

# Effectiveness of An Educational Program on Mother's Knowledge toward their Children with Sickle Cell Anemia about Non-Pharmacological Approaches to Pain Management in Basra Center for Hereditary Blood Diseases

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## Abstract

**Background:** Sickle cell anemia is a chronic disease and a blood disorder that induces cellular modification to the sickle-shaped form of defective hemoglobin in red blood cells. It is the most common genetic blood disease in the world. For people with sickle cell disease, it is important to explore non pharmacological treatments and use them as alternatives to drug treatments to relieve and treat acute and chronic pain.

**Methodology:** A descriptive (quasi experimental) design. This study used a pretest, posttest I and posttest II with a design that is used is the one group. A non- probability sample of (30) mother was chose.

**Result:** The findings of the study indicated that there was high significant difference among mother's knowledge pretest and posttest I and posttest II at p-value =0.001. That indicates the effectiveness of educational program.

**Conclusion:** The study concluded that there was no significant relationship between (age of mother, marital status, and Number of Pain Crises per Month) with mother's knowledge also significance relationship between (level of education,) with mother's knowledge.

**Recommendation:** Frequent lectures and such educational program about non pharmacological to pain management should be implemented in Basra center for hereditary blood disease. Provide an educational booklet for mother includes information about sickle cell anemia and non-pharmacological to pain management. Real need for coordination with the media in order to increase mothers' knowledge about non pharmacological to pain management.

**Keywords:** *Mother's Knowledge, Sickle Cell Anemia, Non-Pharmacological Approaches, Pain Management*

## Introduction

Sickle cell anemia is a chronic disease and a blood disorder that induces cellular modification to the sickle-shaped form of defective hemoglobin in red blood cells, resulting in the blood supply of the oxygen carrier being stopped [1].

Specifically, 1 in 12 individuals carry the sickle cell gene. It is the most common genetic blood disease in the world. There are about 70,000 to 100,000 Americans with sickle cell disease, according to the National Heart, Lung, and Blood Institute of America[2].

Sickle cell anemia is a major health problem in Iraq, especially in Basra, south Iraq, Due to the high rate of disease transmission, frequency of kin marriages, genetic factors, large family size, ethnic origin and geographic region [3].

More than 300,000 babies are born with sickle cell anemia annually, about two-thirds of them in Africa, according to recent global estimates. There are no clear survival data available for children with sickle cell anemia. However, reports from Benin and Nigeria indicate death rates of 50 % and 90 %, respectively.

Cultural history, lack of medical education, and insufficient health care facilities are important factors believed to lead to high death rates among children with sickle cell anemia in Africa<sup>[4]</sup>.

In the eastern and southwestern regions of Saudi Arabia, SCA is prevalent. However, there is currently no reliable statistical data available on its prevalence in Saudi Arabia<sup>[5]</sup>.

In Iraq, SCA patients are divided into two geographical regions, where they constitute a major health concern. The largest percentage is among the Arabs in the extreme south, where 6.48% of Basra's population carries the sickle cell trait. The second most prevalent area is among the northern Kurdish population, where 1.2% of Dohuk people are carriers<sup>[6]</sup>.

People with SCA have both acute and chronic pain. For people with sickle cell disease, it is important to explore non-drug treatments and use them as alternatives to drug treatments to relieve and treat acute and chronic pain. An educational program that includes mothers of children with SCA can help use non-pharmacological pain management strategies for their children. The educational program allows parents to improve their knowledge of SCA and the importance of non-pharmacological methods<sup>[7]</sup>.

Chronic anemia and occasional pain episodes are the main features of sickle cell anemia. The shape of the red blood cells is changed from normal cells to sickle or crescent shape. The misshapen RBCs may cause tissue infarction and inhibit microcirculation. It mainly causes pain in organs or joints; Hand and foot syndrome, eye problems, as well as other complications including heart problems, infection, spleen retention, leg ulcers, lung congestion, puberty and slow growth in childhood and sometimes a small frame in adults<sup>[8]</sup>.

Therefore, pain management leaders suggest implementing biological, behavioral, and social therapies to relieve chronic pain. The role of pharmacotherapy for pain in sickle cell disease, especially opioids, has been recognized over the past three decades; however, little attention has been paid to using non-pharmacological methods to better deal with and treat chronic pain associated with sickle cell anemia. It is also widely accepted that pharmacological treatments alone are

rarely sufficient, and that non-drug approaches to pain management are very important due to the recent increase in accidental deaths from opioid. A series of coordinated and planned activities aimed at enhancing trainers' knowledge, helping them assess their facts, improve their skills, processes, and solve their problem<sup>[9]</sup>.

## Methodology

### Design of the Study:

A descriptive (quasi experimental) design study was carried out at Basra Center for Hereditary Blood Diseases from 19 September 2020 to 30 March 2021.

### Ethical Consideration

Before each mother took part in the study, the Researchers explained the study's purpose. Mothers were assured that the study maneuver would not harm the study sample in any way, either directly or indirectly. Before any data was collected, each patient gave their verbal consent. Also, ethical approval was obtained from ethical committee of research in the Faculty of Nursing/ University of Baghdad regarding confidentiality and anonymity of participants .

**Setting and sample of the Study:** This study was conducted at Basra Center for hereditary blood diseases in Basra governorate which receive patients with blood diseases for investigation and treatment. A non-probability sample is chosen for the current study, which consist of study involves (45) mother divided as (30) mother were selected as sample of study group. (10) Mother was selected for assessment need and (5) mother was selected for pilot study.

### Data Analysis Methods:

The data were analyzed through the application of statistical package for social science IBM-SPSS version 24.0 and by applying descriptive and inferential statistical tests:

## Results and Discussions

Discussion of Mothers' Socio-Demographic Characteristics: Table(1)

As regards to age; half mothers are young adult with age group 30-39 years (50%) with average (37±7). This

was similar to what was reported study was stated that 56% of mothers age from 30:39 years, with mean age (38.2±8.1)<sup>[8]</sup>.

Regarding mother's level of education refers that the highest percentage of mothers are graduated from primary school (36.7%) and (33.4%) are graduated from secondary school. This is close to the percentages reported in Sudan was pointed that (46%) of mother studies university, (41%) secondary school, and 13% of mother primary school<sup>[10]</sup>.

On the subject of marital status; most of mothers are living with normal marital status in which 90% of them are married and only 10% are divorced. This result is match with the result of similar study was founded that the higher percentage of mothers 95% are married and only 5% are divorced<sup>[11]</sup>.

In relation to number of children; half of mothers are reported that they have 4-6 children in their families (50%) and more of them are reported that they have patient inflicted with sickle cell anemia in family (80%). On the other hand, in the study at New Valley city was found that the number of children in family (1- 3) 62.2% while 37.8% have more than three children, 44.4% have a history of sickle cell anemia and 55% without a family history<sup>[12]</sup>.

The largest percentage is among the Arabs in the extreme south, where 6.48% of Basra's population carries the sickle cell trait.

In the present study the highest percentage among children are referring to 46.7% that children are diagnosed at age less than one year and 43.3% are diagnosed at age of 1-3 years. While the study "Quality of Life of Children with Sickle Cell Anemia" was reveals that the onset of illness was one year for 88% of children, while it was two years for 12% only of them<sup>[13]</sup>.

In relation to number of pain crises the present study is referring that is occurs two times per month as reported by their mothers (46.7%). While study that was shown that more than three quarters of children (78%) had severe pain and 22% of them only had moderate pain. while, none of them had mild pain<sup>[13]</sup>.

Discussion of Mother's Knowledge toward Children with Sickle Cell Anemia: Table (2)

Regarding assessment of mothers' knowledge about behavioral, emotional strategies and biophysical interventions of non-pharmacological approach to pain management; the present study shows that mothers are presenting fair level of knowledge about sickle cell anemia prior application of an educational program during the pre-test (66.7%), while mothers are showing good level of knowledge post application the educational program during the time of post-test (100%). This is similar with study was stated that the mothers had poor knowledge regarding of sickle cell anemia at pre-test compared to them at post-test<sup>[14]</sup>.

Furthermore, the study in Iran was showed that 95.1% of the adolescents and early adulthood with Sickle cell disease (SCD) had unsatisfactory knowledge about SCD before carried out of the program. While after the carried out the program the 100% of the adolescents and early adulthood with SCD had a good knowledge about SCD. The difference was statistical significant, P-value = 0.02.<sup>[15]</sup>

This result may be due to the increase of mothers' education due to empowering them to be more knowledgeable and act effectively (Researchers).

Discussion of Effectiveness an Educational Program on Mother's Knowledge toward Children with Sickle Cell Anemia about Non-Pharmacological Approaches to Pain Management: Table (3)

The present study depicts that mothers are showing fair level of knowledge about non-pharmacological approach management for sickle cell anemia prior application of an educational program during the pre-test (73.3%), while mothers are showing good level of knowledge post application the educational program during the time of post-test (100%). This is similar with study was found there were highly statistical significant differences between pre and post intervention at 1% level of statistical significance<sup>[16]</sup>.

Also that study tested the "Impact of education on the knowledge and skills of parents of children with sickle cell disease" was reported that after providing education post test scores of knowledge improved significantly (100%)<sup>[17]</sup>.

As well study investigated the “Effect of Self Care Management Program on Pain and Fatigue in Sickle Cell Children” was found that there were positive changes of children with sickle cell anemia regarding self-care practices post program than pre-program especially for mouth care from 12.0% pre-program to 83.0% post program. Also, there was a highly statistical significant difference ( $P < 0.001$ ) pre and post program implementation [18]

This clarifies importance of health teaching sessions that improve mother’s knowledge toward children with sickle cell anemia about non-pharmacological approaches to pain management (Researchers).

**Discussion of Relationship between Mother’s Knowledge toward Children with Sickle Cell Anemia about Non-Pharmacological Approaches to Pain Management of Study Group at Post-test and their Socio-Demographic Data: Table (4)**

In regard to relation between mother’s knowledge their age and education; the present study shows that there is no significant relationship among mothers’ knowledge with regard to their age at  $p$ -value= 0.05; however, there is significant relationship between mothers’ knowledge about non-pharmacological approach to pain management with regard to their educational level evidence by significant difference at  $p$ -value= 0.029 respectively. This does not match what was found by study was tested the “Educational Program for Empowering Mothers of Fewer Than Five Children to Overcome Sickle Cell Crisis” that indicates an increase in satisfactory knowledge of mothers age from 30:39 years were 12% in pre/test and increase to 50% in post/test, satisfactory knowledge of mothers who have secondary school education in pre/test was 12% and increase to 42% in post/test. However, this increase reached statistically significant difference between the mothers age and formal education their knowledge ( $P$ . 0.01 and 0.01); respectively [8].

This can be illustrated that mothers, regardless of their age, as soon as one of her children is diagnosed with sickle cell disease, she works hard on how to take care of her child in a healthy way and acquire the

correct information that helps her with that. Also the level of education of mother is helps to understand the information being given during the program teaching session (Researchers).

Concerning mothers’ knowledge with regard to their marital status the present study reveals that there is no significant relationship among mothers’ knowledge with regard to their marital status. The finding of the present study is consistent with that obtained by study was reported Assessment Mother’s Knowledge Regarding Their Children with Sickle Cell Disease” who concluded that there is no significant association among mothers’ knowledge with regard to their marital status [19].

The present study reported that there is no significant relation between mother’s knowledge and number of children in family; while there is a significant relationship between mother’s knowledge and inflicted child in the family; Because of the fact that sickle cell anemia is hereditary disease in the family, this leads to family members’ fear of their children being infected with the disease, which makes them learn about the details of the disease and gain knowledge about it (Researchers).

### Conclusion

The study concluded that there was no significant relationship between (age of mother, marital status, child’ and Number of Pain Crises per Month) with mother’s knowledge also significance relationship between (level of education,) with mother’s knowledge, also educational program about non pharmacological to pain management was effectiveness.

### Recommendation

Frequent lectures and such educational program about non pharmacological to pain management should be implemented in Basra center for hereditary blood disease. Provide an educational booklet for mother includes information about sickle cell anemia and non-pharmacological to pain management. Real need for coordination with the media in order to increase mothers’ knowledge about non pharmacological to pain management.

**Table (1): Distribution of the sample According to their Socio-demographic Characteristics**

Characteristics		f	%
Age: (M±SD= 37±7 years)	20 – 29 years	5	16.7
	30 – 39 years	15	50
	40 – 49 years	10	33.3
Level of education	Doesn't read & write	4	13.3
	Read & write	1	3.3
	Primary school	11	36.7
	Secondary school	10	33.4
	Institute (Diploma)	0	0
	College (Bachelor)	4	13.3
Marital status	Married	27	90
	Divorced	3	10
Number of children in family	1 – 3	13	43.3
	4 – 6	15	50
	7 ≤	2	6.7
Birth order	First	8	26.7
	Second	7	23.3
	Third	3	10
	Fourth +	12	40
Age at diagnosis	< 1 year	14	46.7
	1 – 3 years	13	43.3
	4 – 5 years	3	10
Number of pain crises/ month	1	5	16.7
	2	14	46.7
	3	9	30
	4	2	6.7
Total		30	100

**Table (2): Levels of Mothers’ Knowledge about Sickle Cell Anemia and Non-Pharmacological Approaches to Pain Management**

Levels of Knowledge Non-Pharmacological Approaches to Pain Management	Pre-test	Post-test I	Post-test II
	%	%	%
Poor	16.7	0	0
Fair	66.7	0	0
Good	16.7	100	100
Mean+ SD	1.93±.521	3.00±000	3.00±000

#: Percentage, M: Mean, SD Standard deviation, Poor= 0-8, Fair= 9-17, Good=18-25

**Table (3): Repeated Measure Analysis of Variance (RM-ANOVA) Test for Effectiveness of Educational Program on Mothers’ Knowledge about Non-Pharmacological Approaches to Pain Management for Children with Sickle Cell Anemia**

Levels of Knowledge Sickle Cell Anemia	Pre-test	Post-test I	Post-test II
	%	%	%
Poor	16.7	0	0
Fair	73.3	0	0
Good	10	100	100
Total	100	100	100
Mean+ SD	2.00±.587	3.00±000	3.00±000

#: Percentage, M: Mean, SD Standard deviation, Poor= 0-5, Fair= 6-11, Good=12-17

**Table (4): Analysis of Variance**

Knowledge	Mean (S.D)	Source	df	F	P-value	
Pre-test Post-test I Post-test II	18.97 (6.139) 39.27 (2.016) 38.63 (2.025)	Time	Sphericity Assumed	2	459.31	.001
			Greenhouse-Geisser	1.062	459.31	.001
			Huynh-Feldt	1.069	459.31	.001
			Lower-bound	1.000	459.31	.001
		Error(Time)	Sphericity Assumed	58		
			Greenhouse-Geisser	30.810		
			Huynh-Feldt	31.008		
			Lower-bound	29.000		

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value

**df: Degree of freedom, F: F-statistic, Sig: Significance**

**Ethical Clearance:** The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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