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Analysis of Gluten Free Casein Free Compliance (GFCF) Diet in Terms of the Incidence of Gastroenteritis in Children with Autism Spectrum Using Rank Spearman Test

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Abstract one problem that is often experienced by people with autism is the provision of food and proper nutrition in children with autism. Children with autism spectrum disorder (ASD) are at risk of having a digestive tract disorder (gastroenteritis), they are at a greater risk diarrhea. The last few years autistic sufferers in Indonesia have increased, around 12,800 children. Autistic children have a high chance of experiencing gastroenteritis, if not treated seriously it will cause dehydration even to death. Therefore, this study was to analyze the relationship of adherence to a gluten free casein free diet with the incidence of gastroenteritis on autistic children. events was performed using the management of a sick toddler. The results of the study after Rank Spearman statistical test $\rho = 0.034 < \alpha = 0.05$ indicates that there is a relationship between the compliance of the gluten free casein free diet and the incidence of gastroenteritis on autistic children. Compliance with gluten free casein free diets makes improvements to the digestive system in autistic children.

1. Introduction

Optimization of growth and development, especially with autism is a top priority. One problem that is often experienced by people with autism is the provision of food and proper nutrition in children with autism. Parents who are wrong in providing proper nutrition will cause various complications, one of which is digestive disease (gastroenteritis) [1]. If an autistic child experiences digestive problems then the child cannot go to school, if an illness is not treated immediately it can become dehydrated to death. It is therefore important for parents to prevent gastroenteritis from getting worse with a special diet for children with autism and can be applied in daily life. Children with autism spectrum disorders (ASD) are at risk of having gastrointestinal disorders (gastroenteritis), they are at greater risk from common problems, diarrhea, and abdominal pain [2]. In children with autism, it is difficult to eat sometimes to resist rejecting the food, so that it can cause malnutrition and result in failure in growth and development. So, children with autism must be selective in choosing foods. If you choose the wrong food, it will cause allergies, causing gastroenteritis in children with autism [3]. Gastroenteritis in children with autism is caused by non-compliance with the mother giving the Gluten Free Casein Free (GFCF) diet to autistic children. Because of the workload of the mother in terms of work, it is not compliant to give the Gluten



Free Casein Free (GFCF) diet to the child. Mothers only provide food like normal children usually even provide food that is ready to serve. Or maybe the child is whining to his mother to eat - food that is not allowed to be consumed by him, like it or not must buy a quiet child [4].

In 2013, the director of Mental Health Development at the Ministry of Health counted around 112,000 autistic children in a span of 5-19 years. This figure comes out based on a count of autism prevalence of 1.68 per 1,000 children under 15 years. If children aged 5-19 years in Indonesia reach 66,000,805 people based on BPS in 2010, then it is estimated that more than 112,000 children with autism range from 5-19 years in Indonesia. The last few years are thought to have experienced a remarkable increase in autism sufferers in Indonesia. In 2016 in Indonesia it was estimated that more than 12,800 children with autism and 134,000 autistic people in Indonesia [5]. The average prevalence rate is 65% per 10,000 people, while the median estimated prevalence in the United States is 65.5 per 10,000. The results of the reports of mothers about autistic children have a greater chance than diarrhea problems, food intolerance, and food difficulties at the age of 6 to 18 months compared with children with normal development. This study shows that autistic children also have 2 times more to have gastroenteritis problems [5]. Of the 10 autistic children who are in Nathanisa Ngagel Jaya Central Foundation, Surabaya, 5 autistic children need to be appointed in the past 1 month. Regarding food from children with autism is relatively high, discussing special foods and specifically for children with autism. Because it originates, one type of therapy that is widely developed and followed is diet therapy for autistic children. One of them is a Gluten Free Casein Free (GFCF) diet therapy [4]. Associated with diet in children because there is an increase in intestinal permeability there are changes in the air and electrolytes rise above and there will be a buildup of fluid and eventually cause gastroenteritis [3]. As a health worker that must be done by nurses who provide education to parents about a gluten-approved diet, the gluten diet can improve the digestive system in children with autism, trying to get nutrients that are both the growth system increases in children with autism are increasing. Based on the problem above, researchers are interested in conducting research on the relationship between diet and the incidence of autism in the Nathanisa Ngagel Jaya Tengah Foundation in Surabaya.

2. Methods

This type of research used in this study is analytic because it aims to analyze the Relationship between Gluten Free Casein Free Diet (GFCF) and the incidence of gastroenteritis in autistic children at Nathanisa Ngagel Jaya Tengah Foundation, Surabaya. In this study, the study design used was cross-sectional, this type of research emphasizes the measurement time or observation of independent variable data "adherence to Gluten Free Casein Free (GFCF) diet" and dependent "Gastroenteritis (diarrhea)" only once at that time. The population in this study were all parents or caregivers and children with autism who were present at the Nathanisa Ngagel Jaya Tengah Foundation in Surabaya. 40. With the following criteria:

Inclusion Criteria:

- 1) Parents or caregivers of autistic children at Nathanisa Ngagel Jaya Tengah Foundation, Surabaya
- 2) Parents or caregivers who are willing to sign the consent form and cooperative respondents.
- 3) Parents or caregivers who live in the same house with an autistic child.

Exclusion Criteria :

- 1) Parents or caregivers who cannot be present when conducting research.
- 2) Parents or caregivers who are in a state of disability, mental weakness, and physical.

3. Results and Discussion

3.1 Results

The first, general data collection on mother's education, mother's occupation, child age, child-to, sex are presented in the distribution table as follows:

Characteristics of respondents based on parental education

Table 1. Distribution of Frequency of Respondents Based on the education of parents of autistic children at Nathanisa Ngagel Jaya Tengah Foundation, Surabaya.

No	Education	Frequency	Percentage
1	Basic	0	0
2	Intermediate	6	16,7
3	Heigh	30	83,3
4	The number is	36	100,0

Based on table 1 shows that of the 36 respondents there was a large majority (83.3%) of tertiary education.

Table 2. Frequency distribution of respondents based on parents' work at Nathanisa Ngagel Jaya Foundation, Central Surabaya.

No	Occupation	Frequency	Percentage
1	working	31	86,1
2	No working	5	13,9
	The number is	36	100,0

Based on table 2 shows that of the 36 respondents most (86,1%) working parents. Characteristics of respondents based on the age of the child.

Table 3. Frequency distribution of respondents by age of autistic children at Nathanisa Ngagel Jaya Tengah Foundation Surabaya.

No	Age (Year)	PFrequency	Percentage
1	6	3	8,3
2	7	6	16,7
3	8	6	16,7
4	9	6	16,7
5	10	12	33,3
6	11	2	5,6
7	12	1	2,8
	The number is	36	100,0

Based on table 3 shows that of the 36 respondents there were most (33.3%) aged 10 years. Characteristics of respondents based on the sex of the child

Table 4. Frequency distribution of respondents by sex of autistic children in Yayasan Nathanisa Ngagel Jaya Tengah, Surabaya.

No	Gender	Frequency	Percentage
1	male	24	66,7
2	women	12	33,3
	The number is	36	100,0

Based on table 4, it shows that 36 respondents were mostly (66.7%) of the same sex as **12**n. Special Data The following will be presented about the specific dietary data discussed, and the incidence of **gastroenteritis in children with autism**. Characteristics Responded based on compliance diet in children with autism.

Table 5. Frequency distribution of respondent compliance diet in autistic children at Nathanisa Ngagel Jaya Tengah Foundation, Surabaya.

No	Compliance Diet	Frekuensi	Persentase
1	Non-compliance	1	2,8
2	Sometimes	17	47,2
3	Compliant	18	50,0
The number is		36	100,0

Based on **2**ble 6 shows of 36 half (50.0%) of respondents adhering to the diet. Characteristics Responded based on the incidence of **gastroenteritis in children with autism**

Table 6. Frequency distribution of respondent gastroenteritis in autistic children at Nathanisa Ngagel Jaya Tengah Foundation, Surabaya.

No	Gastroenteritis Occurrence	Frekuensi	Persentase
1	Never	25	69.4
2	Rarely	10	27.8
3	Often	1	2.8
The number is		36	100,0

Based on table 7 which shows that 36 respondents constituted the majority (**4**9.4%) who had never experienced gastroenteritis. Cross-tabulation of the relationship between the **Gluten-free Casein-Free (GFCF) diet meeting with the incidence of gastroenteritis in children with autism** at Nathanisa Ngagel Jaya Tengah Foundation Surabaya.

Table 7. cross-tabulation of the relationship between a free Casein-free diet and the incidence of gastroenteritis in children with autism at Nathanisa Ngagel Jaya Tengah Foundation Surabaya.

Gastroenteritis Occurrence	Gastroenteritis Occurrence			Total N(%)
	Never N(%)	Ravely N(%)	often N(%)	
1 Non-compliance	0 (0%)	0 (0%)	1 (100%)	1 (100%)
2 Sometimes	10 (58,8%)	7 (41,2%)	0 (0%)	17 (100%)
3 Compliant	15 (83,3%)	3 (16,7%)	0 (0%)	18 (100%)
Total	25 (69,4%)	10 (27,8%)	1 (2,8%)	36 100%

3.2 Discussion

The results of filling in the gluten-free casein-free (GFCF) dietary questionnaire given to respondents, half (50.0%) of respondents complied **3** with the gluten-free casein-free (GFCF) diet, there are several factors that affect the adherence to the **gluten-free casein-free diet**, one of them is **is level of education**. At the Nathaniel Ngagel Jaya Tengah Foundation in Surabaya, most of the parents are college-educated, and the way of thinking is different from mothers with primary and secondary education as well as in making

3 decisions on the **gluten-free casein-free (GFCF) diet in autistic children**. According to that education can influence one's behavior, especially motivation plays a role in health. Human motivation is based on cognitive and through thought processes based on the knowledge possessed by individuals. In addition to education, there are also other factors, one of which is health education for parents or caregivers. At the Nathaniel Ngagel Jaya Tengah Foundation, Surabaya, education is often carried out on eating patterns suitable for children with autism, so that most (80%) parents or caregivers understand what foods should be consumed and should not be consumed by autistic children. One of them is gluten and casein which are examples of foods released. Parents who understand the abstinence of food consumed by their children will be reported to have an increase in the development of their baby. In a recent survey in the UK, more than 80% of parents of **children with autism spectrum disorders** have **autism spectrum** [6].

Based on the results of research at the Nathanaisa Ngagel Jaya Tengah Foundation, Surabaya, it was found that the majority (69.4%) did not require gastroenteritis from these results which discussed how to overcome dietary problems. In children with autism, diarrhea is often caused by foods containing gluten and casein, besides also the cleanliness of their children's food, if eating patterns are not appropriate and food hygiene does not make this cause the virus to repair bacteria, bacteria, or parasites that enter into the stomach so the body has diarrhea. At the Nathanaisa Ngagel Jaya Tengah Surabaya Foundation, paying attention also asks for habits such as in terms of cleanliness. This food is proven by parents or caregivers never providing fast food because fast food does not necessarily meet the cleanliness of the food. If food is not clean, diarrhea will be needed. Besides that about eating habits for children about hygiene such as washing hands before eating. This is proven by the theory of one of the causes of diarrhea is food that is polluted, stale, reverses, raw or undercooked food. In addition, higher education also influences awareness of cleanliness, such as how to choose food, how to clean themselves properly. As parents or caregivers at the Nathanaisa Ngagel Jaya Tengah Foundation in Surabaya, they asked the children about washing their hands, which is good and right, besides also talking about environmental cleanliness. Most of the motivations in health. Human motivation is based on cognitive and through thought processes based on knowledge provided by individuals.

The result² of the distribution of respondents regarding the relationship of a gluten casein-free diet (GFCF) with **the incidence of gastroenteritis in children with autism** at the Nathanaisa Ngagel Jaya Tengah Foundation in Surabaya, the results of statistical tests with the rank-spearman test obtained the value of $\rho < \alpha$ (0.034 < 0.05) which means there is a relationship between the approval of a gluten casein-free diet (GFCF) with **the incidence of gastroenteritis in children with autism** at the Nathanaisa Ngagel Jaya Central Foundation in Surabaya. Autistic children are at risk of having a digestive tract, one of the causes is a free gluten casein-free diet (GFCF) because children with autism are linked to foods containing gluten and casein, therefore, autistic children are not able to digest it completely, the protein from one food will all be turned into amino acids that are released are reabsorbed by the body but change into morphine that change the brain's configuration is also inhibited and will inhibit the growth of the brain and digestive tract of children with autism. Parents or caregivers at the Nathanaisa Ngagel Jaya Tengah Foundation in Surabaya understand the importance of a gluten casein-free diet (GFCF). If not approved, a gluten-free diet, casein-free (GFCF) will worsen the gastrointestinal disorders of the autistic child as happens in gastroenteritis if gastroenteritis is not needed

- 1) Can dehydrate even to death.
- 2) Children with autism have twice the risk of developing gastroenteritis [2]
- 3) Regarding food from children with autism is relatively high, discussing special and special food for children with autism. Because it originates, one type of therapy that is widely developed and followed is diet therapy for children with autism. One of them is a Gluten Free Casein Free (GFCF) diet therapy [7].

4. Conclusions

Based on the results of research on the relationship of a free gluten casein-free diet with the incidence of gastroenteritis in children with autism at the Nathanisa Ngagel Jaya Tengah Foundation, Surabaya, it can be concluded as; Compliance with a free casein gluten-free diet in autistic children at the Nathanisa Ngagel Jaya Central Foundation in Surabaya is almost entirely compliant with a free gluten-free casein diet, the incidence of gastroenteritis in children with autism at the Nathanisa Ngagel Jaya Tengah Foundation in Surabaya is almost entirely without gastroenteritis. There is a relationship between a free gluten casein-free diet with the incidence of gastroenteritis in children with autism at the Nathanisa Ngagel Jaya Central Foundation in Surabaya

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