

Original Article

Factors Which Affect the Depression of Mothers with Cerebral Palsy Child

Zahra Ahmadizadeh

Neuromuscular Rehabilitation Research Centre
Semnan University of Medical Sciences, Semnan, Iran

Maryam Mokhlesin

Semnan University of Medical Sciences, Semnan, Iran

Objective: The high number of cerebral palsy, the severe disability of this disorder, depression in disabilities, and long lasting effects of the child's disability on the family especially mothers are the common issues. The purpose of this study was investigating the level of depression in mothers with cerebral palsy children and its related factors.

Methods: This caused comparative study was carried out in Tehran, in 2011. Two groups of mothers with 4 to 12 years old healthy and cerebral palsy children were randomly selected to participate in this study. Beck questionnaire was used to evaluate mothers' depression level. The relationship between variables was investigated by independent T- test and Pearson's correlation.

Results: Sixty mothers with cerebral palsy children and sixty mothers with normal children as control group were participated in the study. Mean and standard deviation of age were 33.79 ± 6.02 in mothers and 7.11 ± 2.71 in children. Depression of mothers with cerebral palsy child was significantly higher than control group and there was a significant correlation between depression of mothers with cerebral palsy children, and increasing caring time, dependency in activity of daily living and children's gross and fine movements ability.

Discussion: Although depression was higher in mothers with cerebral palsy children, the depression level of these mothers was affected by some factors related to the child issue. In order to decrease undesirable effects of having a cerebral palsy child, it is necessary to emphasize on children's abilities to achieve maximum evolution potential and provide physical and mental protections for their mothers.

Key Words: Children with cerebral palsy, depression, mothers with cerebral palsy child

Submitted: 20 Sep. 2014

Accepted: 3 Nov. 2014

Introduction

Disability of a child affects both on the child and family members (1,2). Disable children need more care and their parent tolerate the most stress to care them (3). Cerebral palsy is among the most common causes of movement disability (4) and cerebral palsy is caused by neurological disorders which affect these children posture and control of movements (5). Although the obvious symptom of a cerebral palsy child is movement operation disorder, many of these children experience sensory and mental problems which lead to learning, speaking and understanding problems. So, all of these limitations causes self-caring dysfunction and makes these children to be dependent on others to do their activity of daily living (6,7).

In most cultures, mothers have more responsibility to bring up their children and are the main supporter of disable children; so mothers are more affected by these children problems (8,9) and they have more responsibility than fathers (10). Since caregivers of cerebral palsy children have a crucial role to provide preliminary needs and necessary treatment for these children, permanent caring is stressful for these caregivers (5) and causes physical and mental stress in mothers (7). There are a lot of evidences which indicates that mothers who take care of disable children, experience more physical and mental disorders comparing to mothers who take care of healthy children (11). Although it is expected that caring has a deep effect on the caregiver's health, the aspects of this effect should be studied with

* All correspondences to: Maryam Mokhlesin, email: < m_mokhlessin@yahoo.com >

regard to the people's life style, region and country (6). Social factors such as race, gender, religion and socioeconomic situation are among main factors to cause caring problems of these children, as is reported in some comparative multi-culture studies (9). Since World Health Organization (WHO) has announced, depression will become the second cause of disability after heart problem until 2020 (5), so investigating the effective factors on depression is very important. Studying about depression of mothers with cerebral palsy children indicated that some factors such as stigma of having a disable child, leads to social isolation (11), and lower independence level of the children (12).

Chronic condition of children with cerebral palsy (8) and lower social relationships of their mothers (13) are related to mothers' depression experience. By considering the high spread of cerebral palsy, the severe disability of this disorder, the issues such as depression increasing in disabilities, and long lasting effects of the child's disability on the family and especially on mothers physical and mental pressures become very important. The purpose of the present study was to investigate the level of depression in mothers with cerebral palsy children and its related factors.

Methods

In a caused comparative study, mothers of 4-12 years old children from Tehran participated. They divided into two groups of mothers with cerebral palsy and healthy children in 2011. The mothers with cerebral palsy children were selected among people who had referred to fourteen public and private rehabilitation clinics and mothers with healthy children were selected from people who had gone to twenty medical clinics in Tehran. The criteria of participation in the study included having a child with cerebral palsy between 4 to 12 years old and the same age range for healthy child as control group. Children in both groups lived with their mothers and mothers were the main caregiver. The excluding criteria in both groups included: mothers' illiteracy, mothers who smoke or use any kinds of addictive materials, pregnant women and those who take care of an old person or someone with physical or mental disability, maturing symptoms appearance in the child, and any kind of medical problems or

sever psychological disorders in child which prevents mother to take care of her child alone. Selection of clinics was carried out by a simple random selection method among different regions of Tehran city and the mothers' selection was performed by using available samples. The sample size was determined 120 people by considering the results of Kaya et al. study in which musculoskeletal pain quality of life and depression in mothers with cerebral palsy children were studied and by considering the first type error equal 0.05 and the ability of 99% (7) in that.

To collect background and preliminary data, which are presented in table (1) separate questionnaires of caring and personal information of mothers and children were used. These questionnaires were filled out through an interview by a researcher. Questions of these questionnaires were designed by considering previous articles and texts and their content and nominal descriptions confirmed in a preliminary study in a group of 20 individuals (10 mothers with a cerebral palsy child and 10 mothers with a healthy child). For children with cerebral palsy, questions related to determination of the cerebral palsy type, mega movement ability (according to GMFCS standard classification) and the child's total ability to control the objects were also considered. To evaluate mother's depression, Back-2 depression questionnaire was used (14) which consists of 21 items that selects one of the four options showing the strength of the depression symptom for each person (15). This questionnaire is a self-reporting instrument and one of the most common instruments to recognize depression in adults. Each item takes a grade between zero to three. So, the total grade of the questionnaire has a range between zero and 63. This questionnaire is used for people older than thirteen (15). All the data was analyzed by SPSS software version 16. To describe the information of studied people, mean descriptive analysis technique and standard deviation were used for quantitative variables and frequency percentage was used for qualitative variables. Normal Data distribution was confirmed by Kolmogorov-Smirnov test and then independent T-test was used to determine the differences between the groups.

Table 1. Characteristics of background and preliminary data of mothers enrolled in the

Characteristics	Count(% within each variable)			P
	Having a CP child(n=60)	Having no CP child(n=60)	All (n=120)	
Age group(year)	≤30	29(48.3)	22(36.7)	0.2
	>30	31(51.7)	38(63.3)	
Life with husband	No	2(3.3)	58(96.7)	1
	Yes	2(3.3)	58(96.7)	
Job condition	Full-time	5(8.3)	9(15)	0.2
	Part-time	5(8.3)	9(15)	
Level of education	Household	50(83.3)	42(70)	0.2
	Elementary	14(23.3)	7(11.7)	
	Diploma	27(45)	30(50)	
Number of children	Academic	19(31.7)	23(38.3)	0.4
	1	24(40)	19(31.7)	
Social class according to income	2	26(43.3)	33(55)	0.5
	≥3	10(16.7)	8(13.3)	
	Low	39(65)	34(56.7)	
Time devoted to the diurnal child care	Middle	13(21.7)	14(23.3)	0.001
	High	8(13.3)	12(20)	
Regular exercise	<4 hours	7(11.7)	22(36.7)	1
	4 to 8 hours	16(26.7)	20(33.3)	
	≥8 hours	37(61.7)	18(30)	
	No	48(80)	48(80)	96
	Yes	12(20)	12(20)	24

Results

According to the acceptance criteria, 127 mothers were selected. 7 were excluded from the study according to the exiting criteria; three children had maturity symptoms, one mother had 2 cerebral palsy children, 2 mothers were pregnant and one was taking care of an old person in her family. Finally 60 mothers with a cerebral palsy child and 60 mothers with a healthy

child entered the study. The youngest mother was 22 and the eldest was 47 years old, so that their age mean and standard deviation were 33.79 ± 6.02 years. The average age of children was 7.11 ± 2.71 years. Mean grade of movement ability of cerebral palsy children and their hand ability were 2.97 ± 1.28 and 2.63 ± 1.31 respectively. Other characteristics of participants are presented in table (2).

Table 2. Characteristics of children whose mothers enrolled in the study by their health status

Characteristics	Count(% within each variable)			P
	CP (n=60)	Healthy (n=60)	All (n=120)	
Age group(year)	≤7	37(61.7)	31(51.7)	0.3
	>7	23(38.3)	29(48.3)	
Gender	Male	33(55)	31(51.7)	0.7
	Female	27(45)	29(48.4)	
Behavioral problem(s)	No	23(38.3)	32(53.3)	0.1
	Yes	37(61.7)	28(46.7)	
Pertinacity		26(43.3)	16(26.7)	0.06
	Nail biting	3(5)	10(16.7)	
Thumb sucking		3(5)	0(0)	0.2
	Destructive behavior	3(5)	3(5)	
Irritability		9(15)	2(3.3)	0.3
	Enuresis	5(8.3)	2(3.3)	
Aggression		9(15)	0(0)	0.4
	General health problem(s)	9(15)	51(85)	
Recent hospitalization	No	51(85)	9(15)	<0.001
	Yes	3(5)	1(1.7)	
Convulsion		13(21.7)	0(0)	0.62
	Visual problems	21(35)	2(3.3)	
Auditory problems		1(1.7)	2(3.3)	<0.001
	Respiratory problems	1(1.7)	0(0)	
Metabolic problems		5(8.3)	0(0)	0.06
	Heart problems	1(1.7)	0(0)	
Urinary and fecal incontinence		15(25)	1(1.7)	<0.001
	Deformity	18(30)	2(3.3)	
Verbal problems		31(51.7)	1(1.7)	<0.001
	Activity of daily living	2(3.3)	40(66.7)	
Fine movement	No	58(96)	20(33)	<0.001
	Yes	38(63.3)	0(0)	
Eating		40(66.7)	0(0)	<0.001
	Bathing	53(88.3)	18(30)	
Toileting		48(80)	4(6.7)	<0.001
	Dressing	49(81.7)	4(6.7)	
Mobility		43(71.7)	0(0)	<0.001
	Intellectual disability	0(0)	60(100)	
	Yes	38(63.3)	0(0)	<0.001

As it is indicated in table (3), mothers of two groups showed a significant difference in time duration they devoted to take care of their child (P=0.001). So that, mothers who had a cerebral palsy child, spent

more time to care of their child. In other characteristics, they had no significant difference with each other.

Table 3. Comparison of depression in mothers with and without cerebral palsy children

Variable	Group	n	Mean of score ± SD*	t-test	P
Depression	Having no CP	60	11.4±8.36	2.87*	0.01>
	Having a CP	60	16.1±9.54		

*Standard Deviation

Independent t-Test results showed that depression in mothers with a cerebral palsy child is significantly higher than those with a healthy child as it's seen in

above table. Table (4) shows the correlation between mother's depression and presented variables which were significantly higher in cerebral palsy children.

Table 4. Multiple regression analysis of mothers depression and children characteristics

variable	Correlation coefficient	p	Regression coefficient	SE**	
Depression	GMFCS	0.293*	0.023	0.086	9.205
	MACS	0.355*	0.005	0.126	9
	Intellectual disability	0.44*	0.000	0.194	8.64
	ADL*	0.116	0.377	0.013	9.561
	General health problem(s)	0.34*	0.008	0.115	9.057
	Behavior disorder	0.236	0.07	0.056	9.364
	Time devoted to the diurnal child care	0.239*	0/023	0.086	9.205

*Activity of daily living

**standard error

P<0.05

As results show, depression has significant correlation with movement ability grades, hand movement ability grades, mental deficiency, and time devoted to take care of child. By considering the significance of correlation between depression and dependency of cerebral palsy children in their daily life activity, in investigating the correlation between depression and each of daily life activities(eating, taking a bath, going to toilet, and mobility), no significant relationship is observed (P<0.05). In investigating the correlation of other studied problems in the present study with depression, just having problems in fecal was related to mother depression (r=0.34, P<0.01).

Discussion

The results showed that depression is significantly higher in cerebral palsy children's mothers and some factors are effective on their depression degree including the time devoted to the child, child's concomitant other problems, mental deficiency of child, and lower hand movements ability in the cerebral palsy child. Significant depression increase in mothers with a cerebral palsy child has been reported in many studies. Sajedi et al have mentioned that having a cerebral palsy child makes

mother depression experience 2.26 times more (OR=2.26) than control group and mothers' depression has no relationship with the type of cerebral palsy in children (10). Vanza et al have gained similar results when comparing quality of life and depression in mothers of cerebral palsy or healthy children and have reported higher depression in mothers with a cerebral palsy child (8). Dilk et al (16), Ilmaz et al (17), Xanon et al (5) and Kaya et al have reported higher depression in mothers with cerebral palsy children (7). Mehmedinović et al have reported no difference between the depression of mothers with a cerebral palsy and healthy child (18). It seems that low number of samples (23 mothers with a cerebral palsy child and 16 mothers with a healthy child), has caused no significant difference in this study. Since mothers with a cerebral palsy child have more protection duties, they spend more time to take care of their children than other mothers (19) and as it was mentioned before, there is a significant relationship between depression grade of such mothers and the time they devote to take care of their children as spending more time to take care of children leads to more depression. It seems that these mothers don't experience necessary balance in different areas, so this leads to less satisfaction of

using the time and they can't do their daily activities and the activities they were interested in like the past (19). They also devote less time for themselves and their health. Birne reported that caregivers, who had devoted more time to take care of their children, had significantly worse mental health (20) and this issue is consistent with the present study.

The results of the present study showed that mothers with cerebral palsy children with lower hand movement ability, experience more depression. It seems that children's ability decrease is related to their mother's depression. Yilmaz achieved similar results with this study and reported higher depression in mothers with cerebral palsy children and its relation to operational ability of cerebral palsy children by using GMFCS scale [18]. Linton reported lower independency level of cerebral palsy children to be significant in mothers' depression increase (12). Vanza, however, reported that children's main movement ability had no significant relationship with their mothers depression and quality of life in cerebral palsy group (8). Possibly reason is that most sampled children were in levels 3 and 4.

In the other hand, the results of the present study showed that in cerebral palsy children there is no significant relationship between children dependency increase in the activities of daily life and mothers' depression. It seems that because healthy children who are 4 to 12 years old are dependent to their mother for a part of their daily living activities, and this part of activities are as a

part of usual protection duties for mothers, so mothers do not treat doing these activities to be imposing and as a result of their children cerebral palsy, our study results also showed that the increase of the cerebral palsy children's problems leads to mother's depression increase, because having children with chronic health problems makes their mothers experience more depression, behavioral and emotional disorders (10). In addition, mothers with cerebral palsy children who had degrees of intellectual disabilities, took higher degree of depression in this study. In fact these mothers are faced simultaneously with two problems (cerebral palsy and intellectual disability) and since mothers with intellectual disability children have more limited social relationships and less free time (10) and correlation between mother's inadequate social relationships and her depression (13), so intellectual disability accompanied by cerebral palsy has increased mothers depression.

Conclusion

Besides paying attention to the cerebral palsy children's problems and focusing on their treatment and reducing their problems, their mother's health should be considered, because mother's health affect children health and vice versa. Paying attention to the health of the cerebral palsy children's mothers can improve these children's treatment, therefore, it is recommended to pay attention to the cerebral palsy children's mothers.

References

1. Terra VC, Cysneiros RM, Schwartzman JS, Teixeira MCT, Arida RM, Cavalheiro EA, et al. Mothers of children with cerebral palsy with or without epilepsy: a quality of life perspective. *Disability and Rehabilitation*. 2011;33(5):384-8.
2. Gardiner E, Iarocci G. Unhappy (and happy) in their own way: A developmental psychopathology perspective on quality of life for families living with developmental disability with and without autism. *Research in Developmental Disabilities*. 2012;33(6):2177-92.
3. Yuen Shan Leung C, Wai Ping Li-Tsang C. Quality of life of parents who have children with disabilities. *Hong Kong Journal of Occupational Therapy*. 2003;13(1):19-24.
4. Raina P, O'Donnell M, Rosenbaum P, Brehaut J, Walter S, Russell D, et al. The health and well-being of caregivers of children with cerebral palsy. *Pediatrics*. 2005;115(6):e626.
5. Zanon MA, Batista NA. Quality of life and level of anxiety and depression in caregivers of children with cerebral palsy. *Rev Paul Pediatr*. 2012;30(3):392-6.
6. Davis E, Shelly A, Waters E, Boyd R, Cook K, Davern M. The impact of caring for a child with cerebral palsy: quality of life for mothers and fathers. *Child: Care, Health and Development*. 2010;36(1):63-73.
7. Kaya K, Unsal-Delialioglu S, Ordu-Gokkaya N, Ozisler Z, Ergun N, Ozel S, et al. Musculo-skeletal pain, quality of life and depression in mothers of children with cerebral palsy. *Disability & Rehabilitation*. 2010;32(20):1666-72.
8. Ones K, Yilmaz E, Cetinkaya B, Caglar N. Assessment of the quality of life of mothers of children with cerebral palsy (primary caregivers). *Neurorehabilitation and Neural Repair*. 2005;19(3):232.
9. Oh H, Lee E. Caregiver Burden and Social Support among Mothers Raising Children with Developmental Disabilities in South Korea. *International Journal of Disability, Development and Education*. 2009;56(2):149-67.
10. Sajedi F, Alizad V, Malekkhosravi G, Karimlou M, Vameghi R. Depression in mothers of children with cerebral palsy and its relation to severity and type of cerebral palsy. *Acta Medica Iranica*. 2010;48(4):250-4.
11. Laurvick C, Msall M, Silburn S, Bower C, Klerk N, Leonard H. Physical and mental health of mothers caring for a child with Rett syndrome. *Pediatrics*. 2006;118(4):e1152.
12. Linton S. A review of psychological risk factors in back and neck pain. *Spine*. 2000;25(9):1148.
13. Badaru UM, Ogwumike OO, Adeniyi AF, Kaka B. Psychosocial adversities and depression in mothers of children with cerebral palsy in Nigeria. *Journal of Pediatric Neurology*. 2013;11:1-7.

14. Dozois DJ, Martin RA, Bieling PJ. Early maladaptive schemas and adaptive/maladaptive styles of humor. *Cognitive therapy and research*. 2009;33(6):585-96.
15. Ghassemzadeh H, Mojtabai R, Karamghadiri N, Ebrahimkhani N. Psychometric properties of a Persian language version of the Beck Depression Inventory Second edition. *Depression and Anxiety*. 2005;21(4):185-92.
16. Dilek B, Batmaz I, Karakoç M, Sariyildiz MA, Aydin A, Çavaş H, et al. Assessment of depression and quality of life in mothers of children with cerebral palsy. *Marmara Medical Journal*. 2013;26:94-8 abstract.
17. Yılmaz H, Erkin G, Ezke AA. Quality of Life in Mothers of Children with Cerebral Palsy. *ISRN Rehabilitation*. 2013;2013:1-5.
18. Mehmedinović S, Sinanović O, Ahmetović S. Depression in Parents of Children with Cerebral Palsy in Bosnia and Herzegovina. *Tehran University of Medical Sciences*. 2012;50 819-21.
19. Rassafiani M, Kahjoogh MA, Hosseini A, Sahaf R. Time Use in Mothers of Children with Cerebral Palsy: A Comparison Study. *Hong Kong Journal of Occupational Therapy*. 2012;22(2):70-4.
20. Byrne M, Hurley D, Daly L, Cunningham C. Health status of caregivers of children with cerebral palsy. *Child: care, health and development*. 2010;36(5):696-702.