

The Relationship between Dietary Patterns and Gastrointestinal Symptoms of Children with Autistic Spectrum Disorder

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ABSTRACT

Objective: To determine the relationship between dietary pattern and gastrointestinal symptoms of children with autistic spectrum disorder.

Methodology: A descriptive study is designed to determine the relationship between dietary pattern and gastrointestinal symptoms of children with autistic spectrum disorder for the period of October 20th 2021 to May 15th 2023. A nonprobability, convenient, sample of (150) parent of children with autistic spectrum disorder is selected for the purpose of the study. All parents have signed consent form for their agreement to participate in the study and to ensure confidentiality, as well as to confirm the ethical considerations. A developed questionnaire is used for the purpose of the current study. The questionnaire is comprised of (4) parts that include: parents' socio-demographic characteristics (15) item; children's socio-demographic characteristics (12) item; dietary patterns (16) item and gastrointestinal symptoms (14) item. Content validity of the questionnaire is determined through panel of (20) expert in the fields of Pediatric Nursing, Pediatric Medicine and Community Health Nursing. Internal consistency reliability of the questionnaire is obtained through the use of split-half technique. Cronbach alpha correlation coefficient is computed for such reliability; ($r=0.81$) for dietary patterns and ($r=0.78$) for gastrointestinal symptoms. Data are collected through the use of the study questionnaire. Data are analyzed through the use of the descriptive statistical data analysis approach of frequency, percent, mean, standard deviation, total scores and range and inferential statistical data analysis approach of multiple linear regressions.

Results: The study findings indicate that children have experienced problems with their dietary patterns and such patterns have highly significant relationship with gastrointestinal symptoms among children with autistic spectrum disorder evidenced by highly significant p-value of (0.001).

Conclusion: The study confirms that there is highly significant relationship between dietary patterns and gastrointestinal symptoms among children with autistic spectrum disorder.

Recommendation: Special rehabilitative and behavioral programs dealing with the eating behavioral problems of autistic children are needed to be applicable by the specialization centers for autism care.

Keywords: Dietary Patterns, Gastrointestinal Symptoms, Children, Autistic Spectrum Disorder

INTRODUCTION

Autism is an enigmatic condition, with no knowledge about its origins, the only statement that may be used to describe autism was "there is no idea" and we now know that there is no particular explanation for autism and that there are many forms of autism, and fortunately experts have recently begun to provide answers¹. Autistic Spectrum Disorder (ASD) is a broad term for a disease that affects around one in every (68) school-aged children. It affects boys 4 times more often than girl². The origin of eating abnormalities in ASD children is believed to be multifactorial, including behavioral, cognitive, and environmental causes. In particular, among the behavioral factors that can condition eating behaviors, there are the symptoms of repetitiveness and rituals, including fear of novelty, inflexibility, need for sameness, but also hypo or hyper-reactivity to sensory stimuli. The alteration of the sensory processing described in ASD patients³. It is declared that autistic children often suffer gastrointestinal difficulties consistent with altered composition of gut microbial inhabitants. Gastro-intestinal (GI) symptoms, such as abdominal pain, gaseousness, diarrhea, constipation and flatulence are common in autism patients. The prevalence of GI symptoms in autistic children ranges from 23 to 70%.

Moreover, the observed GI symptoms are associated with the severity of autism. But, other studies suggested imbalances in the gut microbial plays an important role in the etiology of autism⁴. Based on the early stated evidence, the present study ought to investigate the relationship between dietary patterns and gastrointestinal symptoms of children with autistic spectrum Disorder.

METHODOLOGY

A descriptive study is designed to determine the relationship between dietary pattern and gastrointestinal symptoms of children with autistic spectrum disorder for the period of October 20th 2021 to May 15th 2023. A nonprobability, convenient, sample of (150) parent of children with autistic spectrum disorder is selected for the purpose of the study. All parents have signed consent form for their agreement to participate in the study and to ensure confidentiality, as well as to confirm the ethical considerations. A developed questionnaire is used for the purpose of the current study. The questionnaire is comprised of (4) parts that include: parents' socio-demographic characteristics (15) item; children's socio-demographic data (12) item; dietary patterns (16) item and gastrointestinal symptoms (14) item. Content validity

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of the questionnaire is determined through panel of (20) expert in the fields of Pediatric Nursing, Pediatric Medicine and Community Health Nursing. Internal consistency reliability of the questionnaire is obtained through the use of split-half technique. Cronbach alpha correlation coefficient is computed for such reliability; ($r=0.81$) for dietary patterns and ($r=0.78$) for gastrointestinal symptoms. Data are collected through the use of the study questionnaire. Data are analyzed through the use of the descriptive statistical data analysis approach of frequency, percent, mean, standard deviation, total scores and range and inferential statistical data analysis approach of multiple linear regressions⁵⁻¹⁰.

RESULTS

Table 1: Overall Assessment of Dietary Patterns among Children with Autistic Spectrum Disorder

Dietary Patterns	F	%	M	SD
Poor	23	15.3		
Moderate	104	69.4	92.65	28.219
Good	23	15.3		
Total	150	100		

F: Frequency, %: Percentage, M: Mean, SD: Standard Deviation, Poor = 0 – 61.66, Moderate = 61.67 – 123.33, Good = 123.34 – 185

Table 2: Overall Assessment of Gastrointestinal Symptoms among Children with Autistic Spectrum Disorder

Symptoms	F	%	M	SD
No problems	21	14		
Mild problems	91	60.7		
Moderate problems	33	22	11.85	4.680
Severe problems	5	3.3		
Total	150	100		

F: Frequency, %: Percentage, M: Mean, SD: Standard Deviation, No problem = 0 – 7, Mild = 7.1-14, Moderate = 14.1 – 21, Severe = 21.1 – 28

Table 3: Multiple Linear Regression Analysis for Measuring Effect of Dietary Patterns on Gastrointestinal Symptoms among Children with Autistic Spectrum Disorder

GI Symptoms Variables	Unstandardized Coefficients		Standardized Coefficients	t-test	Significance
	B	Std. Error	Beta		
Dietary Patterns	0.043	0.012	0.258	3.469	0.001

a. Dependent variable: Gastrointestinal Symptoms (GI)

This table indicates that dietary patterns have a high effect on gastrointestinal symptoms among autistic children evidenced by significant difference at p-value of (0.001).

DISCUSSION

Part I: Discussion Overall Assessment of Dietary Patterns among Children with Autistic Spectrum Disorder

The results of existing study indicate that children with autism are associated with moderate dietary patterns in which more than two third of them seen with moderate level of dietary patterns. The findings of the recent study are in the same line with¹¹ who has reported that majority of the children had moderate dietary pattern (Table 1).

In the same direction¹² have carried out a study to explore the association between dietary quality and executive functions in children with ASD and illustrated that as being compared to typical development children, children with ASD had a higher proportion of moderate dietary intake and moderate level of unbalanced dietary intake (Table 2).

This may be due to insufficient and unbalanced dietary intake problems may be caused by the following factors. First, children with ASD often exhibit repetitive and stereotypical behaviors and other uncontrolled behaviors at mealtimes. These behaviors put them at higher risk for eating problems such as food rejection and high frequency of single food intake (Table 3).

As well, according to a study findings that it is may be due to autism spectrum disorder as a condition that is accompanied by high food selectivity, and children with ASD have reported that texture, appearance, brand, packaging, temperature, food presentation, color, taste and smell are all characteristics that influence on children’s food choices¹³.

Part II: Overall Assessment of Gastrointestinal Symptoms among Children with Autistic Spectrum Disorder

Spectrum Disorder

It is indicated that children with autism are identified to have mild to moderate gastrointestinal problems in which more than half of them are seen with mild problems and highest percentage is with moderate problems.

A cross-sectional study is carried out by to find that children with ASD significantly have higher gastrointestinal symptoms, such as constipation, bloating, and abdominal pain¹⁴.

The cause of these GI problems is unclear, but it appears to partly relate to abnormal gut flora and possibly to the excessive use of oral antibiotics which can alter gut flora. Several studies by our group and others have reported significantly higher oral antibiotic use in children with autism vs. typical children. Oral antibiotics were primarily used for treating otitis media (ear infections), which may suggest an impaired immune system. Commonly used oral antibiotics eliminate almost all of the normal gut micro biota, which play an important role in the breakdown of plant polysaccharides, promoting gastrointestinal motility, maintaining water balance, producing some vitamins, and competing against pathogenic bacteria. Loss of normal gut flora can result in the overgrowth of pathogenic flora, which can in turn cause constipation and other problems¹⁵.

Part III: The Relationship between Dietary Patterns and Gastrointestinal Symptoms among Children with Autistic Spectrum Disorder

It is indicated that dietary patterns have high effect on gastrointestinal symptoms among autistic children evidenced by significant differences at p-value of (0.001).

Such finding is consistent with that of a study conducted about eating and feeding problems and gastrointestinal dysfunction of Autistic Spectrum Disorders and their results indicate that there is a strong relationship and significant correlations between eating problems and gastrointestinal dysfunction¹⁶⁻¹⁸.

In contrast with another study that is carried out by^{19,20} who has reported that no statistically significant correlation is found between

parent-reported FS and GI symptoms. This may be due to certain foods that can cause exacerbate gastrointestinal (GI) problems, such as reflux and abdominal pain that they may be suffering from.

CONCLUSION

Based on the interpretation and discussion of the study findings, the study can conclude that:

- 1. Children with autistic spectrum disorder have experienced problems with their dietary patterns.**
- 2. The study confirms that there is highly significant relationship between dietary patterns and gastrointestinal symptoms among children with autistic spectrum disorder.**

RECOMMENDATIONS

With respect to such conclusion, the study recommends that:

1. Special rehabilitative and behavioral programs dealing with the eating behavioral problems of autistic children need to be applicable by the specialization centers for autism care.
2. Future studies with larger sample size should focus on alternative assessment methods as objective measures of food selectivity with valid dietary patterns measures.

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Competing Interest: None

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