Impact of Educational Empowerment Program on knowledge, Aggression, loneliness, and Anxiety of Mothers having Children with Cerebral Palsy

Nagat Farouk Abolwafa [(1)]**, Safaa Mohammed Zaki** [(2)]**, Howayda Mohammed Ali** [(3)]

(1) Assistant professor of Pediatric Nursing, Faculty of Nursing, Minia Universities, Egypt
(2) Assistant professor of Psychiatric and Mental Health Nursing, Faculty of Nursing, Minia University, Egypt,
(3) Lecture of Pediatric Nursing, Faculty of Nursing, Minia Universities, Egypt

Abstract

Background: Cerebral palsy (CP) is a permanent disorder of posture and movement resulting from brain damage occurring in the baby or young child which could have negative impacts on social behavior of mothers **Objective to** assess the impacts of educational empowerment program on knowledge, aggression, loneliness, and anxiety of mothers having children with cerebral palsy. **Setting; the study conducted in the** pediatric department, at Minia University Hospital for Obstetrics and Pediatrics and General Hospital. **Sample,** Convenient samples of all available mothers who have been selected for the program pre/post the intervention. **Tools:** five tools were used for data collection. Tool (1) An interviewer questionnaire, (2) Buss-Perry Aggression Questionnaire (BP-AQ), (3) UCLA Loneliness, (4) Scale Beck Anxiety Inventory (BAI) and (5) Empowerment scale. **Results; the finding** of the current study showed that the main age of mothers was 38.2 ± 8.1 years and noticeable improvement were detected in the mothers' level of knowledge, aggression, loneliness, and anxiety after implementation of the program based empowerment model compared to the pre assessment. So, the finding of this study **concluded that** after implementation of the intervention program-based empowerment model, mothers who had children with CP their level of aggression, loneliness and anxiety were alleviated. **Recommendions**: future researches are needed to develop and refine interventions through program in-order to alleviate aggression, loneliness and anxiety through empowering and engaging mothers in the caring plan of their children with CP.

Keywords: Aggression, Anxiety, Cerebral Palsy, Empowerment, loneliness, Mothers

Introduction

Cerebral palsy (CP) is the most common permanent disability in children and is defined as "an umbrella term covering a group of non-progressive but often-changing motor impairment syndromes, secondary to lesions or anomalies of the brain, arising in the early stages of its development. The range of motor disorders are large and varied including impairments such as limb weakness, spasticity and lack of co-ordination which can have a significant impact on a child's ability to carry out activities of daily living (Patel et al., 2020). The daily lives of mothers with children affected by cerebral palsy are often more impacted as mothers are usually the primary caregiver and as such more likely to experience emotions and challenges. In the same respect, other studies have demonstrated that mothers of children with disabilities experience higher stress than fathers and are at greater risk of anxiety, depression, lower psychological wellbeing, and decreased health **(Rudebeck, 2020)**

Family centered empowerment is a dynamic, helpful, interactive, and public process help to improve the quality of life of people with chronic disease, responsibility, better interaction with health problem, satisfaction, better response to treatment, prevention of complications, reduced the costs of treatment **(Shahdadi, Rahdar, Mansouri, & Abdollahimohammad, 2018).** Family empowerment is a method through which the families get information and skills in order that it can manage family life ideally and as a result upgrade the family members' lifestyles and quality of life. This type of empowerment, which is realized by the interaction between healthcare professionals and families, brings about a sense of control over family life and leads to positive changes that improve the strengths, abilities, and skills of the family. Altogether, the empowerment program can be helpful for sick children and his/her parents to

contract more efficiently with the disease and its complications to achieve a higher level of good care and good life **(Teymouri, Alhani, & Kazemnejad, (2011); Subandi, (2013) and Minooei, Ghazavi, Abdeyazdan, Gheissari, & Hemati, 2016).** Mothers of children with cerebral palsy encounter significant interaction, input and information from healthcare services. Receiving information "by chance" and the need to be personally proactive to get their child the access to the services needed was a common experience. Mothers wanted improved access to services and for health professionals to be honest with them, give them accurate and individualized information, develop a plan of action, and treat them as an equal team member **(Hayles et al., 2015)**

In most cases, mother is constantly engaged with the affairs of children with CP, and the child's health greatly affects her well-being. Feelings like guilt, fault, failure, and deprivation due to the child's abnormality and fear of the future can cause withdrawal and disinterest in social engagement and create an environment of anger, sadness, and grief, hence a rising other negative mental states like the feeling of loneliness, isolation, helplessness, and tension. loneliness is a condition in which a person or group of people has do not meet their interpersonal needs, because of their perception of self and the environment or their individual and social motivations, choose to disconnect from the environment and continue their life as an isolated individual or group **(Jalili, et al., 2013).**

Aggression is a strong emotion that affects our mood and situation in a variety of cases. American Psychological Association (APA) dictionary of psychology defines aggression as to harm a person physically or psychologically and when aggression is to attain a goal or inflict intentional injury it is called hostile aggression. It can be aggressive or instrumental aggression (reaching the goal) or reactive and emotional aggression (the emotional response to the target person) (ManyaPundir, 2020). The mothers see their life modified due to the need to care for their children and tend to feel less satisfied with life. Low self-esteem, lack of family and social support, limited financial resources, the

feelings of frustration/loss in value, and the daily overload of tasks caused anxiety, stress and repercussions in physical and psychological health. With this, the mothers felt less able to accommodate and support the children and satisfaction with the parental role also decreased. Which intern led to aggression toward self and others, loneliness due to lack of emotional support and anxiety produce, **(Parkes.et. al., 2011).**

Mothers afflicted with loneliness are afraid of social encounters and avoid such situations as they deem themselves vulnerable to negative evaluation by others. In a study conducted in 2013 on the parents of mentally disabled children in Khorramabad, Iran, it was found that although all these parents had psychosocial problems, especially mothers, because of their multiple roles in the family, had more problems than fathers. More than half of the parents their social relations with their families and neighbors have faded **(Malekshahi & Fallahi, 2013).** Further attention to the knowledge of the mothers with special needs children regarding the child's condition and the ways of acquiring support from others can improve their ability to manage the situation **(Avaznejad, et al., 2017).** Mothers also described how caring for their child with cerebral palsy was 'time consuming' and how daily cares such as showering required a balancing of time and adapting priorities. These necessary adaptations meant that the mother experienced limits to freedom and resulted in a sense of separation from family and others in the community as causing feeling of loneliness **(Vadivelan, 2020).**

Significance of the study

CP is one of the most common causes of physical disability in childhood, with a reported prevalence of approximately 1.5–3 per 1,000 **(McCullough, et al., 2013).** El-Tallawy et al reported that 52 of 25,540 children in Al-Karga District, Egypt, had CP, giving a prevalence of 2.04 (95% confidence interval 1.48–2.59) per 1,000 live births **(El-Tallawy, et al., 2011).** Cerebral palsy is damage to the brain that cannot currently be fixed treatment and therapy help manage effects on the body. The injury &damage to the brain is permanent. The brain doesn't heal as other parts of the body .Because

of this, the CP itself will not change for better or worse during a person's life time. It is a blanket for several disorders that affect normal, healthy movement **(Martin, 2016).**

Mothers of the children with CP are vital member of the professional team; the most important role of them is the lifelong interest in the commitment to their children. They may feel helpless and confused, so that they need information, intervention and support to rehabilitation program and learn to manage the practical difficulties, which can disrupt the developing relationship with their children **(Winder, 2013).** Mothers as caregivers may not fulfill their roles due to lack of understanding to the physical, psychological, emotional, and social needs of their child. They like to help themselves and sometimes form own help groups and arrange friendships and events, etc. In general, they receive little support from relatives, friends and neighbors **(Stenvenson, 2016).**

The Study's Aim

The objective of this study is to investigate the impacts of educational empowerment program on knowledge, aggression, loneliness and anxiety of mothers having children with cerebral palsy.

Subjects and Methods

3.1. Research design: To achieve the study's goal, a quasi-experimental (pre/post-test) research design was used .

3.2. Setting: this study was carried out at pediatric department at Minia University Hospital for Obstetrics, Pediatrics and General Hospital.

3.3 Sampling and population: Convenient samples of all available mothers have children with CP 100 mothers (50 mothers from Minia University Hospital for Obstetrics, Pediatrics and 50 mothers from General Hospitals).

In this study, Fifth tools were employed, which are listed below :

First Tool: the researchers created a pre-designed questionnaire sheet for mothers have children with CP, developed by the researchers based on appropriate literatures, in order to gather data required for this study, as pre/post, was designed by the researchers after reviewing the related literature to assess the knowledge of mothers of primary school children about CP. It was made up of the two sections that follow:

1. **Part one:** Interpersonal information, as well as the children's ages, their gender, their mothers' age, their educational level, the number of children they have, and their home

2. **Part two:** Questionnaire sheets for mothers' level of knowledge interviews: For all mothers, as pre-and post-education test was administered in this part. That offers information on CP for mothers, such as definition, signs and symptoms, types, causes, nursing care of CP and complications of CP and treatment

Scoring system of mothers' level of knowledge was scored using a scoring method based on the items on the interview from questionnaire; moms' responses were examined utilizing a template answer key created through the researchers. Correct answers received just one-point grade, while incorrect answers received a zero. The item scores were added up for each portion, and the total was divided by the number of things. The mean and standard deviations of these scores were calculated after they were transformed to a percent score. A score of less than 50 percent on the overall mother's knowledge was regarded unsatisfactory, but a score of 50 percent or above was considered satisfactory.

Second Tool: Buss-Perry Aggression Questionnaire (BP-AQ) consists of 29 self-administered items rated on a 5-point Likert scale. (BP-AQ) includes four subscales: physical aggression 1-9 items, verbal aggression 10-14 items, anger 15-21 items, and hostility 22-29 items. Higher scores indicate higher aggressive behavior. The total score of aggression is the sum of scores of all the items. 0- 50 mild level of aggressions, 51-100 moderate level of aggression, 101-150 sever level of aggression. In a study conducted by Samani on 492 female and male 18-22 years

old students of Shiraz University and Shiraz University of Medical Sciences, the validity of BP-AQ was confirmed and its test-retest reliability was reported to be 0.78 **(Samani, 2008).**

Third Tool: Social isolation was measured using UCLA Loneliness Scale, which consists of 20 items rated on a 4-point Likert scale and measuring the person's subjective feelings of loneliness and social isolation in three dimensions of relationship with family, relationship with friends, and relationship with neighbors. The Cronbach's alpha coefficient of this scale for the populations of adults, students, and teachers ranged from 0.89 to 0.94. In a study performed by Yaghoubi Doust on 384 high school students, validity of this scale was verified and its reliability was reported to be 0.88. Total score range from 20 to 80. Higher scores indicate higher loneliness. Categorization as the following: 20-34 denotes a low degree of loneliness, 35-49na moderate degree of loneliness, 50-64 a moderately high degree of loneliness, and 65-80 a high degree of loneliness **(Yaghoubi Doust, 2013).**

Fourth Tool: Beck Anxiety Inventory (BAI), the Persian version, was used to measure mothers' anxiety. This 21-item self-report instrument measures the severity of anxiety in adolescents and adults. The BAI consists of 21 questions about how the subject has been feeling in the last week, expressed as common symptoms of anxiety (such as numbness and tingling, sweating not due to heat, and fear of the worst happening). The rating of symptoms is similar to BDI. The BAI has a maximum score of 63 which is rated as following: 0–7 = minimal level of anxiety; 8–15 = mild anxiety; 16–25 = moderate anxiety; and 26–63 = severe anxieties. The applicability of BAI in the Iranian population has been previously reported by **Kaviani, et al. (2008)** (reliability: r = .72; validity: r = 0.83 internal consistency: = .92).

Fifth Tool: was family empowerment scale: The scale was originally performed by **Koren, et al., (1992)** and revised by the Behavioral and Developmental Services: Children's **Quality Improvement, (2008)** and revised by Research and Training Center on

Family Support and Children's Mental Health, (2010). It consisted of 17 items within three construct areas family (6 statements), child service system (6 statements) and community (5 statements); measured by five point Likert scale and was summarized in the current research to be easy to use by the mothers, Never (1), Seldom (2) and Sometimes (3) Often (4) Very often (5) for ease applicability. The researchers adopted the scale, translated it into Arabic language and summarized it. The tool was tested for validity and reliability pre conduction the study. **A score of each area** is the sum of the item responses. The higher score indicates relatively more empowerment in each area. To obtain a score for each area, sum the item responses and scored in the same direction. **The Scoring of family empowerment scale was as the following:** 17-39 of Low empowerment, 40-62 of Moderate empowerment, and 63-85 High empowerments.

Validity and Reliability:

The tools were subjected to a content validity test by a panel of three pediatric nursing specialists, and required revisions were made. The Cronbach's alpha coefficient approach was used to test the tools' consistency and reliability .

Pilot study:

Pediatric department at Minia University Hospital for Obstetrics and Pediatrics and General Hospital conducted a pilot study on 10 percent of 10 mothers. A pilot study was undertaken to assess the study tools' clarity and completeness, as well as the time required to complete each instrument. The necessary modifications, exclusions, and/or additions were made based on the findings of the pilot. Before beginning the study, the final forms were approved by a jury, and the dependability was tested.

Ethical consideration:

Official permission was obtained through an issued letter from the Dean of Faculty of Nursing, **Minia University** to conduct this study. Written consent was obtained from the directors of the previously mentioned setting after explaining the aim of the study. An

informed consent form was obtained from the nurses before starting the study and a brief introduction about the study's objectives was explained, the researchers informed the participants that, the study was voluntary, they were allowed to refuse to participate and they had the right to withdraw from the study at any time, without giving any reason, anonymity and confidentiality were preserved for the participant.

Administrative Design:

An official letter requesting permission to conduct the study was directed from the dean of the faculty of nursing, Minia University to the directors of the pediatric department at Minia University Hospital for Obstetrics, Pediatrics and General Hospital.to obtain their approval to carry out this study.

Pilot study:

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Field work:

The field work took place over the course of 12 months, from August 2021 to August 2022, with the program's implementation taking eight months. Pre/post-testing takes one month, and the program takes seven months to implement. Mothers with CP children were divided into 20 small groups, each with five mothers. Each group had a total of five sessions, each of which varied in length from 45 to 60 minutes. Every contributor receives a description of the program brochure, which contains every instructional resource. Every session normally begins with recap of what has been covered in previous sessions as well as the goals for the new one. As a reward, the interested mothers were given praise and/or acknowledgment.

The actual work began with researchers meeting mothers at Pediatric department at Minia University Hospital for Obstetrics and Pediatrics and General Hospital in Morning and Evening shift. The researchers first introduced themselves to the mothers and gave them a complete background on the study, its purpose, and then distributed the pre-test format to collect the required data. When more information was needed, the researcher was available. The program's curriculum was then developed based on the mothers' actual educational needs assessment .

As a result, the content of the participant's information has been organized into conceptual sessions. **Content of the first session** included the interviews with the mom personally who were being investigated, an explanation of the study's purpose and duration by the researcher through face-to-face interaction, a mother lecture, a conversation, and a pre-test results, evaluation of mother's self-awareness about changes and recognition of one's performance level and expectations. In this session, individual interviews were conducted using a series of evaluation forms previously prepared based on empowerment scale (each subject was given a sheet, in which all the session of the intervention were jointly registered by the subject and the researcher).

Content of the second session The aim of these interviews was to examine the person's knowledge and awareness about the changes in her psychological, spiritual, and social capacities, range of activities and roles she plays, her functional and mental independence, her adaptation to the condition, and then her abilities and skills and available support sources and their limitations in each of these domains. The subjects were also encouraged to express their expectations from a desirable life.

Then, the problems of the person in each of the mentioned domains were identified. For example, when a mother stated that "I don't know if I can cope with the fact that I will see my child in this condition through her life or my life?", the researcher interpreted this as the mother's deficiency of knowledge and awareness about the changes occurred in her life because of having a disabled child and how to manage it. When another mother stated that

"I used to go to all sorts of festivities, events, parties, I was free to do as I like, but now, because of my child's illness, I've lost many of my contacts, I'm always home and feel empty", the researcher interpreted this as maladaptation to the change in the role, subjective misconception about motherhood, and the state of isolation. When another mother stated that: "I often treat my husband and other children with a sense of aggression and hostility, sometimes I start to break things around the house", the researcher registered this as unchecked and rising feeling of anger and hostility in the mother.

Content of the third session topic includes definitions, causes, and signs and symptoms of CP. **The fourth session's** content: types of CP, nursing care of CP, and complications of CP. The topic of **the fifth session** was revision. A variety of teaching techniques, including lectures and small-group discussion, were used. These included the use of videos and pictures for illustration. In order to get the necessary data, a post-test format was finally distributed.

Data analysis

A suitable personal computer was used to enter the data. The statistical analysis was carried out with the help of the SPSS-20 statistical software package. Each tool's content was evaluated, categorized, and coded. For qualitative variables, frequencies and percentages-based descriptive statistics were used. Quantitative continuous data were compared by using student T-test in case of comparisons between the mean scores of the two studied groups, whereas in quantitative data, means as well as standard deviations were used. In the event of comparisons between the mean scores of the two examined groups, the Chi-square test was used to compare qualitative study variables. P. value<0.05 was utilized for statistical significance difference.

Results:

Table (1) revealed that the mean age of mothers was 38.2 ± 8.1, 50% of the mothers were read & write, while only 3% hold high educational degree. There were 70% of

mothers came from rural area, also, 87% of the families had insufficient income.

Table (2): This table showed that 51% of children aged 3-6 years with mean age 3.23 ± 3.3, 70% of them were males. The third child rank order was 43.0%. In Relation to types of CP, 72.0% of the children were spastic type while 8.0% were ataxic type.

Table (3): This table clears that 85.0% of mothers didn't know definition of CP in pretest while in post-test 95.0% know, regarding nursing care of child with CP 92.0% of the mothers know how they provide nursing care to their children with CP in the post-test, total score of mothers knowledge was 15.0% satisfactory in pre-test and become 92.0% in post- test, with statistically significant differences between the pre and the post-test with (P. 0.01, 0.02, and 0.01) respectively.

Table (4) showed mothers' empowerment in caring for their children with CP, low empowerment was 80.0% in pre/test and become 3.0 % in post/test, moderate empowerment was 15.0% in pre/test and 7% in post/test and higher empowerment was 5.0% in pre/test and 90.0% in post/test. However, this increase reached statistically significant difference between the pre and the post-test with the mothers low, moderate, and higher empowerment (P. 0.001, 0.05, and 0.001); respectively.

Table (5) demonstrates that mother's level of anxiety in pre-test was 70 % moderate, become (39.0%, 31.0%) minimal and mild anxiety in post-test respectively. While mothers' loneliness was 72% moderate level in pre-test and become 58.0% minimal in post-test. Also, 74% of mothers had moderate level of aggression in pre-test, while in post-test become 80% mild level of aggression, however, this increase reached statistically significant difference between the pre and the post-test with the mothers low, moderate and higher empowerment (P. 0.001, 0.001, and 0.001); respectively.

Table (6) indicated the relation between the studied sample knowledge pre/post program about CP and their characteristics. It is evident that higher percentages of satisfactory knowledge in post- test were observed among

mothers in the age from 30 ≤40 years old (73%), mothers' level of education who read & write (50%), rural residence of mothers were (65%). It indicates an increase in knowledge scores in all knowledge areas at the post-program phase. However, this increase reached statistically significant difference between the mothers' age, level of education, residence, and their knowledge with (P. 0.05, 0.04, and 0.02); respectively.

Table (7) indicated the relation between the studied sample empowerment pre/post program about CP and their characteristics. Higher percentages of higher empowerment in post- test were observed among mothers in the age from 30: ≤40 years old (70%), mothers' level of education who read & write (45%), rural residence of mothers were (62%). It indicates an increase in empowerment scores in all levels of empowerment at the post-program phase. However, this increase reached to statistically significant difference between the pre and the post-test with the mothers' age, level of education, residence and their knowledge (P. 0.02, 0.04, and 0.03); respectively.

Table (8) shows the relation between the studied sample anxiety level pre/post program about CP and their characteristics. Higher percentages of minimal anxiety in post- test were observed among mothers' in the age from 30: ≤40 years old (19%), mothers' level of education that cannot read & write (26%), rural residence of mothers were (62%). It indicates decrease in anxiety scores in all anxiety levels at the post-program phase. However, this increase reached statistically significant difference between the pre and the post-test with the mothers' age, level of education, residence, and their knowledge level with (P. 0.03, 0.02, and 0.05); respectively.

Table (9) indicates the relation between the studied sample loneliness pre/post program about CP and their characteristics. Higher percentages of minimal loneliness in post- test

were observed among mothers' in the age from 30: ≤40 years old (43%), mothers' level of education that cannot read & write (22%), rural residence of mothers were (47%). It indicates decrease in loneliness scores in all loneliness levels at the post-program phase. However, this increase reached statistically significant difference between the pre and the post-test with the mothers' age, level of education, residence, and their knowledge (P. 0.04, 0.03, and 0.02); respectively.

Table (10) indicated the relation between the studied sample aggression pre/post program about CP and their characteristics. Higher percentages of mild aggression in post- test were observed among mothers' in the age from 30: ≤40 years old (64%), mothers' level of education who read & write (38%), rural residence of mothers were (59%). It indicates decrease in aggression scores in all aggression levels at the post-program phase. However, this increase reached statistically significant difference between the pre and the post-test with the mothers' age, level of education, residence, and their knowledge (P. 0.05, 0.04, and 0.03); respectively.

Table (11) illustrates that there were statistically significant negative correlations between mothers empowerment and the total mean score of the Anxiety, Loneliness, and Aggression levels in pre and post-test (r=-.558**-, P=<.0001 & r=-.110-, P=<0.001, and (r= -.247-** & P=<.0001); respectively. The highest strong positive statistical significant correlation was found between the total scores of mothers empowerment was found between the result of the pre-test and post-test program of the mothers how have children with CP (r=.590) P=0.001.

Table (1): Frequency distribution of mothers according to their socio-demographic characteristics (n= 100)

Items	No	%
Age in years of mothers:		
Under 20:29 years old	20	20
From 30:40 years old	77	77
40 years and more	3	3
Mean ± SD	38.2 ± 8.1	
Mothers Level of education		
Cannot read and write	30	30
Read& write	50	50
Secondary School	17	17
Higher Education	3	3
Residence		
Rural	70	70
Urban	30	30
Family income		
Sufficient	13	13
Insufficient	87	87

NS= Not statistically significant differences

Table (2): Frequency Distribution of children according to their ~~socio~~demographic characteristics and associated problems (n=100)

Child's demographic characteristics	(n=100)	
	N	%
Age / years		
1-3 yrs.	49	49.0
3-6 yrs.	51	51.0
Mean ± SD	3.23± 3.3	
Gender		
Male	70	70.0
Female	30	30.0
Order		
1st child	17	17.0
2nd child	18	18.0
3rd child	43	43.0
More than third	22	22.0
Types of CP		
Spastic.	72	72.0
Athetoid.	10	10.0
Ataxic.	8	8.0
Mixed.	10	10.0

Table (3): Frequency Distribution of mothers have children with CP according to their knowledge about CP n=100

Items	Pre test		Post-test		X2	P. value
	No	%	No	%		
Definition of CP.						
- Know	15	15.0	95	95.0	5.52	0.01*
- Don't know	85	85.0	5	5.0		
Causes of CP						
- Know	12	12.0	93	93.0	6.40	0.04*
- Don't know	88	88.0	7	7.0		
Signs and symptoms CP						
- Know	15	15.0	95	95.0	5.13	0.02*
- Don't know	85	85.0	5	5.0		
Nursing care of CP						
- Know	13	13.0	92	92.0	5.24	0.02*
- Don't know	87	87.0	8	8.0		
Complications of CP						
- Know	14	14.0	95	95.0	6.22	0.01*
- Don't know	86	86.0	5	5.0		
- **Total score of mother's knowledge**						
- Satisfactory	15	15.0	92	92.0	6.66	0.01*
- Unsatisfactory	85	85.0	8	8.0		

*= Statistically Significant difference

Table (4): Distribution of the mothers' according to empowerment pre/post-test (n = 100)

Family empowerment Scales	Pretest		Posttest		T. test	P. value
	No	%	No	%		
- Low empowerment	80	80.0	3	3.0	5.40	0.001*
- Moderate empowerment	15	15.0	7	7.0	7.37	0.05*
- Higher empowerment	5	5.0	90	90.0	4.34	0.001*
Mean ± SD of family empowerment Scales	35.12±0.8		76.14±0.6			

*= Statistically Significant difference

Table (5): Mean score of the mothers' anxiety, loneliness and aggression (no = 100).

	Pre test		Post-test		X^2	P. value
	No	%	No	%		
Anxiety						
- Minimal	8	8.0	39	39.0	5.22	0.001*
- Mild	12	12.0	31	31.0		
- Moderate	70	70.0	20	20.0		
- Severe	10	10.0	10	10.0		
- Mean anxiety score	20.14±0.5		15.7±0.2			
Loneliness						
- Minimal	8	8.0	58	58.0	5.36	0.001**
- Mild	10	10.0	20	20.0		
- Moderate	72	72.0	15	15.0		
- Severe	10	10.0	7	7.0		
- Mean loneliness score	36.4±0.5		30.5±0.2			
Aggression						
- Mild	12	12.0	80	80.0	4.33	0.001**
- Moderate	74	74.0	15	15.0		
- Severe	14	14.0	5	5.0		
- Mean aggression score	90.5±22.04		45.7±15.5			

*= Statistically Significant difference

Table (6): The relation between the studied sample knowledge about CP and their characteristics pre/post program (n= 100)

Items	Pre-test Satisfactory		Unsatisfactory		Post-test Satisfactory		Unsatisfactory		P. value
	No	%	No	%	No	%	No	%	
Age in years of mothers									
Under 20: ≤30 years	5	5.0	15	15.0	17	17.0	3	3.0	**X²**=0.74
From 30 : ≤40 years	10	10.0	67	67.0	73	73.0	4	4.0	0.05*
40 and more	0	0.0	3	3.0	2	2.0	1	1.0	
Level of education of mothers									
Cannot read and write	0	0.0	30	30.0	22	22.0	8	8.0	**X²**=0.62
Read& write	8	8.0	42	42.0	50	50.0	0	0.0	0.04*
Secondary School	4	4.0	13	13.0	13	13.0	0	0.0	
Higher Education	3	3.0	0	0.0	3	3.0	0	0.0	
Residence									**X²=0.76**
Rural	8	8.0	62	62.0	65	65.0	5	5.0	**0.02***
Urban	7	7.0	23	23.0	27	27.0	3	3.0	

*= Statistically Significant difference

Table (7): The relation between the studied sample empowerment pre/post program about CP and their characteristics (n= 100)

Items	Pre-test Low empowerment		Moderate empowerment		Higher empowerment		Post-test Low empowerment		Moderate empowerment		Higher empowerment		P. value
	No	%	No	%	No	%	No	%	No	%	No	%	
Age in years of mothers													
Under 20: ≤30 years	15	15.0	5	5.0	0	0.0	1	1.0	2	2.0	17	17.0	X²=0.70
From 30: ≤40 years	62	62.0	10	10.0	5	5.0	2	2.0	5	5.0	70	70.0	0.02*
40 and more	3	3.0	0	0.0	0	0.0	0	0.0	0	0.0	3	3.0	
Level of education of mothers													
Cannot read and write	25	25.0	5	5.0	0	0.0	3	3.0	2	2.0	25	25.0	X²=65
Read& write	45	45.0	3	3.0	2	2.0	0	0.0	5	5.0	45	45.0	0.04*
Secondary School	10	10.0	5	5.0	2	2.0	0	0.0	0	0.0	17	17.0	
Higher Education	0	0.0	2	2.0	1	1.0	0	0.0	0	0.0	3	3.0	
Residence													X²=0.78
Rural	60	60.0	7	7.0	3	3.0	3	3.0	5	5.0	62	62.0	0.03*
Urban	20	20.0	8	8.0	2	2.0	0	0.0	2	2.0	28	28.0	

*= Statistically Significant difference

Table (8): The relation between the studied sample anxiety level pre/post program about CP and their characteristics n= 100

Items	Pre-test								Post- test								P. value
	Minimal		Mild		Moderate		Severe		Minimal		Mild		Moderate		Severe		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
Mothers age in years																	
Under 20: ≤30 years	3	3.0	9	9.0	1	1.0	7	7.0	17	17.0	1	1.0	0	0.0	2	2.0	X²=0.70 0.03*
From 30 : ≤40 years	3	3.0	2	2.0	69	69.0	3	3.0	19	19.0	30	3.0	20	20.0	8	8.0	
40 and more	2	2.0	1	1.0	0	0.0	0	0.0	3	3.0	0	0.0	0	0.0	0	0.0	
Level of education of mothers																	
Cannot read and write	4	4.0	7	7.0	17	17.0	2	2.0	19	19.0	6	6.0	2	2.0	3	3.0	X²=63 0.02*
Read& write	2	2.0	2	2.0	41	41.0	5	5.0	12	12.0	17	17.0	16	16.0	5	5.0	
Secondary School	1	1.0	1	1.0	12	12.0	3	3.0	5	5.0	8	8.0	2	2.0	2	2.0	
Higher Education	1	1.0	2	2.0	0	0.0	0	0.0	3	3.0	0	0.0	0	0.0	0	0.0	
Residence																	X²=0.74 0.05*
Rural	4	4.0	9	9.0	50	50.0	7	7.0	26	26.0	25	25.0	12	12.0	7	7.0	
Urban	4	4.0	3	3.0	20	20.0	3	3.0	13	13.0	6	6.0	8	8.0	3	3.0	

*= Statistically Significant difference

Table (9): The relation between the studied sample loneliness level pre/post program about CP and their characteristics n= 100

Items	Pre-test								Post- test								P. value
	Minimal		Mild		Moderate		Severe		Minimal		Mild		Moderate		Severe		
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
Mothers age in years																	
Under 20: 29 years	2	2.0	7	7.0	4	4.0	7	7.0	12	12.0	8	8.0	0	0.0	0	0.0	X²=0.67 0.04*
From 30 : 39 years	4	4.0	2	2.0	68	68.0	3	3.0	43	43.0	12	12.0	15	15.0	7	7.0	
40 and more	2	2.0	1	1.0	0	0.0	0	0.0	3	3.0	0	0.0	0	0.0	0	0.0	
Level of education of mothers																	
Cannot read and write	5	5.0	6	6.0	14	14.0	5	5.0	22	22.0	8	8.0	0	0.0	0	0.0	X²=56 0.03*
Read& write	3	3.0	2	2.0	42	42.0	3	3.0	19	19.0	9	9.0	15	15.0	7	7.0	
Secondary School	0	0.0	2	2.0	13	13.0	2	2.0	14	14.0	3	3.0	0	0.0	0	0.0	
Higher Education	0	0.0	0	0.0	3	3.0	0	0.0	3	3.0	0	0.0	0	0.0	0	0.0	
Residence																	X²=0.69 0.02*
Rural	5	5.0	6	6.0	52	52.0	7	7.0	47	47.0	18	18.0	5	5.0	0	0.0	
Urban	3	3.0	4	4.0	20	20.0	3	3.0	11	11.0	2	2.0	10	10.0	7	7.0	

*= Statistically Significant difference

Table (10): The relation between the studied sample aggression level pre/post program about CP and their characteristics n_ 100

Items	Pre-test						Post- test						P. value
	Mild		Moderate		Severe		Mild		Moderate		Severe		
	No	%	No	%	No	%	No	%	No	%	No	%	
Age in years of mothers													
Under 20: ≤30 years	8	8.0	3	3.0	9	9.0	13	13.0	5	5.0	2	2.0	X^2=0.75 0.05*
From 30 : ≤40 years	2	2.0	70	70.0	5	5.0	64	64.0	10	10.0	3	3.0	
40 and more	2	2.0	1	1.0	0	0.0	3	3.0	0	0.0	0	0.0	
Level of education of mothers													
Cannot read and write	7	7.0	11	11.0	12	12.0	22	22.0	3	3.0	5	5.0	X^2=67 0.04*
Read& write	3	3.0	45	45.0	2	2.0	38	38.0	12	12.0	0	0.0	
Secondary School	2	2.0	15	15.0	0	0.0	17	17.0	0	0.0	0	0.0	
Higher Education	0	0.0	3	3.0	0	0.0	3	3.0	0	0.0	0	0.0	
Residence													X^2=0.72 0.03*
Rural	9	9.0	53	53.0	8	8.0	59	59.0	9	9.0	2	2.0	
Urban	3	3.0	21	21.0	6	6.0	21	21.0	6	6.0	3	3.0	

*= Statistically Significant difference

Table (11): Correlation between mean scores of mother's empowerment, anxiety, loneliness, and aggression in pre and post-test (n= 100)

Items		Empowerment Pre-test	Empowerment Post-test	Anxiety Pre-test	Anxiety Post-test	Loneliness pre-test	Loneliness Post-test	Aggression Pre-test	Aggression Post-test
Empowerment pre-test	R								
	P-Value								
Empowerment Post-test	R	**0.590 **.**							
	P-Value	**0.000**							
Anxiety pre-test	R	-.490-	0.046						
	P-Value	.324	0.751						
Anxiety post-test	R	-.420-	**.558 **-**	.056					
	P-Value	.076	**0.000**	.964					
Loneliness pre-test	R	-.400-	-.247-	.525	0.105				
	P-Value	.234	.123	.452	0.466				
Loneliness Post-test	R	-.550-**	**-.110-****	.233	**0.194****	0.101			
	P-Value	0.000	**0.000**	.0.345	**0.000**	0.484			
Aggression Pre-test	R	-.650-	-0.652-	.522	0.025	0.016	0.076		
	P-Value	0.354	0.342	.323	0.862	0.914	0.600		
Aggression post-test	R	-.620-**	**-.247-****	.723	0.048	0.101	**0.567****	**0.275****	
	P-Value	.000	**.000**	..341	0.743	0.484	**0.000**	**.000**	
*. Correlation is significant at the 0.05 level **. Correlation is highly significant at the 0.01 level									

Discussion

Cerebral palsy (CP) is an abnormality of motor function and postural tone that is acquired at an early age, even before birth **(Gulanick & Myers, 2016).** The aim of this study was to investigate the impacts of empowerment program on anger; social isolation and anxiety of mothers have children with cerebral palsy.

One hundred mothers caring of children with CP were included in the present study their main age was 38.2 ± 8.1years this finding

is similar to those obtained by Afifi, et al., (2018) who found that one hundred and twenty-four mothers caring of children with CP their main age was 37.6 ± 0.6 years old. Also, **Adam, et al., (2010)** mentioned that the mothers should be in suitable age to be able to assume responsible appropriately toward their children because young mothers are usually unprepared psychologically for parenthood.

Additionally, in the present study it was observed that half of the mothers cannot read and write, the majority of mothers had

insufficient family income, this finding is not incongruent to those obtained by **Afifi, et al., (2018)** who found that, More than one third of the mothers were illiterate, while basic education represented more than one fifth. The minority of them was highly educated. **Saunders, et al., (2014)** stated that when mother'' education decreases, the health risk to herself and to her children and family increase. Also, **Hallman, (2012)** emphasized that the educated mother can take care of their children, especially the children with CP who need more care and understanding of their needs and problems. Indeed, **Badawi, and Blair, (2013)** who reported positive correlation between the decreasing socioeconomic class and the severity of disability and nutritional impairment in children with CP, this finding is supported by **Nelson, (2013),** who reported that most families find that essentials expensive are needed to care, manage, or treat a child with CP and also found most families have ongoing, extra, out of pocket expenses that create problems for other family expenses. Although insurance, public programs which could cover such services are of help, but they require time to access and have frustrations of their own.

As regards characteristics of children with CP in the current study, it was found that their mean age was 3.23± 3.3, more than half between the aged of 3-6 years old, the majority are males. As well as, this finding was not accordance with the finding of **Afifi, et al., (2018)** regards characteristics of children with CP, and it was found that their mean age was 4.5 ± 0.5 where more than third of them at the aged of 3 years old. **Kolawole (2014)** also, mentioned that CP occurs more frequently among males children more than females, however, this was contradicting with **Butler ,(2014)** who stated that CP occur in both sex equally. Regarding child's rank order, it was found more than one third of the studied children in the current study there ranked were the third in their families; this could be due to the lack of mother tendency toward prenatal, perinatal and postnatal follow up especially among low socioeconomic status families.

Most CP types in the present study were spastic and less than ten present were ataxic type. This finding agrees with **Afifi, et al.,** **(2018)** who reported that children with spastic diplegia have the higher incidence. This result is incongruent with the result of **Slaman, (2010)** who found that most of the children identified as CP had spastic type. Regarding child'' associated problems (severity of disease), it was found that the majority had mild &moderate CP, as there was a relation between children associated problems and their dependency level pre and post program.

The current study showed that the majority of mothers' total score of knowledge were satisfactory after implementation of the empowerment program with statistically significant differences (P. 0.01) this finding was accordance with finding of **Afifi, et al., (2018)** who noticed that after program implementation, mothers had higher satisfactory score level than pre and follow up after program implementation, which highlights on the positive effect of the intervention program on mothers' level of knowledge. This finding is in agreement with **Ahmed and Youssef, (2013)**, who emphasized that the highest percentage of mothers' knowledge were un-satisfactory before implementation of the intervention program which improved immediately after its implementation.

Regarding the mothers' empowerment, in caring for their children in the current study, most of the mothers had low empowerment in pre-test and decreased to 3% in post/test; while higher empowerment was 5% in pre/test and increased to 90% in post/test. These results agreed with the study of **Abd El-Gawad, (2017) who** implied that half of the mothers had empowerment with "very true" at post-test. Also, there were about two thirds of the mothers had "very true" in regarding to the services provided by system and community/political sub-categories of empowerment in post-test compering to about one fifth of the mothers in pretest.

The present study also illustrated that there were statistically significant negative correlations between mothers' empowerment and the total mean score of the Anxiety, Loneliness, and Aggression in pre and post-test. While the highest strong positive statistically significant correlation was found

between the total scores of mothers' empowerment in pre and post-test of the program for mothers have children with CP.

The present study demonstrated that mothers increase level of anxiety, loneliness, and aggression in pre-test and decreased after empowerment program implementation in post-test. The findings of the present study are consistent with the argument that mothers with limited relationship with the external environment are likely to show violence against their children, and that in the absence of interrelationship between mothers and children and between family and the environment, there is a higher likelihood of violence. That finding similar to the finding of study done by **Kousha, et al., (2016)** who found that high scores of anxieties and depression were found among mothers, as the finding of the current study in which found some degree of anxiety in two-thirds among the mothers and depression in half of them. In this respect **Nousheen et al., 2021, also** found that, among 120 mothers. Of those, mothers of children with epilepsy were maximum (40%) followed by (27%) of Attention Deficit, and Hyperactivity disorder, than (14%) Intellectual Disability, (12%) Cerebral Palsy and Autism with (7%)spectrum disorder . Of the total, 52 mothers were screened positive for depression and 46 were diagnosed with depression. As for anxiety, 91 mothers were screened positive and 52 were diagnosed with anxiety. 36 mothers had both depression and anxiety.

These outcomes agree with **Zare, et al., (2017)** who found that more specifically, the intervention led to a significant difference between the intervention and control groups in terms of change in the mean aggression scores, which implies the significant effect of the intervention in alleviating mothers' aggression among the intervention group. Increased inclination to express anger is correlated with factors such as health problems, cultural problems, social isolation, and depression, among others. Although parents' anger is widely known to have substantial detrimental effects on children, as many families still abuse their children with physical and mental problems. Loneliness level of mothers after intervention was insignificant, comparison of

the post-intervention as mean loneliness scores of the control and intervention groups showed a statistically significant difference, implying the possible positive effect of the empowerment intervention on mothers Loneliness level

Conclusion

This study concluded that after implementation of the intervention program which based on the empowerment model mothers' have children with CP their aggression, loneliness and anxiety **levels** alleviated. Also, mothers' knowledge level increase about CP after implementation of the empowerment program

Recommendation

This study recommended that. Future researches are required to develop and refine interventions program to alleviate aggression, loneliness and anxiety **among mothers** caring for children with CP through empowering and engaging them. Increase the public awareness toward care of child with CP and offer an available specialty center that provide care for such group of children through mass media such as television, pamphlets, and posters. Development a comprehensive empowerment plan including anger management concepts could improve the efficacy of nursing interventions for mothers caring for children with CP.

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