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Thalassemic Adolescents' Knowledge toward Patterns Nutrition at Blood Diseases Center

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ABSTRACT

There are two general forms of genetic diseases of the hemoglobin molecule: hemoglobinopathies and thalassemia. The two types of thalassemia are α-thalassemia and β-thalassemia, depending on which globin chain of the hemoglobin molecule is not formed efficiently. An estimated 60,000 newborns worldwide are impacted each year.

Adolescents with thalassemia were asked to participate in a cross-sectional, non-experimental (descriptive) study to find out how much they knew about healthy eating. This research was carried out between 1st May, 2024 to 1st March, 2025. One hundred teenagers with thalassemia who were attending the hematology center in the holy city of Karbala were chosen as a non-probability (purposive) sample. The 18 items on the tool were used to assess the knowledge of teenagers with thalassemia.

Our study at the Hematology Center in the holy city of Karbala revealed that 53% of patients were female, 34% were between the ages of 14 and 16, 70% lived in an urban area, 32% could read and write, 66% had a sufficient monthly income, 76% had major thalassemia, 69% exchanged blood every week, and 88% used blood transfusions as part of their treatment. The study's findings demonstrated that the patients' degree of nutrition awareness was modest.

Recommendations include holding seminars and educational courses for thalassemia patients regarding the right diet and foods that are good for them, as well as producing booklets with dietary guidelines and television shows or social media posts about the right diet for thalassemia patients.

Keywords: *Thalassemic Adolescents, Thalassemia, Patterns Nutrition, Blood Diseases Center.*

1. INTRODUCTION

The hereditary abnormalities of the hemoglobin molecule are among the commonest of clinically significant genetic diseases. They fall into two broad categories: thalassemia, where a mutation affects the quantity of protein produced, and hemoglobinopathies, where a structural alteration of the hemoglobin molecule results in the synthesis of a different protein. [(1)] Both the β globin cluster on chromosome 11 with the genes for the γ, δ, and β globin chains and the α globin cluster on chromosome 16 with the two α globin genes HBA1 and HBA2 control the creation of the globin chains. A balanced generation of α and non-α globin chains, which guarantees a reciprocal pairing into the typical tetramers, characterizes the physiological state. [(2)] This balance is upset in thalassemia when one of the globin chains is not produced correctly. When a growing red cell produces fewer globin chains, the usually produced chain will accumulate since it can no longer find the same quantity of its heterologous partner to assemble into the normal heterotetrametric. α-thalassemia is the accumulation of β globin chains due to insufficient production of α globin chains; β-thalassemia is the accumulation of β globin chains due to insufficient production of β globin chains. The development of techniques to isolate and measure these globin chains allowed for these observations. These investigations made it possible to comprehend how the chain imbalance causes the pathophysiology of these disorders. [(3)]

This leads to poor erythropoiesis since it occurs within the erythropoietic tissue. A portion of the immature red blood cells enter the bloodstream. They are brittle and prone to hemolysis due to their membrane defect. Additionally, they have changed deformability, and the spleen traps them, where macrophages kill them. This causes the spleen to grow to a potentially gigantic size, which can result in functional hypersplenism, which involves the removal of both red and white blood cells as well as platelets. [4]

Blood transfusions are used to treat severe anemia. Frequent transfusions starting in early childhood cause significant iron overload in the serious transfusion-dependent types. In a healthy state, 1-2 mg of iron are taken in through diet each day and the same amount is eliminated through feces. In thalassemia, increased gastrointestinal absorption of iron exacerbates transfusion iron burden and causes the excess iron to be absorbed by liver-produced proteins such as ferritin and transferrin. Iron that is attached to proteins is not harmful and is mostly deposited in the liver. [5]

2. METHOD AND MATERIALS

In order to ascertain the knowledge of 100 adolescents with thalassemia who were admitted to the Children's Teaching Hospital in the city of Karbala between July 30, 2024, and January 10, 2025, a descriptive (cross-sectional) study was carried out. One hundred teenagers who were admitted to the Hematology Center were included in the non-probability (purposive) sample.

One technique for gathering data that aids in the study's production of the expected results is the Questionnaire. The current study's knowledge dependability coefficient is (0.88). In order to determine the study's consistency and reliability, clarity and effectiveness all of which were verified the typical time required to gather data for every subject, which can be estimated during the interview and to spot any potential issues, a preliminary study was conducted.

3. RESULT

Table 1: distribution of the sociodemographic characteristic of patients

Variables		Frequency	Percent
Sex	Male	47	47.0
	Female	53	53.0
	Total	100	100.0
Age	11-13	33	33.0
	14-16	34	34.0
	17-19	33	33.0
	Total	100	100.0
Resident	Urban	70	70.0
	Rural	30	30.0
	Total	100	100.0
Education	Read and writes	32	32.0
	Primary school graduate	31	31.0
	Intermediate graduate	24	24.0
	Preparatory school graduate	13	13.0
	Total	100	100.0
Monthly income	Enough	66	66.0
	May be enough	26	26.0
	Not enough	8	8.0
	Total	100	100.0

Type of thalassemia	Major	76	76.0
	Mild	19	19.0
	Minor	4	4.0
	I don't know	1	1.0
	Total	100	100.0
Number of blood exchange	Weekly	69	69.0
	Monthly	31	31.0
	Total	100	100.0
Therapy plan	Blood transfusion	88	88.0
	Deferoxamine	11	11.0
	Other	1	1.0
	Total	100	100.0

Table 2: distribution of patients' knowledge about nutrition

Items	Response					
	Correct		Incorrect		MS	Ass.
	f	%	f	%		
Cow liver	84	84.0	16	16.0	1.84	H
Vegetables	64	64.0	36	36.0	1.64	M
Limon	34	34.0	66	66.0	1.34	M
Red meat	6	6.0	94	94.0	1.06	L
Spanch	64	64.0	36	36.0	1.64	M
Orange juice	13	13.0	87	87.0	1.13	L
Nuts	28	28.0	72	72.0	1.28	L
Beverage drinks	78	78.0	22	22.0	1.78	H
Dairy product	13	13.0	87	87.0	1.13	L
Melon	12	12.0	88	88.0	1.12	L
Over all mean score	**1.39**		**Assessment**		**moderate**	

Table 3: distribution of patients' knowledge about nutrition according to overall mean score

Level of knowledge	Frequency	Percent
Low	37	37.0
Moderate	59	59.0
High	4	4.0

Total	100	100.0
Mean and standard deviation	1.39±0.174	

4. DISCUSSION OF THE STUDY RESULTS

1St Part: Discussion of the sociodemographic characteristic of patients.

Based on Table (1) Participants' gender: Our research's statistics showed that there are more female than male, with 53% of the population being female. This finding is in line with a study published in 2021 by Asa titled Empowering Thalassemia Patients and Family to Increase Public Knowledge on Thalassemia % 76. [6]

At 70%, the bulk of research participants lived in rural areas. In 2015, Shareef conducted a study "Assessment of Knowledge of Adolescents with Thalassemia Major Regarding Iron Chelating Therapy, the 74% of participants lived in rural areas. [7]

Regarding the educational level According to the statistics, 32% of participants were the largest group to read and write. This is comparable with Az-zahra study in 2019 entitled The Depression Categories of Adolescent with Beta-Thalassemia Major 51.4% were read and write. [8]

The majority of participants—66%—have incomes that are adequate to cover their expenses. Empowering Thalassemia Patients and Families to Increase Public Knowledge on Thalassemia 93% is a Asa study from 2021 that supports our results. [6]

Regarding blood transfusion operations show that 69% of participants perform these procedures weekly, which is in line with a 2019 study by Az-zahra titled Depression Categories of Adolescent with Beta-Thalassemia Major 37.1%. [8]

The treatment plans show 88% of participants are utilizing the blood transfusion plan, which is the highest number. A 2015 Boonchooduang study titled "Health-related Quality life in Adolescents with Thalassemia 53.13%" supports this. [9]

2nd Part: Discussion of patients' knowledge about nutrition

Table (2) showed that patients' mean score of 1.39 indicated a modest level of nutrition knowledge. The findings of the 2018 study by Ebrahim, titled "Knowledge and Beliefs Regarding Thalassemia in an Urban Population," are in line with this outcome. [10]

5. CONCLUSIONS

The finding shows that 53% of patients were females, 34% at age 14-16 years, 70% urban resident, 32% read and write, 66% had enough monthly income, 76% had major thalassemia, 69% weekly did blood exchange, 88% used blood transfusion as a therapy plan.

The indicated that patients had moderate level of knowledge about nutrition at mean score (1.39).

There was a statistically significant relationship between participants' knowledge and monthly income. also; It shows that there is no statistically significant relationship between participants' knowledge and their other demographic data.

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