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The Effect of an Educational Intervention for Improving Mothers' Care for their Children with Cerebral Palsy

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Abstract: Cerebral palsy is a group of permanent disorders of movement and posture results from brain damage originating early in life and causes activity limitation, sensory, cognitive, communicative and behavioral problems in children. Nurses have an important role in providing support and ongoing education to the children with cerebral palsy and their parents especially the mothers who are the primary caregivers for their children and also, provide them with adequate knowledge and training about the skills of daily living according to their children's functional level. ***Aim:*** Evaluate the effect of an educational intervention for improving mothers' care for their children with cerebral palsy. ***Method:*** A quasi- experimental design was used to conduct this study, including 65 mothers having children with cerebral palsy. The tools of data collection were a structured questionnaire sheet and observation checklists. ***Results:*** The results of this study clarified that, the majority of the studied mothers had unsatisfactory knowledge before the teaching program while, all of them had satisfactory knowledge about cerebral palsy and care of associated problems in their children after 6 months of the educational program. Also, more than half of the studied mothers had unsatisfactory reported practices before the educational program while, more than two thirds had satisfactory reported practices regarding daily care of their children with cerebral palsy after 6 months of the educational program. In addition, half of the studied mothers had a satisfactory observed practices before the teaching program while, the majority of them had satisfactory observed practices post 6 months of the educational program. There was a statistical significant difference between the total knowledge score and the total practices score of the studied mothers regarding care of children with cerebral palsy. ***Conclusion:*** based on the results of the present study and research hypothesis, it is concluded that, the educational program was an effective in improving mothers care for their children with cerebral palsy. ***Recommendations:*** Continuous educational programs should be provided for all mothers of children with cerebral palsy about the disease and daily care of their children in all health care settings by qualified and trained nurses.

Key words: Cerebral Palsy, Children, Care, Educational intervention, Mothers.

INTRODUCTION

Cerebral Palsy (CP) is one of the CNS disorders that are more prevalent in infancy and early childhood. It is caused by brain damage that can lead to severe sensory, motor, speech and cognitive impairments and complex limitations in self care functions for children [(1)].

The incidence of CP was greater in premature and low birth weight infants. It was estimated that, approximately 2 to 2.5 of every 1000 live born children in developed countries have CP [(2, 3)]. Cerebral Palsy is the leading cause of physical disability in early child hood [(2)]. In the UK, one in 400 children has CP [(4)] while, in El kharga district, Egypt, 52 of 25, 540 Children have CP, giving a prevalence of 2.04 per 1, 000 live births [(5)]. It is a condition which results from cerebral damage before, during or shortly after the birth and it is not a disease, but rather a complex of symptoms covering a wide variety of functional impairment [(6)]. Ten Percent of children with CP has acquired CP that occurs at later ages such as meningitis and head injury but, nearly 50% of children with CP have no identifiable risk factors [(2)].

Cerebral Palsy is classified according to the affected limb to spastic CP which accounts for 65.5% of all cases and was classified into diplegia, hemiplegia, monoplegia and quadriplegia [(7)]. Ataxic and dyskinetic CP representing 3.8% for each while mixed type accounting for 26.9% [(8)]. It is diagnosed in the first 18 months of life for most of children when they fail to attain the motor milestones or when they show specific abnormal signs such as asymmetric gross motor functions, hypertonia or hypotonia [(4)]. Movement and posture problems are present in all CP children and some of them have some level of intellectual disability, seizures, abnormal physical sensation, impaired vision or hearing, speech problems and bladder and bowel control problems [(2)].

There is no a standard treatment for all CP children and treatment is mainly preventative, symptomatic and supportive [(9)]. The basic treatment methods include: physical therapy, occupational therapy, speech therapy, behavioral therapy, medications and surgical intervention [(10)]. Children with CP who had movement problems become independent and are usually treated at home through their parents specially the mothers. They require assistance in daily activities as feeding, bathing, dressing, handling, stimulation, frequent medical care and need special exercises every day [(11 &12)]. Mothers play an essential role in early identification and observation of growth patterns of children with CP. They need advice about how the associated conditions with CP may affect or change the daily living activities like sleeping, dressing, and toileting, using an age - appropriate focus on planning and knowledge strategies that aims to enhance the functional abilities of the child [(13)]. Children with CP will need meaningful educational program that emphasize on independence in the least restrictive educational environment because, cerebral palsy is a life- long condition [(14)].

The nurse should play a key role in teaching the parents especially the mothers how to care for their Cerebral Palsy children and providing them with an emotional support**.** She must teach them about all special needs of the CP child, the proper handling, the home care and training about the manual skills and activities of daily living which proceeds a long developmental lines and according to the child's functional level **(1 &15)**.

AIM OF THE STUDY

The aim of this study was to evaluate the effect of an educational intervention in improving mothers' care for their children with cerebral palsy.

RESEARCH HYPOTHESIS

The study was hypothesized that, the mothers' care provided for children with cerebral palsy will be improved after the educational intervention.

SUBJECTS AND METHOD

Design: Quasi experimental research design was utilized.
Setting: The study was carried out at the neurological department and at out-patient clinic affiliated to Mansoura University Children's Hospital (MUCH), Egypt.

Subjects: A convenience sample of 65 mothers who were attending to the previous mentioned settings and fulfilling the following inclusion criteria: willing to participate in the study and having children with cerebral palsy only in all age groups.

Tools of Data Collection:

Two tools were used for data collection:
Tool I: **Structured questionnaire sheet (pre / post test format):** This questionnaire was developed by the researchers after reviewing the related literature and consisted of two parts:

Part (1):

a) ***Characteristics of the studied mothers of children with cerebral palsy as***: Age, educational level, occupation, marital status, residence, number of children, family income, consanguinity of parents.
b) ***Characteristics of children with cerebral palsy as***: Age, gender, birth order, education, duration of illness, type of CP.

Part (2):

a) ***Assessment of mothers*' *knowledge about cerebral palsy which included:*** Definition, causes and predisposing factors, manifestations, associated difficulties or complications, investigations, treatment measures, preventive measures, care of CP child with associated difficulties and sources of their knowledge about CP.

Scoring System:

The scoring system for the questionnaire was developed; the complete correct answer was given the score (2), incomplete correct answer was scored (1) and the wrong answer was given score (zero). The researchers summed the scores for each item of knowledge and the total is divided by the number of the items which gave a mean score of the part. The mothers' knowledge was considered good if the percent score was **5o% or more**, and if the percent score was **less than 50%,** the mothers' knowledge was considered **poor.**

a) ***Assessment of mothers*' *reported practices regarding daily care of their children with CP* as:** Nails care, toilet training ,sleeping positioning, care of child with seizures and muscular contractions, dental care, bathing, and wearing clothes.

Scoring System:

The scoring system for the reported practice was developed; each correct step scored on the bases of "Done" scored (1), or "Not done", scored (0). Then, the mean score of each task was done. If the percent score was **60%or more,** the mothers' reported practices was considered **satisfactory and** if the percent score was **less than 60%,** the mothers' reported practices was considered **unsatisfactory .**

Tool II: **Observational checklists:** The researchers developed these checklists after reviewing the related literature. This tool was to assess mothers' observed practices regarding care of their children with CP at home. It covered the tasks as: Feeding positioning & its precautions, physical exercises and oral drug administration.

Scoring System:

Each practical task was assessed by a set of steps and each mother was observed while performing the tasks. The items observed which were done correctly were scored (1) and the items which were not done correctly or not done were scored (zero).The researchers summed-up the scores of the items for each task and the total was divided by the number of the items, giving the mean score for the part and the total scores were converted into a percent score. If the percent score was **(60% or higher**), the mothers' observed practices were considered **satisfactory** and if the percent score was **(less than 60%),** the mothers' observed practices were considered **unsatisfactory**.

METHOD

An administrative Design:

An official approvals to conduct the study were obtained by the researchers through letters directed from the Faculty of Nursing to the director of Mansoura University Children's Hospital, and therefore the heads of neurology departments (in-patient and out – patient) to conduct this study, explaining the study's aim and procedures together with its potential advantages.

Ethical Considerations:

Oral acceptance was obtained from each mother for her participation after explaining the aim of the study and securing confidentiality of data. The studied mothers were able to withdraw or refuse at any time from the study without any responsibilities.

An operational Design:

a) Preparatory phase :

– The researchers reviewed the related literature covering the all aspects of cerebral palsy in children and the role of their mothers for care of them by using the available

text books, articles, journals, and internet search to be acquainted with previous and current literature and to develop the relevant tools for data collection.

- The study tools were tested for its content validity by a panel of five experts in the field of the study and the necessary modifications were done.
- Using alpha Cronpach's Coefficients to test the reliability of the developed tools which were (0.87) for questionnaire sheet, (0.72) for the reported practice sheet and (0.95) for the observed practice sheet.

Pilot Study:

A pilot study was carried out to test the study tools .It was conducted on 10% of the total sample size in order to evaluate the research plan ,practicability and feasibility of the tool . Some modifications were done in the tool and the mothers who participated in the pilot study were excluded from the study.

Field Work:

The study was done during the period from **January 2014** to the end of **June 2014.**

Data collection was carried out for six months and the purpose of the study was explained by the researchers to each mother.

***b) Planning phase*:**

- The educational program was developed based on the updated evidence based literature about care of children with CP. The interviewing time with the studied mothers ranged from (30- 45 minutes) to assess their knowledge and reported practices related to care of their children with CP. Then, the researchers observed how the mothers cared for the child in the activities of feeding, oral drug administration and physical exercises for their children using the observation checklists. The researchers were available in the morning and afternoon shifts for data collection about two days /week.
- The mothers who were participated in the study completed a structured interviewing questionnaire. This questionnaire was initially administered on (80) mothers but the full responses were obtained from (65) of them only.

***c) The implementation phase*:**

The educational program was given in five sessions (two theoretical and three practical sessions). Different teaching methods were used in these sessions as lectures, group discussion, demonstration, re-demonstration and role playing. In addition to, various teaching media were used such as: data show, handout guideline regarding CP and care of children with CP which was prepared by the researchers. The program was conducted at both out- patient and in –patient departments.

d) Evaluation phase:

Evaluation of mothers' knowledge and practices was done two times , immediate after the application of program and 6 months later using the previously mentioned study tools.

Statistical Analysis:

The collected data was and analyzed with SPSS program version 21. It was described as number and percent and the relation between the categorical variables was tested using chi- square test. Fisher's exact test was used if more than 25% of cells have expected count <5 within (2x2) contingency tables, or Monte Carlo exact test was used if within larger than (2x2) contingency table. Statistical significance level was considered at p- value ≤0.05 or ≤0.001.

Limitations of the Study:

1. A small sample size in the present study was inadequate to generalize the results of this study.
2. The dependence on self- reported practices in some of mothers was difficult to be observed by the researchers such as toilet training, child safety, bathing, dental care and positioning during sleeping.

RESULTS

Table (1) describes characteristics of the studied mothers in this study. More than half of them (52.3 %) were in the age group < 30 years with the mean age of 30.4± 7.5 years, more than three fourths of them (78.5%) were house wives and more than three fourths (78.5%) of them were living in rural areas .Regarding their educational level, less than half (46.2%) of the studied mothers had secondary or diploma level of education. Also, more than a quarter of them had two or more than three children in the family as revealed by (36.9% and 26.2%) respectively. In addition, more than half (61.5%) of the studied mothers were not relatives with their husbands and more than half (61.5%) of them reported that, the physician was the source of knowledge about the disease.

Characteristics of the studied children with cerebral palsy are showed in **table (2).**This table showed that, the mean age of the studied children were 6.19± 4.60 years, more than two thirds (67.8%) of them were males, more than half of them were the first children in their family and had dyskinetic cerebral palsy as revealed by (53.8%&63.1%) of them respectively. Also, more than a quarter of them had their duration of illness < 4 months &from (4 - < 8months) as clarified by (30.8% & 27.7%) of them respectively.

Table (3) indicates the distribution of mothers' knowledge regarding CP in children pre, immediate after and post 6 months of the program implementation. It was clear from this table that, more than a quarter of the studied mothers had satisfactory knowledge about definition, causes , general manifestations and preventive measures as revealed by (38.5% ,47.7%, 47.7% & 38.5%) of them respectively pre program. Mean while, the majority of them had satisfactory knowledge in these variables post 6 months of the program as clarified by (84.6%, 89.2%, 87.7%&72.3%) of them respectively .Also, there was a significant statistical difference between the total mothers 'knowledge about the cerebral palsy in children pre, immediate after and post 6 months of the program implementation.

Distribution of mothers' knowledge regarding care of associated problems in their children with CP was illustrated in **table (4).** This table clarified that, the majority of the studied mothers had unsatisfactory knowledge about the care of the associated problems in their children with CP specially for problems of movement, speech, chewing &

swallowing ,drooling , vision , uncontrolled head movement and lack of concentration before program as revealed by (89.2%, 87.7%, 87.7%, 95.4%, 96.9% , 96.9% & 96.9%) of them respectively. Meanwhile, more than two thirds of them had satisfactory knowledge about care of problems in their children such as walking ,speech, hearing, vision, constipation and uncontrolled head movement post 6 months of program implementation as clarified by (69.2%,75.4%, 78.5%, 73.8%, 72.3% &66.2%) of them respectively. There was a significant statistical difference between the total mothers' knowledge about the care of associated problems in their CP children pre, immediate after and post 6 months of program implementation.

The total percent of mothers' knowledge about CP and care of associated problems in their children with CP pre, immediate after and post 6 months of program implementation were clarified in **Figure (1).** It was observed from this figure that, the most majority (95.4%) of the studied mothers had unsatisfactory knowledge before the program while, this percent decreased to (41.5%) immediate after but, all the mothers (100%) had satisfactory knowledge post 6 months of program implementation. Also, there was a significant statistical improvement in the total mothers' knowledge pre, immediate after and post 6 months of program implementation.

Table (5) illustrates the distribution of mothers' reported practice regarding daily care of their children with CP pre, immediate after and post 6 months of program implementation. It is observed from this table that, more than half (61.5%) of the total studied mothers had unsatisfactory reported practices regarding (child's clothing, dental care, toilet training, nails care, positioning during sleeping and seizures' care) pre program while, their total reported practices in these items were satisfactory by the majority (93.8%) of them immediate after and more than half (66.2%) of them post 6 months of the program implementation. Also, there was a significant statistical difference between the total mothers' reported practices regarding daily care of their children with CP pre, immediate after and post 6 months of the program implementation.

Mothers' observed practices regarding care of their CP children are showed in **table (6)** which indicates that, more than a quarter (33.8%)of mothers had satisfactory observed practices regarding feeding of the child while, more than half had satisfactory observed practices regarding applying physical exercises and oral drug administration for their children as revealed by (58.5% &60%) of them respectively pre program but , their observed practices were satisfactory by more than three fourths of them in these items post 6 months of the program implementation as clarified by (78.5%,73.5% & 87.7%)of them respectively. Also, there was a significant statistical improvement in all areas of observed practices between the studied mothers pre, immediate after and post 6 months of the program implementation.

Figures (2, 3& 4) clarify the correlations between the total knowledge and the total practices scores of the studied mothers' pre, immediate after and post 6 months of program implementation**.** In **figures (2 & 3),** there was no significant statistical relation between them pre and immediate after the program implementation but, in **figure (4**), There was a significant statistical relation between the total knowledge and the total practices of the studied mothers post 6 months of the program implementation.

Table (1); Characteristics of the studied mothers

Characteristics	(n=65)	
	No.	**%**
Age of mother in years:		
• < 30 years	34	**52.3**
• 30 - <40 years	21	32.3
• ≥40years	10	15.4
Mean(±SD):	30.4±7.5	
Residence:		
• Urban	14	21.5
• Rural	51	**78.5**
Educational level:		
• Illiterate	11	16.9
• Read and write	12	18.5
• Primary/preparatory	7	10.8
• Secondary/diploma	30	**46.2**
• University education	5	7.7
Mothers' work:		
• Housewife	51	**78.5**
• Working	14	21.5
Number of children:		
• One child	11	16.9
• Two	24	**36.9**
• Three	13	20.0
• > three	17	26.2
Consanguinity relationship:		
• Relatives	25	**38.5**
• Not relatives	40	61.5
Sources of knowledge :		
• The nurse	20	30.8
• The physician	35	**53.8**
• The relatives& Neighbours	8	12.3
• Mass media	17	26.2

Table (2); Characteristics of the studied children with cerebral palsy

Characteristics	(n=65)	
Age:		
Mean (±SD)	6.19 ± 4.60	
	No.	**%**
Gender:		
• Boys	44	**67.7**
• Girls	21	32.3
Birth order:		
• The first	35	**53.8**
• The second	12	18.5
• The third	10	15.4
• Other	8	12.3
Type of CP:		
• Spastic	17	26.2
• Dyskinetic	41	**63.1**
• Athetoid	5	7.7
• Mixed	2	3.0
Duration of illness:		
• < 4 months	20	**30.8**
• 4months - < 8 months	18	**27.7**
• 8months - < 1year	14	21.5
• ≥ 1years	13	20.0

Table (3); Mothers' knowledge regarding cerebral palsy in children through the program phases

Variables	Pre (n=65)		Immediately (n=65)		Post 6 months (n=65)		*p*-value
	Satisfied	Unsatisfied	Satisfied	Unsatisfied	Satisfied	Unsatisfied	
Definition	**25(38.5)**	40(61.5)	43(66.2)	22(33.8)	**55(84.6)**	10(15.4)	*P*1=0.001* *P*2≤0.001* *P*3=0.01*
Causes	**31(47.7)**	34(52.3)	61(93.8)	4(6.2)	**58(89.2)**	7(10.8)	*P*1≤0.001* *P*2=0.171 *P*3≤0.001*
General Manifestations	**31(47.7)**	34(52.3)	53(81.5)	12(18.5)	**57(87.7)**	8(12.3)	*P*1≤0.001* *P*2=0.331 *P*3≤0.001*
Signs of seizures attack	**25(38.5)**	40(61.5)	31(47.7)	34(52.3)	**43(66.2)**	22(33.8)	*P*1=0.288 *P*2=0.002* *P*3=0.034*
Investigations	40(61.5)	25(38.5)	55(84.6)	10(15.4)	61(93.8)	4(6.2)	*P*1=0.003* *P*2≤0.001* *P*3=0.09*
Treatment	43(66.2)	22(33.8)	49(75.4)	16(24.6)	58(89.2)	7(10.8)	*P*1=0.247 *P*2=0.002* *P*3=0.039*
Prevention	25**(38.5)**	40(61.5)	50(76.9)	15(23.1)	**47(72.3)**	18(27.7)	*P*1≤0.001* *P*2≤0.001* *P*3=0.545
Total knowledge about the disease	**37(56.9)**	28(43.1)	42(64.6)	23(35.4)	**64(98.5)**	1(1.5)	*P*1=0.369 *P*2≤0.001* *P*3≤0.001*

Data is described as number (percent), Chi-square test,
***P*1=probability value of statistically significance difference between pre group& immediate group**
***P*2=probability value of statistically significance difference between pre group& post group**
***P*3=probability value of statistically significance difference between immediate group& post group**
**Statistical significant at p ≤0.001 & ≤ 0.05*

Table (4); Mothers' knowledge regarding care of associated problems in their children with Cerebral palsy

Problems of	Pre (n=65)		Immediately (n=65)		Post 6 months (n=65)		*p*-value
	Satisfied	Unsatisfied	Satisfied	Unsatisfied	Satisfied	Unsatisfied	
Walking	22(33.8)	43(66.2)	30(46.2)	35(53.8)	**45(69.2)**	20(30.8)	*P*1=0.152 *P*2≤0.001* *P*3=0.008*
Movement	7(10.8)	**58(89.2)**	18(27.7)	47(72.3)	40(61.5)	25(38.5)	*P*1=0.014* *P*2≤0.001* *P*3≤0.001*
Speech	8(12.3)	**57(87.7)**	32(49.2)	33(50.8)	**49(75.4)**	16(24.6)	*P*1≤0.001* *P*2≤0.001* *P*3=0.002*
Chewing & Swallowing	8(12.3)	**57(87.7)**	31(47.7)	34(52.3)	32(49.2)	33(50.8)	*P*1≤0.001* *P*2≤0.001* *P*3=0.861
Drooling	3(4.6)	**62(95.4)**	31(47.7)	34(52.3)	42(64.6)	23(35.4)	*P*1≤0.001* *P*2≤0.001* *P*3=0.05*
Hearing	0(0.0)	65(100.0)	31(47.7)	34(52.3)	**51(78.5)**	14(21.5)	*P*1≤0.001* *P*2=0.023* *P*3≤0.001*
Vision	2(3.1)	**63(96.9)**	31(47.7)	34(52.3)	**48(73.8)**	17(26.2)	*P*1≤0.001* *P*2=0.048* *P*3=0.002*
Constipation	18(27.7)	47(72.3)	31(47.7)	34(52.3)	**47(72.3)**	18(27.7)	*P*1≤0.001* *P*2≤0.001* *P*3=0.004*
Uncontrolled head movement	2(3.1)	**63(96.9)**	31(47.7)	34(52.3)	**43(66.2)**	22(33.8)	*P*1≤0.001* *P*2=1.00 *P*3=0.034*
Lack of concentration	2(3.1)	**63(96.9)**	31(47.7)	34(52.3)	40(61.5)	25(38.5)	*P*1≤0.001* *P*2≤0.001* *P*3=0.113
Total knowledge about the care	1(1.5)	64(98.5)	28(43.1)	37(56.9)	61(93.8)	4(6.2)	*P*1≤0.001* *P*2≤0.001* *P*3≤0.001*

Data was described as number (percent), Chi-square test,
***P*1=probability value of statistically significance difference between pre group& immediate group**
***P*2=probability value of statistically significance difference between pre group& post group**
***P*3=probability value of statistically significance difference between immediate group& post group**

Table (5): Mothers' reported practices regarding daily care of their children with CP

Variables	Mothers' reported practices No (%)						*p*-value
	Pre (n=65)		Immediately (n=65)		Post 6 months (n=65)		
	Satisfied	Unsatisfied	Satisfied	Unsatisfied	Satisfied	Unsatisfied	
Child' s clothing	30(46.2)	**35(53.8)**	54(83.1)	11(16.9)	**43(66.2)**	22(33.8)	*P*1≤0.001* *P*2=0.022* *P*3=0.027*
Dental care	23(35.4)	**42(64.6)**	46(70.8)	19(29.2)	**37(56.9)**	28(43.1)	*P*1≤0.001* *P*2=0.014* *P*3=0.100
Toilet training	26(40.0)	**39(60.0)**	40(61.5)	25(38.5)	**39(60.0)**	26(40.0)	*P*1=0.014* *P*2=0.023* *P*3=0.857
Nails care	20(30.8)	**45(69.2)**	37(56.9)	28(43.1)	**38(58.5)**	27(41.5)	*P*1=0.003* *P*2=0.001* *P*3=0.859
Positioning during sleeping	20(30.8)	**45(69.2)**	49(75.4)	16(24.6)	**36(55.4)**	29(44.6)	*P*1≤0.001* *P*2=0.005* *P*3=0.017*
Seizures' care	27(41.5)	**38(58.5)**	51(78.5)	14(21.5)	**41(63.1)**	24(36.9)	*P*1≤0.001* *P*2=0.014* *P*3=0.054
Bathing& hygiene	43(66.2)	22(33.8)	62(95.4)	3(4.6)	**45(69.2)**	20(30.8)	*P*1≤0.001* *P*2=0.708 *P*3≤0.001*
Total mothers' reported practice	**25(38.5)**	**40(61.5)**	**61(93.8)**	4(6.2)	**43(66.2)**	22(33.8)	*P*1≤0.001* *P*2=0.002* *P*3≤0.001*

Data is described as number (percent), Chi-square test,
***P*1=probability value of statistically significance difference between pre group& immediate group**
***P*2=probability value of statistically significance difference between pre group& post group**
***P*3=probability value of statistically significance difference between immediate group& pos t group.**

Table (6); Mothers' observed practices regarding care of their children with CP

Variables	Mothers ' observed practices No (%)						*p*-value
	Pre (n=65)		Immediately (n=65)		Post 6 months (n=65)		
	Satisfied	Unsatisfied	Satisfied	Unsatisfied	Satisfied	Unsatisfied	
Feeding positioning & its precautions	**22(33.8)**	43(66.2)	42(64.6)	23(35.4)	**51(78.5)**	14(21.5)	*P*1≤0.001* *P*2≤0.001* *P*3=0.080
Applying Physical exercises	**38(58.5)**	27(41.5)	56(86.2)	9(13.8)	**48(73.8)**	17(26.2)	*P*1≤0.001* *P*2=0.064 *P*3=0.079
Oral drug administration	**39(60.0)**	26(40.0)	49(75.4)	16(24.6)	**57(87.7)**	8(12.3)	*P*1=0.061 *P*2≤0.001* *P*3=0.071
Total observed practices	**33(50.8)**	32(49.2)	54(83.1)	11(16.9)	**60(92.3)**	5(7.7)	*P*1≤0.001* *P*2≤0.001* *P*3=0.109

Data is described as number (percent), Chi-square test,
***P*1=probability value of statistically significance difference between pre group& immediate group**
***P*2=probability value of statistically significance difference between pre group& post group**
***P*3=probability value of statistically significance difference between immediate group & post group**

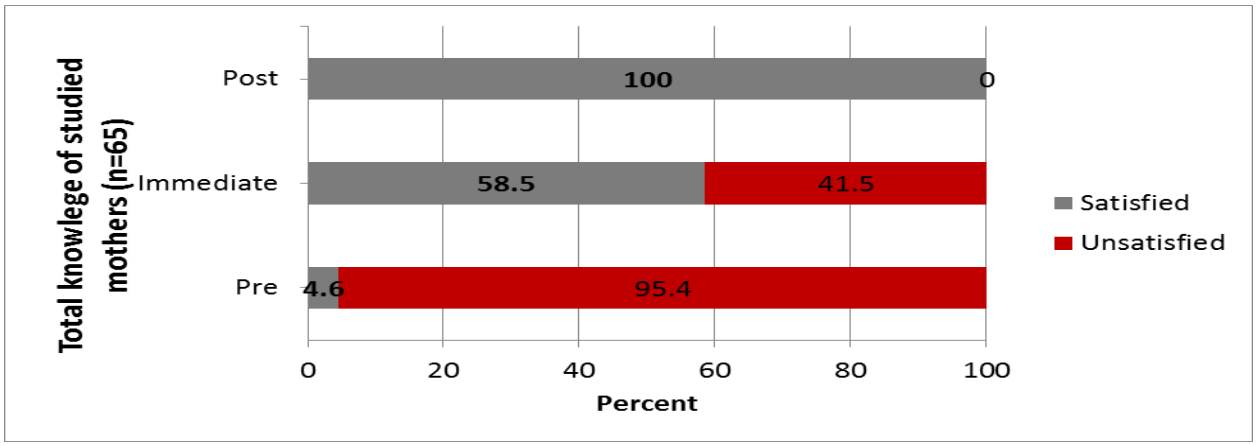

Figure (1): Bar chart illustrates the total percent of knowledge within the studied mothers about CP and care of associated problems in their children pre/immediate after and post 6 months of program implementation (n=65)

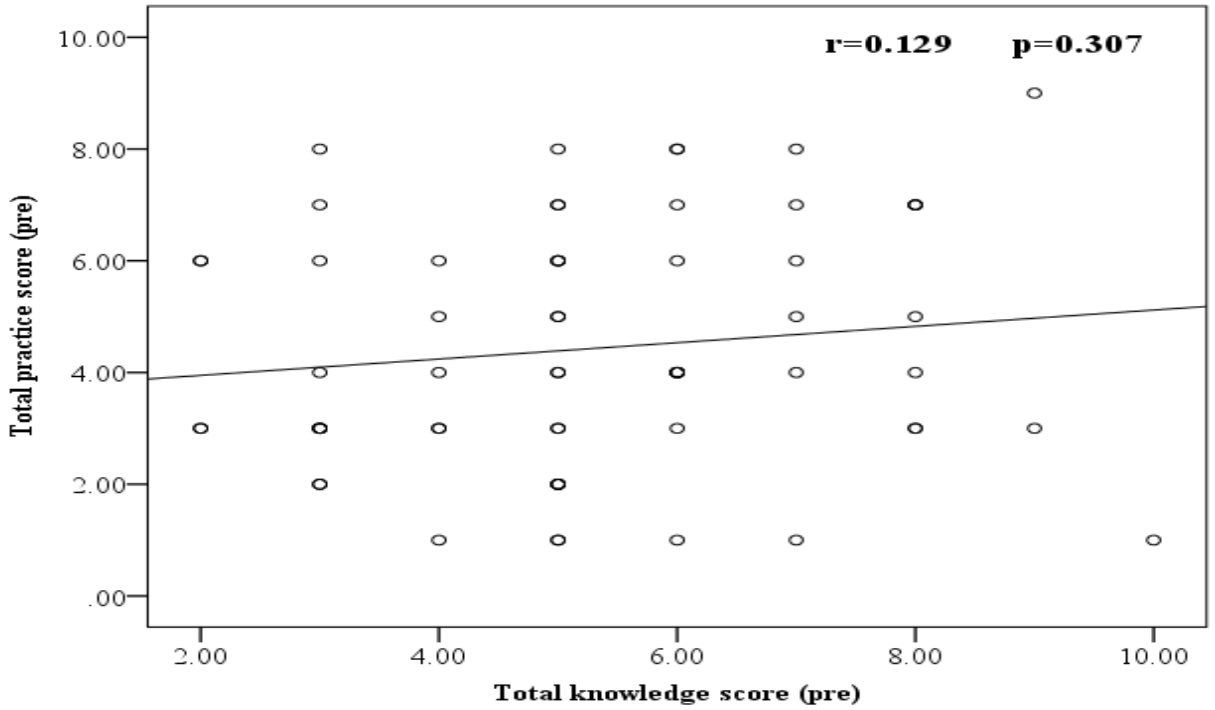

Figure (2): Scatter plot illustrates correlation between total knowledge score and total practice score among the studied mothers before the program implementation (n=65)

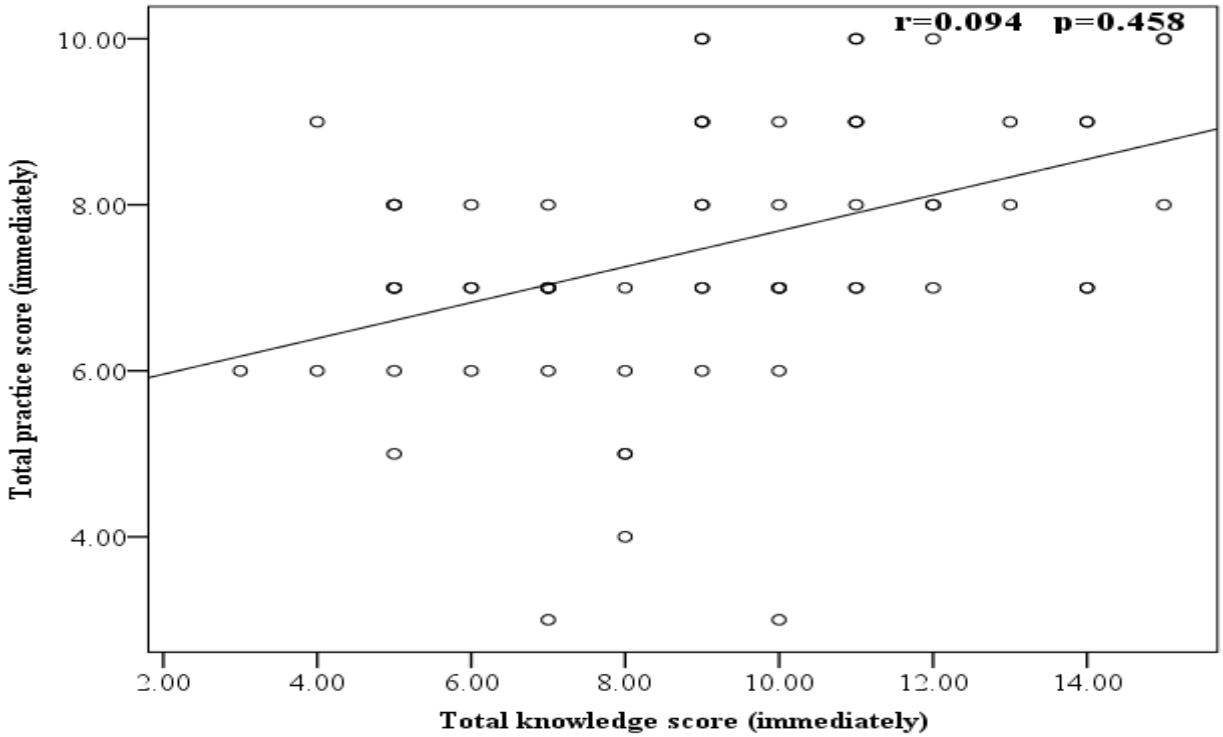

Figure (3): Scatter plot illustrates correlation between total knowledge score and total practice score among the studied mothers immediate after the program implementation (n=65)

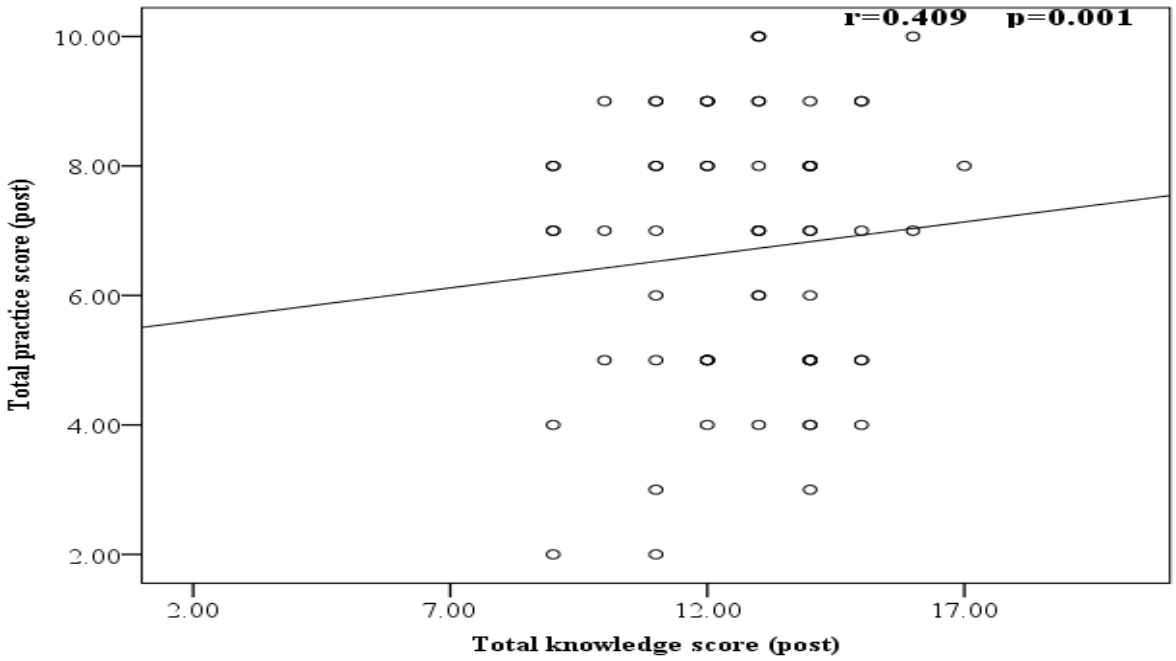

Figure (4) : Scatter plot illustrates correlation between total knowledge score and total practices score within the studied mothers post 6 months of program implementation (n=65)

DISCUSSION

Cerebral palsy is a group of permanent and non-progressive disturbances of movement and posture caused by a central nervous system lesion, or dysfunction originating early in life [(16)]. Various activity limitations result from movement problems which impair the ability of child with CP to live independently and he is usually treated at home [(17)]. Parents of children with CP especially the mothers often carry the principal multifaceted role of long–term CP and disability care [(18)]. A good educational program will encourage an open exchange of information, offer respectful and supportive care, and encourage partnership between parents and the health care professionals who work with them [(19)]. So, the nurse has responsibility to help the care givers specially the mothers to manage their time and effort and teach them about the disease and how to care for their CP children [(20)].

Regarding characteristics of the studied mother, the findings of the present study showed that, less than half of the studied mothers had secondary education and more than three fourths of them were housewives. These findings disagree with the results of [(21)] who found in his study that, the majority of mothers of children with CP were illiterate and housewives. This result may explain that, the educated mothers had more information and positive attitude than illiterate mothers. Also, in the current study, more than half of the studied mothers were in the age less than 30 years. This result is not similar with the view by [(22)] who showed in their study about "parents' adjustment for caring of cerebral palsy children" that, less than half of the caregivers of CP children were in the age 50 years. These results may explain the view of [(23)] who mentioned in his study that, the mothers should be in suitable age to be able to assume responsibility appropriately toward children because, young mothers are usually unprepared psychologically for parenthood duties.

Our study also revealed that, the mean age of children was 6.19± 4.60 and more than two thirds of them were males. This result agree with [(22)] who stated that, more than half of the studied children with CP were males and 57.5 % of children their ages ranged from 6 < 9 years while, 42.5 % of them aged from 6 to less than 12 years. Also, the previous result contradicted with [(24)] who mentioned that, cerebral palsy occurs in both sexes equally. Regarding children's birth order, the present study showed that, more than half of them in the first birth order. This was disagree with the study by [(20)]who stated that, less than half of the CP children was in the first birth order. Also, the study by [(25)] indicated that, about one fourth of CP children were the first born children. The findings of the present study showed that, more than half of children had dyskinetic CP and more than a quarter of them had spastic CP. These finding was contradicting with the view of [(26)] who showed in their study that, two thirds of cerebral palsy children had spastic CP. Also, this result is in agreement with [(27)] who mentioned in their study that, the numbers of children with spastic CP were always more than the dyskinetic and ataxic types.

As regard the total mothers' knowledge about cerebral palsy in children. Findings of the current study indicated that, more than half of the studied mothers had good level of knowledge about cerebral palsy as definition, causes, manifestations, signs of seizures attack, investigations, treatment and preventive measures before program implementation while, the majority of them had satisfactory level of knowledge post program implementation. This result was in an agreement with [(28)] who stated in his study that, the minority of mothers had satisfactory level of knowledge regarding cerebral palsy in children and its intervention before program implementation. However, there was a considerable improvement in the knowledge of the mothers of children with CP post program implementation which could be attributed to the frequent explanation and motivating those mothers by providing them with an educational booklet. This finding may be due

to mothers need for simple information about their children's illness and how to deal with it. Also, there were inadequate nurses available in some places whose the major part of their responsibilities is to educate the CP children and their mothers.

In relation to mothers' knowledge regarding care of associated difficulties in their children with CP , The present study indicated that, the majority of them had unsatisfactory level of knowledge about care of associated problems such as (problems of movement, speech, chewing, swallowing, drooling, hearing ,vision, constipation, un controlled head movement and lack of concentration) before program implementation, compared to more than two thirds of them had satisfactory level of knowledge about care of these problems post program implementation. These findings explain that, the program lead to significant improvement in mothers 'knowledge about care of the associated problems of CP in children.

The findings of the current study revealed that, more than half of the studied mothers had unsatisfied reported practices regarding daily care of their children with CP pre program implementation as in (child's clothing, dental care, toilet training, nails care, positioning during sleeping and seizures care) while, there was an improvement in these daily care activities and more than two thirds of the studied mothers had satisfactory reported practices regarding these needs post program implementation. This result was supported by [(17)] who found in his study that, there is a deficit in most aspects of daily living child's activities in the majority of caregivers of CP children. This finding may be due to lack of mothers' knowledge regarding good daily care of their children with CP at home. The study by [(29)] who "stressed the importance of improving care givers' knowledge about the proper oral and dental care of disabled children as cerebral palsy". From the previous findings, it was suggested by [(30)] in his study that, "caregivers may be unable to take care of their disabled children at home due to defect in their knowledge and practices regarding caring of CP children".

It was observed from the results of the present study that, more than half of the studied mothers had satisfactory level of observed practices regarding care of children with CP as (physical exercises and oral drug administration) while, more than a quarter of them had satisfactory level of observed practices related to feeding of CP child before program intervention compared to, the majority of them had satisfactory observed practices in the care of the previous aspects after program implementation. This improvement in mothers' observed practices related to child's feeding in the present study post program explains the importance of child's safety and prevention of aspiration during feeding which is a common problem in cerebral palsy due to neurological impairment [(31)].

In the current study, improving mothers' reported and observed practices related to daily care of their children with CP may be due to improving their knowledge about the disease and care of associated problems after program implementation. This was agree with the view of [(32)] who revealed in his study that, an awareness of caregivers about child's needs are considered an important factor to adopt healthy practices for their CP children.

Additionally, there were statistical significant differences between mothers' educational level and their total level of knowledge about the cerebral palsy and care of associated problems and daily care of their CP children pre program implementation and also, between the number of children and their total level of knowledge immediate the program implementation. These findings may explain that, better education is necessary to explain and understand the disease process and care required for children while, mothers may benefited more and had higher satisfaction in practical part of the study because it is simply recognize the most important issue for mothers having children with. Furthermore, limited No of children in the family offer the mothers' good chance for education and learning about the disease and positively influencing mothers' total score in the study.

Finally, the present study clarified that, there was a significance statistical difference between the total knowledge score and total practice score of the studied mothers post program implementation. This finding explains that, the educational intervention was an effective in improving the knowledge and care provided for children with CP.

CONCLUSION

The present study concluded that, improved mothers knowledge was a positive predictor of the scores of mothers' practice. So, the teaching program was an effective in improving the mothers' knowledge and practices regarding care of their children with cerebral palsy.

RECOMMENDATIONS

Based on the findings of the current study, it was recommended that, this program should be implemented in many settings of health care to support its effectiveness and nurses in all settings should be provided with adequate training and information to empower mothers and improve their role efficacy in caring of their children with CP. Also, continuous teaching programs should be provided for all mothers of children with CP about the disease as a chronic illness and daily care of associated difficulties in these children.

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