anak ng malulutong na pagkain (hal. meryenda, biskwit).)	2.96	1.37
My child accepts or prefers a variety of foods* (Tumatanggap o mas gusto ng aking anak ng iba't ibang pagkain.)	2.87	1.31
My child prefers to have food served in a particular way (Mas gusto ng aking anak na maghain ng pagkain sa isang particular na paraan.)	2.34	1.29
My child prefers only sweet foods (Mas gusto lang ng aking anak ng matatamis na pagkain (hal. kendi, matatamis na cereal).)	2.46	1.24
My child prefers food prepared in a particular way (Mas gusto ng aking anak ang pagkaing nakahanda sa partikular na paraan (hal. halos piniritong pagkain ang kinakain, malamig na cereal, hilaw na gulay).)	2.57	1.41

Note: Attributes marked with an asterisk (*) are reversely scored and represent positive attributes.

Perceived Problematic Attributes Related to Food Refusal, Autism-related Features, and Limited Variety

The findings regarding participants' perceptions of problematic attributes related to food refusal, features of autism, and limited variety are summarized in Table 3. Among the food refusal attributes, the most identified problem is related to the expulsion of food that the child has already eaten, with 29.5% of respondents indicating this as an issue. For autism-related features, difficulties with flexibility in mealtime routines were the most frequently cited, affecting 42.8% of families. In the domain of limited variety, the leading concern was the child's aversion to specific foods, reported by 69.9% of respondents. These findings suggest that issues related to food refusal, rigidity in mealtime routines, and limited food preferences are prominent concerns among caregivers, highlighting the need for targeted interventions that address both behavioral and sensory-related mealtime challenges in children with autism.

Table 3. Proportion of Participants Identifying Attributes as Problematic in the BAMBI Questionnaire

	n	%
Food Refusal		
My child cries or screams during mealtimes (Umiiyak o sumisigaw ang aking anak tuwing oras ng pagkain.)	29	17.5
My child turns his/her face or body away from food (Inilalayo ng aking anak ang kaniyang mukha o katawan sa pagkain.)	41	24.7
My child expels (spits out) food that he/she has eaten (Iniluluwa ng aking anak ang pagkaing kaniyang kinain.)	49	29.5
My child is disruptive during mealtimes (Nakakaabala ang aking anak tuwing oras ng pagkain (itinutulak/itinatapon ang kagamitan, pagkain).)	34	20.5
My child closes his/her mouth tightly when food is presented (Mahigpit na isinasara ng aking anak ang kaniyang bibig kapag may ipinakikitang pagkain.)	39	23.5
Features of Autism		
My child remains seated at the table until the meal is finished* (Nananatiling nakaupo sa mesa ang aking anak hanggang sa matapos ang oras ng pagkain.)	59	35.5
My child is aggressive during mealtimes (Agresibo ang aking anak tuwing oras ng pagkain (nananakit, naninipa, nangangalmot ng iba)	24	14.5
My child displays self-injurious behavior during mealtimes (Nakasasakit sa sarili ang aking anak habang oras ng pagkain (sinasaktan ang sarili, kinakagat ang sarili).)	21	12.7
My child is flexible about mealtime routines* (Kayang umangkop ng aking anak pagdating sa mga nakasanayang paraan ng pagkain (hal. oras ng pagkain, puwesto kung saan kumakain, pagkakaayos ng lugar).)	71	42.8
My child refuses to eat foods that require a lot of chewing (Tumatanggi ang aking anak na kumain ng pagkaing nangangailangan ng maraming pagnguya (hal. kumakain lamang ng malambot o kinatas na pagkain).)	58	34.9
Limited Variety		
My child is willing to try new foods* (Handang sumubok ang aking anak ng bagong pagkain.)	84	50.6
My child dislikes certain foods and won't eat them (May mga inaayawang partikular na pagkain ang aking anak at hindi niya ito kakainin.)	116	69.9
My child prefers the same foods at each meal (Mas gusto ng aking anak ng parehong pagkain sa bawat oras ng pagkain.)	74	44.6
My child prefers "crunchy" foods (Mas gusto ng aking anak ng malulutong na pagkain (hal. meryenda, biskwit).)	75	45.2
My child accepts or prefers a variety of foods* (Tumatanggap o mas gusto ng aking anak ng iba't ibang pagkain.)	70	42.2
My child prefers to have food served in a particular way (Mas gusto ng aking anak na maghain ng pagkain sa isang particular na paraan.)	57	34.3
My child prefers only sweet foods (Mas gusto lang ng aking anak ng matatamis na pagkain (hal. kendi, matatamis na cereal).)	70	42.2
My child prefers food prepared in a particular way (Mas gusto ng aking anak ang pagkaing nakahanda sa partikular na paraan (hal. halos piniritong pagkain ang kinakain, malamig na cereal, hilaw na gulay).)	75	45.2

Multivariate Analysis of Factors Associated with Problematic Mealtime Behaviors

Table 5 presents the results of the multivariate logistic regression analysis, which includes variables with a potential impact on problematic mealtime behaviors ($p < 0.20$). The analysis revealed that sensory sensitivity, characterized by an increased reaction to sensory stimuli leading to discomfort or aversion to certain sounds, textures, tastes, or lights, remains the only statistically significant factor. Children who exhibited sensory sensitivities were 3.0 times more likely to display problematic mealtime behaviors (OR = 3.0, 95% CI: 1.2 to 7.3, p = 0.0150) compared to those without such sensitivities. Other factors, such as number of snacks consumed and sibling status, showed a notable trend toward higher odds of problematic mealtime behaviors, and were retained in the model for their potential relevance. However, variables like the child's gender, number of meals per day, and educational program enrolled in did not appear to be significant in either the univariate or multivariate analysis but were included in the model to enhance the overall understanding of the variables influencing mealtime behaviors.

Table 4. Univariate Analysis of Factors Associated with Problematic Mealtime Behaviors (BAMBI Score >34)

	Univariate		
	Crude OR	**95% CI**	**p value**
Variables			
Age of Child			
3 to 5 years and 11 months old	1.73	0.7 to 4.4	0.2483
6 years to 8 years and 11 months old	1.07	0.4 to 2.8	0.8870
9 years to 11 years and 11 months old	Reference		
Gender of child			
Male	2.14	1.0 to 4.8	0.0620
Female	Reference		
Classification			
New	Reference		
Follow-up	1.42	0.7 to 2.9	0.3486
Birth Order			
First born/ only child	Reference		
Second born	0.77	0.3 to 1.8	0.5624
Third born or greater	0.96	0.4 to 2.3	0.9273

Autism Spectrum Disorder Level In Social Communication			
Level 1		Reference	
Level 2	0.93	0.3 to 2.8	0.9027
Level 3	1.37	0.5 to 4.0	0.5649
Autism Spectrum Disorder Level In Restrictive Repetitive Behaviors			
Level 1		Reference	
Level 2	1.45	0.5 to 4.1	0.4886
Level 3	1.88	0.7 to 5.1	0.2165
With Accompanying Language Impairment			
Yes	0.93	0.4 to 2.2	0.8693
No		Reference	
With Accompanying Intellectual Impairment			
Yes	0.8	0.4 to 1.7	0.5511
No		Reference	
Child shows sensitivity to different sensory inputs			
Yes	2.88	1.4 to 6.1	0.0057
No		Reference	
Co-morbid conditions			
With Comorbid	0.94	0.4 to 2.3	0.8854
ADHD	1.17	0.4 to 3.4	0.7712
Epilepsy	0.45	0.1 to 1.7	0.2332
Cerebral Palsy	-	-	1.0000
Visual Impairment	-	-	1.0000
Number of Meals a day			
One	6.18	0.7 to 54.3	0.1004
Two			
Three	1.12	0.4 to 2.8	0.8134
More than 3		Reference	
Number of snacks a day			
One		Reference	
Two	0.86	0.3 to 2.6	0.7928
Three	0.99	0.3 to 3.9	0.9880
More than 3	3.75	0.6 to 21.7	0.1405
Underwent Occupational Therapy (OT)			
Yes	0.8	0.4 to 1.7	0.5567
No		Reference	
Underwent Speech and Language Therapy (ST)			
Yes	1.48	0.7 to 3.2	0.3160
No		Reference	
Underwent Physical Therapy (PT)			
Yes	1.20	0.2 to 5.9	0.8226
No		Reference	
Educational Program Enrolled in			
Not Enrolled		Reference	
SPED School	2.11	0.8 to 5.5	0.1253
Regular School	1.24	0.5 to 3.0	0.6297
Child is on medication			
Yes	0.99	0.4 to 2.7	0.9805
No		Reference	

Age of caregiver			
20 to 30 years old	Reference		
31 to 40 years old	0.55	0.2 to 1.6	0.2859
41 to 50 years old	0.49	0.2 to 1.6	0.2289
51 to 60 years old	0.71	0.12 to 4.4	0.7168
More than 60 years old			
Gender of the caregiver			
Male	1.2	0.2 to 5.9	0.8226
Female	Reference		
Relationship to child			
Mother	Reference		
Father	0.73	0.1 to 4.0	0.7161
Others	0.99	0.3 to 2.9	0.9917
Primary caregiver			
Myself	Reference		
Myself and Partner	0.998	0.4 to 2.2	0.9952
Other family members	0.75	0.2 to 2.3	0.6059
Others/Guardian	0.56	0.0 to 6.6	0.6458
Yaya/Helper	0.84	0.1 to 8.7	0.8839
Duration of Direct Care of Child			
6-12 months	Reference		
13-24 months			
25-36 months	0.6	0.1 to 6.8	0.6800
More than 36 months	1.41	0.3 to 7.6	0.6881
Marital Status			
Married	Reference		
Common-law	1.28	1.3 to 3.8	0.6549
Widowed/Separated	1.07	0.3 to 4.2	0.9264
Others	1.23	0.4 to 3.4	0.6915
Educational attainment			
Elementary Undergraduate	Reference		
Elementary Graduate			
High School Undergraduate			
High School Graduate	2.95	0.7 to 11.8	0.1258
Vocational	1.57	0.3 to 7.5	0.5702
Vocational Undergraduate	0.71	0.1 to 6.9	0.7715
College Undergraduate	2.86	0.6 to 13.0	0.1727
College Graduate	3.14	0.8 to 12.0	0.0933
Post-graduate	2.62	0.5 to 14.6	0.2716
Employment status			
Unemployed	Reference		
Employed	0.76	0.3 to 1.7	0.5097
Self-employed	1.35	0.4 to 4.4	0.6205
Monthly Family Income			
< P10,000	Reference		
P 10,000 - 20,000	0.78	0.3 to 2.3	0.6532
P20,000 - 30,000	0.56	0.2 to 1.8	0.3373
P30,000 - 40,000	0.41	0.1 to 2.7	0.3555
P40,000 – 50,000	0.51	0.1 to 3.2	0.4770
P50,000 - 60,400	1.1	0.3 to 4.8	0.9012
> P60,000			

Number of parents working			
None	Reference		
One	0.57	0.1 to 2.8	0.4875
Two	0.64	0.1 to 3.4	0.5941
Number of children in the household			
None	2.03	0.9 to 4.8	0.1059
One			
Two	Reference		
Three or more			

Table 5. Multivariate Logistic Regression Analysis of Factors Associated with Problematic Mealtime Behaviors (BAMBI Score >34)

	Multivariate		
Factors	**Adjusted OR**	**95% CI**	**p val-ue**
Gender of child			
Male	1.76	0.7 to 4.4	0.2279
Female	Reference		
Child shows sensitivity to different sensory			
Yes	3	1.2 to 7.3	0.0150
No	Reference		
Number of Meals a day			
One	6.85	0.6 to 73.3	0.1113
Two			
Three	1.29	0.4 to 3.8	0.6461
More than 3	Reference		
Number of snacks a day			
One	Reference		
Two	1.46	0.4 to 5.1	0.5561
Three	1.32	0.3 to 6.2	0.7280
More than 3	6.3	0.8 to 46.9	0.0722
Educational Program Enrolled in			
Not Enrolled	Reference		
SPED School	1.87	0.6 to 5.4	0.2484
Regular School	1.37	0.5 to 3.7	0.5410
Educational attainment			
Elementary Undergraduate	Reference		
Elementary Graduate			
High School Undergraduate			
High School Graduate	2.18	0.5 to 9.9	0.3096
Vocational	0.78	0.1 to 4.6	0.7806
Vocational Undergraduate	0.34	0.0 to 6.4	0.4738
College Undergraduate	1.67	0.3 to 8.8	0.5478
College Graduate	1.58	0.4 to 7.0	0.5447
Post-graduate	1.57	0.2 to 11.0	0.6508
Number of children in the household			
None	2.33	0.9 to 6.1	0.0856
One			
Two	Reference		
Three or more			

Discussion

The most critical finding of this study is the significant association between sensory sensitivity and problematic mealtime behaviors among Filipino children aged 3 to 11 years diagnosed with ASD. Specifically, children exhibiting sensory sensitivities were found to be 3.0 times more likely to display problematic mealtime behaviors, characterized by difficulties such as food refusal, limited variety in food choices, and challenges during mealtime routines, compared to those without such sensitivities. This highlights the substantial impact that sensory processing difficulties have on the eating experiences of children with ASD.

In addition to sensory sensitivities, other factors approached statistical significance, indicating potential associations with mealtime behaviors. For example, children consuming more than three snacks daily showed a notable trend towards higher odds of problematic mealtime behaviors, and being an only child or having no siblings was associated with problematic mealtime behaviors, hinting at how family structure might influence eating patterns and behaviors. This suggests that the dynamics of family structure, such as the absence of siblings, may lead to more individualized attention during mealtimes, potentially reinforcing problematic eating behaviors as children may feel less social pressure to conform to shared family mealtime practices. Although these factors did not reach statistical significance, their proximity to significance underscores the need for further investigation to explore their potential relevance in understanding mealtime behaviors among children with ASD.

Conversely, variables such as the child's gender, number of meals per day, and enrollment in educational programs did not show significant associations with problematic mealtime behaviors. This raises questions about their influence; for example, while some studies highlight gender differences, it may not account for variability in mealtime behaviors among children with ASD here. Similarly, while educational programs may aid overall development, they did not directly impact mealtime behaviors in our sample, suggesting other factors may mediate this relationship.

These observations imply that while sensory sensitivity is a clear and significant factor affecting mealtime behaviors, the dynamics surrounding eating in children with ASD are multifaceted. The near significance of other factors suggests a need for a holistic approach when addressing mealtime challenges. Interventions that not only focus on sensory issues but also consider dietary habits and family dynamics may be more effective in improving mealtime experiences for children with ASD.

This study utilized a cut-off score of 34 for the BAMBI, based on previous study's[21] recommendation to identify clinically

significant feeding difficulties in children with ASD. While this validated cut-off score facilitated the identification of clinically significant feeding difficulties in children with ASD, it is important to acknowledge the limitations of relying on an arbitrary threshold. Relying on a single cut-off may have introduced exposure misclassification bias, potentially influencing the observed associations. Future research should explore alternative cut-off scores (ie. 34, 52, or others), through separate regression analyses to assess their impact. This approach would help better understand how the chosen threshold affects the results and could identify the best cut-off score that accurately reflects the studied population, leading to stronger and more reliable findings.

Recent studies consistently demonstrate a significant relationship between sensory processing and eating behaviors in children with ASD. Atypical sensory sensitivity, particularly in the oral domain, is associated with increased food selectivity and refusal [26 -27], contributing to a range of eating difficulties, including reduced vegetable consumption. A systematic review [28] found that overall sensory processing scores and oral sensory processing measures were frequently linked to feeding problems in children with ASD, while another study [29] reported early evidence for the role of taste and smell sensitivities in eating behaviors across development. These findings align with the results of our study, which showed that while factors such as the child's gender and family structure showed a trend toward significance but ultimately did not reach statistical significance, suggesting that the impact of sensory sensitivities might be more pronounced and warrants further exploration in diverse populations. This underscores the need for further research on sensory-based eating and feeding interventions to improve mealtime experiences for children with ASD.

A survey of Filipino children with ASD found that all participants reported at least one problematic feeding behavior, with picky eating being the most common [7]. Filipino occupational therapists also identified sensory issues as a root cause of mealtime challenges [31]. Moreover, in Filipino culture, challenges are often perceived as less severe unless they significantly disrupt daily life, which may lead to an underreporting or delayed recognition of feeding problems compared to other cultures. This cultural tendency to normalize difficulties could impact how families address mealtime behaviors in children with ASD.

This study has several limitations that must be acknowledged. Firstly, the cross-sectional design limits causal inferences regarding the relationship between sensory sensitivities and mealtime behaviors. Additionally, the reliance on caregiver-reported data may introduce biases, as perceptions of behavior can vary among caregivers. The study's relatively small sample size, although adequate for preliminary

analysis, may limit the generalizability of the findings to a broader population of Filipino children with ASD. Conversely, the strengths of this research include the use of the Filipino version of the Brief Autism Mealtime Behavior Inventory (BAMBI), which provides culturally relevant insights into mealtime behaviors. Furthermore, the comprehensive socio-demographic and clinical characterization of participants allows for an understanding of the various factors influencing mealtime behaviors in this population.

Understanding the link between sensory sensitivities and problematic mealtime behaviors can inform individualized intervention strategies for children with ASD. Occupational therapy and sensory integration approaches may be beneficial in addressing these sensitivities, thereby improving mealtime experiences for both children and their families. Furthermore, the findings emphasize the need for caregivers and educators to adopt a flexible and supportive approach to mealtime routines, particularly for children with sensory sensitivities.

In terms of research implications, this study lays the groundwork for future investigations into the multifaceted nature of mealtime behaviors among children with ASD. Longitudinal studies are necessary to explore the causal relationships between sensory sensitivities and eating behaviors over time. Moreover, expanding the sample size and including a more diverse range of socio-economic backgrounds can enhance the generalizability of the findings and foster a better understanding of cultural influences on mealtime behaviors. Future studies could also focus on determining the optimum cut-off score for identifying problematic mealtime behaviors in children with ASD, which would further refine the use of tools like the BAMBI and enhance their clinical applicability.

Conclusion

In conclusion, the Filipino version of the BAMBI has proven to be a valuable tool for assessing problematic mealtime behaviors in Filipino children with ASD, revealing a high prevalence of such behaviors within this population. The development of a locally validated tool like the Filipino-translated BAMBI opens new opportunities for evaluating feeding difficulties in this population. This study suggests that sensory sensitivities may play a role in influencing feeding challenges, such as food selectivity, disruptive behaviors, and mealtime rigidity. While findings point to the potential importance of considering sensory issues in feeding interventions for children with ASD, these results should be interpreted with caution. Further research is needed to confirm these associations and to guide the development of individualized strategies that could improve mealtime experiences and support better long-term nutritional outcomes.

Additionally, these insights can guide the development of nutrition education programs tailored to the unique needs of each child, laying the groundwork for future multidisciplinary approaches in managing feeding difficulties. Ultimately, this can enhance both the nutritional outcomes and overall quality of life for children with ASD and their families in the Philippines.

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