

Selection of Food Materials and Diet Intervention of Casein Free Gluten Free (CFGF) on Children Nutritional's Status of Autism in Bengkulu City

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ABSTRACT : Background: The prevalence of autistic children has a significant increase. Autism can happen to all children from various social and cultural levels. Autistic behavior can be handled with several steps including through medical treatment, psychological therapy, behavior management, and diet regulation. Diet therapy settings can make it the easier achievement of other therapeutic results. The usual diet for autistic patients is among others Gluten Free and Casein Free (GFCF) diets. Repair or decrease in autistic behavior can be seen within 1-3 weeks for Gluten Free and Casein Free (GFCF) diets. With Given the provision of gluten and casein-free diet, autistic children will be limited in consuming food every day so that the food consumed does not vary and macro and micronutrients that should be available will also be reduced so that they will impact on children's nutritional status. Objective: To find out the influence of food selection behavior

and dietary intervention CFGF on the nutritional status of autistic children in the City of Bengkulu Method: This type of research is experimental quasi with research design one-group pretest-posttest design. Research location is Autism Center in the City Bengkulu. The study sample was all autistic children who met the inclusion criteria and exclusion at the Bengkulu City Center Autism School as many as 31 people. After Primary data was collected, pre-test and FFQ interview continued to intervene by giving red bean milk as an alternative fulfillment of the CFGF diet, observation of autistic children in the study sample. Furthermore, post-test and the process of collecting, processing, and analyzing data using the Independent test T-test. Results: There is an effect of the behavior of food selection and CFGF diet interventions on Nutritional status of autistic children in the city of Bengkulu, the act of mothers in the collection of food ingredients children

with autism in Kota Bengkulu, there is an effect of providing dietary intervention on nutritional status autistic child in the city of Bengkulu.

Keywords: Autism, CFGF Diet, Nutritional Status

INTRODUCTION

Autism is a complex neurological development disorder and is characterized by difficulties in social interaction, language skills, especially in social communication and pleasure in imagination, along with a tendency towards repetitive types of activities and desires. Symptoms of autism usually appear before the child is three years old, (Rahmayanti, 2008). The cause of autism is unknown, but there is evidence to suggest that the environment plays an essential role in triggering autism, perhaps not alone but through complex interactions with personal genetics (2). The disturbance at each initial stage causes obstacles in the next step, so that early detection, monitoring and stimulation of further growth and development of early intervention is a significant effort to optimize growth and development (Tiel, 2006).

The prevalence of autistic children in recent years has experienced a significant increase. Autism can occur in all children from various social and cultural levels. The survey results taken from several countries show that 2-4 children per 10,000 children have the chance to have autism with a ratio of 3: 1 for boys and girls. In other words, male children are more susceptible to autism than girls (Wijayakusuma, 2004).

Autistic behavior can be handled with some steps including through medical treatment, psychological therapy, behavioral management, and dietary regulation. Diet therapy settings can facilitate the achievement of other therapeutic results.

Diets commonly used for autistic patients include Gluten Free and Casein Free (GFCF) diets. Repair or decrease in autistic behavior can be seen within 1-3 weeks for Gluten Free and Casein Free (GFCF) diets. The application of gluten and casein-free diet is considered to alleviate the condition of autistic children. A gluten-free and casein diet is a limitation on the consumption of foods containing gluten and casein. According to Al-Farsi et al., (2011), children with autism have a risk of

malnutrition caused by several factors, including strict diet therapy, eating disorders, limited food intake, knowledge of parental nutrition, and the influence of drugs. Given the provision of gluten and casein-free diet, autistic children will be limited in consuming their daily food so that the food consumed does not vary and macro and micronutrients that should be available are also reduced so that it will affect the nutritional status of children.

According to UNICEF (1990), one of the factors that influence the nutritional status of autistic children is mother's knowledge. Mothers are the main actors in the family in the decision-making process, especially those related to food consumption. Mothers, in general, are people who actively participate in handling autistic children.

Based on the background above, the authors want to find out more about the behavior of the selection of food ingredients and the intervention of casein-free gluten-free (CFGF) diet on the nutritional status of autistic children in the City of Bengkulu.

RESEARCH METHODS

This type of research is experimental quasi with one-group pretest-posttest design research design. Research location is Autism Center in Bengkulu City. The study sample was all autistic children who met the inclusion and exclusion criteria in the Bengkulu City Center Autism School as many as 31 people.

The stated inclusion criteria are:

1. Autistic parents and children who are willing to become respondents
2. Hyperactive samples
3. Samples are registered and active

Data collection techniques were carried out by collecting primary data from the study population, then selecting samples according to established inclusion and exclusion criteria. After that, a pre-test, interview/questionnaire sheet was submitted to the sample parents who had been elected, related to the behavior of autistic children's food selection and the measurement of children's nutritional status. It was continued by intervening by giving red bean milk as one of the alternatives to fulfill the CFGF diet, observing autistic children in the study sample. Furthermore, post-test and data collection, processing, and

analysis process were conducted using Independent T-test.

RESULTS

Sample Characteristics

Table.1
Respondent Characteristics

No	Characteristics		Frequency	
			n	%
1	Gender	Male	24	77,42
		Female	7	22,58
		Total	31	100
2	Age	≤ 3 years	2	6,45
		>3 years	29	93,55
		Total	31	100

Based on Table 1, it shows that 77.42% of the research subjects are male while the female subjects are 22.58%, male subjects are five times larger than female subjects.

Table. 2
Parent Characteristics

No	Parent Characteristics		Frequency	
			n	%
1	The education of mother	Junior High School	2	6,45
		Senior High School	10	32,26
		Bachelor	19	61,29
		Total	31	100
2	The profession of mother	Housewife	21	67,74
		entrepreneur	4	12,90
		PNS (civil servant)	6	19,36
		Total	31	100

Based on Table 2, shows the characteristics of parents based on mother's education and work. It is known that more than half of the subject parents (61.29%) have a graduate

education. There are 67.74% are housewife from the subject.

Table. 3
Characteristics of study subjects based on age, BMI / U nutritional status, CFGF diet score and behavioral score

Subject characteristics	Min	Max	Average+ SD
BMI / U nutritional status	0,00	5,40	2,6±1,11
behavioral score	18	30	26,48 ±1,12
CFGF diet score	0	29	9,36±15,63

Based on the table, it is known that the average nutritional status of children is based on BMI / U values of 2.6 ± 1.11 , for an average behavioral score of 26.48 ± 1.12 and a CFGF diet score based on FFQ obtained a mean of $9.36 \pm 15, 63$

Maternal behavior in the selection of autism food ingredients in the City of Bengkulu

Behavioral selection of food ingredients is a behavior that is done by mothers in choosing food ingredients for children with autism.

Table. 4
The behavior of the selection of food ingredients for Autism children in the city of Bengkulu

The behavior of the selection of food ingredients	Mini mum	Ma xim um	Rerata+ SD	p
Behavior score before	18	30	26,48 ±1,12	0,000
Behavior score after	24	39	31,80±3,54	

From table 5.4, it is known that the score of the behavior of the selection of food for autistic children is obtained before the intervention of the mean score of 26.48 and after the response with a behavioral score of 31.80. Statistical test results showed $p < 0.05$ which means that there was a change in the score of the behavior of food selection in children with autism in the city of Bengkulu.

Administration of DCFG (Diet Casein Free Gluten) dietary intervention for children with autism in the city of Bengkulu.

Table. 5

Diet frequency score for casein free gluten (CFGF) of children with autism in the city of Bengkulu

Intake Score CFGF	Min	Max	Average+ SD	P
Intake Score CFGF before	0	29	9,36±15,63	0,10
Intake Score CFGF after	0	27	7,76±13,54	

Based on Table 5, the mean score of CFGF intake in children with autism before the intervention was 9.36 while the mean score of input was 7.76. Statistical test results showed $p > 0.05$, which means that there was no change in the CFGF dietary

frequency score in autistic children in Bengkulu City.

The effect of giving CFGF dietary intervention to the nutritional status of autistic children in the City of Bengkulu

The CFGF diet for children with autism and nutritional status assessment based on BMI / U in children with autism in the city of Bengkulu can be seen in the table below:

Table 6

The effect of giving dietary intervention to the nutritional status of autistic children in the City of Bengkulu

Variable	Min	Max	Average+ SD	P value
BMI/U Nutritional Status (Z-Score)	0,00	5,40	2,6±1,11	0.040
Diet Score CFGF	0	29	9,36±15,63	

Statistical test results show that there is an effect of the CFGF diet intervention on the nutritional status of BMI / U. Calculation of nutritional status according to the BMI / U index shows the mean nutritional status of Z-Score 2.6 and the mean score of the CFGF diet is 9.36 with indigo $p = 0.040$.

DISCUSSION

Based on the results of research conducted in 3 places, namely Autism Center, Mutiara Bunda, and Kota RSJKO in Bengkulu, as many as

77.42% of respondents were male while female subjects were 22.58%. This is in line with the statement of Mashabi NA and Tajudin NR (2009) that the prevalence of boys with autism is 3 to 4 times greater than girls.

The number of boys with autism is more than women; this is thought to be due to the presence of genes or genes on the X chromosome that is involved with autism. Women have two X chromosomes, while men only have one X chromosome. Functional failure of the genes on one of the X chromosomes in girls can be replaced by genes on other chromosomes. While in boys there is no reserve when the X chromosome experiences abnormalities. Many studies have concluded that genes on the X chromosome are not the main cause of autism, but a gene on the X chromosome that affects social interaction can have a role in autism-related behavior, (Mujiyanti, 2011).

Research data according to age of children when diagnosed with autism for the first time, said that of the 31 subjects studied it was found that children diagnosed with autism between birth and 3 years (≤ 3 years) 6.45%, most children were diagnosed with autism for the first time at age > 3 years,

amounting to 29 children (93.55%). Autism Spectrum Disorders usually appear clearly before three years of age. Research in the United States conducted by the retrospective method, states that the average age of children with autistic disorders ranges from 10 months to 2.7 years. It is known from the observations of parents when they first saw the characteristics of symptoms of autism in their children.

According to Syafitri (2008), someone's education determines the knowledge of that person. This level of education affects a person's ability to access information, the higher the education of parents, it is expected to increase parents' knowledge about the selection of good food for their children and implement it in their daily lives and broader insight into autism.

Autistic children need extra attention from mothers as primary caregivers so that many of the mothers stop working to pay more attention and care for their children directly. These results are almost the same as the results of research conducted by Latifah (2004) or (72%) and the results of the same study conducted by Ramadayanti (2012) amounting to (80%) mothers with autistic children are housewives [8,10].

A high level of maternal education will make it easier to receive information about nutrition and children's health. The results of the mother's final education research were secondary education, the majority of whom graduated from high school. It contrasts with Wieke's (2008) study, mothers with low education can provide the best quality of care for their children so that their children's growth and development will improve. So, succeeding or not mother educating children is not seen from the duration factor of education but the most important is the quality of care provided.

The behavior of autistic children such as the behavior of tantrums and picky eaters that appear in children makes parents relent because they do not have the heart. The helplessness of parents in handling the behavior of autistic children who have many eating problems, as well as the availability of food in the surrounding environment which does not allow indirectly influence the behavior of parents on the application of casein-free gluten-free diet consistently. Statistical test results showed that $p < 0.05$, this means that there was a change in maternal behavior

in the selection of autism in the city of Bengkulu.

All subjects (100%) in this study still consumed foods containing gluten and casein. Current parent subject implementation only can only reduce or regulate the frequency of feeding. Variations in the frequency of consumption, some subjects always consume in their daily food. Some of the things that are behind the difficulty of parents in carrying out diets include the limitations of food ingredients as a substitute alternative, foods containing gluten and casein are children's preferences, so parents feel uneasy if they do not give it.

Based on research on maternal adherence in food selection in autistic children to the GFCF diet (Gluten Free Casein Free), most of them did not obey (92%) in the selection of foods containing gluten, casein, gluten covert, and covert casein. The results of this study are in accordance with Pratiwi's (2014) study which stated that all subjects (100%) in this study still consumed foods containing gluten and casein. Current parent subject implementation only can only reduce or regulate the frequency of feeding. Some therapies for autism children will

experience progress like other healthy children. One of the recommended treatments is GFCF diet therapy in a suitable study conducted by Sofia (2012) on parental adherence in applying the GFCF diet to only a small proportion of respondents (15%) who adhere to the food. It is because of a lack of supervision and nutrition are not carried out continuously.

It was due to several reasons behind the difficulty of applying the diet, including children's psychological factors, family environment, lack of supervision, limited food ingredients as a substitute alternative and generally foods containing gluten or casein as a favorite food for autistic children. It causes the mother with autism to feel unhappy (pity) if the demand for food is not fulfilled even though the mother is very aware of dietary restrictions for children with autism.

Maternal nutrition knowledge is the level of mother's understanding of the growth of autistic children, the care and feeding of children with autism and the selection and processing of food for children with autism. Based on the results obtained by mothers have a high level of knowledge. It is consistent with the statement of Suhardjo (2003) and

Mutianingrum (2013) that good understanding of nutrition can prevent a person from consuming wrong and lousy food. Good maternal knowledge about nutrition will have a positive impact on the child's diet as in a study conducted by Mashabi and Tajudin (2009) on knowledge of maternal nutrition with autism children 's menu shows that the high and low level of expertise of maternal nutrition will affect the eating patterns of children with autism. High knowledge of maternal nutrition can change the eating patterns of autistic children and vice versa.

The administration of CFGF dietary interventions influences nutritional status. The child with CFGF diet has a healthy nutritional status the development of nutritional status will be in line with the CFGF diet. The IMT / U is a good indicator of the current nutritional status. The results are then interpreted according to the nutritional status of the child. By applying a gluten-free and casein diet in autistic children, there is a significant positive impact on children's nutritional status.

Nutritional status is related to the nervous system of the brain, which can be affected by one of the foods that are

based on gluten and casein. But basically, a gluten and casein free diet can be given to children but individually or unequally between autistic children with the same disorder. Before going on a gluten-free and casein diet, parents should take a variety of tests including hair tests, blood tests, even allergic tests to find out whether a gluten-free and casein diet should be given to the child or not. WHO in Riyadi (2001) states that a pronounced deficit in anthropometric measurements, which shows the past and present nutrition at the cellular level can be caused by low food intake, a rate of increase in nutrient utilization (such as in infectious diseases), and or disruption of absorption of substances. The results of interviews with a number of parents of children with autism show that they actually want to provide nutrition therapy for their children, but the difficulty of finding non-gluten and non-casein processed products makes them unable to apply this diet to their children, citing fear of nutrition fulfilled.

CONSLUSION

1. The influence of the behavior of food selection and CFGF diet intervention on

the nutritional status of autistic children in the city of Bengkulu

2. Maternal behavior in the variety of autism food ingredients in the City of Bengkulu

3. There is an effect of giving dietary intervention to the nutritional status of autistic children in the City of Bengkulu.

Suggestion

To improve the application of a casein-free gluten-free diet consistently in autistic children is necessary to socialize and counsel with the target individually so that there will be no mistakes in the child's diet that can cause malnutrition. While the socialization was carried out with the objective of parents and families of children with autism as well as schools that deal directly with children with autism. In addition, it is necessary to introduce ways to modify foods that do not contain gluten and casein as well as various alternative foods as a substitute for food sources of gluten and casein which are still rarely available on the market to parents, families, and schools who are caring for children with autism.

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