

## Mother's Knowledge and Practice Regarding care of their Children Suffering from thalassemia

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### Abstract

Thalassemia is one of the most common genetic disorders worldwide. Therefore, it is a major public health problem causing highest morbidity and mortality rate. Aim: The aim of this study was to assess mother's knowledge and practice regarding care of their children suffering from thalassemia. Design: A descriptive study was used. Setting: The study was conducted at in patient pediatric department of children's Hospital affiliated to Fayoum University Hospital. Sample: non-probability purposive sampling technique that was consisted of 70 mothers and their children with confirmed diagnosis of thalassemia. Tool: Data were collected through the use of the structured interviewing questionnaire and Observational Checklists Results: The study note that, two thirds of the studied mothers had unsatisfactory knowledge about thalassemia. Furthermore, more than one half of the studied mother had unsatisfactory practice about thalassemia. Conclusion: The current study concluded that, the mothers had unsatisfactory knowledge and practice about thalassemia Recommendations: The study recommended that, provide support and education programs for parents to improve the care provided to children with thalassemia.

Keywords: Mothers, Knowledge, Practice, Children, Thalassemia.

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### I. Introduction

Thalassemia is the most common genetic disorder over the world. It estimated that there are 270 million carriers in the world and, 300000 up to 400000 are annually born with thalassemia in the world. Therefore, children with thalassemia have a large range of developmental disorders with slow growth speed and poor body mass index, which may be due to low hemoglobin, anemia and high levels of body ferritin (Shahraki, et al., 2020).

In Egypt, occurrence of thalassemia disorders is increasing; carrier rate 5.3 -  $\geq$  9%, and 1000/1.5 million / year live births born with thalassemia and about 10,000 registered thalassemia cases and more than 20,000 non-registered cases divided into 95% are beta thalassemia major and 5% are thalassemia intermediate (Bahnasawy, et al., 2017).

Children with beta thalassemia major suffer from chronic anemia due to hemolysis and ineffective erythropoiesis. Therefore, regular blood transfusion to maintain the pre-transfusion hemoglobin concentration between 9.5 and 10.5 g/dL are essential for their survival and avoidance complications which result from accumulation of iron, which leads to dysfunction and failure of the major organs including heart, liver and endocrine glands such as pituitary, thyroid, parathyroid, adrenal and pancreas (Khalil, 2019)

Pediatric nurses have an important role in educating the mothers and focusing on their strength points and capacities, educational needs. Therefore, enhancing mothers knowledge regarding control of symptoms, minimizing drug side effects, participation in physical activities and living a normal life and improving their participation in the process of care to enhance quality of life and the abilities of mothers ( Khalil, et al., 2019). Mothers have a central role in delivering hospital and home care for their children with thalassemia, so the aim of this study was to assess mother's knowledge and practice regarding care of their children suffering from thalassemia

### Significance of the study:

Thalassemia is considers a critical health issue in both developed and developing countries with approximately 330,000 affected newborns each year. The number of children with thalassemia in children's Hospital affiliated to Fayoum University Hospital is approximately 250 child coming to hospital monthly for

frequent blood transfusion (**unpublished statistical records from Fayoum University Hospital, 2020**). Mothers have a central role in delivering hospital and home based care for their children with thalassemia. On the other hand, the children can resume their normal activities and their quality of life improved.

**Aim of study**

Aim of this study was to assess mother's knowledge and practice regarding care of their children suffering from thalassemia.

**Research questions:**

- 1-What is mother's knowledge and practice regarding care of their children suffering from thalassemia?
- 2- Is there a relation between characteristics of mothers and their level of knowledge and practice regarding thalassemia?

**Subjects and methods:**

**Research design:** A descriptive study research design was used in the current study to achieve the aim of the study.

**Setting:** Children's Hospital affiliated to Fayoum University Hospitals at in patient Pediatric Department.

**Subjects:**

**The subjects of this study included the following:**

A non-probability purposive sampling technique was used with a total number of thalassemic children and their mothers sample size (70) was collected from previously mentioned setting. They were eligible for inclusion in the study sample whenever they met the following criteria:

**Inclusion criteria;** all available confirmed Beta thalassemic children aged from one to 18 years old from both genders and their accompanying mothers regardless their age, residence and socioeconomic standard. **Exclusion criteria;** other children who have any other types of anemia or physical or neurologic disorders were excluded from the study.

**Tools of data collection:**

Two tools were used in this study to collect the data, which developed by the researchers after reviewing the national and international related literatures.

**Tool I: A structured interviewing questionnaire** was developed in a simple clear Arabic language by the researchers based on relevant studies and references **Hassan and El afandy, (2019)** it consisted of the following parts:

**Part I:**

- **Characteristics of thalathmic children** including age, gender, weight, height, educational level, degree of Beta thalassemia, duration of illness and family history of thalassemia.
- **Characteristics of mothers** including age, educational level, occupational, marital status and number of family members.

**Part II:**

- **Mothers' knowledge regarding thalassemia** which consisted of 10 questions ended open and multiple choice questions about definition, sign and symptoms, management, complication, prevention of disease, prevention of complication source of mother's information about thalassemia.

**Part III:**

- **Mother's knowledge regarding nutrition** of child with thalassemia it consisted of 3 ended open and multiple choice questions. It included foods should be given to a child, foods forbidden given and examples about food should not be given.

**Part VI:**

- **Mothers' knowledge regarding blood transfusion of child with thalassemia** it contained 5 ended open and multiple choice questions. It included importance of blood transfusion, relation between blood transfusion and hemoglobin, the hemoglobin percentage allowed for transfusion, side effects during blood transfusion and precautions to prevent side effects during blood transfusion.

**Part VII:**

- **Mothers' knowledge questionnaire regarding physical activity** of child with thalassemia it contained 2 questions. It included importance and allowed physical activity.

**Scoring system:**

Knowledge of mothers was scored and calculated according to their answers, it was evaluated using the model key answers sheet that was prepared by the researcher. Each question had a score ranged from 0-2 grades, whereas, correct and complete answer had score 2 grades, correct but incomplete answer had score 1 grade and score zero was for an incorrect or unknown answer. The total score was 36 grades (equal 100%). The total scores converted to percentage and then categorized as following less than 60 % considered as unsatisfactory, while score of 60% or more was considered as satisfactory level of knowledge.

**Tool II: Observational checklist:** The observational checklist was adopted from: **Bowden and Greenberger, (2017)**, and modified by the researcher to suit the nature of study and reviewing from the researcher supervisors

to assess reported practice of mothers regarding to care of their children with thalassemia. It included ten procedures divided into; hand wash (11 steps), eye care (6 steps), breathing & coughing exercise (5 steps), range of motion (14 steps), weight (19 steps), height (13 steps), Body Temperature (13 steps), radial pulse (8 steps), oral drug administration by cup (13 steps), oral drug administration by dropper or syringe (12 steps), oral care (10 items) and role of mother during blood transfusion (11 items).

**Scoring system:** Each item of the observational checklist scored done (1) grad, while the not done (zero). The total numbers of steps in the observation checklist were 135 steps. That make a total score of (135) grad equal 100 %. The scoring system of mothers practice was classified into satisfactory practice when mothers practice is 75% and more. While unsatisfactory practice when mothers practice is less than 75%.

**Validity**

The content validity of the tools reviewed by 5 expert (2 in the fields of pediatrics medicine hematology and 3 in pediatric nursing) to test the content validity. The tools were examined for content coverage, clarity, relevance and applicability. Minor modifications of the tools were done according to the experts' comments on clarity of sentences, appropriateness of content and sequence of items.

**Reliability**

Reliability of the tools tested by using Cronbach's Alpha for testing internal consistency of the tools was performed. The results were 0.832 for structured interview questionnaire, 0.794 for observation check list and 0.835 for quality of life and 0.856 for family empowerment.

**-Pilot study:** Pilot study was conducted on 10% of the study subjects which constitute 7 mothers based on sample criteria. It was conducted to evaluate the clarity and applicability of the study tools. According to the obtained results from the pilot study, little modification was done e.g. rephrasing and rearrangements of some items. The involved mothers were excluded later from the main study sample.

**- Field work:** The actual field work was carried out for data collection over 6 months started from December 2019 till end of February 2020 then stop due to epidemic COVID19 then restarted from October 2020 till end of December 2020. Data collected three days per week during the morning shift from 9 a.m. to 12 p.m. Mother's interview to assess mother's knowledge about thalassemia using questionnaire sheet Also, data related to children were collected as children's characteristics (age and gender) and physical measurements and blood group were obtained from medical record of each child. Meanwhile, each mother was assessed regarding to their practice using observation sheet. The time spent to fill the questionnaire ranged between 30 to 40 minutes according to the needed explanation.

**Ethical considerations:**

The researcher contacted with the study subjects before collecting data of actual study for the purpose of providing simple explanation of the aim of the study to gain their cooperation and assure the mothers about the anonymity of their answers. Each study subject was secured that the study is harmless either physically or psychologically. All the gathered data was treated confidentially and was for research purpose only. An oral permission was obtained from the mothers before the participation in the study. They were informed that they have the rights to withdraw from the study at any time without given any reason.

**Administrative Design:**

An official permission was obtained by submission of official letters issued to the Dean of the Faculty of Nursing, Helwan University and the directors of Children's Hospital as well as Inpatient Pediatric Department in Pediatric Hospital affiliated to El Fayoum University Hospital to conduct the study.

**IV- Statistical Design:**

The collected data was organized, categorized, tabulated, entered and analyzed by using SPSS (Statistical Package for Social Sciences), soft-ware program version 20. Statistical significance and associations were assessed using the arithmetic mean, standard deviation (SD), chi square ( $X^2$ ), t- test and P-value to detect the relations between the variables of the study.

**II. Results**

**Table (1):** Number and percentage of the studied mothers according to their characteristics (n=70)

Mother's Characteristics	No.	%
<b>Age in years:</b>		
< 20 years	16	22.9
20 < 30 years	27	<b>38.5</b>
30 < 40 years	16	22.9
40 ≤ 50	11	15.7
<b>X±SD</b>	<b>27.3±4.18 years</b>	
<b>Place of residence:</b>		
Urban	29	41.4
Rural	41	<b>58.6</b>

<b>Current occupation:</b>	35	
Working	35	50.0
House wife		50.0
<b>Level of education:</b>	25	
Can't read and write	1	<b>35.7</b>
Read and write	8	1.4
Basic education	23	11.4
Intermediate education	13	32.9
High education		18.6
<b>Marital Status</b>		
Married	56	<b>80.0</b>
Divorced	10	14.3
Widow	4	5.7

**Table (1):** Revealed that, the mean age of the studied mothers were  $27.3 \pm 4.18$  years old, more than half (**58.6%**) of them were lived in rural areas. and 50% of the studied mothers were housewives. Also this table showed that, more than one third (35.7%) of them can't read and write. While majority (80%) of the studied mothers were married.

**Table (2):** Number and percentage of the studied children with thalassemia according to their characteristics (n=70)

Children's' Characteristics	No.	%
<b>Age in years:</b>		
1 < 6 years	23	32.9
6 < 12 years	38	<b>54.2</b>
12 ≤ 18 years	9	12.9
<b>X ±SD</b>	<b>7.54±3.12years</b>	
<b>Gender:</b>		
Male	48	<b>68.6</b>
Female	22	31.4
<b>School stage:</b>		
nursery	23	32.9
Primary	38	<b>54.2</b>
Preparatory	9	12.9
<b>Weight:</b>		
Normal	36	<b>51.4</b>
Abnormal	34	48.6
<b>X ±SD</b>	<b>14.66±3.21 kg</b>	
<b>Height:</b>		
Normal	43	<b>61.4</b>
Abnormal	27	38.6
<b>X ±SD</b>	<b>104.62±5.7 cm</b>	

**Table (2):** clarified that, the mean age of studied children was  $7.54 \pm 3.12$  years old, more than two third of them (**68.6%**) were males, while more than half (**54.2%**) of them were in primary school. Regarding weight, slight more than half **51.4%** had normal weight with mean weight was  $14.66 \pm 3.21$  and **61.4%** had normal height with mean height was  $104.62 \pm 5.7$ .

**Table (3):** Number and percentage of the studied mothers according to their knowledge about children with thalassemia n =70

Knowledge about thalassemia	Satisfactory		Unsatisfactory	
	N	%	N	%
Definition of thalassemia	27	38.6	43	61.4
Manifestations of thalassemia	17	24.3	<b>53</b>	<b>75.7</b>
Treatment of thalassemia	23	32.9	47	67.1
Prevention of thalassemia	18	25.7	<b>52</b>	<b>74.3</b>

Complications of thalassemia	20	28.6	50	71.4
Avoid complications of thalassemia or no	24	34.3	46	65.7
Method's to avoid complications	18	25.7	<b>52</b>	<b>74.3</b>

**Table (3):** Showed that 75.7%, 74.3% and 74.3% respectively of studied mothers had unsatisfactory knowledge about manifestation, prevention and methods to avoid complications of thalassemia.

**Table (4):** Number and percentage of the studied mothers according to their knowledge about nutrition of children with thalassemia n =70

Nutrition of children with thalassemia	Satisfactory		unsatisfactory	
	N	%	N	%
Permitted foods to a child with thalassemia	26	37.1	44	62.9
Prohibited foods to a child with thalassemia	24	34.3	46	<b>65.7</b>

**Table (4):** This table revealed that, regarding to the studied mothers knowledge about nutrition of children with thalassemia, more than half (65.7 %) of studied mothers had unsatisfactory knowledge about foods prohibited to their child with thalassemia.

**Table (5):** Number and percentage of the studied mothers according to their knowledge about blood transfusion for their children with thalassemia n =70

knowledge about blood transfusion	Satisfactory		Unsatisfactory	
	No.	%	No.	%
	Importance of blood transfusion	<b>26</b>	<b>37.1</b>	44
Relation between blood transfusion and hemoglobin level	24	34.3	46	65.7
Percentage of hemoglobin for infrequent blood transfusion	23	32.9	47	67.1
Side effects appear during a blood transfusion	21	30.0	49	70.0
Precautions to prevent side effects	20	28.6	<b>50</b>	<b>71.4</b>

**Table (5):** In relation to the studied mothers' knowledge about blood transfusion for their children with thalassemia, this table revealed that, more than two third (71.4%) of them had unsatisfactory knowledge about precautions to prevent side effects.

**Table (6):** Number and percentage of the studied mothers according to their knowledge about physical activity of child with thalassemia n=70

knowledge about physical activity	Satisfactory		Unsatisfactory	
	No.	%	No.	%
Importance of sport for a child with thalassemia	23	32.9	<b>47</b>	<b>67.1</b>
Permit sport for child with thalassemia	26	37.1	44	62.9

**Table (6):** As observed from this table that, more than two third (67.1%) of the studied mothers had unsatisfactory knowledge regarding to importance of sport for a child with thalassemia.

**Table (7):** Number and percentage of the studied mothers according to their total knowledge about thalassemia n=70

Total knowledge about thalassemia	No.	%
Satisfactory	23	32.9
Unsatisfactory	47	67.1

**Table (7):** It is clear from this table that, than two third (67.1%) of the studied mothers had unsatisfactory total knowledge about thalassemia.

**Table (8):** Number and percentage of the studied mothers according to their total reported practice for children with thalassemia n=70

Items	Satisfactory		Unsatisfactory	
	N	%	N	%
Hand wash	26	37.1	44	62.9
Oral care	24	34.3	46	65.7
Respiration	26	37.1	44	62.9
Pulse	23	32.9	47	67.1
Axillary temperature	25	35.7	45	64.3
Range of motion	28	40.0	42	60.0
Breathing & coughing exercise	27	38.6	43	61.4
weight	25	35.7	45	64.3
Height	26	37.1	44	62.9
blood transfusion	26	37.1	44	62.9
Oral drug administration by dropper or syringe	26	37.1	44	62.9
Oral drug administration by a cup	25	35.7	45	64.3

**Table (8):** This table clarified that, more than two third (67.1%) of the studied mothers had unsatisfactory practice about pulse and slightly less than two third (65.7%) of mothers had unsatisfactory practice about oral care.

**Table (9):** Number and percentage of the studied mothers regarding to their total reported practice for children with thalassemia n=70

Total level of mother's practice	No.	%
Satisfactory	25	35.7
Unsatisfactory	45	64.3

**Table (9):** This table reflected that, more than half (64.3% ) of the studied mothers had unsatisfactory level of total reported practice about thalassemia.

**Table (10):** Relation between the studied mothers characteristics and their knowledge n=70

Level of knowledge Mothers' characteristics	Satisfactory		Unsatisfactory		X <sup>2</sup>	P
	No.	%	No.	%		
<b>Age in years:</b>						
Less than 20 years	0	0.0	16	22.9	26.267	0.001*
From 20 to less than 30 years	5	7.1	22	31.4		
From 30 to less than 40 years	9	12.9	7	10.0		
40 or more	9	12.9	2	2.8		

<b>Place of residence:</b>						
Urban	12	17.1	17	24.3	1.630	0.202
Rural	11	15.7	30	42.9		
<b>Current occupation:</b>						
Working	15	21.4	20	28.6	3.173	0.075
Housewife						
<b>Level of education:</b>						
Can't read and write	0	0.0	25	35.7	23.328	0.001*
Read and write	1	1.4	0	0.0		
Basic education	3	4.3	5	7.1		
Intermediate education	10	14.3	13	18.6		
High education	9	12.9	4	5.7		

P-value >0.05: Not significant (NS); P-value <0.05: Significant (S); P-value < 0.01: highly significant (HS) )

**Table (10):** As regards to the relation between the mothers characteristics and their knowledge this table represent that, there was a highly statistical significant difference between the studied mothers knowledge and their ages, level of education with p- value = 0.001. However, there was no statistical significance difference between mothers' knowledge and their residence and occupation

**Table (11):** Relation between the studied mothers characteristics and their level of practice n=70

Level of practice Mothers' characteristics	Satisfactory		Unsatisfactory		X <sup>2</sup>	P
	No.	%	No.	%		
<b>Age in years:</b>						
Less than 20 years	2	2.8	14	20.0	8.824	<b>0.032*</b>
From 20 to less than 30 years	9	12.9	18	25.7		
From 30 to less than 40 years	10	14.3	6	8.6		
40 or more	4	5.7	7	10.0		
<b>Place of residence:</b>						
Urban	13	18.6	16	22.9	1.791	0.181
Rural	12	17.1	29	41.4		
<b>Current occupation:</b>						
Working	13	18.6	22	31.4	0.062	0.803
Housewife	12	17.1	23	32.9		
<b>Level of education:</b>						
Can't read and write	3	4.3	22	31.4	12.315	<b>0.015*</b>
Read and write	1	1.4	0	0.0		
Basic education	3	4.3	5	7.1		
Intermediate education	10	14.3	13	18.6		
High education	8	11.5	5	7.1		

P-value >0.05: Not significant (NS); P-value <0.05: Significant (S); P-value < 0.01: highly significant (HS)

**Table (11):** As regards to the relation between the mothers characteristics and their practice this table represent that, there was a statistical significant difference between the studied mothers practice and their ages , level of education with p- value = 0.032 and 0.015 respectively While there was no statistical significance difference between mothers practice and their occupation.

### III. Discussion:

Thalassemia is one of the most common genetic diseases worldwide. Therefore, it is a major public health problem causing highest morbidity and mortality rate. **Dashtban, et al., (2021)**. Meanwhile, this study was conducted to assess mother's knowledge and practice regarding care of their children suffering from thalassemia

Regarding the studied mothers' characteristics, the present study revealed that, the mean age of the studied mothers was 27.3±4.18 years old. In the same context **Kumar and Pujari, (2020)** who studied

knowledge, attitude, and practices among parents of  $\beta$  thalassemia children regarding thalassemia among 260 parents/caregivers of  $\beta$  thalassemic children in India and indicated that, the majority of the mothers' were in the age group of 21-30 year with mean age  $28.62 \pm 7.12$ . On the contrary **alizadeh, et al., (2019)** who studied caregiver burden and related factors in parents of children with thalassemia among 149 parents in Iran who found that, the age of majority of parents was 41-50 years with mean age of  $43.5 \pm 6.77$  years.

As regarding place of residence, more than half of the studied mothers were lived in rural areas. This finding can be attributed to wrong habits such as consanguinity marriage and lack of health education program about prevention of the heredity disease in rural areas than urban areas. This result is in consistent with **Hassan and El afandy, (2019)** who studied family empowerment program for mothers of children diagnosed with thalassemia in Egypt on 115 mothers of thalassemic children who found that, 74.8% place of residence were from rural areas. In addition **Abo Jeesh, et al., (2018)** who stated in the study conducted at Sudan about the effects of patients' and caregivers' knowledge, attitude, & practice (KAP) on quality of life among thalassemia major patients' that more than half of the sample was from rural areas.

In relation to educational level, the results of the current study showed that, more than one third of them can't read and write. Which indicated that illiteracy rate among the studied sample was high. This result goes in line with a study done by **Kalra, et al., (2019)** about knowledge, attitude and practice in parents of chronically transfused thalassemic patients regarding thalassemia on 50 caregivers (either mother or father) of chronically transfused thalassemic children in India and found that Illiteracy rate among the subjects was more than one third and only 6% to post-graduate level. On the contrary **Abo Jeesh, et al., (2018)** who stated that more than half of caregivers got their higher education. This may be due to study location difference the researcher sample from a rural, but the reference taken sample from an urban .

The present study revealed that, half of the studied mothers were housewives. This may be due to some mothers give up their jobs to care for their children and to meet the demands of medical treatment such as taking the child to hospital for follow up maintenance or blood transfusion and treatment .Also, may be due to the traditional belief that mothers are more close to their own children. This result was similar to **Abo Jeesh, et al., (2018)** who found that, more than half of caregivers were un-employed. In addition to, **Hassan and El afandy, (2019)** found that, majority of them house wives. Moreover, **Kalra, et al., (2019)** who found that, all females in their study were unemployed.

Concerning characteristics of the studied children with thalassemia the current study results reveled that, the mean age was  $7.54 \pm 3.12$  years old, This result was supported by **Silva and Peiris,(2020)** who studied the health related quality of life of children with thalassemia major on the 60 thalassemia children in srilanka , they found that, the mean ages of the studied children was  $8.48 \pm 3.08$  years .The result of this finding is not in agreement with a study done by **Sheikhi, et al., (2019)** about comparison of the effect of family-centered empowerment model and participatory care model on quality of life in children with thalassemia major on 90 children with major thalassemia in Iran who found that, the mean age in the family group was  $14.2 \pm 33.03$ .

Regarding to gender of the studied children with thalassemia, the results of the present study showed that, more than two third of them were males. The present finding may be due to over caring and value of male children in Arabic culture but scientific references are confirmed that, equal ratio between male and female. This finding was supported by **Thiyagarajan , et al., (2019)** who studied the assessing the role of family well-being on the quality of life of Indian children with thalassemia on 125 thalassemia children who found that, the more than half of children was males .The study results was contradicted with **Ghorbanpoor , et al., (2020)** who studied the relationship between psychosocial status and adherence to treatment regimen in adolescents with thalassemia in Iran on 66 adolescents with thalassemia who found that, the more than half of children was females .

As regards the studied children education, the current study finding revealed that, more than half of the studied children were in primary level of education. This may be due to, the child missing school attendance due to blood transfusion or follow up appointments. In the same context **Hassan , (2017)** who stated in the study conducted at Helwan University about assessment of parental stressors and coping pattern of children suffering from beta thalassemia major that almost of the studied children in primary school. On the other hand this result contradicted with **Alizadeh, et al., (2019)** who reported that, more than half of the studied children in high school. Also current study finding revealed that, more than half of them had normal weight and height .This may be due to the parent aware about importance of applied protocol of the frequent blood transfusion and follow up to improve their child health so, the child had normal weight and height. This finding is supported by **Abo Jeesh, et al., (2018)** who found that, half of sample had normal physical growth.

In relation to the studied mother's knowledge about thalassemia and its management, the results of the present study revealed that, more than half of studied mothers had unsatisfactory knowledge about manifestation, prevention and methods to avoid complications of thalassemia. This result goes in line with a study done by **Shahzad, (2017)** who studied knowledge, attitude and practices of the families of  $\beta$ -thalassemia children in Pakistan on 410 parents of children with thalassemia and found that, most parents having poor



knowledge about thalassemia. On the contrary **Kalra, et al., (2019)** who concluded that, it was found that despite adequate knowledge regarding every aspect of this disease ..

In relation to total reported practice of the studied mothers regarding to care of their children with thalassemia. The result of current study clarified that, more than half of them had unsatisfactory level of total reported practice about thalassemia. From the researcher point of view this due to the majority of mothers didn't received any information about thalassemia from health team. This result was in congruent with **Shahzad, (2017)** who reported that, practices towards thalassemia were limited.

The findings of the current study illustrated that, there was a high statistically significant difference in relation to the studied mother's knowledge and their age. The result of the present study was in agreement with **Maheen, et al., (2015)** who found in study about assessing parental knowledge about thalassemia in a thalassemia center of karachi, in Pakistan that, there was relation between parents knowledge about thalassemia and their age. Also **Hassan, (2017)** who stated that, there was extremely statistically significant difference between parent's knowledge and their age .Also this result was in congruent with **Kumar and Pujari, (2020)**, who found that, high statistically significant difference in relation to the studied mother's knowledge and their age.

Considering the relation between mother's educational level and their knowledge the current study showed that, there was highly statistical significant difference between the studied mothers' knowledge and their level of education. From the researcher point of view mothers' educational level may be effective on their level of knowledge which in turn reflecting on their care provided for their children with thalassemia. This means that, mothers who had higher level of education had ability to obtain knowledge to improve their awareness and provided health care practice. This result is similar to **Kumar and Pujari, (2020)**, who mentioned that, there was relation between parent's knowledge about thalassemia and their education level. Furthermore, **Shahzad, (2017)** who found that, most parents having a low education level and poor knowledge about health management. However, educated parents were more proactive towards screening as compared to others. There is inadequate knowledge of accurate frequency and distribution of thalassemia disorder in the developing countries.

Considering the mother's residence and occupation and their knowledge the current study showed that, there was no statistical significance difference between mothers' knowledge and their residence and occupation. From the researcher point of view, this finding may be due to mothers usually doing all their effort to know about their children disease to help them, however they were working or not and however they were from rural or urban area .The result of the present study wasn't in agreement with **Shahzad, (2017)** who found that there was relation between parent's knowledge and all their characteristics. Furthermore, **Hassan, (2017)** who stated that, there was extremely statistically significant difference between parents knowledge and their characteristics, where parents in young age, low education level, housewives and from rural residence were having unsatisfactory knowledge .

The findings of the current study illustrated that, there was statistical significance difference between mothers' practice and their age, education level and place of residence. The result of the present study was in agreement with, **Kumar and Pujari, (2020)**, who found that, statistically significant difference in relation to the studied mothers' practice and their age and education. Also this result is similar to **Shahzad, (2017)** who found that, relation between parent's practice and their characteristics. On the other hand, the current study revealed that, there was no statistical significance difference between mothers' practice and their occupation pre and post intervention. On contrary **Kalra, et al., (2019)** who found that, there was relation between parents practice about thalassemia and their characteristic.

#### **IV. Conclusion:**

The current study concluded that, the mothers had unsatisfactory knowledge and practice about thalassemia Also, there was a relation between the studied mothers', practices, knowledge and their ages. Also the education level of mothers affected their knowledge and practices. Also, thalassemia children tended to have more illiterate mothers, non-working mothers and the parents' knowledge was very low regarding care and dealing with their children to meet their needs which have a negative impact on children health!

#### **Recommendations:**

-Provide support and education programs for parents to improve the care provided to children with thalassemia  
Educate parents about the services available in the community for thalassemic children.

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