

Effect of Health Coaching Intervention on Mothers' Performance and Quality of Life of their Children with Beta Thalassemia

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Abstract

Background: Thalassemia affects not only child's life, but also leaves psychological, social, and economic burdens on their parents. So, health coaching assist mothers toward disease-focused and child's health promotion. **Aim:** The study aimed to evaluate the effect of health coaching intervention on mothers' performance and quality of life of their children with beta-thalassemia. **Methods:** A quasi-experimental research design was used. **Setting:** This study implemented in the Inpatient Pediatric Department at Mustafa Hassan Hospital affiliated to Fayoum University. **Sample:** Non-probability purposive sampling that consisted of 70 mothers and their children with Beta thalassemia recruited from the above-mentioned setting. **Tools:** Four tools were used pre /post health coaching intervention. **Tool (I):** A structured interviewing questionnaire to assess mothers' knowledge related to thalassemia and coaching. **Tool (II):** Coaching practices rating scale. **Tool (III):** Mothers practices observational checklists. **Tool (IV):** Quality of life inventory version 4.0 for children. **Results:** There was a highly statistically significant improvement appeared between the studied mothers' knowledge and practice as well as quality of life of their children with beta-thalassemia at pre and post coaching intervention. **Conclusion:** Implementation of mothers' health coaching intervention improved mothers' knowledge, practices, and the quality of life of their children with beta-thalassemia. **Recommendation:** The health coaching intervention for mothers of children with thalassemia should be used in all hospitals that provide care for children with thalassemia.

Keywords: *Beta-Thalassemia, Children, Coaching Intervention & Performance.*

Introduction

Thalassemia is a hereditary haemoglobin synthesis problem in which the production of normal hemoglobin is partially or fully repressed as a result of improper globin chain synthesis. It's a hemoglobinopathy caused by a globin chain synthesis defect that's handed down through the autosomal genome from parent to child (Nedruetai, 2019). It is the greatest public genetic disease in the world. It is a form of blood disorder in which the body produces abnormal haemoglobin, which is the oxygen-transport protein molecule in red blood cells. However, this condition causes an overabundance of red blood cells to be destroyed (Ghorbanpoor, et al., 2020).

Beta-thalassemia is a blood disorder that is transferred down through the generations. As a result of mutations in genes that govern globin synthesis, the ratio of β -streptoglobin that makes up hemoglobin becomes unbalanced. Beta-thalassemia can cause widespread red blood cell death by shortening the lifespan of red blood cells. If left untreated, severe -thalassemia can cause consequences like growth retardation, pallor, jaundice, hepatosplenomegaly, and osteoporosis (Salem, et al., 2021). Even though treatment technology for increasing the ineffective

generation of red blood cells and the method for managing globin imbalance is progressing, blood transfusion and conventional iron-chelation therapy are frequent relieving treatments for beta-thalassemia. The necessity for regular blood transfusions and developmental defects in children with -thalassemia, on the other hand, has an important effect on their health (Meichun, et al., 2022).

Children of Mediterranean, Middle Eastern, and Asian heritage have the main prevalence of beta-thalassemia mutations. The beta-globin gene has about 200 distinct thalassemia-causing mutations, resulting in the disease's great genotypic and clinical heterogeneity. It is extremely common, with 80 to 90 million people worldwide known to be carriers (1.5 percent of the global population). Beta-thalassemia is divided into three kinds, the first type is β -thalassemia minor, sometimes known as "-thalassemia carrier," which is asymptomatic. The intermediate type of β -thalassemia, known as "Mediterranean anemia" leads to splenomegaly and moderate to severe anemia. β -thalassemia major (TM) (also known as Cooley anemia) is the third kind, which causes a severe anemia that, can lead to heart failure (Cao & Galanello, 2020).

As a result, β -thalassemia has a detrimental effect on the quality of life of children. Treatment alternatives and the disease itself have a major impact on quality life of children health in a multitude of areas, including physical, social, emotional, and academic performance. When children reach school age and adolescence, the disease's effects become more apparent as they seek independence. Furthermore, families with β -thalassemia children endure emotional, behavioral, and economical burdens, all of which have an impact on their life (Thiyagarajan, et al., 2019).

Health coaching is a type of intervention that uses cognitive-behavioral and solution-focused strategies to help mothers achieve their goals. The basic purpose of coaching is to improve independent learning and decision-making abilities. As a result, it's increasingly being used in health and education settings where families want to improve their current knowledge, learn new abilities, and change their responses to repeating events (Samia, et al., 2020).

Coaching is a performance-oriented approach in which mothers are assisted in resolving problems related to achieving self-defined objectives. Coaching focuses on enabling children's and parents' sharing in home and community situations through explanations to performance limitations that highlighted by mothers. The dual goals of coaching are to promote children's and parents' meeting in valued activities while also developing mothers' problem-solving abilities in creating more supportive situations for themselves and their children (International Coaching Federation, 2022).

By counseling mothers, who are the primary teachers and nurturers for their own children, a health coach intervention can improve the children's quality of life. Therefore, mothers who receive coaching program learn the skills and self-reliance they need to guide and motivate their children, as well as establish and realize their goals. Accordingly, their children feel more empowered and safer, which improves their intellectual, physical, and social well-being. Coaching has been shown to help mothers to achieve goals related to health and everyday life difficulties that enhances performance and competences and, in turn improves their children's lives (Tatiana, et al., 2019).

Significance of the study:

Beta-thalassemia is an extremely widespread type of thalassemia in children and is considered a threatening condition for children's health and their families that require special care. Thalassemia is the most prevalent cause of chronic hemolytic anemia in Egypt, which has a high morbidity and mortality rate. Meanwhile, in Egypt, β -thalassemia major is a

prevalent health problem; it is predicted that 1000 children with β -thalassemia are born per 1.5 million live births. In Egypt, carriers of β -thalassemia account for 9–10 percent of the population. It is anticipated that 50,000 to 100,000 of children less than five years die yearly, accounting for 0.5-0.9 percent of all mortality in low- and middle-income nations (Abdel Rahman, 2019).

Health coaching aims to assist mothers to improve their performance by teaching them how to manage their own life. Coaching is considered from the applicable method to capitalize on performance. Therefore, coaching not only offer new abilities or knowledge but also as an alternative form a coach to relate the knowledge and skills acquired from prior experience to show the greatest performance there is preliminary evidence that support the efficiency of coaching in improving mothers' performance. Also, allow mothers to reach the expected levels of goals attainment (Grabmann & Schermuly, 2019).

Aim:

The study aimed to evaluate the effect of health coaching intervention on mothers' performance and quality of life of their children with Beta thalassemia through:

- 1- Assessing mothers' knowledge related to the care of their children with beta thalassemia.
- 2- Assessing mothers' practices related to the care of their children with beta thalassemia.
- 3- Assessing quality life of children with beta thalassemia.
- 4- Designing and implementing a health coaching intervention for mothers regarding the care of their children with beta thalassemia.
- 5- Evaluating the effect of health coaching intervention on mothers' performance in care of their children with Beta Thalassemia and children quality of life.

Research hypotheses:

- Mothers who will be engaged on the health coaching intervention expected to have better knowledge after the intervention than before.
- Mothers who will be shared on the health coaching intervention expected to have better practice after the intervention than before
- Thalassaemic children expected to have a better quality of life after the health coaching intervention than before.

Operational definition:

Health Coaching: Referred to helping patients to increase their knowledge, abilities, and self-confidence to become active participants in their care.

Mothers' Performance includes mothers' knowledge and practice.

Theoretical Framework:

Mothers' coaching is an evidence-based strategy/approach based on learning theory, that states specific motivation and teaching strategies to benefit mothers, providing them with the necessary supports to enhance their children's skills and information through a structured system of jointly planning learning goals, modeling effective practices, and participating in feedback. Effective mothers' coaching, on the other hand, necessitates active participation and engagement from the health coach, mothers, and children. As a result, evidence-based mother coaching is thought to lead to changes in mother's knowledge and practice, which leads to better child outcomes (Elaine, 2015).

Which states that the necessary supports to improve their children's skills and abilities through a structured system of jointly planning learning goals, modelling effective practices, and engaging in feedback.

Subjects and Methods:**Research Design**

The current study used a quasi-experimental (pre/post-test) design to fulfill the aims of the study.

Research Setting:

This study was performed at Mustafa Hassan Children's Hospital associated to Fayoum University at In-patient Pediatric Department on the fourth floor. It included 4 rooms and every room consisted of 4 children's beds.

Research subjects:**The study's subjects involved the following:**

A non-probability purposive sampling technique was utilized with a total number of thalassaemic children and their mothers sample size (70) was taken from above mentioned setting at confidence level 90%, using the following power analysis (Steven, 2012).

$$n = \frac{N \times p(1-p)}{\left[\left[N-1 \times \left(d^2 \div z^2 \right) \right] + p(1-p) \right]}$$

Which:

n= Sample size, **N**= Total size, **Z**= The standard value corresponding to confidence level 95% which is (1.65), **d**= Error level 5% and **p**= 0.50.

They were eligible for inclusion in the study sample whenever they met the following criteria:

Inclusion criteria; Available confirmed diagnosis of Beta thalassaemic children aged from one to 18 years old from both sexes.

Exclusion criteria; other children with any kind of anemia, as well as those with physical or neurologic impairments, were excluded from the study.

Tools of data collection:

Tool I: A structured interviewing questionnaire (one group pre/post-test): It was composed of the

following parts, according to Hassan and El Afandy, (2019), based on the available related studies and references:

Part I:

- Personal characteristics of beta-thalassaemia children, as age, gender, educational level, and Beta thalassaemia severity, as well as length of illness, and family history of thalassaemia. Weight and height also were evaluated using a child growth chart to distinguish between normal and abnormal height and weight.
- Mothers' personal characteristics, such as age, degree of education, occupation, marital status, and size of the family.

Part II: Questionnaire to assess mothers' knowledge: It included two subsections:

The first section: focused on assessing the knowledge of mothers about thalassaemia. It involved 18 open ended and multiple-choice questions about definitions, clinical manifestations, complications, management, and its methods of prevention, treatment of thalassaemia, side effects of medications, restricted and allowed foods, blood transfusion complications, blood transfusion complications treatment, methods of prevention of blood transfusion complications, importance of iron chelation therapy and oral care.

The second section: included assessing mothers' coaching knowledge. It had 5 multiple-choice questions about; concept, benefits, steps, mothers coaching, and the distinction between health and wellness coaching.

Scoring system:

Knowledge score was based on mothers' responses, and it was assessed using answers sheet provided by the researchers. Each question was given a score between 0 and 2, with 2 being for accurate and complete answer, 1 being for a correct but inadequate answer, and zero being for an incorrect or unknown answer. Regarding thalassaemia and coaching, the total score was 46 equal (100 %). The total scores were transferred to percentages and then classified as follows: scores of less than 60% were considered unsatisfactory, while scores of 60% or more were considered satisfactory.

Tool II: Coaching Practices Rating Scale:

It was guided by Dathan, et al., (2011). The scale can be used by the researchers as a health coaching (guidance) to mothers as a (learner). The health coach used the scale to determine the mothers' coaching practices that increase mothers' self-evaluation, self-consideration, and self-generation of new and existing knowledge and skills to sustain their children health. This scale had (14) statements (accepted the coach's prevailing knowledge and abilities as the basis for enhancing knowledge and skills, recognized the

affected skills and a deadline for the coaching process with the coach, build up with the coach a plan for practice that essential to achieve acquire skills following each coaching discussion). For every item, the scoring system was set up as follows: No opportunity to measure (0), none of the time (1), some of the time (2), roughly half of the time (3), most of the time (4), and all of the time (5). The total score varied from 14 to 70 and was divided into two categories:

- A competency level of greater than 60%.
- The level of incompetence ranged from 60% to below.

Tool III: Observational checklist pre/post-test:

The observational checklist was adapted from **Bowden and Greenberger, (2017)** and adjusted by the researchers to meet the nature of the study to assess mothers' reported practices related to their children care. It involved ten procedures including; hand washing (11 steps), eye care (6 steps), breathing and coughing exercise (5 steps), range of motion (14 steps), weight measurement (19 steps), height measurement (13 steps), body temperature (13 steps), radial pulse (8 steps), oral drug administration by cup (13 steps), and oral drug administration by dropper or syringe (12 steps)]. In addition, two practices [oral care (10 items) and mother's role during blood transfusion] (11 items).

Scoring system:

Every observational checklist item take (1) grade for done, whereas the not done items considered a (zero). There were a total of 135 steps in the observational checklist. That make a total score of (135) grad equal (100 %). The scoring system for mothers' practice was divided into two categories; satisfactory practices when mothers practice is 75% and more, meanwhile, unsatisfactory practice when mothers practice is less than 75%.

Tool IV: Pediatric quality of life inventory version 4.0 (PedQL4.0):

The Peds QL4.0 generic core scale, which developed by **Varni, et al., (2001)**. The researchers translated the scale into Arabic language in order to assess quality life of thalassemic children. This scale consists of (23) items included in (4) domains; physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items)

The sum of the 4 scales is the total score. Each item has a score ranging from 0 – 4 where,

- 0 = it is never a problem.
- 1 = it is almost never a problem.
- 2 = it is sometimes a problem.
- 3 = it is often a problem.
- 4 = it is almost always a problem.

After that the items were scored and linearly transformed as 0 = 100, 1 = 75, 2 = 50, 3 = 25 and 4 = 0. So that the higher scores indicate better health related quality of life.

Quality of life is classified accordingly into:

- High quality of life (the score less than 75 – 100)
- Moderate quality of life (the score less than 50-75)
- Low quality of life (the scores from 0-50).

Validity:

Face validity of the instruments was examined by a jury of 3 experts, 2 professors of pediatric nursing from the Faculty of Nursing Ain Shams University and 1 professor from the Faculty of Nursing Helwan University, who judged the clarity, comprehensiveness, relevance, convenience, and accuracy of the tools. All of their suggestions were taken into account. To get the tools to their final state, some components were reconstructed. The tools were valid from the experts' perspective.

Reliability:

The developed tools were examined for reliability by using Cronbach's Alpha to confirm the internal consistency of the tools' reliability. The knowledge assessment of thalassemia and coaching scored 0.832, 0.794 for the observation checklist, 0.835 for quality of life, and 0.856 for coaching practice. This result suggests that the study tools are extremely reliable.

Administrative design:

Formal approval was taken from the hospital managers and head of the medical ward to carry out the study. Official consent for data collection was received from hospital managers by submitting official letters from Fayoum University's Dean of Faculty of Nursing. The study's title, objectives, and end results, in addition the primary data elements to be covered, were illustrated, and the study was conducted after obtaining the appropriate approval between the start of June 2021 to the end of November 2021.

Ethical considerations:

Ethical approval obtained from the Scientific and Ethical Committee of Nursing, affiliated to Fayoum University. Each mother was told about the study aims, process, benefits, and nature before giving her oral agreement. Every mother has the right to leave out the study at any moment without any reason. The participants were notified that the information gathered would not be used in any job evaluation. All data was coded, and all information was preserved for ensuring the confidentiality and anonymity of study participants.

Pilot study:

Pilot study was done on 10% of the participants in the study 7 mothers, according to sample criteria. It was carried out to assess the study tools' clarity and practicability. According to the findings of the pilot

research, only minor adjustments were introduced, such as rephrasing and reordering of some elements. Pilot study sample was not included in the studied sample.

Field work:

The actual field work for collecting data lasted Six months and the beginning was in June 2021 to the end of November 2021. Directly after the ethical agreement was obtained from the mothers. The researchers clarified the questionnaire aims and items to all mothers and their children involved in the study. Total of the study participants was 70 mothers and their children. The participants' were categorized into (7) groups. Each group made up of (10) mothers and their children. Data was gathered three times per week from 9 a.m. to 12 p.m during the morning shift (3 days per week). The researchers provided coaching practices rating scale for mothers and their children. The researchers then began personally interviewing each mother for assessing knowledge. For each mother, the average time required to complete these scales was 20–30 minutes. After that, the researchers assessed the reported care provided to children by their mothers (pretest).

The health coaching intervention was implemented by researchers based on the number of subjects present during the visit. The health coaching intervention was implemented over the course of eight sessions aimed to improve knowledge and practice of mothers as well as of their thalassaemic children's' quality of life. The health coaching intervention based on adult learning theory. The researchers begin with preparation mothers mentally before sessions, identifying their goals, the options and obstacles faced them to achieve their goals with emotional and self-management support.

The first session started with a preparatory. It was associated with the orientation and clarification of the health coaching intervention reasons and objectives to gain mothers cooperation. Four sessions were done to provide mothers with knowledge related to the disease and coaching. Furthermore, four sessions were held by the researchers to cover the practical skills including demonstration and re demonstration. To meet degree of understanding of mothers, simple words and Arabic language were employed.

The sessions of health coaching intervention started after collection of questionnaire & observation sheets and coaching practice rating scales to the studied mothers as well as quality of life for their children. Each session was preceded by open discussion about any question and brief summary about what being discussed in the previous session. Before ending of each session, the researcher summarized the key topics and verified that the mothers understand the information presented.

The researchers provided coaching sessions for mothers about how to care for their children who have β thalassemia through use of several teaching aids such as group discussion, question and answer, role-playing, brain storming, demonstration and re-demonstration, power points presentations, lectures, booklet, and video tutorials, as well as distribution of explanatory related booklet at the beginning of sessions.

Evaluation of training; The researchers evaluated mothers' knowledge, and practice after ending the coaching program one month's period (post-test) using the same questionnaire and observation sheets. Also, quality of life of their children was evaluated through posttests using the same quality of life and coaching scales after program sessions.

Health Coaching Intervention based on adult learning theory:**Steps of coaching intervention:**

Coaching intervention is used to help mothers to detect their urgencies and special goals, as well as developing self-awareness and improving life skills such as communication, stress-management and emotional intelligence. Coaching can improve the competencies of the mothers needed to fulfill their requirements and improve their performance. Therefore, coaching intervention consists of the following steps:

The pre-session check-in:

Effective intervention that allows mothers to be prepared mentally for the upcoming session and determine what they want to focus on. Also, help both the coach and the learner (mothers) to recognize where progress had been made.

Set expectations for each coaching session:

Identifying objectives and outlines of the next steps for each coaching session. Coach collaborates with mothers to set realistic expectations that take into account their loads and the adjustments they need to make.

Use SMART goal setting technique during coaching:

The steps in the SMART framework contributed to distinct coaching goals that could be simply tracked and evaluated. The abbreviation of SMART is Specific, Measurable, Attainable, Relevant and Time-Based.

Ask guiding questions:

Asking open-ended guiding questions allow the coach to get detailed answers from the mothers that can enable them to be more self-sufficient and successful. This encourages mothers to consider areas where they improve or overcome obstacles to their achievement.

Take a positive approach:

Maintaining a favorable attitude when dealing with mothers and have self - confidence to overcome

obstacles. This can help the coach to be a source of encouragement and motivation for mothers.

Crossing the gap between coach and patient:

There are multiple chances for disconnects between the coach and the patient during the care process. Health coach can decrease the gaps by speaking with mothers, inquiring about their needs and challenging, and addressing health literacy, cultural aspects, and social-class barriers.

Make available self-management support:

Self-management support is crucial for mothers and their children to enhance their health care beyond the clinic doors and into their everyday lives. Coaches give information, educate disease-specific skills, promote healthy behaviors, impart problem-solving skills, assist with the emotional effect of chronic illness, provide continuous follow-up, and encourage mothers to be highly involved in their children's care. As a result, health outcomes of mothers and their children improved.

Presenting emotional support:

Dealing with illness is emotionally challenging. As trust and familiarity grow, health coach is able to provide emotional support and assist thalassaemic children to deal with their illnesses.

Look for teaching moments:

Observing mothers' attitude and analyze interactions to find teaching moments and identify new times for improvements. Coach also schedules a weekly one-on-one meeting with each mother to respond to their questions or concerns regularly.

Coaching models and methods:

In coaching, the GROW model is a straightforward way for goal-setting and problem-solving. It contains the following stages: G stands for "goal." The goal that the mothers desire. It should be as specific as possible. During this phase, mothers discuss their existing state and how far away they are from their goal. R refers to "reality": The current reality is where the client is now. What are the issues, the challenges, how far are they away from their goal. O stands for obstacles and solution: What are the difficulties preventing mothers from accomplishing their goal? Once these constraints have been recognized, you can consider your choices for overcoming them. W stands for "way forward": The decisions must then be transformed into action steps that mothers will follow to achieve their goal.

Follow up on plans:

Following up can permit coaches to review what went well, what worked and didn't work, and where they should improve. Coach schedules meetings to follow up on the SMART goal deadlines and action plan. This can assist to identify and treat any issues that mothers are having.

Data analysis

Data collected from the subjects were revised, coded and entered through PC. Computerized data entry and statistical analysis were achieved by using SPSS program, version 24. Descriptive statistics in the form of frequencies and percentages were used, ttest was used to compare the means of two groups. The link between quantitative variables was measured using the F test.

- (P-value at 0.05) was used to determine significance.
- (P-value > .05) to be statistically insignificant.
- (P-value ≤ .05) to be statistically significant.
- (P-value ≤ .001) to be highly statistically significant

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

Mother's Characteristics	No.	%
Age in years:		
< 20	16	22.9
20 < 30	27	38.5
30 < 40	16	22.9
40 ≤ 50	11	15.7
X±SD	27.3±4.18 years	
Place of residence:		
Urban	29	41.4
Rural	41	58.6
Current occupation:		
Working	35	50.0
House wife	35	50.0
Level of education:		
Can't read and write	25	35.7
Read and write	1	1.4
Basic education	8	11.4
Intermediate education	23	32.9
High education	13	18.6
Marital Status		
Married	56	80.0
Divorced	10	14.3
Widow	4	5.7

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

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

Table (3): Distribution of studied mothers regarding their knowledge about thalassemia (pre/post health coaching intervention) (n=70)

Knowledge about thalassemia	Pre – coaching				Post– coaching				X ²	P value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	N	%	N	%	N	%	N	%		
Definition	27	38.6	43	61.4	50	71.4	20	28.6	15.267	<0.001*
Manifestations	17	24.3	53	75.7	54	77.1	16	22.9	39.122	<0.001*
Treatment	23	32.9	47	67.1	60	85.7	10	14.3	40.512	<0.001*
Prevention	18	25.7	52	74.3	62	88.6	8	11.4	56.467	<0.001*
Complications	20	28.6	50	71.4	59	84.3	11	15.7	44.188	<0.001*
Avoid complications of thalassemia	24	34.3	46	65.7	62	88.6	8	11.4	43.531	<0.001*
Methods to avoid complications	18	25.7	52	74.3	60	85.7	10	14.3	51.067	<0.001*
Permitted foods	26	37.1	44	62.9	57	81.4	13	18.6	28.438	<0.001*
Prohibited foods	24	34.3	46	65.7	62	88.6	8	11.4	43.531	<0.001*
Methods of prevention of blood transfusion complications	20	28.6	50	71.4	60	85.7	10	14.3	46.667	<0.001*

P-value >0.05: Non significant (NS) <0.05: Significant (S) < 0.01: highly significant (HS)

Table (4): Comparison of the studied mother’s knowledge score about coaching pre and post health coaching intervention (n= 70)

Knowledge elements	Pre – coaching		Post– coaching		X ²	P value
	Complete & correct answer	Incorrect & unknown	Complete & correct answer	Incorrect & unknown		
	%	%	%	%		
Definition of coaching	10	90	88.3	11.7	73.65	<0.0001**
Steps of coaching process	3.3	96.7	91.7	8.3	93.86	<0.0001**
Define mother coaching	6.7	93.3	95	5	100.86	<0.0001**
Benefits of mother coaching	0.0	100	95	5	108.57	<0.0001**
Difference between health and wellness coaching	0.0	100	96.7	3.3	112.25	<0.0001**

P-value >0.05: Non significant (NS) <0.05: Significant (S) < 0.01: highly significant (HS)

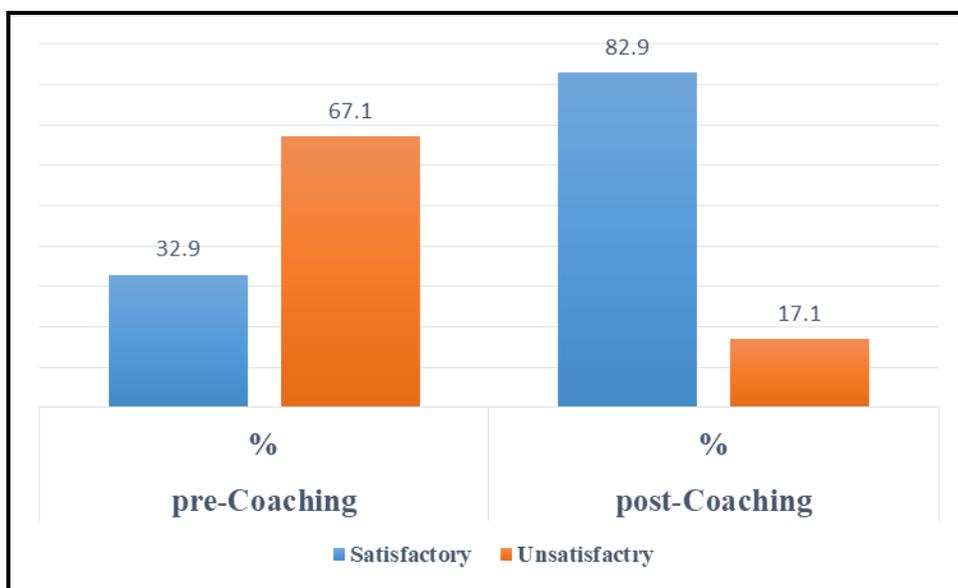


Figure (1): Total level of the studied mother’s knowledge about thalassemia and coaching pre and post coaching intervention (n=70)

Table (5): Distribution of the studied mothers regarding reported practice for their children with thalassemia (pre/post health coaching intervention) (n=70)

Items	Pre- coaching				Post- coaching				X ²	P-value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory			
	N	%	N	%	N	%	N	%		
Hand wash	26	37.1	44	62.9	57	81.4	13	18.6	28.438	<0.001*
Oral care	24	34.3	46	65.7	58	82.9	12	17.1	34.029	<0.001*
Respiration	26	37.1	44	62.9	57	81.4	13	18.6	28.438	<0.001*
Pulse	23	32.9	47	67.1	56	80.0	14	20.0	31.637	<0.001*
Axillary temperature	25	35.7	45	64.3	55	78.6	15	21.4	26.250	<0.001*
Range of motion exercise	28	40.0	42	60.0	54	77.1	16	22.9	19.899	<0.001*
Breathing & coughing exercise	27	38.6	43	61.4	53	75.7	17	24.3	19.717	<0.001*
Weight	25	35.7	45	64.3	52	74.3	18	25.7	21.039	<0.001*
Height	26	37.1	44	62.9	55	78.6	15	21.4	24.637	<0.001*
blood transfusion	26	37.1	44	62.9	58	82.9	12	17.1	30.476	<0.001*
Oral drug administration by dropper or syringe	26	37.1	44	62.9	53	75.7	17	24.3	21.179	<0.001*
Oral drug administration by a cup	25	35.7	45	64.3	52	74.3	18	25.7	21.039	<0.001*

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

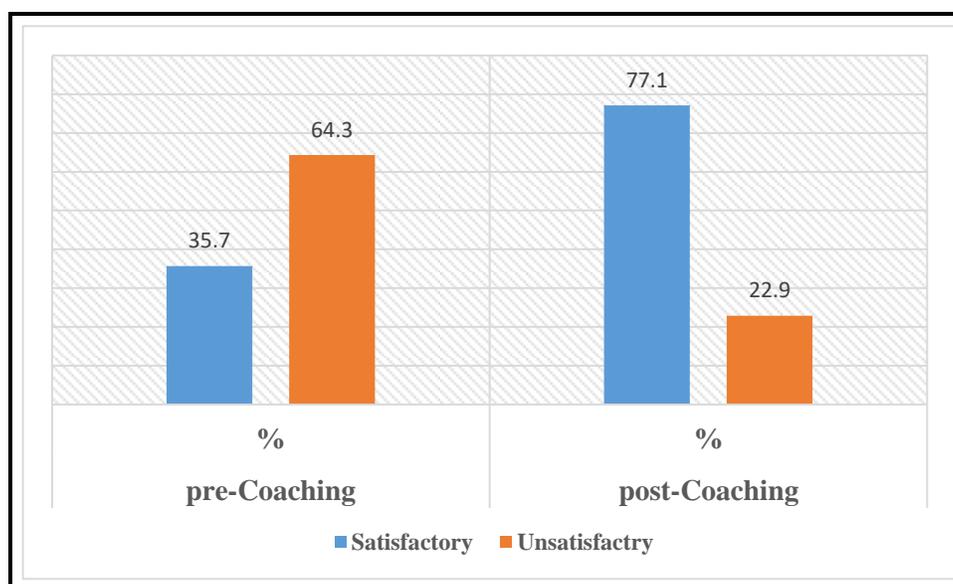


Figure (2): Total level of the studied mother's reported practice for children about thalassemia pre and post health coaching intervention (n=70)

Table (6): Comparison of the studied children according to quality-of-life domains mean scores pre and post health coaching intervention (n=70)

Quality of life domains	Maximum score	Pre coaching	Post coaching	t-value	p-value
		Mean± SD	Mean ± SD		
Physical Functioning	32	9.54 ± 2.51	26.47 ± 3.12	35.374	<0.001*
Emotional Functioning	20	8.3 ± 3.27	18.5 ± 3.8	16.920	<0.001*
Social Functioning	20	6.7 ± 2.14	16.25 ± 4.16	17.080	<0.001*
School Functioning	20	5.8 ± 2.09	17.21 ± 3.1	25.534	<0.001*
Total	92	17.48 ± 4.2	83.04 ± 15.74	33.670	<0.001*

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

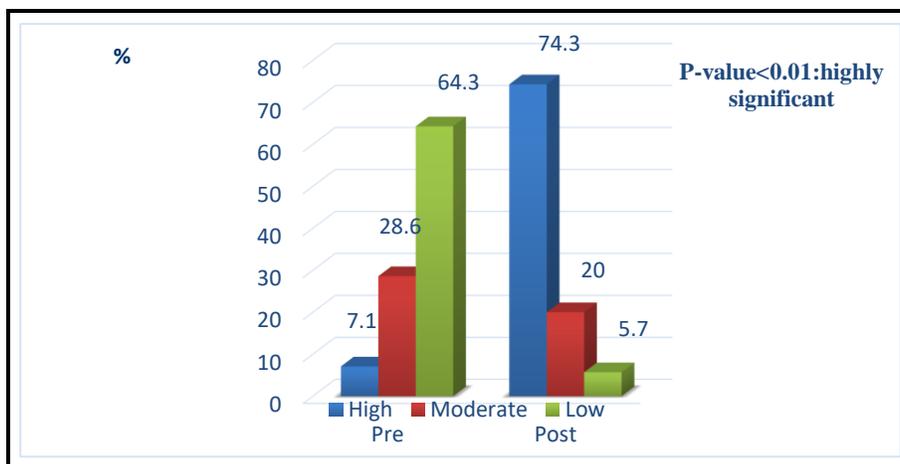


Figure (3): Total level of the studied children quality of life pre and post health coaching intervention (n=70)

Table (7): Relation between the studied mother’s knowledge and their children's quality of life pre and post health coaching intervention (n=70)

Quality of life	Pre- coaching		Post- coaching	
	R	P-value	R	P-value
Physical Functioning	0.248	0.039*	0.327	0.011*
Emotional Functioning	0.490	<0.001**	0.047	0.723
Social Functioning	0.745	<0.001**	0.347	0.007*
School functioning	0.265	0.041*	0.240	0.064

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

Table (8): Relation between the studied mothers reported practice and their children's quality of life (pre/post coaching intervention) (no=70)

Quality of life	Pre- coaching		Post- coaching	
	R	P-value	R	P-value
Physical Functioning	0.519	0.003*	0.329	0.015*
Emotional Functioning	0.755	<0.001**	0.508	<0.001**
Social Functioning	0.966	<0.001**	0.745	<0.001**
School functioning	0.239	0.046*	0.500	<0.001**

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

Table (9): Correlation between total knowledge, total reported practice, total QoL and coaching practice in the pre and post health coaching intervention (no=70).

Items	Total knowledge		Total practice		Coaching practice	
	pre- coaching	post- coaching	pre- coaching	post- coaching	pre- coaching	post- coaching
Total practice	r=0.806 p=<0.001*	r=0.415 p=<0.001*				
Coaching	r=0.482 p=<0.001*	r=0.362 p=<0.001*	r=0.526 p=<0.001*	r=0.751 p=<0.001*		
Total QOL	r= 0.375 p=0.001*	r=0.498 p=<0.001*	r=0.395 p=<0.001*	r= 0.359 p=<0.001*	r=0.451 p=<0.001*	r=0.428 p=<0.001*

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

Table (1): Revealed that, the mean age of the studied mothers was 27.3 ± 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): Clarified that, the mean age of studied children was 7.54 ± 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, slightly more than half (51.4%) had normal weight with mean weight was 14.66 ± 3.21 kg and 61.4% had normal height with mean height was 104.62 ± 5.7 cm.

Table (3): Presented a highly statistically significant difference between the pre and post health coaching intervention regarding all items of mothers' knowledge about thalassemia including definition, manifestation, complications, treatment of thalassemia, and prevention of complications, where $p < 0.001$. Additionally, a highly statistically significant improvement in all items of knowledge for the studied mothers about permitted foods, prohibited foods, and methods for preventing blood transfusion complications after the health coaching intervention than before, where ($P < 0.001$).

Table (4): Showed that there was a highly statistically significant improvement in mothers' knowledge about definition, steps, benefits, nursing coaching, and the difference between health and wellness coaching after the health coaching intervention compared to before.

Figure (1): It was found that the greatest percentage (82.9%) of the participated mothers had satisfactory total knowledge about thalassemia after health coaching intervention compared to 32.9% of them before.

Table (5): Clarified that there was a highly statistically significant difference between the pre and post health coaching intervention about reported practice of the studied mothers about (hand wash, oral care, respiration, pulse, measurement of child's temperature, range of motion exercise, coughing & breathing exercise, weight, height, blood transfusion, drug administration orally using dropper or syringe as well as by using cup) as revealed by $p = 0.001$ for all items.

Figure (2): It was found that greater than two third (77.1%) of the mothers participated in the study had satisfactory practice post health coaching intervention compared to 35.7% of them before.

Table (6): Clarified that the total mean of quality-of-life domains were 17.48 ± 4.2 pre intervention compared to 83.04 ± 15.74 out of (93) in the post intervention and showing a highly statistically

significant difference with p value < 0.001 related all items

Figure (3): It was observed that 64.3% and 7.1% had low and high quality of life respectively in the pre coaching intervention. While, 5.7% had low quality of life and 74.3% had high quality of life in the post coaching intervention.

Table (7): Illustrated that, a highly statistically significant difference was found between mother's knowledge and their children emotional and social functioning in the pre intervention with $p = 0.001$. Also, there was highly a statistically significant difference observed between mother's knowledge and physical and social functioning of their children where p - value = 0.039 and 0.001 in the pre intervention and 0.011 and 0.007 in the post intervention respectively.

Table (8): Showed that, there was a highly statistically significant positive relation among the participated mothers reported practice and their children emotional and social functioning in the pre and post health coaching intervention with p -value < 0.001 .

Table (9): Illustrated that, there was highly statistically significance positive correlation between total knowledge, total practices, coaching and total QoL with $p < 0.001$ for each respectively in the pre and post health coaching intervention. Also, there was highly statistically significance positive correlation between total practice, coaching and total QoL with $p < 0.001$ for each respectively in the pre and post health coaching intervention. Another highly statistically significance positive correlation between coaching and total QoL $p < 0.001$ in the pre and post health coaching intervention.

Discussion:

Evidence-based health coaching help mothers to improve their existing knowledge, learn new skills, and encourage their children's healthy growth. Mothers' health coaching is a collaborative process between mothers and a health coach that incorporates observation, reflection, and action to improve a mother's capability to sustenance her child's engagement in daily routines, family, and social activities. The usage of a mother's coaching program is intended to improve mothers' management abilities, which can lead to better outcomes for their children **Grant, (2021)**.

Regarding the studied mothers' characteristics, the average mothers' age was 27.3 ± 4.18 years old, according to the current findings. It was similar to **Kumar & Pujari, (2020)**, who studied the knowledge, attitudes, and practices of 260 parents/caregivers of thalassemia children in India, and discovered that the greatest of the mother were

between the ages of 21 and 30 years, with a mean age of 28.62 ± 7.12 . In contrary, **Penny, et al. (2018)** who evaluated coaching mothers of typical and conduct problem children in elaborative parent-child recalling: Impacts of a randomized controlled trial on recalling behavior and everyday talk inclinations, they learned that a mean age of caregiver was 43.5 ± 6.77 years.

The current study showed that, the mean age of the studied children with β thalassemia, was 7.54 ± 3.12 years old. The finding was reinforced by **Silva & Peiris, (2020)**, who assessed the health-related quality of life of children with thalassemia major on 60 thalassemic children in Sri Lanka, exposed that, the average age of the studied children was 8.483.08 years. This result controverted a study showed by **Sheikhi, et al., (2019)** who studied comparing the effect of family-centered enabling and participatory care models on quality of life in 90 children with thalassemia major in Iran, which establish that, the mean age of the children was 14.23 ± 3.03 .

The current results demonstrated a statistically significant improvement in mothers' knowledge as regards to thalassemia and its management between the pre and post health coaching interventions in all items. From the research point of view, this difference may be linked to the knowledge received through the coaching program, which was interesting for mothers and motivated them to be active participants in their children's health status. This finding was in agreement with **Hassan & El Afandy, (2019)** who conducted a family empowerment program for mothers of children diagnosed with thalassemia, there was a significant improvement in the percentage of knowledge score levels at the post test because the mothers had better knowledge than at the pretest. Furthermore, in their study about the effects of patients' and care-givers' knowledge, attitude, and practice (KAP) on quality of life among thalassemia major patients' in Damascus-Syrian Arab Republic, **Abo Jeesh, et al., (2018)** suggested that there is an enhancement in total parents' knowledge about thalassemia after receiving the teaching guide than before.

Regarding, studied mothers' knowledge concerning coaching, a highly statistically significant enhancement in knowledge for the participated mothers concerning definition, steps, benefits, mothers' coaching, and the alteration between health coaching and wellness coaching at the post of the health coaching intervention compared to before. This result could be explained by the fact that, coaching can assist mothers in gaining the necessary information to effectively manage, modify, and solve problems. According to **Randi, (2021)**, who studied call the coach: opportunities and challenges for parent coaching in pediatric type 1 diabetes, parents were able to discover appropriate solutions and use

effective strategies to solve their current difficulties during the intervention, with guidance from the coach.

In addition, this study agreed with **Alana, et al., (2019)**, a systematic review of the association between coping techniques and life quality among caregivers of children with chronic illness and/or impairment. They reported that coaching employs interactive ways to engage caregivers and their children in problem-solving and healthcare decision-making. These results corroborated the study hypothesis.

In relation to the mothers' reported practice in caring for their thalassemia-affected children, the current study's findings revealed that, post- health coaching intervention, the satisfaction was higher than before, with a statistically significant difference. According to the researchers' point of view, this progression in mothers' practice may be due to their great desire to learn more about illness in order to help their children care for them and improve their children's quality of life. This result was in congruent with **Grabmann & Schermuly, (2019)** who reported in their study "A literature review on negative impacts of coaching-what we know and what we need to know" that participants who received occupational performance coaching (OPC) improved their performance and satisfaction with their goals pre and post OPC. The finding was consistent with those obtained by **Kish, et al., (2018)**, who studied working and caring for a child with chronic illness: according to a study of current literature, the participants' performance means scores were significantly different from the control group's performance.

The current study's findings demonstrated a statistically improvement in the total mean score of children's quality of life after health coaching intervention. According to the researchers view, this demonstrates the success of the coaching program in improving the children's life quality, in addition the amount to which mothers are willing to obtain information and skills in order to improve their children's quality of life. This finding agreed with the research hypothesis. This is corroborated by **Dehnoalian, et al., (2017)**, who found a statistically significant difference between the pre and post educational counseling program related to the total quality of life mean score in their study titled the impact of educational counseling program on quality of life of thalassemia patients in Iran. Furthermore, **Shahdadi, et al., (2018)** who found that there is a statistically significant difference between pre and post implementation of the family empowerment related to the total quality of life dimensions in a study about "comparing the impact of family-based empowerment model and collaborative care model on

the quality of life among little children with major thalassemia."

The findings of the current study demonstrated a statistically significant difference between pre and post health coaching intervention related children's quality of life and their mothers' knowledge and reported practice. From the researchers' point of view, this can be explained in terms of mothers' awareness of their children's sickness and efficient care of children with thalassemia, both of which have a beneficial impact on children quality of life. Furthermore, it is vital to raise the disease's awareness among children and their families. Also, this finding could be attributed to, the coaching program's influence on raising mothers' awareness of their children's quality of life and assisting them in providing care for their children at home. **Abo Jeesh, et al., (2018)** findings agreed with this result and they discovered a statistically significant relationship between the examined children's quality of life and caregivers' knowledge and reported practice.

The results of this study appeared a positive correlation among total knowledge, total practice, coaching practices, and total children QoL. This result was on line with the result obtained by **Olsen & Nesbitt, (2010)** who conducted health coaching to improve healthy lifestyle behaviors: An integrative review. In addition to goal planning and collaboration with health-care practitioners, they discovered that coaching interventions can enhance performance and satisfaction with it, goal achieving, and increasing self-efficacy.

Conclusion:

The study can conclude that, implementation of the health coaching intervention for mothers in caring for their children with beta-thalassemia is a very effective way to enhance mothers' knowledge and practices as well as quality of life of their children.

Recommendations:

- Periodic follow-up coaching sessions should be encouraged in order to enhance mothers' knowledge, practice, and quality of life for their thalassemic children.
- Increase awareness of mothers about preventive measures of thalassemia through premarital screening for discovering thalassemia carrier, genetic analysis, preventing consanguineous marriage, and prenatal screening to reduce the incidence of thalassemia.
- Generalizing coaching training program for all parents of children with chronic diseases admitted to hospital for all different medical procedures which boost their acquisition of new knowledge and skills regarding the care of their children.

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