Original Article

Assessment of Dietary Behavior of Children Aged between 3-12 Years Suffering from Thalassemia Visiting Tertiary Care Hospitals, Lahore

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Abstract:

Thalassemia is a hereditary blood disorder passed down through families in which the body makes hemoglobin in an abnormal form. Nutritional deficiencies in thalassemia children results in anemia and other medical complications. **Objective:** To assess dietary behavior of children aged between 3-12 years suffering from thalassemia. **Methods:** A cross-sectional study was carried out in the outdoor patient department of thalassemia at Sir Ganga Ram Hospital, Lahore for 4 months.100 patients were selected through non probability sampling technique. Data was tabulated and analyzed by SPSS version 21.0. **Results:** Thalassemia was more prevalent in the age group of 8-12 years. Nutritional deficiencies in thalassemia patients caused anemia as it was evident from results that 74% of thalassemic children had pale skin. As far as dietary intake was concerned only 4% of thalassemia children were consuming meat and meat products.58% of thalassemia children consumed milk on daily basis. Only 8% took green leafy vegetables on daily basis as it contains high amount of iron. Micro nutrient deficiencies as vitamin A, C were common among thalassemia patients as only 30% were consuming fruits on daily basis. **Conclusions:** Most of the thalassemiacchildren were found to be malnourished due to inadequate dietary intake. The caregivers and parents should be counseled to create awareness.

Keywords:

Thalassemia, Dietary behavior, children, malnutrition

Introduction:

Thalassemia is related to group of diseases that are usually due to genetic disorder in the making of the normal hemoglobin chain. The basic treatment today, aimed at patient survived, and is through proper blood fusion. The annual needs of these patients are met by 50600 units of blood donation [1]. Iron chelation and blood transfusions are the only two supportive remedies available to the thalassemia patients [2]. Thalassemia is an inherited disorder it is caused by a decreased or an absence of goblin production Different clinical presentation results that thalassemia originates from genetic abnormalities [3]. After sickle cell anemia thalassemia is leading haemoglobinopathy that accounts for 1.5% of global population [4]. Infants affected by thalassemia fail to succeed and become pale.

Certain health conditions such as irritability, diarrhea, recurrent bouts of fever, feeding problems and enlargement of abdomen caused by splenomegaly usually occur [5]. Untransfused children with severe thalassemia often do not survive beyond age 5 years [6]. Thalassemia is recognized as a genetic blood disorder which can be fatal if proper treatment is not received [7]. Patients with thalassemia are vulnerable to experiencing psychological challenges [8]. Patients suffering with thalassemia need lifelong care, regular blood transfusion these patients

require lifelong care, regular blood transfusions, and iron chelation, and they suffer from anemia, fatigue, and lack of tolerance toward physical activity [9]. We primarily focused on the parents to ascertain the impact of their child's disease worldwide; due to high prevalence thalassemia poses a serious public health problem [10]. In thalassemia, anemia results during erythropoiesis during deficient globin chain production. By iron overload thalassemia may further be complicated, which induces numerous endocrine diseases, hepatic cirrhosis, cardiac failure and even death [11].

Protein high diet should be given which exceeds in vitamin B, zinc and folic acid. Higher amount of calcium for bone formation may be required by patients and multivitamins and supplements having higher amount of vitamin C and iron above the recommended dosages be avoided. Water intake should also be increased [12]. Micronutrients/ trace elements are essential for growth of the skeleton in humans. Zinc is a minor building component in bone and plays important role in bone metabolism and bone turnover [13]. In 2014, Sherief LM et al., conducted a study, and decrease of vitamin A, C, E and B12 and trace elements zinc, copper, selenium in the patients that were thalassemic as compared to controls and no relation was found with the levels of serum of the vitamins and the transfusion frequency, time the transfusion takes and frequency of age and serum ferritin [14].

A Study conducted by Fung EB et al., in 2012 in which terms of micronutrients intake, not even 30% had proper intake of Vitamin A, D, E, K, magnesium, calcium, and folate. Riboflavin, Vitamin B12, Selenium were the few micronutrients that greater than 90% of the subjects took in adequate quantities. Suspects had decreased consumption of essential nutrients as they age older ($P<0.01$), there was greater dietary insufficiency of vitamins A, C, E, B6, folate, thiamin, calcium, magnesium and zinc [15]. Another study was conducted by Tabei SM et.al., Beta-thalassemia minor (BTM) patients experienced fatigue, bone pain complaint, and muscle weakness. Camitine is important for transportation of long-chain fatty acids into beta oxidation. The results showed that in cases with β-thalassemia carnitine and folic acid supplementation lead to fewer pains in bones and muscle weakness [16].

A similar study was carried in 2009 and revealed that patients suffering from beta thalassemia major had higher rates of hypercalciuria, sub clinical hypoparathyroidism, worse hyperglycaemia, multiple endocrinopathies and hypogonadism. Vitamin D levels in adolescents were lower 25 as compared to adults and children. Adolescents had higher amount of abnormalities related to vitamin D [17]. The researcher was aimed to determine the dietary behavior practiced among children suffering from thalassemia. So that improvement in dietary choices can be made through extensive health education to overcome nutritional deficiencies thereby minimizing the disease burden.

Methods:

A cross- sectional study was conducted in the outdoor patient department of thalassemia at Sir Ganga Ram Hospital, Lahore. The duration of the study was 4 months. 100 thalassemia children were selected through non-probability convenient sampling. All children of both genders suffering from thalassemia aged between 3 to 12 years of age were included. Non cooperative mothers whose children were suffering from thalassemia aged less than 3 or above 12 years of age and children aged between 3-12 years of age not suffering from thalassemia were not included. Data were collected through pretested questionnaire during February to May 2018. Data were analyzed and tabulated with the help of Microsoft Excel and SPSS version 21.0.

Results:

Association of iron rich food consumption with feeling of child fatigue was significant having p-value spinach (.041), beef (.000) and fish (.055) as they are less than 0.05, Table 1

Food consumption	child feel fatigue while doing slight activity		P-value
Spinach	Yes	No	
Daily	8	0	.041
1-2 times per week	19	0	
3-4 times per week	21	0	
Once a week	37	1	
Never	12	2	
Beef			
Daily	0	0	.000
1-2 times per week	2	2	
3-4 times per week	0	0	
Once a week	42	0	
Never	53	1	
Fish			
Daily	1	1	.055
1-2 times per week	1	0	
3-4 times per week	0	0	
Once a week	41	0	
Never	54	2	

Table 1: Association of iron rich food consumption with feeling of child fatigue

According to food group consumption only 4% of thalassemic patients took green leafy vegetables on daily basis whereas 14% of them never consumed it.63% of thalassemic children consumed starchy vegetables and 54% consumed non starchy vegetables on daily basis while 4% didn't consumed starchy and 8% didn't consumed non starchy vegetables at all. Whereas 30% took fruits on daily basis and 5% never consumed.58% consumed milk on daily basis while 5% never consumed it.21% of thalassemic children consumed fats and oils daily whereas 25% of them never consumed it, Table 2.

Food	Daily	1-2 times per week	3-4 times per week	Once a week	Never	Total
Green leafy vegetables	8	19	21	38	14	100
Starchy vegetables	63	13	8	12	4	100
Non starchy vegetables	54	6	13	19	8	100
Fruits	30	19	10	36	5	100
Milk	58	9	9	19	5	100
Fat and oils	21	14	6	34	25	100

Table 2: Food group consumption of thalassemic patients

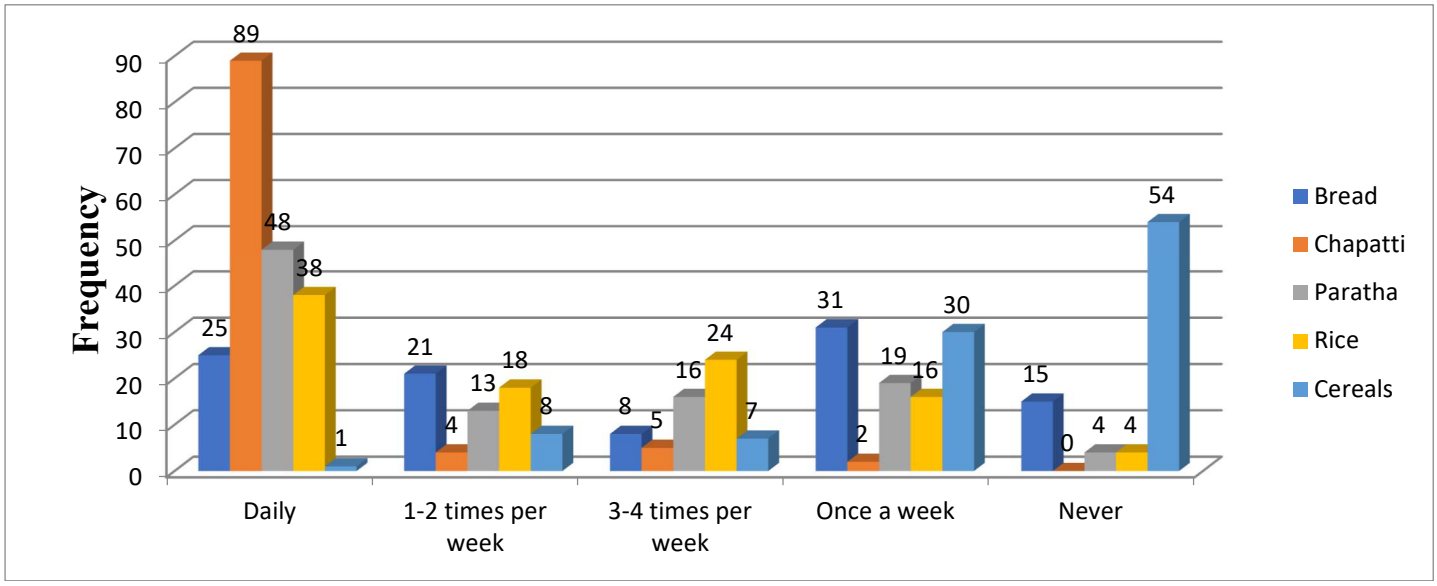

Figure 1: Consumption of bread and cereal group among thalassemia patient

Out of 100 thalassemic children, 31% thalassemia children were consuming bread once a week. The results showed that 89% thalassemic children were consuming chapatti on daily basis. 48% of the participants were consuming paratha on daily basis. 38% children were consuming rice daily, 40% of thalassemia children were not consuming cereal or porridge at all, Figure 1. Out of 100 participants, 54% were not consuming beef at all. The results showed 56% respondents were not consuming fish at all. 27% of thalassemic children were consuming chicken 3-4 times per week, 35% of thalassemic children consumed eggs 1-2 times per week, 63% of thalassemic children consumed legumes on daily basis, Figure 2

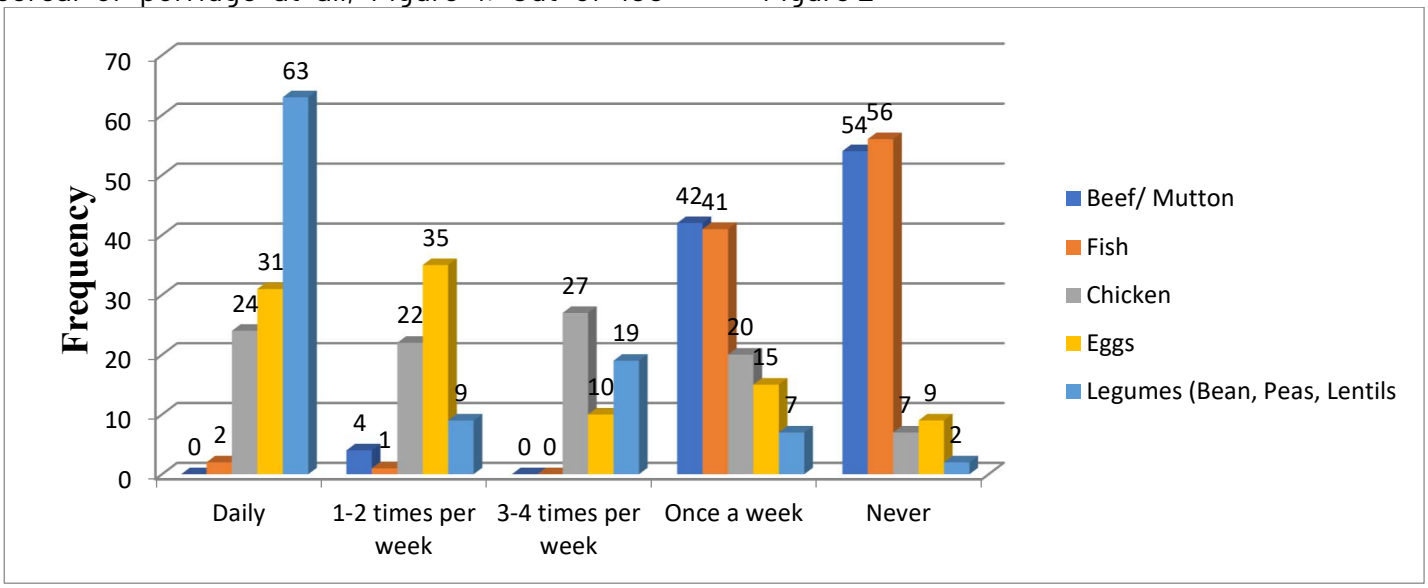

Figure 2: Consumption of diet rich in protein among thalassemic patients

Discussion:

A study was conducted to observe the micro-nutrient deficiencies in thalassemia patients. The study revealed that micronutrient deficiencies such as vitamin A,C and E were common among thalassemic patients as only 30% were consuming fruits on daily basis A similar study also showed similar results conducted by Sherief LM and Abd El-Salam SM in

2014 Showed that there was significant decrease of vitamins A, C and E [14,19]. Current study showed milk consumption 58% daily 9% 1-2 times per week 9% 3-4 times 19% once a week and 5% never consumed milk at all. A similar study conducted by Mahan LK and Raymond JL in 2016 also shows the same results that due to bone formation high amount of calcium may be needed [12].

In a recent study it was seen that thalassemia patients had lower intake of green leafy vegetables as they contain rich amount of iron. The results concluded that the patients only took 8% dietary intake of iron on daily basis. A similar study was conducted previously by Mahan LK and Raymond JL in 2016 showing low dietary intake of iron in the diet of thalassemia patients [12]. Also a study conducted by Eloneium A and Ahosaini A in 2015 it was discussed that the intake of iron should be restricted [17]. In a current study the dietary intake of beef was observed in contrast with vitamin B12 deficiency in thalassemia patients. The study revealed that out of 100% only 4% consumed beef 1-2 times per week, 42% patients consumed once a week whereas, 54% never consumed meat. A similar study also showed similar results conducted by Sherief LM and Abd El-Salam SM in 2014 showed there was significant decrease in vitamin B-12 [14,20].

Conclusions:

Children enrolled in the study were mostly found to be malnourished. Hence it is required that the parents and caregivers should be properly educated in this regard.

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