Nutritional Management of Celiac Disease patients in Gaffer IbnOaff Pediatric Hospital, Khartoum State

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Abstract: ***The study was conducted in Gaffer IbnOaff Pediatrics hospital during the period from July 2011 to March 2012 targeting patients with celiac disease. The main objective of the study was to assess the dietary management of celiac disease patients in Gaffer IbnOaff pediatric hospital. The number of patients during the study period was 65. Primary data were collected by using designed questionnaire directed to mothers of celiac disease patients and another one for nutritionist working in the hospital. Secondary data was collected from available related literature in books, Journals, studies and internet. The results showed that almost more than half of the children were severely mal nourished (57%). The most common symptoms were diarrhea, weight loss and abdominal pain. All respondents were excluded wheat from the diet and used gluten free diet and there were clear improvements apparent in children. Significant relationship were detected between mothers occupation, education and knowledge about gluten free diet (p value = 0.000), significant association was also detected between children age and improvement after avoiding certain types of food containing gluten (p value = 0.0008). All respondents received nutritional advice from the nutritionist who played a very important role in the management of celiac disease. The role of nutritionist as stated in the present study: assessed the children and measured them, determined suitable meals for celiac patients, supervised the work at the kitchen, followed distribution of meals, gave vitamins and mineral supplement, gave nutrition education, followed up the child after discharged and determined free gluten diet. Nutrition awareness of the mothers was quite acceptable regarding diet and nutrition of celiac disease patients. The study recommended mothers should continue to give their children gluten free diet after discharge from the hospital.***

Keywords: celiac disease, management, nutrition, dietitians

1. Introduction

Celiac disease is genetically determined condition that results in the inflammation of the internal surface of the proximal small intestine when certain varieties of the protein gluten are consumed (See and Murry, 2006 & Alicia 2008), Clarifies that celiac disease is an autoimmune response to gluten.

Gluten is found in all grains. Those forms found in wheat, barley and rye, however, are typically the culprit in aggravating celiac disease (See and Murry, 2006). Celiac disease is a common cause of mal absorption. The condition may affect all ages and has been known for many centuries, although the first clear description was stated by Samuel Gee in 1888. The crucial link with cereal was established by the Dutch pediatrician Dicke WK.1950. Celiac disease has been thought to affect people of European ancestry more often than other ethnic groups (Cooke and Holmes 1985). Studies revealed increasing global prevalence (Fasano 2001) As many as 1 in 133 persons in the United States have the disease (Alicia 2008). In the UK the number increases to 1 in 100 (Gay 2005). Celiac disease occurs in all communities where wheat is a major staple. It is rare in Africa, China and Japan. In Sudan the disease was first reported in 1978 when 7 children were diagnosed (Suliman 1978).
Since then many adult and pediatric cases have been reported. The disease may in fact be under diagnosed because of more prevalent condition such as malnutrition, diarrheal diseases, and intestinal parasitic infections.

Celiac disease is perhaps the one disease above all other gut disorder where diet is the key to management. The toxic protein gluten is present in wheat, barley and rye so these must be excluded from the patient's diet for life. (Lee Newman 2004). Long term complication of celiac disease occurs of which the most lethal is small bowel lymphoma. There is now good evidence that a gluten free diet reduces the risk of intestinal malignancy. Compliance to gluten free diet and frequent follow up has the key role to play in the management of celiac disease.

Accredited dietitians and other health professionals play a critical role in the management of those with celiac disease. Initial education regarding gluten free diet and ongoing support and assessment of long term nutritional adequacy and compliance is essential.

It is also important that dietitians should refer patients to be tested for celiac disease when clinical suspicion is raised. Knowledge of the varying presentation of celiac disease and the diagnostic procedure is therefore vital. Support groups are especially helpful in making the transition to a gluten free life. Dietary compliance can significantly reduce the chance for malignancies, osteoporosis and many other diseases (Cardenas Kelly 2002& , 2008, Kathy , (2008).

The potential for celiac disease to become a major health issue in developing countries is highlighted by the report of the high rate of celiac disease in a population of refugee children in North Africa. In this study Catassi et al found 5.6% of Saharawi children to have a positive endomysial

antibody (Catassi, et al. 1999).

Another studies in northern Africa, Maghreb area (the Northern Region of Africa including Morocco, Algeria, Tunisia, Libya and Egypt) revealed very high incidences of celiac disease have recently been reported both in the general population (Catassi, et al, 2004) and in at risk-groups (Bouguerra, et al,2005). Studies also found population in North Africa with an elevated prevalence of Celiac Disease (5.6%), which is the highest known in the world today (Lionettiet al 1999), is the Saharawi people, who are of Arab and Berber origin, who have a high degree of consanguinity, and who live as refugees in Algeria (Sahara Desert). This elevated prevalence may be explained both by genetic factors, (Xu, et al 2002), and by environmental factors, because in the last few decades they have changed their dietary habits. For example, the rates and duration of breast-feeding have been reduced and large amounts of gluten are now being consumed in early life as part of the staple diet, due to the humanitarian aids supplied by Western countries (Ratsch, Catassi 2001).

The disease was first reported in Sudan in 1978 when 7 children were diagnosed (Suliman 1978). Since then, many adult and pediatric cases have also been reported. The disease may in fact be under-diagnosed because of more prevalent conditions such as malnutrition, diarrheal diseases and intestinal parasitic infections. In Sudan diagnosis of celiac disease has depended upon histological changes of the small bowel biopsy and improvement after withdrawal of gluten from the diet. (Chardinaseta.l, 1997).

Study confirmed that celiac disease is a cause of mal absorption in Sudanese children. Its frequency in a selected high-risk group was 22.5%. Females were affected more often than males with a ratio 1.3:1. Ages between onset of symptoms and diagnosis were delayed. Children from Arabic tribes and from middle socioeconomic class were affected more often than others. Celiac children presented with or without frank gastrointestinal symptoms. (Mohammed et al, 2006).

The six key elements in the management of patients with celiac disease can be summarized with the following acronym:

1. Consultation with a skilled dietitian
2. Education about the disease.
3. Lifelong adherence to a gluten-free diet.
4. Identification and treatment of nutritional deficiencies.
5. Access to an advocacy group.
6. Continuous long term follow-up by a multidisciplinary team

Treatment of the patient with celiac disease begins with dietary counseling. Other issues that need to be considered include addressing nutritional needs, monitoring of the response, and evaluating patients who do not respond: (National Institutes of Health Consensus Development Conference Statement, Celiac Disease, 2004). The diet requires a major life change on the parts of the patient if he or she is to adhere to it sufficiently to diminish the immune and inflammatory responses. Elimination of the peptides from the diet is the only treatment of celiac disease. Elimination of diet contains dietary wheat (gliadin), rye (secalin), and barley (hordein), which are sources of the prolamin fractions (Thompson 2001).

Initially the diet should be supplemented with vitamins, minerals and extra protein to remedy deficiencies and replenish nutrient stores. Not all of the specialty gluten free products are fortified, so the diet not be as complete without at least partial supplementation. Anemia should be treated with iron, foliate, or vitamin B12, depending on the nature of the anemia calcium and vitamin D administration may be necessary to correct osteoporosis or steomalacia, and zinc, magnesium mineral deficits may need to be corrected. Vitamins A and E may be necessary to replenish stores depleted by steatorrhea. Vitamin K may be prescribed for purpura, bleeding or prolonged prothrombin time. Electrolyte and fluids replacement is essential for those dehydrated from severe diarrhea. (Thompson 2001)

Those who continue to have mal absorption should take vitamin and mineral supplements as appropriate to at least meet dietary reference intake. Lactose and fructose intolerance sometimes occur secondary to celiac disease, and polyol sugars are not well absorbed, even in a healthy gut. A low lactose or low fructose diet may be useful in controlling symptoms, at least initially. Once the gastrointestinal tract returns to more normal function, lactase activity may also return, and the person incorporate lactose and dairy product back into the diet (Thompson 2001).

Gluten, of course, is found in all grains. Those forms found in wheat, barley, and rye, however, are typically the culprit in aggravating celiac disease (See and Murray, 2006). These glutens are commonly thought of by cooks as the “glue” that holds bread dough together. Gluten also acts as part of the leavening that makes bread rise. While glutens are healthy for most humans, for those with celiac disease they are actually considered toxic (Children’s Digestive Health and Nutrition Foundation, 2006).

Celiac disease is something that an individual is born with. In many cases, however, it is not always diagnosed. Interestingly, those infants that have been fed only human breast milk have a much lower incidence of developing immune medicated diseases such as celiac disease. Breast milk is believed to supply IgA and other immune competent cells which are lacking in infants intestinal tracts (Lee, Newman 2004). The result is the neutralization of toxins and an inhibition of bacterial infections. Infant formulas may actually contribute to intestinal damage and decreased intestinal blood flow by acting as a substrate for bacteria that penetrate the bowel wall (Lee, Newman 2004).

2. Justification

Celiac disease is under diagnosed because of associated condition such as malnutrition, diarrheal disease and intestinal parasitic infestation. There is lack of awareness about celiac disease among Sudanese population. Compliance with strict lifelong gluten free diet is the corner stone of management improving symptoms and reducing complication of the disease therefore it is of great importance to focus on the dietary management of celiac disease in Gaffer IbnOaff pediatric hospital where cases from other states are refer to this hospital.

3. Objective

General objective

a. To assess the dietary management of celiac disease in Gaffer IbnOaff pediatric hospital.
b. Specific objectives
c. To assess the role of nutritionist in the management of celiac disease.
d. To assess the awareness and practices of mothers in relation to management of celiac disease

4. Research Methodology Study area

The study was cross sectional study hospital base study carried out in Gaffer IbnOaff Pediatric Hospital in Khartoum state.

Study Population: Study population included children who were diagnosed with celiac disease in both males and females.
Sample size: Sample size included all children who were diagnosed with celiac disease attended Gaffer IbnOaff Pediatric Hospital with their mothers during the period of data collection (from July 2011 to March 2012 (65 children with their mothers). The study also included all nutritionist who work in Gaffer IbnOaff Pediatric Hospital, (7nutritionist).

Questionnaire was used to obtain data and information about the respondents. The questionnaire was designed according to the objectives of the study. The researcher used face to face interview with each respondents. Questionnaire was divided into two parts, the first part consist of questions to mother who had child diagnosed with celiac disease, the second part consist of questions to nutritionists who work in the target hospital.

Weight determination

Two scales were used:

- Children less than 2years were measured using the seca scale weighing to 25 kilogram.
- Children more than three years were measured using seca scales weighing up to 200 kilogram.

The weight was measured in kilograms to the nearest grams.

Height determination

Height: (length) was measured using a recumbent measuring board with a fixed head piece and sliding foot piece that are both perpendicular/upright (form a 90-degree angle) to the measurement surface to children less than 3years and registered to the nearest 0.1 cm. Stadiometer were used to measure children whose age 3 and more years.

Z score for weight for height calculation determination: by the following equation
Z-score (or SD-score) = Observed value - median reference value

Standard deviation of reference population

Results obtained from Z score calculation were used to determine nutritional statues of children from 0-5 years old.

5. Results

This is an observational case-finding hospital–based study, where 65 children with celiac disease presented to Gaffer Ibnoaff Hospital were involved. All children who presented with celiac disease during the study period were met by the researcher through personal interview using questionnaire. Data were collected directly from the mothers of the children. After being properly revised, data were then tabulated, interpreted and presented in the following sequence:

Table 1: Classification of children according to their age

Age	*No*	*%*
<1 year	4	6
1-<2	27	42
2-5	34	52
Total	65	100

Demographic characteristics

Table (1) shows that 42% of children with ine age group (1–<2) years, 52within age group (2-5) years, whereas 6% were less than one year, 43.1% of childrenwere males and 56.9% of them were females. Regarding parents' education, 29.2% of the mothers had basic education, 35.4% had secondary education whereas 29.2% had university education. 13.8% of fathers had primary education, 41.5% had secondary education, 36.9% had university education and only 1.5% had post graduated studies. The result also demonstrated that 55.4% of mothers were housewives, whereas 41.5% were employees. 56.9% of the fathers were employees, whereas 27.7% had their own business job.

Table 2: Distribution of children according to weight for height

Parameters	*Weight (kg) for height*	*No*	*%*
Mild	< -1 to > -2 Z-score	5	8
Moderate	<-2 to>-3 Z -score	23	35
Severe	<-3 Z-score	37	57
Total		65	100

Growth Parameters

According to the classification of WHO for malnutrition, 8% of the children with mild malnutrition, with 35% with moderate mal nutrition and 57% were severely malnourished.

Table 3: Knowledge of celiac disease

Knowledge of celiac disease	*No*	*%*
Yes	6	9.2
No	59	90.8
Total	65	100
Family history of disease		
Have history of celiac disease	4	6.2
Have no history of celiac disease	61	93.8
Total	65	100

Only 9.2% of the total numbers of the mothers heard about the celiac disease, while 90.8 % of them did not hear about it however, 6.2% of the respondents had family history of the celiac disease, while 93.8 had no history of celiac diseases.

Table 4: Relationships between mothers' education, regarding the first diagnosis of the celiac disease

Variables	*Less than month*	*%*	*1-6 Month*		*7-12 Month*		*Total*	*%*
Illiterate	1	25	2	50	1	25	4	100
Primary	7	63.8	12	63.2	0	0	19	100
Secondary	12	36.8	11	47.8	0	0	23	100
University	9	47.4	10	52.6	0	0	19	100
Total	29	44.6	35	53.8	1	1.5	65	100

Regarding time of the first diagnosis, 44.6% of the respondents stated that, the first diagnosis was less than one month ago, whereas 53.8% of them said their first diagnoses was within (1-6) months ago. Significant relationships was detected in level of mothers' education, regarding the first diagnosis of the celiac disease (p value=0.001).

Table 5: Distribution of children according to the symptoms of the disease

Symptoms	Yes	%	No	%
Diarrhea	33	50.8	32	49.2
Vomiting	10	15.4	55	84.6
Fever	7	10.8	58	89.2
weight loss	55	84.6	10	15.4
Constipation	11	16.9	54	83.1
abdominal bloating and pain	31	47.7	34	52.3
Headache	20	30.8	45	69.2
rash	52	80	13	20
Diseases associated with celiac				
Type of disease	Yes	%	No	%
diabetes	6	9	59	91
Hepatitis	6	9	59	91
Tuberculoses	7	11	58	89
anemia	11	17	54	83
Liver disease	5	8	60	92
total	40	62	25	38

Celiac disease symptoms and disease associated

As shown in table (5) respondents were asked about the symptoms of the disease that the children were presented with; the following facts were obtained:

58.3% of the children were presented with diarrhea. Only 15.4% children were presented with vomiting, 10.8% of them were presented with fever, 84.6% of them were presented with weight loss. 16.9% of them were presented with constipation, 47.7% of them were presented with abdominal bloating and pain. 30.8% of them were presented with headache, and 80% of them were presented with symptoms. e.g. skin rash. Regarding disease associated with celiac disease 9 % of children were diagnosed with type 1 diabetes mellitus,8% were diagnosed with liver diseases,11% were diagnosed with tuberculoses,9% were diagnosed with hepatitis and 17%with anemia.

Table 6: Distribution of children according to their symptoms control

Variables	Yes	%	No	%
Excluding wheat from the diet	65	100	0	100
gluten free diet	65	100	0	100
Medication	13	20	52	80

Control of the Symptoms

Referring back to table number (6), the following facts were obtained:

All of the respondents excluded wheat from the diet and used gluten free diet. 20% of the respondents used medication, excluded wheat from the diet and used gluten free to control the symptoms.

Table 7: Food items given to celiac patients

Food Item	Frequency			
	Yes	%	No	%
Rice	62	95.4	3	4.6
Potato	62	95.4	3	4.6
Millet	0	0	65	0
Corn	0	0	65	0
Chickpea	0	0	65	0
Vegetable	46	70.8	19	29.2
Meat	34	52.3	31	47.7
Chicken	4	6.2	61	93.8
Fish	3	4.6	62	95.4
Milk	58	89.2	7	10.8
Other	58	89.5	7	10.8

Food Items

Referring back to the table number (7) the results demonstrated that, the most common food given to the respondents were, Rice, potatoes, milk and vegetables. Meat, fish, chicken, egg were also given while millet, corn, chickpea were absent from the food list.

Table 8: Association between children' age and improvement after avoiding certain foods

	Yes	%	No	%	Total	100
< 1 year	1	100	0	0	1	1
1-<2 years	29	93.5	2	6.5	31	48
2-5 years	27	82	6	18	33	51
total	57	87.7		12.3	65	100

P value=0.008

Improvement of patients after avoiding gluten from the diet

Table (8) shows that 87.7% of the respondents stated that, when they avoid gluten from diet, the child feel better, while no improvement were observed among 12.3% of them. Significant relationship was found between children age and improvement after avoiding gluten from the diet (P value = 0.008).

Hospital foods

Table 9: Relationship between children' age and consumption of hospital food

	Yes	%	No	%	Total	100
< 1 year	1	3.1	0	0	1	100
1-<2 years	29	93.5	2	6.5	31	100
2-5 years	2	6	31	94	33	100
Total	32	49.2	33	50.8	65	100

P value=0.000

Hospital food

Table (9) shows that 49.2% of the subjects depend only on the hospital food while 50.8% of them eat extra food from outside .significant relationship was found in age group according to the consumption of food provided by hospital (p value=0.000).

Table 10: Food consumed from outside the hospital

Food Item	Frequency			
	Yes	(%)	No	%
Rice	2	3.1	63	96.9
Chicken	2	1.5	64	89.5
Fruits	1	1.5	64	98.5
Canned juice	22	33.8	43	66.2
Vegetable soup	1	1.5	64	98.5
Yogurt	8	12.3	57	78.7
Other	34	47.7	31	52.3

Food consumed from outside the Hospital

Referring back to the table (10) the canned juice is the most common food consumed by the child from outside the hospital 33.8% while 52.3 % consumed other food.

Table 11: Like and dislike of gluten free food

Like		Dislike	
33	50.8	32	49.2
Nutrition education			
	Yes	No	
65	100	0	0
Knowledge about food contain gluten			
65	100	0	0

Table 11 shows that 50.8% of the study respondents liked gluten free food, while 49.2% did not like gluten free foods. Significant relationship was detected in children age according to the like and dislike of gluten free diet (p value =0.000) .All of the mothers received nutrition education from the nutritionists and knowledgeable about the type of foods that contains gluten.

Table 12: Relationships between mothers' occupation and knowledge of gluten free diet

Variables	N0	%	No	%	No	%
House wife	27	75	9	25	36	100
Employee	27	100	0	0	27	100
Worker	0	0	2	100	2	100
Total	54	83	11	17	65	100

Knowledge of mothers about gluten free foods

Table 12 shows that 83.1% of mothers were found to be knowledgeable about the types of gluten free food while 16.9% of them had no knowledge about it. Significant association was detected between education (p value=0.000), occupation (p value=0.000) and mothers' knowledge about types of free gluten diet.

Table 13: Relationship between mothers' education level and availability of gluten free diet

Variables	Yes	%	No	%	Total	%
Illiterate	1	75	1	25	4	100
Primary	11	57.9	8	42.1	19	100
Secondary	18	78.3	5	21.7	23	100
University	19	100	0	0	19	100
Total	51	78.5	14	21.5	65	

P=0.019

Availability of gluten free food

In table (13) respondents were asked about the availability of gluten free food, 78.5% of them said yes, while 21.5% said no. significant relationship was detected between mothers' education level and availability of gluten free diet.(p value=0.019).

Table 14: Relationship between mothers' education level and the ability of the family to buy gluten free diet

Variables	*Yes*	*%*	*No*	*%*	*total*	*%*
Illiterate	1	75	3	75	4	100
Primary	5	26.3	14	73.7	19	100
Secondary	16	96.6	7	30.4	23	100
University	19	100	0	0	19	100
	41	63.1	24	36.9	65	100

P value=0.000

Ability to buy gluten free foods

Table (14) demonstrated that 63.1% of the respondents had the ability to buy gluten free foods while 36.9% did not have ability to buy such type of food. Significant correlation between mothers' occupation and ability to buy gluten free foods (p-value = 0.001)

Table 15: The Role of the Nutritionists

Variables	*Yes*	*%*	*No*	*%*	*total*	*%*
A.C.P.	7	100	0	0	7	100
D.N.G. F.D	7	100	0	0	7	100
S.W. K	6	85.7	1	14.3	7	100
F.D.M	4	57.2	3	42.8	7	100
G.V.M.S	7	100	0	0	7	100
G.N.E	7	100	0	0	7	100
F.P.A.D	7	100	0	0	7	100

A.C.P: Assessment of celiac patient
D.N.G.F.D: Determine nutritive gluten free diet
S.W.K: Supervise the work at the kitchen
F.D.M: Follow distribution of meals
G.V.M.S: Give vitamins and mineral supplant
G.N.E: Give nutrition education
F.P.A.D: Follow patient after discharge

The role of Nutritionist

Different roles of nutritionists were mentioned by the respondents, 85.7 % of the nutritionists supervised the work at the kitchen, 57.2% follow distribution of meals, while all nutritionists (100%) assessed the celiac patients, gave nutrition education, follow up the child after discharged, gave vitamins and mineral supplement and determined gluten free diet.

Table 16: The counseling advice provided to children mothers

	A		*B*		*C*		*D*		*E*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Yes	5	71.5	7	100	7	100	7	100	6	85.7
No	2	28.5	0	0	0	0	0	0	1	14.3
Total	7	100	7	100	7	100	7	100	7	100

- Group counseling about celiac patient nutrition.
- Individual counseling about celiac patient nutrition.
- Raising their awareness about importance of free gluten food.
- Teaching mothers to prepare nutritive gluten free food.
- Educating mother about child hygiene.

The counseling provided to children' mothers

Table (16) demonstrated that 71.5% of the nutritionist gave group counseling, 85.7% of them educated mothers about how to prepare nutritive gluten free diet. It was observed that all the nutritionists 100% provided individual counseling for the patients' mothers, raised their awareness about important of free gluten diet and about child hygiene.

6. Discussion

The result in the present study showed that, females are more likely to develop celiac disease than males. The disease affected all ages. In present study 65childern with 5years and less were involved. Celiac disease was more prevalent among females than in males. This study is in line with previous study stated that celiac disease was more prevalent among females than males (Altwaty, Elbaratty, 1998).

According to WHO zscore classification of malnutrition, almost more than half of the children (57%) of the children were severely malnourished. Many studies confirmed that Celiac disease lead to malnutrition (Chand and Mihas, 2006). The majority of the mothers had no idea about celiac disease only 9.2% of the total number of the mothers heard about celiac disease. This showed lack of awareness about celiac disease among most of Sudanese families. 6.2% of the study subject had history of the disease among sibling .Study had shown that celiac disease is increased 10 fold among first degree relative e.g. parent, siblings, children (FanasoBertil, Geratva-chussit 2003).

In the present study 9% children with type 1 diabetes mellitus were diagnosed. The association between type 1 diabetes mellitus and celiac disease has been well established. (Cronin, Shanahan, 1997) 1 in 20 people with type 1 diabetes also have celiac disease (GohBaneria, 2007). The delay in diagnoses of celiac disease in the present study may result from the distracting influence of

more prevalent conditions in the country that clinically resemble celiac disease and many children suffering from protein energy malnutrition. Significant correlation was detected between mother's level of education and early diagnoses of celiac disease this may be attributed to the fact that educated mothers detected the symptoms of the disease early and took the child to the doctor without delay. The most common symptoms seen among children in the present study were diarrhea, weight loss, abdominal bloating pain and anemia. Other symptoms such as vomiting and constipation were seen.
Regarding the knowledge of respondents about how to control symptoms of the disease, all of them excluded wheat from the diet and used gluten free diet. As mentioned by (See and Murry 2006) that celiac disease cannot be cured, it can be controlled by the elimination of the causative gluten from the diet.

20% of respondents used medications to control the symptoms besides excluding wheat from the diet, those patients have other diseases beside celiac disease e.g. hepatitis, tuberculoses and liver disease. Many studies showed that celiac disease is associated with higher rates of tuberculosis, (Scott Admes, 2007), hepatitis (Villalta, et al, 2005) and liver disease (Alberto, et al, 2008)

Three meals were provided for celiac patient, rice, potato, milk and vegetables were the most food items consumed by 95.4%, 94.5%, 89.2%, and 70.8 % of the patients respectively. Other foods like egg, meat, fish, chicken were offered but not daily, although these types of foods need to be provided daily because celiac patients need high amount of proteins of high biological value, food rich in iron, calcium and vitamin A.

Special milk formula was given to malnourished children. Millet, corn, chickpea, lentils, beans were absent from the food list although they are good source of gluten free food, but it is not allowed by the hospital administration ,as the foods items scheduled by the ministry of health to the hospital without included these important types of food. 49.2% of the subject depends only on hospital food while the other consumed extra food from outside. 50.8% of the study subjects liked gluten free diet significant relationship was found between children like and dislike of gluten free food according to their ages. Younger children aged less than 5 years consumed only hospital food, and they like gluten free diet because they used to eat mashed potato and rise, and those aged more than 5 years consumed extra food from outside the hospital, they stated that they did not like gluten free diet 3 times per day, they liked to eat bread and it was difficult for them to exchange bread with rice.
87.7% of the respondents stated that, avoiding gluten from the children diet made their children feel better they also observed that diarrhea stopped, appetite improved, weight start to gain and no complain about abdominal pain. Response to gluten diet is dramatic and within weeks time appetites improved, patient feeling well, become alert, diarrhea subside, weight gain is observed. (Thampason 2001 and Shepherd, 2008).

Significant relationship was found between age of children and improvement of children health. Children within age less than 5 years depended only on hospital diet and like gluten free food which is important for improving the symptoms. While children within age more than 5 years eat extra food from outside the hospitals which lead to contamination with gluten containing food and may delay the improvement of the celiac disease symptoms.

Different roles of the nutritionists were mentioned towards the celiac patient in the hospital, which include: initial weighing and measuring of child's height at admission. All of the nutritionist, were responsible for planning special gluten free diet for celiac patients and providing nutrition education regarding gluten free diet. As mentioned by Raymond, Heapscase,(2006) that the role of dietitian with experience in celiac disease is considered as an essential part of the patients management (Raymond, Heapscase 2006).

57.2% of the nutritionists follow distribution of meals to make sure that the right food reaches the patients while 42.8% of them stated that following of meals distribution is the responsibility of the nutrition assistants. 85.7% of the nutritionist supervised the work at the kitchen and giving instruction to the cooks to avoid contamination with gluten containing foods. Cross contamination happens when preparing the gluten-free foods on the same surface used to prepare foods with gluten. 100% of nutritionists gave vitamins and mineral supplements e.g. vitamin A, D, iron according to the patients' needs. Initially the diet should be supplemented with vitamins mineral and extra proteins to remedy deficiency and replenishing nutrient store, (Thamposan 2001).

Nutritionist Counseling celiac patients' mothers and raising their awareness about ideal feeding, importance of gluten free for celiac disease treatment, educating them about child hygiene , teaching mothers how to prepare nutritive balanced gluten free diet and advice the patients to eat only home foods. After patients discharged, nutritionist regularly follows them to assess knowledge and compliance with gluten free, diets and detect nutrient deficiencies.

All respondents were found to be knowledgeable about food containing gluten, 83 % of them were found to be knowledgeable about gluten free food. Significant correlation was found between mothers' education and knowledge about gluten free food. Mothers with high level of education had good knowledge about gluten free food but they were not aware of which nonfoods contain gluten. It is important to educate the mothers about the things other than food that contain gluten, because such things as some cosmetics, and children' play dough may contain gluten, these products might be introduce in to digestive tract when food comes in contact with gluten containing products either directly or indirectly. Indirect contaminant between food and gluten might occur for example, if hands are not washed after using the product

with the gluten (children's digestive health and nutrition foundation 2006, Kathy French, MS RDCSP. (2008).
Nutritionists advice the mothers to use Gum Arabic, it was found that gum Arabic was given to celiac patients at the first week of admission, one spoon dissolved in a cup of water twice a day to treat abdominal distention so that child can eat and drink well. Milk was given to all patients from the first day of admission; some patients had lactose intolerance or diarrhea. Low lactose or fructose milk may be used in controlling symptoms at least initially, once the gastrointestinal tract return to its normal function, lactase activity may also return and person incorporate lactose and dietary products back in to the diet, (Thampson 2001).

Nutritionists in the present study emphasized on the need for variety of gluten free food e.g. corn flour, chickpea flour, millet flour, beans flour to make suitable bread and other food for celiac patients. Children with different ages received the same amounts of food, those aged 5 years and more consumed extra food from outside the hospital, which may contaminated with food containing gluten. 78.5% of the mothers said that gluten free foods were available in their areas while 21.5% stated that these types of foods are not available. Significant relationship appeared between mother's education and availability of gluten free food this may be because educated mothers understand what type of gluten free food can purchase.

63.1% of families were able to buy gluten free foods, while 36.9% were not able to buy such type of foods. Significant association also was found between mothers' occupation and their ability to buy gluten free food. The role of socioeconomic status was very clear here, because working mothers have salaries and can contribute in buying food needed by the family. As for storage of food, it was found that gluten free foods were stored with other food containing gluten, and this can lead to contamination. Also the use of same utensils, pots and plates to cook the food, lead to contamination if not washed properly, so the celiac disease situation needs special care when using any thing that is used for preparing or cooking foods. Gluten free foods need special and separate utensils and pots.

7. Conclusion

The results of the present study concluded that:

- Children at the group (1-5) were found to be relatively more affected than children within the other age groups 55.4% of the children were found to be malnourished. The most common symptoms among children in the present study were diarrhea weight loss, abdominal bloating and pain. Other symptoms such as vomiting, constipation were also seen.
- All respondents were excluded wheat from the diet and used gluten free diet and there were clear improvements apparent in children.
- Rice potatoes and vegetable, milk were the main food while egg fish chicken were given but not daily.
- Regarding quality of food was good but the quantity was not enough because food was given without consideration to the age groups.
- Nutritionist play very important role in the management of celiac disease, determine especially nutritive free gluten diet and provided valuable advice to mothers of celiac patient.

8. Recommendations

Being somewhat satisfied with what has been achieved from this result, the researcher would like to take this chance to submit the following recommendations:

- Nutrition education and counseling about dietary management of celiac disease should be placed as first priority for mothers.
- Nutritionists should be provide with all required tools to perform their work efficiently and the hospital administration must provide a health environment for the nutritionists to full their jobs and different types of free gluten food should be available
- Separate kitchen for preparing especial meals for celiac patients and separate equipments to avoid contamination with gluten containing food.
- Gluten free diet recipes should be given as hand out to the mothers to follow at home.
- Nutrition assistants should be aware about the diet for celiac disease to work closely with the dietitians.
- Proper nutrition assessment diagnosis, and follow up of celiac disease.
- Collaboration between the patient family and nutritionists to insure follow up at homes.

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