

## Mothers' knowledge, Attitudes, and Practices towards their Children with Cerebral Palsy at Assiut City, Egypt

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### Abstract

**Background:** Cerebral palsy is a group of neurological disorders caused by damage in the developing brain that affect the brain's ability to control movement and maintain posture and balance. **Aim of the study:** To assess mothers' knowledge, attitudes, and reported practices towards their children with cerebral palsy at Assiut city, Egypt. **Setting:** The study was carried out in Nour Al-Hayat center for rehabilitation of children with cerebral palsy, Kian rehabilitation center and Comprehensive rehabilitation center. **Methods:** A descriptive cross-sectional research design was used in this study. The total number of sample was 210 mothers. **Tools of the study:** Structured interviewing questionnaire was consisted of four tools for data collection. **First tool** included socioeconomic scale, characteristics of mothers and their children. **Second tool:** Mothers' knowledge about CP. **Third tool:** Mothers' attitude scale. **Fourth tool:** Mothers' reported practices. **Results:** One-third of mothers their ages were  $\geq 35$  years and two-fifths of them had secondary and intermediate institute education. 59.5% of mothers had poor knowledge, 40.5% had neutral attitude and 78.1% of them had unsatisfactory reported practices. **Conclusion:** There were statistical significant differences between mothers' socio-demographic characteristics and their total knowledge, attitudes and reported practices regarding care of their children with cerebral palsy. Also, there was positive correlation between knowledge and reported practices scores. **Recommendation:** Development of an educational and training program should be conducted for mothers to improve their knowledge and practices in caring for their children with CP.

**Keywords:** Attitudes, Cerebral Palsy, Knowledge, Mothers & Practices.

### Introduction

Cerebral palsy (CP) is the most common disability of childhood. CP is a neurodevelopmental disorder that is the result of non-progressive impairments or injuries that happen during the development of the fetus or during the first two years of life. CP impairs muscular coordination and control, which frequently results in posture and movement issues. The consequent reduction in activity may have an impact on gross and fine motor movements, language, communication, eating and drinking (Raj, 2022).

The Centers for Disease Control and Prevention (CDC) estimate that there are 2 - 4 cases of CP for every 1000 live births globally. Prevalence was reported to be 4 - 5 per 1000 live births in low- and middle-income countries (LMICs) like Brazil and India, respectively. However, a study carried out in South Africa found a higher prevalence of 10 per 1000. According to a study conducted in the Al-Karga District of the New Valley Governorate in Egypt, 4 out of every 1,000 live births had CP. According to another study in Al Quseir city in the Red Sea Governorate, Egypt, there were three cases

of CP for every 1,000 live (El-Tallawy et al., 2014, Khalil et al., 2018, Mohamed, 2021, CDC, 2023, Duma et al., 2023).

Damage to the brain regions responsible for motor control may be the cause of CP. This damage may happen in prenatal, perinatal or postnatal periods. Chromosome abnormalities, intrauterine stroke, congenital brain deformities, and placenta separation are some of the prenatal causes of CP. Conversely, preterm, kernicterus, Hypoxic-Ischemic Encephalopathy (HIE), and infections of the Central Nervous System (CNS) are among the causes that occur during perinatal period. Also, CNS infections, anoxic insults, and accidental or non-accidental postnatal trauma are among the postnatal causes of CP (Upadhyay et al., 2020; Draz & Elsharkawy, 2021).

Each child has a different set of symptoms, which can range from mild to severe such as excessive irritability, lethargy, sleep poorly, difficult feeding, difficult to handle and cuddle, poor visual attention, floppy or overly stiff body parts, using one side of the body more than the other when reaching, crawling, or

moving. In children with CP, developmental milestones aren't reached at the predicted age and Primitive reflexes (such as the Moro and tonic neck reflexes) are still present in children with CP (**Gulati & Sondhi, 2018; Zhakupova et al., 2019**).

The complexity of CP is evident in the different classifications in which the syndrome can be classified according to; site of brain lesions (pyramidal, extrapyramidal, or cerebellar); clinical manifestations (spasticity, dyskinesia or ataxia); affected parts (diplegia, quadriplegia, hemiplegia or monoplegia); suspected time of incidence (prepartum, intrapartum, or postpartum); and degree of muscle tone (isotonic, hypotonic, or hypertonic) (**Alruwaished et al., 2020; Karatekin & Icagasioglu, 2022**).

Most children with CP have at least one other disorder. These include epilepsy, musculoskeletal disorders, mental retardation, feeding disorders, respiratory problems, sleep disorders, visual impairment, hearing impairment, and bladder and bowel disorders. Children with mild to severe cerebral palsy have physical growth and development delays. As the limb develops, children with CP with muscle spasticity experience a lack of muscle and tendon stretch (**Raja & Hapani, 2019; Mohamed, 2021**).

There is no standard treatment plan for all children with CP, and treatment is primarily preventative, symptomatic, and supportive. Physical therapy, speech therapy, occupational therapy, pharmaceuticals, and surgeries are the primary forms of treatment. Children with CP are usually treated at home by their parents, especially mothers. They need help with daily activities such as eating, bathing, dressing, handling, and specific daily exercise (**Hashem, 2018; Duma et al., 2023**).

Mothers of children with CP are essential members of the medical team; their primary responsibility is to be devoted to their children for the rest of their lives. Care provided by mothers includes nutrition support, exercise, promoting hygiene, maintaining safety, improving social skills and participating in the management of learning disabilities. If mothers are not able to meet the required care, poor caregiving will be a resultant and the desired level of children functioning will not be achieved (**Rashad et al., 2021; Seroke & Mkhize, 2023**).

As health care professionals, community health nurses provide children with support, health education, and care services that promote family and child health and help improve mother's knowledge, attitudes, and skills of in caring for their children. Furthermore, a nurse is supposed to fill all of her role as caregiver, advocate, educator, counselor, organizer, observer, and decision-maker (**Sayed et al., 2021**).

### Significance of study

Cerebral palsy is reported to be the primary cause of disability in children. In LMICs, the estimated prevalence is 2-6 cases per 1,000 live births. It is a common neurodevelopmental disorder and the most common childhood neurological disorder, accounting for approximately 50.3% of all cases treated in the clinics (**Alruwaished et al., 2020**).

Mothers are crucial in helping to detect and monitor their children's cerebral palsy symptoms at an early age. Mothers of children with CP need information about practical skills to deal with everyday problems; assessing mothers' perception toward their children who have CP is an important concern. The emotional development of children with CP is impacted by parents' overprotectiveness as well as other people's negative attitudes (**Afifi et al., 2018**). So that this study conducted to assess the mothers' knowledge, attitudes and reported practices toward children with CP.

#### Aim of the Study:

The study aimed to assess mothers' knowledge, attitudes and reported practices towards their children with cerebral palsy at Assiut city, Egypt.

#### Research question:

What is the current level of mothers' knowledge, attitudes and reported practices towards their children with cerebral palsy at Assiut city, Egypt?

### Subject and Method

#### Research design:

A descriptive cross-sectional research design was used in this study.

#### Settings:

The study was conducted in three settings; Nour Al-Hayat center for rehabilitation of children with cerebral palsy, Kian rehabilitation center and Comprehensive rehabilitation center at Assiut city.

Nour Al-Hayat rehabilitation center is a non-governmental association works under the supervision of the Ministry of Social Solidarity designed for children with cerebral palsy that provides many services such as physical therapy and speech therapy at nominal prices. Kian rehabilitation center is non-governmental an association that provides physical therapy, sensory integration, occupational therapy, speech therapy and learning difficulties sessions for all disabled children including CP. Comprehensive rehabilitation center is governmental center provides only physical therapy sessions.

Those selected centers are characterized by high flow rate of CP cases where cover the larger numbers of children with CP and their mothers. Mothers wait large period of time in these centers until the end of

the child physiotherapy session which make these centers suitable for collecting data.

#### Study subject:

Purposive sample was used in this study. The total number of children with cerebral palsy in previously mentioned settings in one year from January 2021 to December 2021 and fulfilling the inclusion criteria was 210 mothers with their children; all mothers of these children were included in the study.

No.	Name of center	Number of mothers
1.	Nour Al-Hayat Center for Rehabilitation of children with cerebral palsy	168
2.	Kian Rehabilitation center	18
3.	Comprehensive rehabilitation center	24

#### Inclusion criteria

1. Mothers having children with CP aged from one to ten years old from both genders.
2. Mothers having children with any type of CP such as hypotonic, hypertonic, diplegia, quadriplegia, hemiplegia etc.

#### Exclusion criteria

Mothers having children with metabolic or neurodegenerative etiology.

#### Tools of data collection:

After reviewing the related literature, four tools were included in the structured interview questionnaire that the researchers developed to collect data from mothers with CP children

**Tool I:** This tool included three parts

**The 1<sup>st</sup> part:** Scale of the family's social and economic status was used which consisted of 17 closed-ended questions. It was divided into seven domains: the 1st domain assessed various educational and cultural levels, the 2nd domain involved questions about occupation, 3rd domain related to family numbers, 4th domains are related to the family possessions, 5th domains evaluated the economic status and source of income, monthly income, 6th domains assessed the house sanitation, and finally 7th accessed the health care services. Socio-economic level classified into: very low: <42, low: 42-<63, middle: 63-<71 and high: 71-<84 (El-Gilany et al., 2012)

**The 2<sup>nd</sup> part** included personal characteristics of studied mothers such as mother's age, parent consanguinity, degree of consanguinity and family history of CP (Mahmoud et al., 2016).

**The 3<sup>rd</sup> part** personal characteristics of children with CP which included age, gender, ranking of the child and educational level (Abdelrahman et al., 2021; Wafeek et al., 2023).

**Tool II: Knowledge of mother about cerebral palsy**

This tool was developed by researchers based on the related literature and included 14 questions about CP such as meaning, causes, predisposing factors (prenatal, perinatal and postnatal), manifestations, types, complications, investigations, treatment measures, preventive measures, helping the child to become independent, governmental services for these child. A one question about sources of their knowledge about CP (Hashem, 2018; Abdelrahman et al., 2021).

#### Scoring system of knowledge:

The total Knowledge score was 28. Knowledge score for each answer was given '2' score for correct and complete answer, '1' score for correct and incomplete answer and '0' for incorrect answer and don't know. The total score of knowledge level was categorized as Good when score >75%; Fair when score equals 50-75% and Poor when the score < 50% (Abdelrahman et al., 2021).

#### Tool III: The attitudes of the studied mothers toward cerebral palsy children

Parents' attitude scale was developed by Al-Dababneh & Al-Zboon, 2018 for measuring the parents' attitude towards their child with CP. The scale consisted of 15 items which that addressed mothers' perspectives of their child's capacity for independent living, their emotions over their child's impairment, and how these factors impact their child's ability to learn and function similarly to other children. Mothers were asked to rate their agreement or disagreement with each item based on a 5-point Likert scale after modified by translating it into simple Arabic language.

#### Scoring system of attitudes

The scale included both positive items and negative items. Responses were scored 1 (strongly disagree) 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). For negative items, this was corrected by using the Statistical Package for the Social Sciences (SPSS) program to 1 – strongly agree, 2 – agree, 3 – neutral, 4 – disagree, 5 – strongly disagree. The total score equal 75 marks; calculate the mean for total scale statements for each participant and divided into three levels (negative attitude), (neutral attitude) and (positive attitude)

Attitudes levels calculated by extracting the range for each item and dividing by three  $[(5 - 1)/3 = 1.33]$ . The value (1.33) is then serially added to 1 (the lowest score) to obtain the following ranges: 1–2.33 (negative attitude), 2.34–3.67 (neutral attitude) and 3.68–5 (positive attitude) (Al-Dababneh & Al-Zboon, 2018).

#### Tool IV: reported practices of mothers toward their children with cerebral palsy

This tool to assess mothers reported practices toward CP children. It developed by the researchers after an

extensive literature review which consisted of 62 statements divided into nine parts as follow: Mothers' reported practices about proper positioning in sitting, standing and walking (12 statements), exercises (4 statements), feeding (12 statement), speaking difficulties (3 statements), dressing (5 statement), toileting (4 statements), sleeping (4 statements), care in case of epilepsy (12 statements), and child hygienic measures (6 statements) (Ahmed et al., 2015; Gabr et al., 2019 ; Rashad et al., 2021; Desoky et al., 2021).

#### Scoring system of reported practices:

The total score was 62 marks; each statement was assigned a score according to mother's response were mark for each statement. A score of '1' was given for "done" practices, while '0' was given for "not done". The scores of items were summed up and then converted into percentage scores, as the following: a satisfactory level  $\geq 60\%$  of the total reported practices score, while an unsatisfactory level was  $< 60\%$  of the total reported practices score (Abdelrahman et al., 2021).

#### Tool validity and Reliability:

##### Tools Validity:

Face validity for the questionnaire clarity, relevance, comprehensiveness, understanding, and applicability was reviewed and evaluated by five Assiut University nursing science experts to ensure that the questionnaire was clear and pertinent to cerebral palsy and all suggested modifications were applied.

##### Tools Reliability:-

- **The reliability of El-Gilany et al., 2012**, The internal consistency of the scale assessed by Cronbach  $\alpha$ . (0.66, 0.84 to 1.00) (\* $P \leq 0.05$ )
- **Reliability of the tools** for knowledge and practices tested using Cronbach's Alpha were 0.820, 0.869 respectively.
- **The reliability of the attitude scale (Al-Dababneh & Al-Zboon, 2018)**, internal consistency measures computed using Cronbach's alpha. The reliability coefficient obtained was 0.815, which is considered acceptable for the aim of the study.

#### Methodology:

##### Preparatory phase:

It involved analyzing of the present literature in the different aspects of the review using text books, articles, various studies, internet and journals in order to develop the study questionnaire for data collection. The directors of the Kian Rehabilitation Center, Comprehensive Rehabilitation Center, and Nour Al-Hayat Center for Rehabilitation of Children with Cerebral Palsy received an official permission letter obtained from the Dean of Assiut University's faculty of nursing.

#### Pilot study:

Pilot study conducted on 10% of the sample, (21 mothers) before starting data collecting. It collected in September 2023. The purpose of this study was to evaluate the clarity of the tools and determine the required time to fill the questionnaire based on the results of pilot study. Based on the result of a pilot study, no modification in the tool was done, so that it included in the study.

#### Data collection phase (Field work):

Data collection started from September 2023 to December 2023; two days (Saturday and Tuesday) every week and approximately from 5 to 8 mothers was collected daily from 8 A.M to 2 P.M. Filling of the questionnaire was taken from 30 – 40 minutes according to mother's tolerance.

Steps that were taken to filling out the questionnaire. First, the mother was welcomed and detailed explanation for the study objectives was done. Verbal consent was obtained from the studied mother before the study enrollments. Then the questionnaire was filled and during it the mother was allowed to ask any questions in order to clear up any confusion. Lastly, expressed gratitude to the mother for her involvement

#### Ethical consideration:

Research proposal was approved from Ethical Committee at the Faculty of Nursing –Assiut University, there is no risk for mothers during the application of the research, the study complied with standard ethical principles for clinical research, include oral consent after explaining the aim and nature of the study, stating the option to withdraw at any time, and confidentiality of the information where it was not accessed by any other party without taking permission of the participants. Ethics, values, culture, and beliefs were respected.

#### Statistical Design:

- After completion of data collection, the data was checked for computer input, coded, scored, tabulated, and analyzed by using using computer Statistical Package for Social Science (SPSS) version 22. Descriptive statistics (such as frequencies and percentage) was performed using computer program SPSS version 22.
- Data were presented as number, percentage, mean, standard deviation; frequency and percentage were used for numerical data. Also, fisher exact test was used.
- Qualitative variables were compared using the Chi-square test
- Pearson correlation was used to measure correlation between quantitative variables.
- P-value considered statistically significant when  $P < 0.05$ .

## Results

Table (1): Socio-demographic characteristics of the studied mothers with cerebral palsy children in rehabilitation centers at Assiut City, Egypt (n=210).

Socio-demographic characteristics	No. (210)	%
<b>Mother age: (years)</b>		
< 30	58	27.6
30 - < 35	89	42.4
≥ 35	63	30.0
Mean ± SD (Range)	32.31 ± 4.55 (22.0-45.0)	
<b>Mother education:</b>		
Illiterate/ Read & write	38	18.0
Basic education	52	24.8
Secondary/ Intermediate	85	40.5
University/ Postgraduate	35	16.7
<b>Mother occupation:</b>		
Housewife	189	90.0
Employee	21	10.0
<b>Residence:</b>		
Rural	134	63.8
Urban	76	36.2
<b>Family size:</b>		
< 5	76	36.2
5 of more	134	63.8
<b>Parent consanguinity:</b>		
Yes	110	52.4
No	100	47.6
<b>Degree of consanguinity: (No.= 110)</b>		
First degree	85	77.3
Second degree	22	20.0
Third degree	3	2.7
<b>Other family relatives has a disease</b>		
No	176	83.8
Yes	34	16.2
<b>Number of family members who call for financial income:</b>		
One	144	68.6
Two	37	17.6
Three or more	29	13.8
<b>Health care services:</b>		
Governmental and Non-governmental	210	100

Table (2): Personal Characteristics of children with cerebral palsy in rehabilitation centers at Assiut City, Egypt (n=210).

Socio-demographic data	No. (210)	%
<b>Age of child: (years)</b>		
< 3	52	24.8
3 - < 6	97	46.2
≥ 6	61	29.0
Mean ± SD	4.32 ± 2.00	
Median (Range)	4.0 (1.0-9.0)	
<b>Gender of child:</b>		
Male	142	67.6
Female	68	32.4



Socio-demographic data	No. (210)	%
<b>Birth order of child:</b>		
First child	39	18.6
Second child	79	37.6
Third child	77	36.7
Fourth child	15	7.1
<b>Educational level:</b>		
Below age of education (below 6 years)	149	71.0
Primary	15	7.1
Not educated	46	21.9

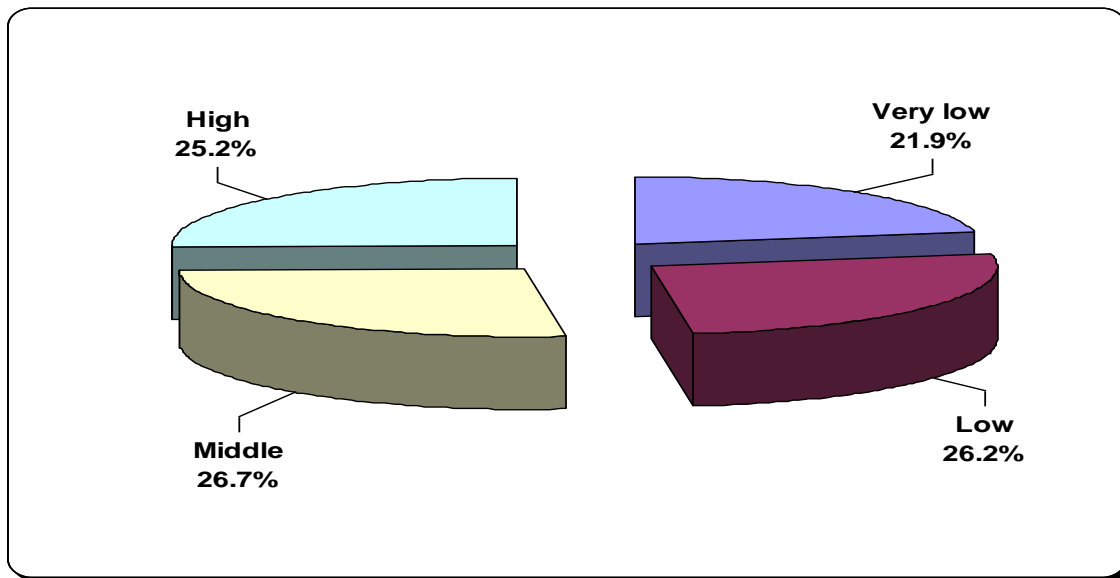


Figure (1): Social class among the studied mothers of cerebral palsy children in rehabilitation centers at Assiut City, Egypt (n=210).

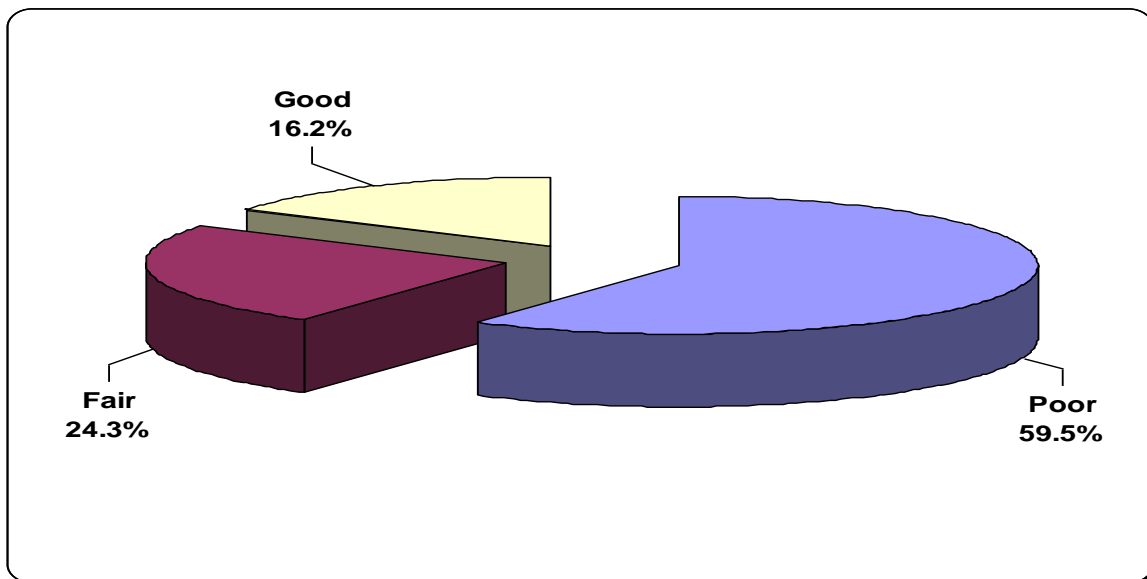


Figure (2): Level of Knowledge of the studied mothers regarding cerebral palsy in rehabilitation centers at Assiut City, Egypt, (n=210).

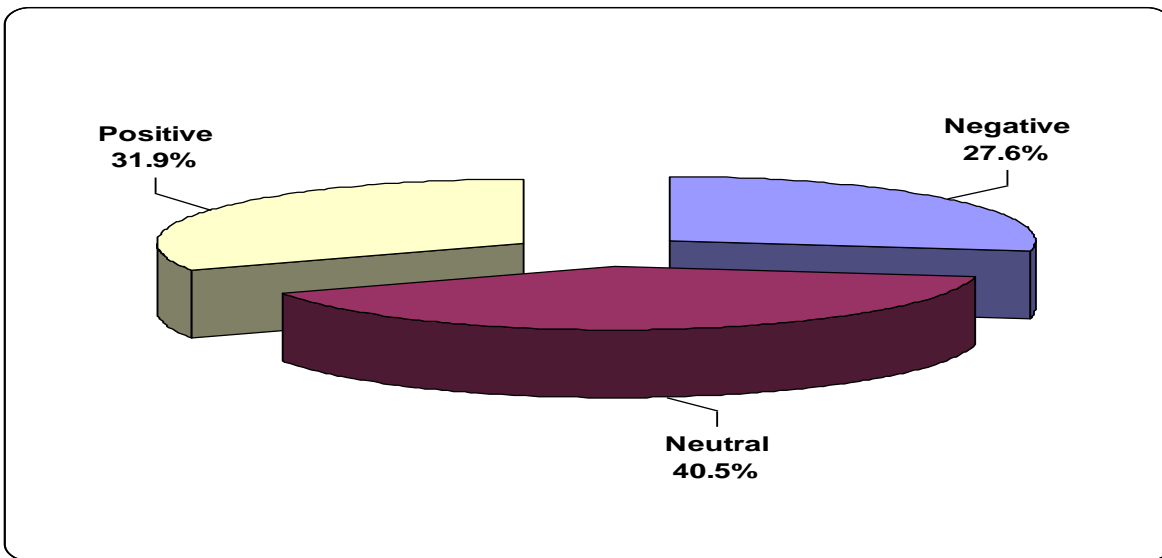


Figure (3): The attitudes level of the studied mothers toward their children with cerebral palsy in rehabilitation centers at Assiut City, Egypt (n=210).

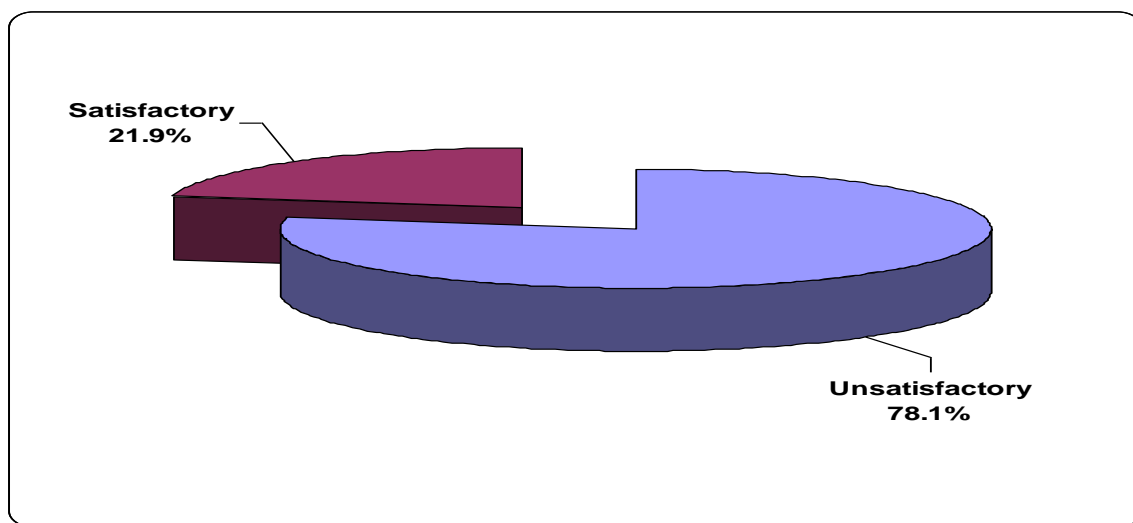


Figure (4): The reported practice level of the studied mother's toward their children with cerebral palsy in rehabilitation centers at Assiut City, Egypt (n=210).

Table (3): Relation between the mother’s total knowledge score about cerebral palsy and their socio-demographic characteristics in rehabilitation centers at Assiut City, Egypt (n=210).

Personal data	Knowledge score						P-value
	Poor (No.= 125)		Fair (No.= 51)		Good (No.= 34)		
	No.	%	No.	%	No.	%	
<b>Mother age: (years)</b>							
< 30	44	75.9	9	15.5	5	8.6	
30 - < 35	51	57.3	21	23.6	17	19.1	0.027*
≥ 35	30	47.6	21	33.3	12	19.0	
<b>Mother education:</b>							
Illiterate/ Read & write	27	71.1	9	23.7	2	5.3	
Basic education	38	73.1	8	15.4	6	11.5	0.000*
Secondary/ Intermediate	55	64.7	20	23.5	10	11.8	
University/ Postgraduate	5	14.3	14	40.0	16	45.7	

Personal data	Knowledge score						P-value
	Poor (No.= 125)		Fair (No.= 51)		Good (No.= 34)		
	No.	%	No.	%	No.	%	
<b>Mother occupation:</b>							
Housewife	115	60.8	46	24.3	28	14.8	0.251
Employee	10	47.6	5	23.8	6	28.6	
<b>Residence:</b>							
Rural	93	69.4	28	20.9	13	9.7	0.000*
Urban	32	42.1	23	30.3	21	27.6	
<b>Family size:</b>							
< 5	36	47.4	18	23.7	22	28.9	0.001*
5 of more	89	66.4	33	24.6	12	9.0	
<b>Social score:</b>							
Very low	34	73.9	9	19.6	3	6.5	
Low	39	70.9	12	21.8	4	7.3	0.000*
Middle	35	62.5	13	23.2	8	14.3	
High	17	32.1	17	32.1	19	35.8	
<b>Family history of CP</b>							
Yes	22	64.7	7	20.6	5	14.7	0.792
No	103	58.5	44	25.0	29	16.5	

\*P. value ≤ (0.05)

Chi-square test and Fisher exact test.

**Table (4): Relation between the mothers’s total attitudes score and Socio-demographic characteristics in rehabilitation centers at Assiut City, Egypt (n=210).**

Socio-demographic characteristics	Attitudes level						P-value
	Negative (n= 58)		Neutral (n= 85)		Positive (n= 67)		
	No.	%	No.	%	No.	%	
<b>Mother age: (years)</b>							
< 30	21	36.2	29	50.0	8	13.8	
30 - < 35	27	30.3	37	41.6	25	28.1	0.000*
≥ 35	10	15.9	19	30.2	34	54.0	
<b>Mother education:</b>							
Illiterate/ Read & write	8	21.1	13	34.2	17	44.7	
Basic education	24	46.2	20	38.5	8	15.4	0.002*
Secondary/ Intermediate	23	27.1	35	41.2	27	31.8	
University/ Postgraduate	3	8.6	17	48.6	15	42.9	
<b>Mother occupation:</b>							
Housewife	55	29.1	75	39.7	59	31.2	0.354
Employee	3	14.3	10	47.6	8	38.1	
<b>Residence:</b>							
Rural	43	32.1	55	41.0	36	26.9	0.042*
Urban	15	19.7	30	39.5	31	40.8	
<b>Family size:</b>							
< 5	17	22.4	32	42.1	27	35.5	0.415
5 of more	41	30.6	53	39.6	40	29.9	
<b>Social score:</b>							
Very low	11	23.9	19	41.3	16	34.8	
Low	22	40.0	23	41.8	10	18.2	0.013*
Middle	19	33.9	17	30.4	20	35.7	
High	6	11.3	26	49.1	21	39.6	
<b>Family history of CP</b>							
Yes	16	47.1	11	32.4	7	20.6	0.020*
No	42	23.9	74	42.0	60	34.1	

\*P. value ≤ (0.05)

Chi-square test and Fisher exact test.

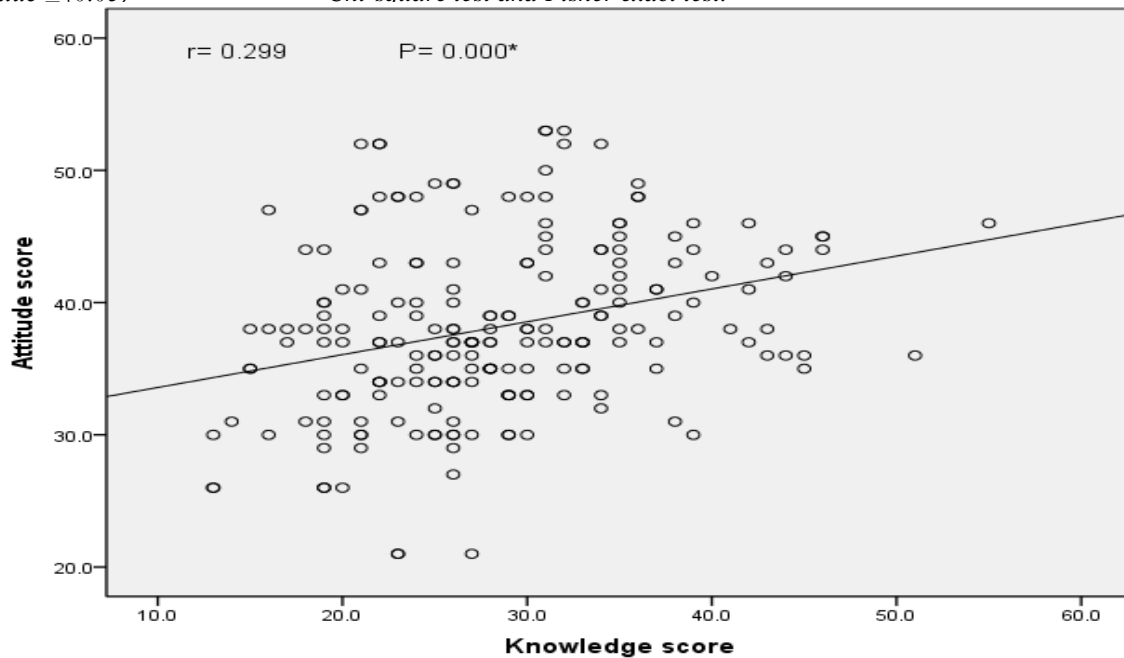


**Table (5): Relation between the mother’s total reported practices score regarding cerebral palsy children and Socio-demographic characteristics in rehabilitation centers at Assiut City, Egypt (n=210).**

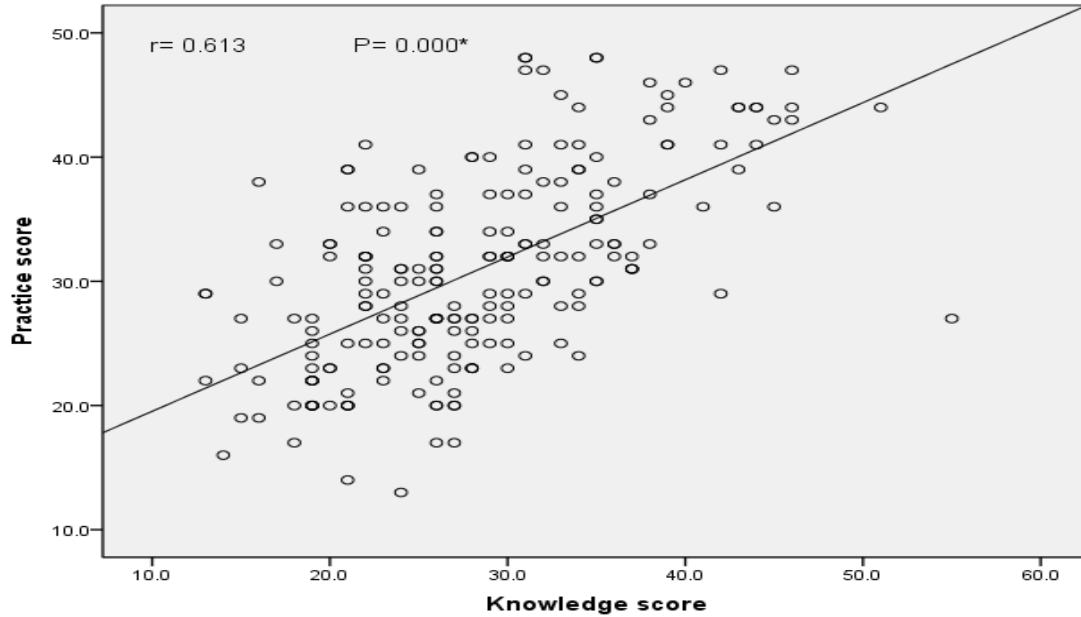
Personal data	Reported practices score				P-value
	Unsatisfactory		Satisfactory		
	No.	%	No.	%	
<b>Mother age: (years)</b>					
< 30	47	81.0	11	19.0	0.685
30 - < 35	70	78.7	19	21.3	
≥ 35	47	74.6	16	25.4	
<b>Mother education:</b>					
Illiterate/ Read & write	31	81.6	7	18.4	0.000*
Basic education	46	88.5	6	11.5	
Secondary/ Intermediate	71	83.5	14	16.5	
University/ Postgraduate	16	45.7	19	54.3	
<b>Mother occupation:</b>					
Housewife	151	79.9	38	20.1	0.090
Employee	13	61.9	8	38.1	
<b>Residence:</b>					
Rural	113	84.3	21	15.7	0.004*
Urban	51	67.1	25	32.9	
<b>Family size:</b>					
< 5	50	65.8	26	34.2	0.001*
5 of more	114	85.1	20	14.9	
<b>Social score:</b>					
Very low	42	91.3	4	8.7	0.000*
Low	46	83.6	9	16.4	
Middle	48	85.7	8	14.3	
High	28	52.8	25	47.2	
<b>Family history of CP</b>					
Yes	33	97.1	1	2.9	0.003*
No	131	74.4	45	25.6	

\*P. value ≤ (0.05)

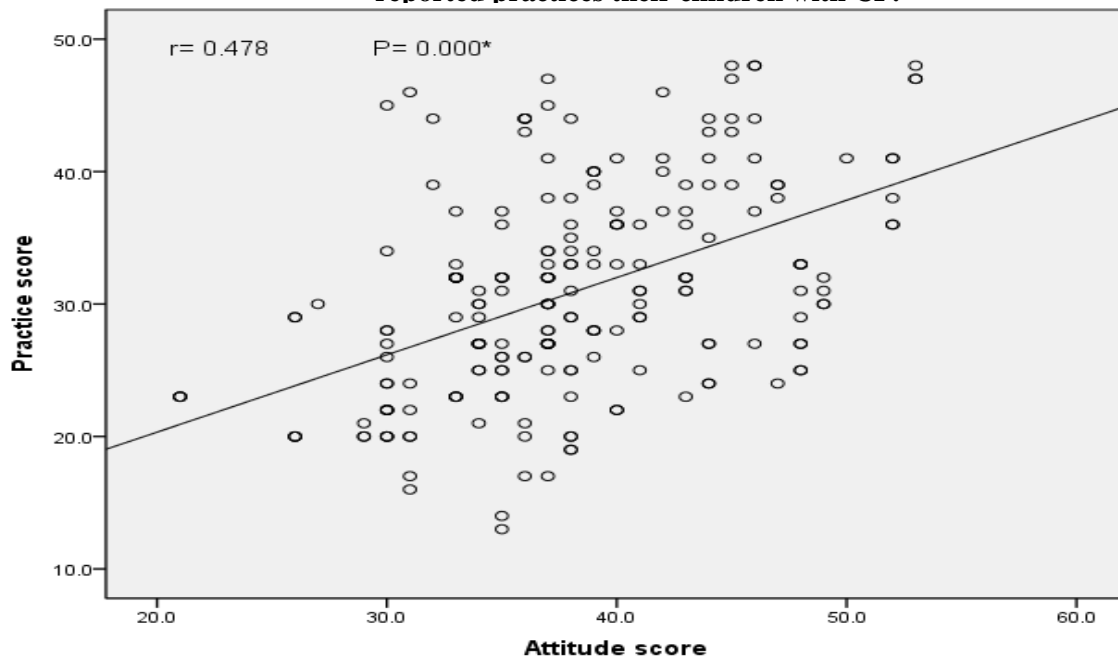
Chi-square test and Fisher exact test.



**Figure (5): Correlation between the studied mother’s total score of knowledge and score of attitudes toward their children with CP.**



**Figure (6):** Correlation between the studied mothers’s total score of knowledge and score of reported practices their children with CP.



**Figure (7):** Correlation between the studied mother’s total score of attitudes and score of reported practices toward CP children

**Table (1):** Represent socio-demographic data of mothers with CP children, regarding their age, this table showed that 42.4% of mothers aged 30 - < 35 years, 18.0% of mothers were illiterate/ read & write. 63.8% of those mothers lived in rural area. Moreover, it showed. 52.4% of mothers had parental consanguinity, 77.3% out of them were first degree of consanguinity. There were 16.2% of total mothers had family history of the disease.

**Table (2):** Showed that 46.2% of children were aged from 3 - < 6 years. Regarding gender of children, 67.6% of children were male and 37.6% of children were the second ranking. However, only 7.1% of these children enrolled in primary school.

**Figure (1):** Showed that 25.2% of mothers were high social class, 26.7% was in middle level of social class. Also, 26.2% of mothers are low social class and 21.9 % was very low social class.

**Figure (2):** Illustrated that 59.5% of the studied mothers had poor knowledge regarding CP, while, 24.3% of them had fair knowledge. Also, 16.2% had good Knowledge regarding CP.

**Figure (3):** Displayed that 31.9% of the studied mothers had positive attitude towards their children with cerebral palsy, 40.5% of them had neutral attitude and 27.6% had negative attitude.

**Figure (4):** Cleared that 21.9% of the studied mothers had satisfactory level of reported practices about CP versus 78.1% of them had unsatisfactory level of reported practices.

**Table (3):** Displayed that the mothers had highly statistical significant relationship between mother's knowledge and their educational level, residence and social class, P. value = 0.000\*

**Table (4):** Observed that there were statistically significant relation between mother's attitudes and their educational level, residence, social class and had history of disease and P. value= 0.002\*, 0.042\*, 0.013\*, 0.020\*) respectively.

**Table (5):** Observed that there was statistically significant relation between mother's reported practices and their educational level, place of residence, family size, social class and had family history of CP (P .value=0.000\*, 0.004\*, 0.001\*, 0.000\*, 0.003\*) respectively.

**Figure (5):** Reported that there was positive correlation between knowledge and attitudes scores with highly statistical significance difference. (P. value=0.000\*, r=0.299).

**Figure (6):** Demonstrated that there was positive correlation between knowledge and reported practices scores with highly statistical significant difference. (P. value=0.000, r=0.613).

**Figure (7):** Showed that there was positive correlation between attitudes and reported practices scores with statistical significant difference (P value=0.000\* r=0.478).

## Discussion

Cerebral palsy is a neurological condition that manifests in early childhood and permanently affects body movements and muscle coordination. It requires the caregiver's daily effort to maintain a special care program, rehabilitation, and dealing with the child's disabilities. Mothers have the main responsibility in providing long-term care for their children with CP. If mothers are not able to meet the required care, poor caregiving will be a resultant and the desired level of children functioning will not be achieved (Kyeremateng et al., 2019 & Raj, 2022).

In relation to the age of mothers with CP children, the findings of present study showed that slightly less than one-thirds of mothers their ages were  $\geq 35$  years. This findings were similar with Sadek et al., (2022)

who conducted a study in Cairo, Egypt . The sample size consisted of 50 children with their mothers and who stated that one-thirds of the mothers were aged  $\geq 35$  years.

According to the level of mother's education, the findings of this study showed that two-fifths of mothers had secondary and intermediate institute educational level. This result agreed with Desoky et al., (2021) who conducted a published study in El-Qaliobyeya Governorate, Egypt with sample of 104 children with cerebral palsy and their mothers which revealed that, two-fifths of mothers had secondary and diploma level of education.

In relation to the mothers' job, the most of mothers didn't work. This result was reinforced by Hashem & Abd El Aziz, (2018) who conducted a published study in El-Mansoura city, Egypt with sample of 65 mothers caring of children with cerebral palsy which found that, more than three-quarters of mothers were housewives. From the perspective of researchers these result might be due to the chronic ill children such as CP need continues care throughout the day so mothers preferred to stay at home.

According to mother's place of residence, the study's findings indicate that slightly less than two third of the studied mothers living in the rural area. This result was in the same line with the results of Desoky et al., (2021) who mentioned that three quarters of mothers are living in rural area.

According to the family size, the result of this study showed that, slightly less than two-thirds of studied mothers had 5 or more members in their family. This result was supported by Ahmed et al., (2015) with sample of 50 caregivers and their preschool children who are suffering from hemiplegic cerebral palsy at Mina City, Egypt who found that more than half of studied sample have 6 or more members in their family.

Consanguineous marriage percentage in Egypt is still high (35.3%), especially among first cousins and (59.9%) of them from rural area (Aldeeb et al., 2022). The current study concealed that more than half of mothers have got consanguinity marriage and more three quarters of them were first degree of consanguinity. This result was supported by the study conducted by Hassan & Sabea, (2020) who conducted a study at Cairo, Egypt who indicated that half of the participants have got consanguinity marriage. The result may be attributed to the customs and traditions at the Egyptian villages, which force into relative's marriage, where there is little knowledge about genetic disorders.

Related to family history of CP, the current study revealed that sixteen percent of studied sample had another family relative with CP. This result was supported by Desoky et al., (2021), who found that

one fifth of studied mothers have a family history of CP.

According to the mother's socio- economic status, the result of this study revealed that slightly less than half of the studied mothers had low and very low social class. This result disagreed with **Salih et al., (2022)** who carried a study in Al-Baha City, Saudi Arabia with sample size consisted of 385 which stated that, more than three quarters of parents belonged to the middle socioeconomic status.

Regarding to characteristics of children, the present study founded that more than three quarters of children their ages ranged from 3 years and more. This result supported by **Sayed et al., (2021)** who carried out a study who conducted a published study in Ain shams, Egypt with age of children range between 1-12 years. Their sample size consisted of 75 children and their caregivers. They stated that more than three quarters of children their ages ranged from 3 years and more.

Related to children gender, the study revealed that more than two-thirds of children were males. This result agreed with **Lestari et al., (2024)** who carried out a study in Yogya- karta, Indonesia with sample of 95 mothers with CP children and they founded that slightly less than two-third of studied children were males.

Regarding CP child's ranking among their sibling, this study concealed that more than one-third of children had the second order child. This result disagreed with **Salman et al., (2022)** who conducted a published study with sample of 107 parents of children with diplegic cerebral palsy in Cairo, Egypt and who found that two fifths of studied children had the first order among their siblings and more than one fifth of them had second order.

Regarding to educational level, this study revealed that more than two-thirds of children below age of education and less than one quarter of children not educated. This result disagreed with **Sayed et al., (2021)** who founded that, more than half of children below age of education and one quarter of them were at primary school. From the researchers' perspective, this may be because of people with disability face widespread barriers in accessing services including educational services especially in Upper Egypt such as lack of special education services and transportation. Furthermore, stigma still leads to stereotypes and discrimination that restrict disabled Egyptians from engaging with their communities (**Disability Inclusion Newsletter, 2024**).

Relating to the knowledge of mothers about CP, more than half of the studied mothers had poor knowledge, slightly less than one-quarter had fair knowledge and sixteen percent of them had good knowledge level. This result agreed with **Hussein et al., (2023)** who

conducted a published study in Minia City with sample of 200 mothers with CP children and who mentioned that half of mothers had poor knowledge, more than one-quarter had fair knowledge and one fifth of them had good knowledge level. This finding may be attributed to that more than three quarters of the studied mothers had basic and moderate educational level, and more than one quarter of them received information about their child's' disease from friends and relatives having children with the same condition.

Regarding the mothers' attitudes toward their children with CP, the present study detected that slightly less than one third of mothers held positive attitudes, two fifths of them had neutral attitudes and over one-quarter of the mothers had a negative attitudes. This result supported by **Onwuakagba et al., (2023)** who conducted a study in southeast Nigeria involved 90 parents of children with CP and who stated that, more than one-quarter of the parents exhibit a negative attitude.

Also, **Al-Dababneh & Al-Zboon, (2018)** who conducted a study in Amman involved 70 parents of children with CP and who stated that, two fifths of studied parents held neutral attitudes towards their children with CP, although more than one third of parents held negative attitudes and over one-quarter of the parents displayed a positive attitudes. This result may be due to that the mothers of CP children suffering from more stress, poor psychological well-being, anxiety and depression compared to mothers of typically developing children (**Alam et al., 2023**). In the researchers' opinion the negative attitudes expressed by the studied mothers might be due to that the most mothers believed that they had been responsible for their children's disability.

In relation the mothers' total reported practices; the current study revealed that more than three-quarters of them had unsatisfactory of total reported practices. This findings supported by **Rashad et al., (2021)** who conducted a study at Zagazig, Egypt with sample included 50 mothers and their children which stated that, before implementation of educational modules, more than three quarters of mothers had unsatisfactory of total reported practices. Also **Hussein et al., (2023)** stated that, the majority of mothers had unsatisfactory of total practices. This result might be due to that more than two-third of studied mothers their ages was > 35 years and be may be due to that the mothers occupied by other children. Also efforts for caring with CP children lead to poor physical health which leads to insufficient practices.

In this study, there was statistically significant difference between mother's total knowledge score and their level of educational, residence, social class and family size. This results agreed with **Hamed et**

al., (2023) who conducted a study in Helwan, Egypt with sample consisted of 70 children suffering from CP and their caregivers who stated that there was a statistically significant difference between mother's total knowledge score about CP and their educational level, occupation and residence.

Regarding the relation between the mothers's total attitudes scores and socio-demographic characteristics, the present study demonstrated that there was statistically significant differences relation between mother's attitudes and their educational level, residence, social class. This results agreed with **Hussein et al., (2023)** who stated that there were statistically significant differences between mothers' total attitudes and their educational level, family monthly income, and residence.

This study illustrated that there was a statistically significant difference between mothers' total reported practices and their level of education, place of residence, family size, social class and had family history of CP. This result agreed with **Hamed et al., (2023)** who showed that there were statistical significance difference between caregivers' characteristics and their total reported practices namely education, job and place of residence. In my opinion this result because of the mother's knowledge having an impact on how well she meets the needs of their children, if mothers have a good degree of understanding their children's cases; this will enhance their practices in the care of CP children.

The present study concealed that there was positive correlation between knowledge scores and reported practices scores. This result agreed with **Baraka et al., (2019)** who carried out a study of 60 mothers and their children with cerebral palsy in Tanta, Egypt which showed that preprogram there was positive correlation between knowledge and reported practices scores.

The current study illustrated that there was positive correlation between mother's attitudes scores and reported practices scores. This result may be due to that the mother's attitudes toward their CP children highly affected by the degree of children disability and dependency on daily activities; presence of other associated health conditions and IQ of the child thereby affecting their practices.

Education about CP helps in reduction of myths and stigma associated with the condition, as well as the harmful response from society that forces mothers to isolate themselves and their children at home. This study illustrated that there was positive correlation between mother's knowledge scores and attitudes scores. This result may be because of the fact that one quarter of mothers had basic education and two fifths of them had middle education.

## Conclusion:

The current study found that the majority of the mothers had poor knowledge regarding cerebral palsy. Additionally, the majority of mothers had neutral attitude and unsatisfactory reported practices. Also, there is statistically significant differences relation between mothers' socio-demographic characteristics and their knowledge, attitudes and reported practices regarding their children with cerebral palsy. Moreover, there was positive correlation between knowledge and reported practices scores with highly statistical significant difference.

## Recommendations

**Based on the findings of this study, the following recommendations were suggested:**

1. Development of an educational and training program should be conducted for mothers to update their knowledge and improve their practices in caring for their children with cerebral palsy.
2. Distribute updated and Arabic brochure through rehabilitation centers and during home visits to help the caregivers in improving their knowledge, practices and develop a favorable attitudes.
3. Dissemination of health awareness about the care of cerebral palsy children and available specialty centers that provide care for these children through social media
4. Conducting community based studies to know the actual incidence of cerebral palsy among children, associated health problems and nursing interventions for cerebral palsy children.

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