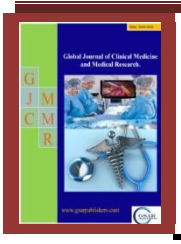

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KNOWLEDGE, ATTITUDESAND PRACTICES REGARDING NUTRITION OF MOTHERS WITH CHILDREN SUFFERING FROM THALASSEMIA UNDER TREATMENT AT TAY NGUYEN REGIONAL GENERAL HOSPITAL

BY

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Abstract

Introduction: *Thalassemia is a group of hemoglobin disorders characterized by genetic anemia and reduced or absent globin formation. The disease profoundly affects the growth and physical development of children. Therefore, the knowledge, attitudes, and practices regarding nutrition for children among mothers are crucial.*

Study Objectives*: To evaluate the knowledge, attitudes, and practices related to nutrition among mothers with children suffering from Thalassemia who are being treated at the Tay Nguyen Regional General Hospital in 2024 and some related factors.*

Subjects and Methods*: A cross-sectional descriptive study was conducted with 160 mothers of children with Thalassemia receiving treatment at the Tay Nguyen Regional General Hospital*

Results: *The mothers were aware that children with Thalassemia need a nutritious diet (88.8%); a diet rich in protein and vitamins (86.2%) and different diets for each age (87.5%); 84.4% of mothers expressed concern about feeding children iron-rich foods; 62.5% were willing to adopt a diet low in iron and high in Vitamin C; 96.2% knew that food preparation should vary by age but 66.2% of mothers did not provide children with the four essential food groups daily and 68.7% did not supplement their children with milk daily.*

Conclusion: *The knowledge and attitudes regarding nutrition among mothers were relatively good at rates of 70.6% and 69.4%. However, the correct nutritional practices among mothers were very low, at 14.4%. Educational programs on nutritional practices for mothers are needed.*

Keywords: *Thalassemia; Knowledge; Attitudes; Practices.*

INTRODUCTION

Thalassemia is the result of mutations in the genes encoding the alpha or beta-globin chains of hemoglobin. According to the World Thalassemia Federation in 2021, there are approximately over 270 million carriers of the disease worldwide and more than 300,000 children are born each year with one of the Thalassemia syndromes or one of the structural hemoglobin variants[11]. In Vietnam, research conducted by the Central Institute of Hematology and Blood Transfusion since 2017 has shown that carriers of Thalassemia/hemoglobin exist with varying frequencies among all 54 ethnic groups across the country, with an estimated average carrier rate of Thalassemia/hemoglobin of 13.8% for all ethnic groups nationwide [2]. The disease profoundly affects the growth, physical development and quality of life of patients. Also creating economic and healthcare burdens for the patients' families and communities. Establishing a proper nutrition regime will contribute to improving treatment efficacy and quality of life for children with Thalassemia. This heavily depends on the knowledge, attitudes, and practices regarding nutrition of mothers caring for children with Thalassemia. In Dak Lak, according to statistics from the Pediatrics Department of the Tay Nguyen Regional General Hospital in 2023. There were 2,052 hospitalizations of children with Thalassemia for treatment,

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and in the first quarter of 2024, there were 577 hospitalizations. With the desire to understand the current status of knowledge, attitudes, and practices regarding nutrition among mothers of children with Thalassemia as well as to identify some factors related to their knowledge, attitudes, and practices about nutrition for children with Thalassemia. Our group conducted the study: "Knowledge, Attitude and Practice regarding nutrition of mothers with children suffering from Thalassemia under treatment at Tay Nguyen regional general hospital"

II. SUBJECTS AND METHODS

2.1. Study Subjects

- Mothers of children diagnosed with Thalassemia who are receiving treatment at the Pediatrics Department of Tay Nguyen regional general hospital from January 2024 to December 2024.
- Agree to participate in the study.
- Have good communication skills in Vietnamese.

2.2. Study Design: Cross-sectional descriptive design.

2.3. Sampling Method

Purposeful sampling of the entire population.
Sampling duration: 2 months.
After 2 months of data collection, 160 eligible samples were obtained for the study.

2.4. Data Collection

A pre-designed self-administered questionnaire will be used with observation and participation from the researcher during the mothers' responses to clarify any questions. The questionnaire structure includes 6 sections: 8 questions about the general information of the mothers; 6 questions about the general information of the children; 3 questions about nutritional counseling information received by the mothers; 10 questions to assess the knowledge of mothers regarding the nutrition of children with Thalassemia; 8 questions to assess the attitudes of mothers with children suffering from Thalassemia about the importance of nutrition; 7 questions to evaluate the practices of mothers with children suffering from Thalassemia regarding adherence to nutritional guidelines.

Mothers are required to read each question carefully and select the answer they believe is correct by marking the appropriate option.

2.5. Data Analysis

Data processing:

- Each questionnaire is checked immediately after the interview for completeness and relevance. Incomplete or inappropriate questionnaires will be re-interviewed or discarded.
- Data analysis: Data analysis: Data is entered and analyzed using SPSS 26 software

III. RESULTS

Table 3.1. Knowledge of Nutrition Among Mothers (n=160)

Content	n	Percentage (%)
Nutrient-rich diet	Correct	142
	Incorrect	18
High in protein and vitamins	Correct	138
	Incorrect	22
Nutritional needs differ at each age	Correct	20
	Incorrect	140
Iron-restricted diet	Correct	129
	Incorrect	31
Drinking fresh tea after meals	Correct	88
	Incorrect	72

The survey on the mothers' knowledge of nutrition for children with Thalassemia revealed that a suitable diet is a nutrient-rich diet (88.8%); 87.5% of mothers know that nutritional needs different at each age; most mothers have knowledge about daily supplementation of milk and dairy products (93.1%); they choose a diet high in protein and vitamins (86.2%) and 80.6% believe that children with Thalassemia need an iron-restricted diet while 55% of mothers responded that children should drink fresh tea after meals.

3.2. Attitude Towards Nutrition of Mothers

Table 3.2. Attitude Towards Nutrition of Mothers (n=160)

Content		n	Percentage (%)
Appropriate nutrition regime	Important	131	81.9
	Not sure	29	18.1
Necessity of protein, calcium, and iron for child development	Necessary	157	98.1
	Not sure	3	1.9
Concern when feeding children iron-rich foods	Yes	135	84.4
	No	25	15.6
Willingness to adopt a low-iron - Vitamin C diet	Yes	100	62.5
	No	60	37.5

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The survey on the attitudes of mothers regarding appropriate nutrition for children with Thalassemia showed that 81.9% of mothers believe that a proper nutrition regime is very important for children. The development of children requires protein, calcium, and iron (98.1%). Most mothers expressed concern when feeding children iron-rich foods (84.4%). However, when asked if they would be willing to adopt a low-iron and Vitamin C diet, 37.5% of mothers responded that they would not implement such a diet.

3.3. Nutritional Practices of Mothers

Table 3.3. Nutritional Practices of Mothers (n = 160)

Content		n	Percentage (%)
Child's diet is prepared according to age	Yes	154	96.2
	No	6	3.8
Child receives all four food groups daily	Yes	54	33.8
	No	106	66.2
Child receives daily milk supplementation	Yes	50	31.3
	No	110	68.7
Yes Regularly provides child with foods high in iron and vitamin C	Yes	76	47.5
	No	84	52.5
Yes Regularly gives child tea	Yes	71	44.4
	No	89	55.6

The research results on the nutritional practices for children with Thalassemia showed that the majority of mothers prepare food according to the child's age (96.2%). However, 66.2% of mothers do not provide their children with all four food groups daily, and 68.7% do not give their children daily milk supplementation. Additionally, 52.5% of mothers do not regularly provide foods high in iron and vitamin C while 44.4% of mothers regularly gave their children tea after meals.

3.4. Knowledge, Attitude, and Practices Regarding Nutrition of Mothers

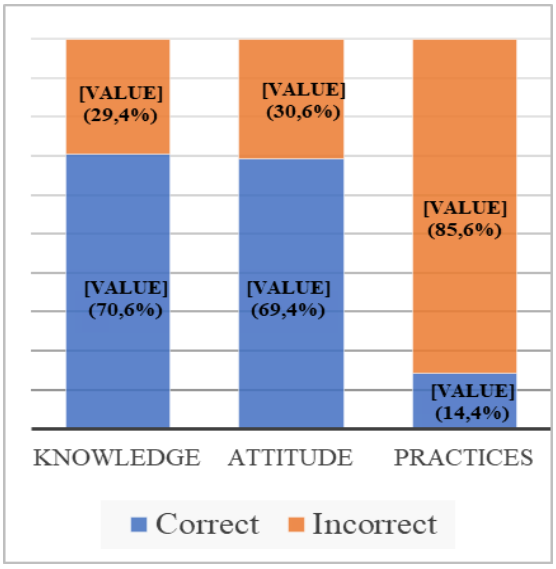

Figure 3.1. Knowledge, Attitude, and Practices Regarding Nutrition of Mothers

The results show that the majority of mothers have good knowledge and attitudes about nutrition for children with Thalassemia accounting for 70.6% and 69.4%, respectively. However, the rate of good practices regarding nutrition for children with Thalassemia among mothers is very low at only 14.4%.

IV. DISCUSSION

4.1. Knowledge of Nutrition Among Mothers

The research results indicate that 88.8% of mothers choose a suitable diet for children with Thalassemia as a nutritious diet, balanced in components and avoiding excessive iron intake. This percentage is consistent with the findings of author Duong Van Cua (87.5%) [1] but higher than the study by Mim in Bangladesh in 2023 which reported 77.26% [8]. This rate suggests that most mothers are aware of the importance of a suitable diet for children with Thalassemia. Choosing a nutritious and balanced diet is essential for enhancing children's health especially in disease management. Moreover, 87.5% of mothers believe that there are differences in dietary needs for each age group. However, 12.5% of mothers made incorrect choices. This rate is higher compared to Duong Van Cua's study where 67.5% of parents of children with Thalassemia recognized that dietary needs different by age [1]. This study, mothers' awareness regarding this issue is better as they recognize that dietary adjustments are necessary to meet the nutritional needs at different ages. A diet rich in protein and vitamins is consistently recommended for children with Thalassemia. The results show that 86.2% of mothers correctly chose this option. This rate is significantly higher than that found in Nguyen Thi Tu Ngoc's study, which reported 56.3% [5]; Duong Van Cua's study at 65% [1] and the study by Man et al at 57% [7]. When mothers understand the correct and appropriate diet for children with Thalassemia, it can significantly improve the nutritional status of the children thereby enhancing their health and development. Limiting foods that are high in iron is one of the top recommendations from experts when advising on nutrition for

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children with Thalassemia. The survey results showed that 80.6% of mothers correctly identified the need to restrict iron in the diet. This result is higher than Seif's study, which reported 34.3% [10] and comparable to the study by Dinh Thi Thu Hang and Tran Thi Kim Dung, which found 81.7% [3] but lower than the 88.5% reported by Man et al. [7] and Duong Van Cua's study at 95% [1]. Nutritional deficiencies are common in Thalassemia due to hemolytic anemia, increased nutritional demands and conditions like iron overload and iron waste management. For children with Thalassemia, prolonged blood transfusions lead to iron overload, necessitating the use of iron-chelating agents. Therefore, controlling iron intake in their diet can improve their condition and reduce complications.

Regarding the encouragement for children to drink fresh tea after meals, only 55% of mothers answered correctly. This rate is lower compared to the study by Dinh Thi Thu Hang and Tran Thi Kim Dung which reported 73.3% [3]; Nguyen Thi Tu Ngoc's study at 81.3% [5]; Man et al at 69.9% [7] and Samararathna's study at 64.5% [9]. This percentage indicates that mothers' awareness of the effects of fresh tea on iron absorption is still low. Fresh tea can inhibit iron absorption. So, providing education on this topic is essential.

4.2. Attitude Towards Nutrition Among Mothers

The survey on mothers' attitudes regarding the importance of a suitable diet shows that the majority of mothers recognize the significance of proper nutrition with 81.9%. This result is higher than that of Mim's study when only 30% of mothers understood the importance of proper nutrition for children and about 50% did not pay attention to their children's dietary needs [8]. This is a positive indicator reflecting mothers' concern for the health and development of their children, especially those with genetic conditions like Thalassemia.

Mothers participating in this study were provided with accurate knowledge about nutrition including foods that should and should not be consumed for children with Thalassemia. They were even informed about the adverse complications that could arise if a proper diet is not followed. In this study, as many as 98.1% of mothers recognized the importance of nutrients such as protein, calcium and iron for children's development which is higher than the Man's study with 69.9% [7]. This result indicates that mothers' knowledge regarding the selection of appropriate foods for children with Thalassemia is quite good.

In this study, the majority of mothers (84.4%) expressed concern when feeding their children iron-rich foods and 62.5% showed a willingness to adopt the recommended diet. However, these results are lower than those of Man's study with 91.9% of mothers were concerned and 98.4% were willing to adopt a low-iron and Vitamin C diet [7]. Nonetheless, a significant proportion (37.5%) of mothers did not implement the recommended diet and 15.6% did not express concern about feeding their children iron-rich foods. This rate is concerning and may indicate that some mothers do not fully understand the consequences of consuming iron-rich foods and Vitamin C or they have not been adequately educated about the nutritional needs of children with Thalassemia.

4.3. Nutritional Practices of Mothers

The research results on nutritional practices for children with Thalassemia provide an overview of the state of nutritional care, highlighting both positive aspects and limitations. There are 96.2% of mothers prepare food that varies according to age. This is a positive sign indicating that most mothers understand that children's nutritional needs must change with age. However, the study shows that 66.2% of mothers often do not provide their children with all four food groups daily. Children with Thalassemia need not only to control iron intake but also to receive adequate energy, protein, vitamins and minerals to support their immune system and growth. A lack of a well-balanced diet increases the risk of malnutrition and underweight conditions. Additionally, 52.5% of mothers do not adhere to a specific diet for children with Thalassemia indicating that a significant proportion of mothers still lack knowledge about nutrition for these children.

For children in general and particularly for those with Thalassemia, milk is an important source of calcium that helps in developing strong bones. Children with Thalassemia often face bone issues and not providing daily milk supplementation increases the risk of osteoporosis or bone deformities. In this study, 68.7% of mothers did not provide daily milk for their children. The high percentage of children not receiving daily milk can be explained by the fact that most mothers live in rural and remote areas, facing significant economic difficulties with over 60% classified as poor or near-poor. In challenging economic conditions, children often receive a poor diet that may even lack sufficient daily energy. Therefore, the results regarding the lack of daily milk supplementation and inadequate intake of all four food groups are understandable.

In addition to a well-balanced diet, children with Thalassemia require special attention to limit iron and Vitamin C in their diet while increasing foods that inhibit iron absorption. In this study, only 52.5% of mothers correctly practiced not frequently giving their children high-iron and high-Vitamin C foods. This rate is much lower than Man's study, where 90.2% of mothers regularly avoided giving their children iron-rich foods and Vitamin C [7]. Another good practice in nutrition for children with Thalassemia is for mothers to provide tea after meals to inhibit iron absorption. However, in this study, only 44.4% of mothers regularly provided tea after meals. This rate is also significantly lower than Man's study, which reported 69.9% [7] and Samararathna's study, which found 64.5% of mothers offering tea after meals [9]. Caring for the nutrition of children with Thalassemia is not only the responsibility of mothers but also requires strong support from the healthcare system and community. Enhancing education and improving nutritional care practices will help elevate the quality of life for children, reduce the risk of complications and improve treatment efficacy.

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4.4. Summary of Knowledge, Attitude, and Correct Practices Regarding Nutrition for Children with Thalassemia Among Mothers

The results indicate that correct knowledge about nutrition for children with Thalassemia among mothers is relatively high at 70.6%. This rate is higher than that found in the study by DinhThi Thu Hang and Tran Thi Kim Dung with 56.7% of mothers had good knowledge about nutrition for children with Thalassemia [3]. It also exceeds the findings of Seif et al in 2021 which 34.3% of mothers had correct knowledge [10]. Additionally, this result is higher than Atshan's study, after an intervention program with 65% of mothers had correct knowledge [6]. However, it is still lower than Mim's findings in 2023 which showed a rate of 77.7% [8]. The differences in the rates of correct knowledge among the studies can be attributed to factors such as time, location, and the study population being different.

In addition to the relatively high rate of correct knowledge among mothers, the correct attitudes of mothers towards nutrition for children with Thalassemia also accounted for a high percentage (69.4%). This result is comparable to the study by NguyễnThịPhươngNgân et al. in 2020 in TháiNguyên (68.9%) [4] but significantly higher than the findings of Mim, where only 46.87% of mothers had a good attitude [8]. Positive attitudes will motivate mothers to apply the knowledge they have learned in practice, thereby improving the nutritional regimen for children and maintaining their health status effectively.

The survey results on nutritional practices for children with Thalassemia among mothers indicate that the percentage of mothers practicing correct nutrition is very low at only 14.4%. This result is significantly lower than the studies by Mim et al., which reported 18.56% [8]; Seif et al with 35.7% [10]. The notable discrepancy between knowledge, attitude, and practice demonstrates that while mothers have good awareness and attitudes, the implementation of a correct nutritional regimen still faces many limitations. This highlights the necessity of organizing practical training courses on nutrition to help mothers better understand how to prepare and choose appropriate foods for their children. Additionally, providing easily understandable guidelines on diets for children with Thalassemia could help mothers apply their knowledge in practice.

V. CONCLUSION

The knowledge and attitudes of mothers regarding nutrition are relatively good, with rates of 70.6% and 69.4%, respectively. However, the correct nutritional practices among mothers are very low, at only 14.4%. There is a need for educational programs focused on nutritional practices for mothers.

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