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The Impact of GFCF Diet on the Nutritional Status of Autistic Children

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Abstract

It has been suggested that the consumption of foods that are high in casein and gluten on a regular basis might be the root cause of autism syndrome. Clinical signs in children include aberrant child development, tantrums, sobbing, fussiness, apathy and hyperactivity, poor speech, less social interactions, and high levels of imaginative activity. All of these symptoms may be brought on by a diet that is high in foods that contain casein and gluten. The purpose of this research is to determine whether or not giving children with autism GFCF snacks has any impact at all. The methodology of this research is considered to be quasi-experimental, and it consists of many sets of pre- and post-tests. During the course of the 21-day experiment, children diagnosed with autism received GFCF (Gluten Free, Casein Free) snacks. In order to collect data on clinical symptoms, direct interviews with the participants were carried out. In order to acquire a sense of the participants' nutritional status, we used a microtoise and a treadle scale to assess the subjects' height and weight respectively. The findings of the study, which were based on the opinions of forty individuals, indicated that the provision of GFCF snacks had an effect on the improvement or worsening of autistic children's clinical symptoms both before and after the intervention, but had no impact on the children's nutritional status. This was determined by comparing the clinical symptoms of the children before and after the intervention.

Keywords: GFCF • Nutritional Status • Autism

Introduction

Children that have autism, as opposed to typically developing children, tend to have difficulties with their immune systems and digestive systems. As a consequence of this, autistic children have an increased risk of experiencing allergy responses and are more likely to be hypersensitive to certain foods. Children who have autism may have pain while swallowing, difficulty defecating, difficulty defecating, constricted pupils, hallucinations, delayed walking, and poor night vision. Other clinical indications of autism include delayed walking and poor night vision. Autism is a neurological condition that manifests itself in a child's development [1].

Children who have autism often have issues with their immune systems, which makes them more susceptible to contracting infectious diseases [2]. As a consequence of this, these children often suffer from malnutrition, which may take the form of a variety of various symptoms depending on the child's specific nutritional condition. Proteins like casein and gluten are both examples of substances that are made up of amino acids, and the formation of new cells in the human body is dependent on the consumption of foods that contain protein [3]. If children cease eating these two types of protein, which increases the possibility that they will become malnourished. Children are at danger of getting malnutrition, which increases the likelihood that they will become undernourished [4]. However, if autistic children are allowed to consume casein and gluten, it will cause absorption problems since the dipeptidyl peptidase IV enzyme in their bodies does not function correctly.

Food therapy is one of the many distinct forms of medical therapies that have been developed throughout the course of human history [5]. The incorporation of dietary therapy into treatment plans may make it easier to achieve the intended therapeutic outcomes. Casein is a protein that comes from cow's milk in its numerous forms, such as fresh cow's milk, milk powder, ice cream, and even chocolate [6]. On the other hand, oats, macaroni, spaghetti, noodles, crackers, and barley all contain gluten in one form or another. It is recommended that parents of children who have autism put their children on a diet that is known as the GFCF diet (which stands for "Casein free Gluten free"). This requires abstaining from food components that are comprised of casein.

When trying to adhere to the GFCF (Gluten Free, Casein Free) diet, the first thing you need to keep in mind is that you should aim to wean yourself off of casein and gluten gradually rather than eliminating them all of a sudden. This is done in the hopes of assisting children in becoming acclimated to their new eating habits, which include the consumption of foods that do not lack either casein or gluten. This is done in the aim of helping children grow accustomed to their new eating patterns. This diet is offered in the form of snacks that are well-liked by children as a way to pique their interest in following it. The reason for this is because children have a strong preference for snack foods. In order to prevent autistic children from being bored, it is essential that snacks come in a wide range of shapes, colors, and flavors. This will keep the children from becoming restless. Consuming foods that have been altered to exclude casein and gluten may be of great help to children who have autism [7,8].

It is recommended that persons avoid products that are known to contribute to an increase in the incidence of hyperactive condition and that snacks be supplied for a length of time ranging from two weeks to four weeks. It should be clear by the third or fourth week that removing foods containing casein and gluten from one's diet has beneficial impacts

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on one's health. A child with autism may get around 25% more of their daily required energy from the consumption of snacks or snacks [9]. Because of the addictive potential of casein and gluten, it is not viable to suddenly discontinue consumption of these substances in autistic children. This is due to the fact that doing so would be impossible.

Children with autism who have undergone nutritional therapy show considerable improvement in their behaviour when they are provided with snacks [10]. The degree of hyperactivity has seen significant improvement as a result. Improvements may be shown in the behaviour, emotional stability, and learning focus of autistic children whose parents adhere to a diet devoid of gluten, casein, and fructose. This illustrates that the quantity of casein and gluten that a person eats on a consistent basis has an influence on autistic people. Casein is a protein found in milk, and gluten is a protein found in wheat.

Research Methodology

This research is a quasi-experimental examination that was created utilizing a format consisting of both a before and a subsequent test. Respondents in this study were either mothers or other persons who provided care for autistic children and had been randomly chosen as samples. The research was conducted on children who had autism spectrum disorder.

Before and after the subject was given the GFCF snack, their body weight was measured using a digital scale from the GEA brand that had an accuracy of 0.01 kilograms, and their height was measured using a microtoise that had an accuracy of 0.1 centimeters. Both of these measurements were taken before and after the subject was given the sample. In addition, the age of the subject was established by computing the subject's age over a complete year. The subject's nutritional status was analyzed using the data that was compiled using this information. The data on the subject's acquired weight and height, in addition to the subject's obtained date of birth, are then converted to an even number of years based on the information that has been collected. This is done on the basis of the information that has been gathered. After that, you will need to log in to the WHO Anthro Plus program so that you may get information on the nutritional state of the population in the form of standard deviation.

When determining whether or not the data were normal, the Kolmogrov-Swirnov test was traditionally used in the past. The test that is carried out is referred to as the T dependent test in the case that the data follow a normal distribution (paired). The Wilcoxon signed rank test is the one that is used when the data do not follow a normal distribution, as this is the situation when the test is being carried out. If the value of p is larger than 0.05, then the null hypothesis of ha is accepted, assuming that one may have 95% confidence in the results of the test.

Result and Discussion

Average nutritional status in autistic children

It is possible to think of the nutritional status of an organism either as an expression of a state of equilibrium as it manifests itself in the form of certain variables or as the physical manifestation of nutrition as it manifests itself in the form of certain variables. Either way, an organism's nutritional status can be thought of in either of these ways. Because of the meals and nutrients that they put into their body; an individual's nutritional status may be described as the degree to which they are satisfying their dietary needs. This is determined by the foods that they eat and the nutrients that they take in. The minimum and maximum values that are often linked with a person's nutritional status are shown in the following (Table 1).

The average nutritional status of the participants was -0.60 before they were given the GFCF snack, but after the intervention was carried out, it improved to -0.56.

The nutritional condition of school-aged children may be monitored via the use of a tool or a straightforward technique known as the body mass index (BMI) [11]. This tool primarily addresses issues related to a child's being underweight or overweight. Children are considered to be of school age when they are between the ages of five and eighteen years old. The Body Mass Index (BMI) is a measure that analyzes a person's nutritional state by comparing their weight, height, and age with other people of the same age and gender. A person's nutritional state may be classified into one of the following five categories using the Body Mass Index (BMI): very thin, thin, normal, and fat/obese [12].

When the food consumed supplies the body with the essential nutritional sufficiency, the individual's nutritional status has been determined to be healthy [13]. A low nutritional status is attained when an inadequate number of the nutrients that the body requires are ingested, which causes the body to have a leaner and less strong look than normal [14]. This is because the body is not getting the nutrients that it needs to function properly. The condition known as over nutrition is a state in which an individual has an excessive intake of food sources that include nutrients that are needed by the body.

It is possible for parents of autistic children to assist their children in overcoming both an overnutrition and an undernutrition state by changing the normal eating habits of autistic children. It is essential to get a head start on developing this pattern of food consumption as soon as it is physically possible to do so [15]. The results of this research showed that the participants' average nutritional status was -0.60 before they were given the GFCF (Gluten Free, Casein Free) snack, but that their average nutritional status dropped to -0.56 after they were given the snack. These are the findings. Therefore, a progress toward normal nutritional status in autistic children may be observed in the average change in nutritional status, which can be seen as shown by the fact that autistic children have improved.

Impact of giving GFCF snacks on nutritional status in autistic children

The condition of a person's or group's physical health may be evaluated by a single or more particular nutritional metrics to determine the nutritional status of that individual or group. According to Sauberlich, (2018) the nutritional status of a person or a whole community may be evaluated using many methods. The World Health Organization (WHO) recommends using the body mass index percentile indicator for age as the standard approach for determining the nutritional health of children and adolescents between the ages of 5 and 18 years old. There are five separate categories for describing a person's nutritional state, which are as follows: severely thin, thin, normal, fat, and obese. In this specific study, there were a total of forty participants, and the researchers measured each individual's weight and height both before and after they were given the GFCF snack. The results of these measurements were compared. The subject's nutritional status is broken down both before and after they ate the GFCF snack in the accompanying table, which compares the two periods of time.

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Table 1. Average Minimum and Maximum Values of Nutritional Status.

	n	Min	Max	Mean	SD	P value
Nutritional status before giving GFCF snacks	40	-4.43	3.6	-0.6	1.78	0,48
Nutritional status after giving GFCF snacks	40	-3.38	3.54	-0.56	1.47	

Table 2. Analysis of nutritional status before and after giving the GFCF snacks.

	n	Min
Nutritional status before giving GFCF snacks	40	0.48
Nutritional status after giving GFCF snacks	40	

whole community may be evaluated using many methods [16]. The World Health Organization (WHO) recommends using the body mass index percentile indicator for age as the standard approach for determining the nutritional health of children and adolescents between the ages of 5 and 18 years old. There are five separate categories for describing a person's nutritional state, which are as follows: severely thin, thin, normal, fat, and obese. In this specific study, there were a total of forty participants, and the researchers measured each individual's weight and height both before and after they were given the GFCF snack. The results of these measurements were compared. The subject's nutritional status is broken down both before and after they ate the GFCF snack in the accompanying table, which compares the two periods of time (Table 2).

According to the results of the Wilcoxon test, which produced a value of p = 0.48, there is no noticeable influence on nutritional status that can be attributed to the provision of GFCF snacks. This is in accordance with the outcome of the statistical test, which stated that the null Hypothesis (H0) should be accepted if the value of p was larger than 0.05. This finding is in line with that statement. According to the results of this research project, offering autistic children GFCF snacks does not have a significant impact on the nutritional health of these children. This conclusion was reached after analyzing the data collected throughout the study.

It is possible to establish the child's nutritional state by looking at the child's height and weight. A useful predictor of the child's nutritional status is the child's weight in proportion to their height [17]. Additionally, nutritional status may be defined as a state of health that is accomplished by achieving a harmony between a person's dietary requirements and the nutrients that they take in [18]. This harmony is known as the "nutritional balance." Scientists perform studies to identify a person's nutritional condition, and one of the methods they use is anthropometric data. The nutritional condition of autistic children is not the same as that of typical children because autistic children often have issues with their immune systems and are therefore more prone to sickness than typical children. This is due to the fact that children with autism have a higher risk of suffering from malnutrition.

The results of the Wilcoxon test that were done on the outcomes of the study provided a value of p = 0.48, which suggested that supplying the receivers of the GFCF snacks did not have any influence on the nutritional status of those receiving the snacks. This finding is in accordance with the conclusion reached by the statistical test, which stated that the null hypothesis (H0) should be accepted if the value of p was found to be less than 0.05. Due to the fact that the autistic children who participated in this study were only given snacks on a daily basis, the food that was supplied did not meet the nutritional needs of the autistic children. Because of this, the children with autism did not see an improvement in their nutritional condition.

As a consequence of this, the manner in which children with autism choose to consume their food has an impact on the nutritional health of those youngsters [19]. For instance, it's not uncommon for autistic children to stick to eating the same thing over and over again for an extended period of time. In addition to this, autistic children tend to eat far less than typical youngsters. As a result, the autistic children who participated in the study received their nourishment in the form of snacks for a period of 21 days. And they were unable to change their food regimens or their eating habits. Additionally, it is expected that parents who teach their autistic children to get used to the consumption of foods that are free of casein and gluten would be needed to take part in the study.

It is essential for parents to provide their children who have autism with food that is free of casein and gluten on a daily basis [20]. The consumption of good food will have an effect on the nutritional state of children with autism, and this is why it is essential for parents to provide their children with autism with food. In an attempt to improve the nutritional state of the children with autism, not only are snacks provided, but the whole diet that is consumed on a daily basis is free of casein and gluten. This is done in conjunction with the provision of snacks. Because it is well known that children with autism have problems with their digestive tracts, a reduced immune system, and a higher risk of catching infectious infections, it is important to treat these symptoms.

Conclusion

Prior to receiving the GFCF snack, autistic children often had a nutritional status of -0.60 on average. This was before they had the snack. Following the administration of the GFCF snack, the autistic children's nutritional status dropped to a level that was, on average, 0.56 points lower than before. The results of the statistical test indicated that there was no connection between the impact of delivering GFCF snacks on nutritional status with a value of ($p = 0.48 > 0.05$), which indicated that there was no association between the two. The findings of the test indicated that there was no connection between the two dues to the fact that there was no association between the two. It is the hope of the researchers conducting this study that they will be able to provide information on the relevance of adhering to a GFCF diet while feeding autistic children, especially to families who already have autistic children and to the community as a whole. Parents of autistic children should have a more transparent role, and they should be educated on the significance of food consumption as well as the prohibition of eating foods that are derived from casein and gluten. In addition, children with autism should be prohibited from consuming foods that contain these proteins.

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