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Original Research

Impacting of an instructional program on Mothers' knowledge toward Non-Pharmacological Pain Management: A Study Focusing on Cognitive Behavioral Therapy for children

[1]Athmar A Shaheed | [2]Khatam M AL-Mousawi

[1]Instructor, Pediatric Nursing Department, College of Nursing University of Baghdad
E-mail: Athmar.Ali2204m@conursing.uobaghdad.edu.iq

[2]Instructor, Pediatric Nursing Department, College of Nursing University of Baghdad
E-mail: Kitam.mutashar@conursing.uobaghdad.edu.iq

Abstract:

Objectives: The aim of this research is to measure mothers' knowledge of non-pharmacological pain management, determine the association between mothers' knowledge and their demographic characteristics, and find the relationship between mothers' knowledge and their children's demographic factors.

Methodology: Between December 2023 and February 2024, a quasi-experimental (non-probability) study was conducted on a sample of 50 women and their children who attended a health institution. The researcher designed an evaluation instrument based on previous research studies. Panel experts determined the content's reliability. The internal consistency of the instrument was assessed using the Alpha Correlation Coefficient, and the data was analyzed using SPSS version 26.0.

Result: The study group's knowledge scores changed significantly from pretest to posttest, whereas the control group's curve remained steady throughout the testing period.

Conclusion: Mother's knowledge regarding non – pharmacological pain management has been improved after implementation of the research program in the study group, which reveal that the effectiveness of the provided program was highly beneficial

Recommendations: The study suggests increasing mother's involvement in non – pharmacological seminars and educational sessions. Additional research is needed to focus on coping strategies for non-pharmacological pain management.

Keywords: Mothers, Children, Non- Pharmacological, Cognitive Behavioral Therapy

Introduction:

Pain has been present from the beginning of human history. Pain can be described in many ways, and everyone has felt it. It is currently known as the fifth vital sign. The International Association for the Study of Pain defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described as such damage." [1]. Children's pain differs from adult pain according to of physiological, cognitive, developmental, and social variables. Developmental processes influence perceptions, emotional expression, pain, cognition, and educational level. Children's pain experiences vary relying on their environmental, cultural, and social contexts, such as their interactions with parents, caregivers, and healthcare providers [2]. Non-pharmacological pain management (NPPM) is a treatment that does not include the use of medications. Non-pharmacological techniques complement, rather than replace, pharmacological treatment. These strategies are very effective for managing mild to moderate discomfort. They are used in connection with medication to manage moderate to severe pain, as well as can be used alone to relieve mild pain. There are various NPPM approaches that nurses can utilize in nursing care [3]. Non-pharmacological techniques used in children are classified into three types: supporting, cognitive-behavioral, and physical. Supporting strategies involve seeing movies, reading books, and having parents stay with their children during uncomfortable medical therapies. Cognitive-behavioral methods include relaxation, distraction, and hypnotherapy. Physical techniques include positive touch, posture, massage, and the application of heat and cold [4] Cognitive behavioral therapy (CBT) is a functional approach that uses motivational reinforcement techniques like emotionally motivating children, rewarding them with prizes, encouraging them to stay positive, allowing them to use their imagination and creativity, relaxing them with soothing music, calming them, prompting them to take deep breaths, and attempting to read books. Cognitive strategies encourage youngsters to focus on something other than their distress [5]. Cognitive behavioral therapy can be utilized with clients from various socioeconomic backgrounds, ethnicities, and ages. Along with hospitals and clinics, it is also used in schools, vocational programs, and rehabilitation centers, and other places. It has been shown to be effective in generalized anxiety, stress, obsessive-compulsive disorder, phobias, depression, and behavioral disorders [6]. Mothers have a significant impact on their children's care, both directly and indirectly, due to their values, culture, education, and knowledge. Mothers are increasingly encouraged to engage in their children's care and pain treatment, whether in the hospital or at home. Nurses and other health professionals will be less familiar with the youngster than parents. Mothers are the primary source of information on their children's pain-related behaviors and responses [7]. Mothers' specific knowledge, appropriate non-pharmacological implementation, and evaluation of pain relief offered optimal child outcomes and health maintenance. Non-pharmacological strategies include stimulation methods (e.g., massage, heat or cold packs, transcutaneous nerve stimulation), cognitive-behavioral methods (e.g., meditation, relaxation techniques, hypnotherapy, music therapy, and biofeedback), and other methods (e.g., acupuncture and acupressure). Many of these alternate treatments are non-invasive, low-risk, affordable, and simple to implement in home or clinical settings. They achieve their benefits in a variety of ways, not only in reducing pain but also by maintaining the emotional components, thereby reducing anxiety, boosting coping abilities, offering a sense of control, enhancing comfort, promoting sleep, reducing fatigue, and improving quality of life [8]

Methodology:

Study design:

The study used a quasi-experimental approach and was conducted at Merjan Medical City's Consulting Clinic in Hillah. This institution is government facility that provides a medical center clinic for large numbers of patients from all ages and provides them with medical, therapeutic and diagnostic care in a smooth and regular manner. The investigation was accomplished from December 7, 2023 to April 2, 2024.

Study sample and sampling:

A non-probability (convenient) sample of 55 moms were selected for this study: 25 mothers were exposed to the educational program as the study group, while the remaining 25 mothers were not exposed to the program as the control group. A pilot research excluded five mothers from the sample population.

Study instrument:

The researcher designed a questionnaire based on past research to assess mothers' knowledge of cognitive behavioral therapy (CBT). The tool is organized into three sections: the first covers the mothers' demographics and personal traits, the second covers the children's demographics, and the third contains the CBT knowledge scale. The knowledge measure consists of 24 items assessed on a two-level scale (2=I know, 1=I don't know). The knowledge scale measures understanding of CBT types, uses, advantages, and how to practice them.

Validity of the instrument:

To confirm the study questionnaire's content validity, a panel of 19 experts evaluated its clarity, relevance, and adequacy. The advice of experts were taken into account with their comments. The tool has been modified and is now appropriate for use in research. In January 2024, 5 randomly selected mothers participated in a pilot research to test the questionnaire's dependability for 14 days.

Reliability of the study:

A pilot study was used to examine the instrument's internal consistency, as well as Alpha Correlation Coefficient (Cronbach's Alpha). The reliability coefficient (r = 0.712) indicates that the questionnaire demonstrated good internal consistency and equivalent measurability.

Data collection:

Between January 21st and February 27th, 2024, data was collected using a modified self-report questionnaire utilizing the Arabic version. Mothers gave a list of phone numbers, and verbal consent was necessary for participation in the study (both study and control groups). Both the study and control groups took a pre-test to determine mothers' knowledge of CBT. The study group of 25 mothers was exposed to the current program. Following the program sessions, both groups were given a post-test to measure their understanding of the **study challenge.**

Data analysis:

Data were analyzed and interpreted using the statistical package for social science (SPSS), version 26.0.

Descriptive data analysis:

1. Using frequencies and percentages to describe demographic structures.
2. The means and standard deviations are used to approximate the data value.

Ethical consideration:

All mothers agreed, and their identities were not gathered by the researcher. In addition, the researcher informs everyone about the research and its objectives. As a result, they were fully aware about their task. The researcher told all participants that the questionnaire responses would only be used for research purposes. They were also informed that all participants are autonomous individuals with the right to decline participation.

Results:

Table (1): Distribution of the Mothers according to their Socio- demographic Characteristics

No.	Characteristics		Study group		Control group	
			f	%	f	%
1	**Age (Years)**	25 – less than 35	7	28	8	32
		35 – less than 45	10	40	11	44
		45 – less than 55	4	16	6	24
		55 and more	4	16	0	0
		Total	***25***	***100***	***25***	***100***
		M ± SD	***40.8 ± 10***		***38.8 ± 7***	
2	**Level of education**	Doesn't read & write	2	8	1	4
		Primary school	3	12	4	16

		Secondary school	9	36	9	36
		Diploma	1	4	3	12
		Bachelor	10	40	6	24
		Postgraduate	0	0	2	8
		Total	***25***	***100***	***25***	***100***

No.	**Characteristics**		**Study group**		**Control group**	
			f	%	f	%
3	**Occupation**	Employee	12	48	12	48
		Student	1	4	2	8
		Housewife	12	48	11	44
		Total	***25***	***100***	***25***	***100***
4	**Number of family member**	1 – 3	2	8	1	4
		4 – 6	17	68	21	84
		7 or more	6	24	3	12
		Total	***25***	***100***	***25***	***100***
5	**Residency**	Rural	6	24	6	24
		Urban	19	76	19	76
		Total	***25***	***100***	***25***	***100***
6	**Monthly income (Iraqi Dinar)**	> 300000	5	20	3	12
		300000-600000	5	20	3	12
		601000-900000	6	24	9	36
		901000-1200000	5	20	4	16
		1201000-1500000	4	16	6	24
		Total	***25***	***100***	***25***	***100***
7	**Getting information?**	No	9	36	8	32
		Physician	1	4	0	0
		Nurse	1	4	0	0
		Family	5	20	5	20
		Friends	2	8	12	48
		Social media	1	4	0	0
		Multiple source	6	24	0	0
		Total	***25***	***100***	***25***	***100***

No: Number, f: Frequency, %: Percentage, M: Mean, SD: Standard Deviation

The descriptive analysis in table 1 reveals that average age for mothers in the study group is 40.8±10 years and refers to 38.8±7 years for mothers in the control group; 40% of mothers in the study group and 44% of mothers in the control group are seen within age group of 35 – less than 45 year.

Regarding level of education, the highest percentage refers to 40% of mothers graduated with bachelor degree in the study group while in the control group refers to 36% of those who are graduated from secondary school.

The occupational status reveals that 48% of mothers in the study group and 48% in the control group are governmental employees. The number of family member refers to 4-6 as reported among 68% of mothers in the study group and 84% of them in the control group. The residency of mothers indicates that 76% in the study group and 76% in the control group are resident in urban.

The monthly income for mothers refers to 601000 – 900000 Iraqi dinars as reported among the highest percentage of mothers in the study group (24%) and control group (36%).

Regarding getting information about non-pharmacological management of pain in children with chronic pain, about two third of mothers in both groups confirmed that they get information, their main sources are family (20%) and multiple source (24%) of those in the study group while those in the control group got their information from friends (48%) and family (20%).

Table (2): distribution of children according to their socio-demographic characteristics.

No.	Characteristics		Study group		Control group	
			f	%	f	%
1	**Age (Years)**	1 – less than 7	5	20	5	20
		7 – less than 13	13	52	13	52
		13 and more	7	28	7	28
		Total	***25***	***100***	***25***	***100***
		M ± SD	***10 ± 4***		***10 ± 4***	
2	**Sex**	Male	12	48	13	52
		Female	13	52	12	48
		Total	***25***	***100***	***25***	***100***
3	**Birth order**	First	3	12	8	32
		Second	6	24	7	28
		Third	9	36	5	20
		Fourth	3	12	3	12
		Fifth	4	16	2	8
		Total	***25***	***100***	***25***	***100***
4	**Duration of diagnosis (years)**	1 – less than 4	8	32	6	24
		4 –less than 7	12	48	9	36
		7 and more	5	20	10	40
		Total	***25***	***100***	***25***	***100***
5	**Number of inflicted children**	One	23	92	25	100
		Two	2	8	0	0
		Total	***25***	***100***	***25***	***100***

No: Number, f: Frequency, %: Percentage, M: Mean, SD: Standard Deviation

The analysis in table 2 shows that average is 10±4 years for children of mothers in the study group and control group; 52% of mothers' children in each group are seen within age group of 7 – less than 13 year. The sex of children refers to female among 52% of mothers in the study group and refers to male among 52% of mothers in the control group. Regarding birth order of children, 36% of children were third born among mothers in the study group while 32% of children were firstborn among mothers in the control group.

The duration of chronic pain in children refers to 4less than 7 years among 48% of mothers in the study group while refers to seven years and more among 40% of mothers in the control group. The number of inflicted children with chronic pain refers to one only as reported by 92% of mothers in the study group and 100% of mothers in the control group.

Table (3): Assessment of Mothers' Knowledge about Non-Pharmacological Pain Management related to "Cognitive Behavioral Therapy" in the Study and Control Groups.

Levels of knowledge	Study Group												Control Group											
	Pre-test				Post-test I				Post-test II				Pre-test				Post-test I				Post-test II			
	f	%	M	S.D	f	%	M	S.D	f	%	M	S.D	f	%	M	S.D	f	%	M	S.D	f	%	M	S.D
Poor	12	48	8.24	1.332	8	32	9.28	1.208	3	12	9.96	1.274	8	32	9.16	1.599	7	28	9.04	1.020	5	20	10.00	1.354
Fair	12	48			12	48			14	56			13	52			17	68			11	44		
Good	1	4			5	20			8	32			4	16			1	4			9	36		
Total	*25*	*100*			*25*	*100*			*25*	*100*			*25*	*100*			*25*	*100*			*25*	*100*		

This table presents the mothers' knowledge about cognitive behavioral therapy for managing pain in children; the findings reveal that mothers in the study group show poor to fair levels of knowledge during the pretest (poor= 48%, fair=48%) while they show fair level of knowledge during the posttest 1 (48%) and posttest 2 (56%).

Table (4): Relationships among Mothers' Knowledge in the Study Group with their Children' Sociodemographic Characteristics (Post-test)

Variables		Knowledge				Relationship
		Poor	Fair	Good	Total	
Age (Years)	1 – less than 7	0	3	2	5	r^s = .435 P-value= .030 Sig= S
	7 – less than 13	0	9	4	13	
	13 and more	0	6	1	7	
	Total	0	18	7	25	
Sex	Male	0	8	4	12	r^*= 199 P-value= .340
	Female	0	10	3	13	

	Total	0	18	7	25	**Sig= N.S**
Birth order	First	0	1	2	3	**r^s = .270 P-value= .191 Sig= N.S**
	Second	0	5	1	6	
	Third	0	5	4	9	
	Fourth	0	3	0	3	
	Fifth	0	4	0	4	
	Total	0	18	7	25	
Duration of diagnosis (years)	1 – less than 4	0	5	3	8	**r^s = .266 P-value= .199 Sig= N.S**
	4 –less than 7	0	9	3	12	
	7 and more	0	4	1	5	
	Total	0	18	7	25	
Number of inflicted children	One	0	16	7	23	**r^*= 151 P-value= .472 Sig= N.S**
	Two	0	2	0	2	
	Total	0	18	7	25	

rs: Spearman Correlation coefficient, r*: Biserial correlation coefficient, P: Probability, Sig: Significance, N.S: Not Significant, S: Significant, H.S: High Significant

This table indicates that there is significant relationship between mothers' knowledge in the study group and their children' age at p-value= .030 while there is no significant relationship with remaining variables

Discussion:

Table (1)

The study results on ages correspond with those of [9] who indicated that the average mother's age was 38.2 ± 8. Other study found that [10] participating mothers had an average age of 40-49. The level of education results were consistent with those of [11], who reported that the majority of sample participants (25.0%) had completed high school. Furthermore, the educational findings supported those of [12] who discovered that the majority of participants (52.2%) had completed primary school. Regarding to occupation status the study's findings differed with those of [13] who discovered that the majority of participants (65.8%) were housewives. The results also correlate with [12] who discovered that the majority of the sample was employed.

The study group's findings corresponded with [14] findings which showed that 42.9 percent of the sample had 4-8 children. Also disagree with these findings [15] the results revealed that 71.08 percent of the sample had more than six children. For residency of mothers this result agree with the findings of [16] who demonstrate that (80%) of the sample lived in an urban region. Disagree with the study made by [17] who conducted that 56.1 percent of the sample lived in rural areas. Regarding to monthly income this finding aligns with a study conducted by [14] who discovered that the majority of the study population (54.5%) had sufficient monthly income. This study also contradicts [18] finding that the majority of the study sample (55.8%) did not have enough monthly income. Also not consistent with a study conducted by [19] who showed that the majority of participant had a low income. In relation to obtaining information regarding CBT, these findings are consistent with the [20] study, which found that the majority of parents obtained information from different sources. In the similar direction, studies conducted [12] disagree with these results, that most of the mothers obtained knowledge from medical resources.

Table (2)

The results on ages correspond with those of [9] who found that the child age ranged from 6 to 10

years. In the same line with this study [21] reveal that children in the study had an average age of 9.30 ±1.6. For the control group, 9.10 ± 1.3. In relation to child gender the findings are consistent with those of [22] who discovered that more over half of the study sample of children (53.5%) were female. Also, agree with [23] who found that half of the study sample (50.2%) was female. Regarding to birth order, the data show that the majority of subjects ranked third (36%). The results from this study fit in with the findings of [12] who discovered that the majority of childbirths occurred in the second to third place (55%). This conclusion does not match by [24] which indicated that the majority of individuals placed first (54%). Concerning to the length of chronic pain in children the findings of [21] are consistent with the majority of the children in the study sample having longer than four years. Also, [25] disagree with the study's findings, which demonstrate that the majority of children had chronic pain for 1-3 years.

Table (3)

These findings are supported by [26] they indicate that the mean score of participants for non-pharmacological pain management on the pre-test was (1.39), indicating a low level of knowledge, but at the post-test, the mean score improved (1.66) with a substantial effect size of 1.02 at p-value 0.001. Also, these findings are consistent with a study conducted by [27], who discovered that the mother's ability to address pain caused by invasive acts is supported by a non-pharmacological pain management technique (behavioral intervention). Is focused on offering the greatest possible mother engagement (family-centered empowerment) to manage pain in toddlers without using medicines (behavioral intervention).

Table (4)

According to the current study findings, there are statistical correlations between mothers' knowledge and their children' age at p-value= .030. This finding supported by [28] who established that a significant association between participant ages and physical activity. This result differ from [12] who demonstrate that strong relationship between mothers' degree of education and their awareness of their children with chronic pain. Another study show that [20] significant association between mothers' knowledge and their number of children, father's occupation, father's education, and mother's education. Other demographic and clinical data did not show any significant relationship.

Conclusion:

Pain in children is a difficult situation, that must be managed properly .Non-pharmacological approaches can be used to manage pain in children, depending on the degree, type, and age. Children's involvement in pain treatment planning and implementation leads to improved outcomes. One of the non - pharmacological types is Cognitive behavioral therapy which it's contain several methods like (music, imagery, distraction, relaxation, hypnosis). It was used in this study and it demonstrate efficient in lowering pain in children.

Recommendation:

1- The study implement in various settings, including communities, hospitals, and clinics.
2- Involve a large number of children with chronic pain in the study by offering gifts and providing psychological and emotional support.
3- Catalogs and posters should be available in outpatient clinics and hospital departments which contains pictures, colors, and cartoon characters that attract the attention of children and mothers.

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