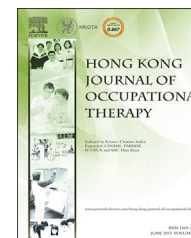


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ORIGINAL ARTICLE

Factors Associated with Quality of Life in Mothers of Children with Cerebral Palsy in Iran



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Summary *Objective/Background:* Children with cerebral palsy (CP) need more attention and care, especially from their mothers. This can affect the mothers' quality of life (QOL) adversely. This study aimed to assess the QOL of Iranian mothers who have a child with CP, compared with mothers with a healthy child, focusing on some individual and social underlying factors.

Methods: Using a cluster-sampling approach, two groups of eligible mothers having children aged 4–12 years, with and without CP, from Tehran's randomly selected clinics, were chosen in a convenient way and enrolled in a cross-sectional study. A group of mothers with healthy children whose demographics closely matched with the group of mothers having children with CP were selected and recruited in the study. The group with mothers with children with CP was selected randomly from a convenience sample in 14 rehabilitation and occupational therapy clinics in Tehran, Iran. To collect data on characteristics of interest, mothers were interviewed, and the SF-36 Questionnaire was used to measure their QOL. The relationship between each characteristic and the mothers' level of QOL was assessed, and the crude odds ratios (ORs) and adjusted ORs were measured by logistic regression.

Results: Sixty mothers with CP children, and 60 mothers with healthy children participated in this study. Their mean (\pm standard deviation) age was 33.79 (\pm 6.02) years, and their children's mean age was 7.11 (\pm 2.71). The two groups were significantly different in QOL mean score (57.35 ± 18.39 vs. 71.7 ± 13.58 ; $p \leq .001$). It was shown that having a child with CP with

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intellectual disability is significantly related to a worse level of QOL of mothers (adjusted OR = 5.4, $p \leq .001$), whereas having full-time jobs is reversely associated with it (adjusted OR = 0.2, $p = .02$).

Conclusion: Two important factors that lead to a worse QOL of mothers with a CP child are the unemployment of mothers and having a CP child with concurrent intellectual disabilities. To diminish the adverse effects of having a CP child on QOL of mothers, unemployed women who have a CP child with concurrent intellectual disabilities need more psychological support and help.

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Introduction

Quality of life (QOL) is widely used in health and medical studies to measure health status (Habashneh, Khader, & Salameh, 2012). Identifying the factors affecting QOL can enhance treatment, care, and rehabilitation programs (Soh et al., 2013). One of the major goals of all countries is to improve people's QOL and well-being (Prudente, Barbosa, & Porto, 2010). QOL is a subjective concept that encompasses all conditions and aspects of human life (Nesterko, Braehler, Grande, & Glaesmer, 2013). According to the World Health Organization, QOL is defined as the individual's perception of his/her position in life in the context of his/her culture and value systems in which he/she lives, and in relation to his/her goals, expectations, standards, and concerns (Susniene & Jurkauskas, 2009).

Cerebral palsy (CP) is the most common cause of motor dysfunction in children; it involves a group of permanent disorders in the development of movement and posture causing activity limitation, which is attributed to nonprogressive disorders occurring in the development of the foetus or the infant's brain (Raina et al., 2005). Although impaired motor dysfunction is a hallmark of CP, many of these children, in addition to speaking, understanding, and learning disabilities, may also experience intellectual and emotional problems. Consequently, these constraints may lead to dysfunction in self-care and make these children dependent on others for their activities of daily living (Davis et al., 2010; Kaya et al., 2010).

Disability not only affects children themselves but also their family members (Gardiner & Iarocci, 2012; Terra et al., 2011). Disabled children require more care, and their parents suffer more stress in taking care of them (Karande & Kulkarni, 2009). In most cultures of the world, women have more responsibility in raising children, and the primary caregivers of children with disabilities are often mothers (Ones, Yilmaz, Cetinkaya, & Caglar, 2005). In confronting the problems of children, mothers are more affected than fathers (Oh & Lee, 2009; Ones et al.). Taking care of these children, especially those who require special and long-term support, results in physical and mental stress for mothers (Kaya et al., 2010). There is much evidence to show that mothers who take care of disabled children suffer from more severe physical and psychological complications than mothers with healthy children (Laurvick et al., 2006). Mahani, Rostami, and Nejad (2013) found that the socioeconomic status, marital satisfaction, and subtypes of pervasive developmental disorders have a

significant influence on the QOL of mothers of children with pervasive developmental disorders in Iran. There is no doubt that these conditions can affect the QOL of mothers who have children with CP (Gorter, Ketelaar, Rosenbaum, Helders, & Palisano, 2009).

It naturally follows that taking care of a disabled child has a profound impact on the QOL and health of mothers who are in charge of caregiving; however, its different dimensions and scales must be reviewed in each region or country based on those lifestyles (Davis et al., 2010). As has been reported in multicultural comparative studies, underlying social factors, such as race, sex, religion, and the socioeconomic status of families with disabled children are among the critical factors that can cause problems while caring for these children (Oh & Lee, 2009). The present study concentrates on several individual and social factors to compare the QOL of mothers who have a child with CP and mothers with a healthy child in Iran.

Methods

This was a cross-sectional study in which a sample of mothers, living in Tehran, who had children aged 4–12 years participated. They were selected in two groups: those with one or more healthy children and those with a CP child. They were studied and compared over a 2-month period in 2011. The mothers of children with CP were selected from among those people referred to 14 rehabilitation and occupational therapy clinics, and the mothers of healthy children were selected from among those who took their children to one of 20 selected medical clinics in Tehran, the capital of Iran, for outpatient therapy. The inclusion criterion for mothers with a CP child was having only one child aged 4–12 years with CP, whereas for the mothers with a healthy child, the criterion was having a healthy child in the same age range. It was essential that both mother and child lived together, and that the mother is the main caregiver for the child. The exclusion criteria for both groups were as follows: (a) not being able to read and write, (b) having any sort of medical problems or acute or chronic psychological disorders, so that it prevents the mother from taking care of her child alone. Furthermore, mothers who smoked or used any drugs, pregnant women, and those who took care of other elderly or mentally or physically disabled persons were also excluded. We also excluded mothers when their children showed symptoms of puberty.

Clinics were randomly chosen from different areas in the city, and mothers were chosen using available samples. Considering the results of Kaya and co-workers' study in 2010, in which musculoskeletal pain, QOL, and depression in mothers of children with CP were studied simultaneously, and setting type I error of 0.05 and a power of 99%, a total of 120 persons (60 persons in each group) were enrolled in this present study.

Written informed consent was obtained from all eligible mothers who were willing to participate in this study. To collect primary background data (as are listed in Tables 1 and 2), separate questionnaires for evaluating the personal characteristics of mothers and children were used. The questionnaires were completed by interviews. The questions were designed based on the literature review, benefiting from corrective feedback of five university professors and experts, and after conducting a pilot study in a group of 20 mothers (10 mothers with CP children and 10 mothers with healthy children), the face and content values of the questionnaires were confirmed. For children with CP, some questions were also included to identify the type of CP, gross motor ability (based on the Persian version of Gross Motor Function Classification System standard classification [GMFCS]), and the child's overall ability to control objects (based on the Manual Ability Classification System [MACS]) (Gorter et al., 2009).

To measure a mother's QOL and its dimensions, we used the Persian version of the SF-36 questionnaire, which is one of the most famous general tools used for measuring health-related QOL; this questionnaire has been translated into many languages so far. This questionnaire has already been validated in Iran by Montazeri, Goshtasebi,

Vahdaninia, and Gandek (2005). The SF-36 questionnaire contains 36 questions that measure the following eight dimensions related to QOL: (a) physical functioning, (b) bodily pain, (c) physical role, (d) general health, (e) vitality, (f) social functioning, (g) emotional role, and (h) mental health. The grading scale is based on percentages, so that scores close to 100% indicate a higher QOL (Table 3).

The distributions of demographics and personal characteristics of participants in the study were described and compared between two groups using the χ^2 (or Fisher exact) test. Then, the overall scores of QOL for the two groups, and also the scores for each of the eight dimensions of the SF-36 questionnaire taken separately, were compared with each other. In the next step, participants were divided into two groups based on achieving a total score of 70% in QOL, so that people who had a minimum score of 70% were categorized as having better QOL, and the rest were put in a group with worse QOL. Taking this classification as the dependent variable, the logistic regression models were fitted to the data in three steps. In the first step, using separate simple logistic regression models, the relationship between each independent variable and the dependent variable (level of QOL) was assessed, and their relationship was reported using crude odds ratios (ORs). Second, all variables that had a liberal p value ($\leq .2$) were assessed together in a multiple logistic regression model. In the final step, considering the likelihood ratio tests, the reduced multimodel was fitted using a backwards approach. The final interpretation was based on the final model. The entire process of analysis was performed using STATA 9.1, Special Edition, College Station, Texas 77845, USA, <http://www.stata.com> and taking a maximum type I error of 5%.

Table 1 Characteristics of Mothers Who Participated in the Study.

Characteristics		Count (% within each variable)			p^*
		Have a CP child ($n = 60$)	Have a healthy child ($n = 60$)	All ($n = 120$)	
Age group (y)	≤ 30	29 (48.3)	22 (36.7)	51 (42.5)	.20
	> 30	31 (51.7)	38 (63.3)	69 (57.5)	
Lives with husband	No	2 (3.3)	58 (96.7)	116 (96.7)	$< .99$
	Yes	2 (3.3)	58 (96.7)	4 (3.3)	
Employment	Full-time	5 (8.3)	9 (15.0)	14 (11.7)	.20
	Part-time	5 (8.3)	9 (15.0)	14 (11.7)	
Level of education	Housewife	50 (83.3)	42 (70.0)	92 (76.7)	.20
	Primary	14 (23.3)	7 (11.7)	21 (17.5)	
	Secondary	27 (45.0)	30 (50.0)	57 (47.5)	
Number of children	University	19 (31.7)	23 (38.3)	42 (35.0)	.40
	1	24 (40.0)	19 (31.7)	43 (35.8)	
	2	26 (43.3)	33 (55.0)	59 (49.2)	
Social class according to income	≥ 3	10 (16.7)	8 (13.3)	18 (15.0)	.50
	Low	39 (65.0)	34 (56.7)	73 (60.8)	
	Middle	13 (21.7)	14 (23.3)	27 (22.5)	
Time devoted to diurnal child care	High	8 (13.3)	12 (20.0)	20 (16.7)	.001
	< 4 h	7 (11.7)	22 (36.7)	29 (24.2)	
	4–8 h	16 (26.7)	20 (33.3)	36 (30.0)	
Regular exercise	≥ 8 h	37 (61.7)	18 (30.0)	55 (45.8)	$< .99$
	No	48 (80.0)	48 (80.0)	96 (80.8)	
	Yes	12 (20.0)	12 (20.0)	24 (20.0)	

CP = cerebral palsy.

* χ^2 test.

Table 2 Characteristics of Children Whose Mothers Participated in the Study.

Characteristics		Count (% within each variable)			<i>p</i> *
		CP (<i>n</i> = 60)	Healthy (<i>n</i> = 60)	All (<i>n</i> = 120)	
Age group (y)	≤7	37 (61.7)	31 (51.7)	68	.30
	>7	23 (38.3)	29 (48.3)	52	
Sex	Male	33 (55.0)	31 (51.7)	64	.70
	Female	27 (45.0)	29 (48.4)	56	
Behavioural problem(s)	No	23 (38.3)	32 (53.3)	55	.10
	Yes	37 (61.7)	28 (46.7)	55	
Pertinacity		26 (43.3)	16 (26.7)	42	.06
Nail biting		3 (5.0)	10 (16.7)	13	.04
Thumb sucking		3 (5.0)	0 (0)	3	.20
Destructive behaviour		3 (5.0)	3 (5.0)	6	<.99
Irritability		9 (15.0)	2 (3.3)	11	.30
Enuresis		5 (8.3)	2 (3.3)	7	.40
Aggression		9 (15.0)	0 (0)	9	.003
General health problem(s)	No	9 (15.0)	51 (85.0)	60	<.001
	Yes	51 (85.0)	9 (15.0)	60	
Recent hospitalization		3 (5.0)	1 (1.7)	4	.62
Convulsion		13 (21.7)	0 (0)	13	<.001
Visual problems		21 (35.0)	2 (3.3)	23	<.001
Auditory problems		1 (1.7)	2 (3.3)	3	<.99
Respiratory problems		1 (1.7)	0 (0)	1	<.99
Metabolic problems		5 (8.3)	0 (0)	5	.06
Heart problems		1 (1.7)	0 (0)	1	<.99
Urinary and faecal incontinence		15 (25.0)	1 (1.7)	16	<.001
Deformity		18 (30.0)	2 (3.3)	20	<.001
Verbal problems		31 (51.7)	1 (1.7)	32	<.001
Problem(s) in ADL	No	2 (3.3)	40 (66.7)	42	<.001
	Yes	58 (96.0)	20 (33.0)	78	
Bathing		53 (88.3)	18 (30.0)	53	<.001
Toileting		48 (80.0)	4 (6.7)	52	<.001
Dressing		49 (81.7)	4 (6.7)	53	<.001
Intellectual disability	No	22 (36.7)	60 (100)	60	<.001
	Yes	38 (63.3)	0 (0)	38	
GMFCS					
1		7 (5.8)			
2		20 (16.7)			
3		10 (8.3)			
4		14 (11.7)			
5		9 (7.5)			
MACS					
1		15 (12.5)			
2		15 (12.5)			
3		13 (10.8)			
4		11 (9.2)			
5		6 (5.0)			

ADL = activities of daily living; CP = cerebral palsy; GMFCS = Gross Motor Function Classification System; MACS = Manual Ability Classification System.

* χ^2 test.

Results

Following the inclusion criteria, 127 mothers were selected. Seven were excluded due to the exclusion criteria—three children had signs of puberty, one mother had two children with CP, two mothers were pregnant, and one mother was in charge of taking care of an older person at

home. Finally, 60 mothers of children with CP and 60 mothers of healthy children were enrolled in the study. The youngest mother was 22 years old and the oldest was 47 years old, and therefore, their mean age \pm standard deviation were 33.79 ± 6.02 years. The children's mean age was 7.11 ± 2.71 years. The mean scores of GMFCS and MACS of children with CP were 2.97 ± 1.28 and 2.63 ± 1.31 ,

Table 3 Comparison of the QOL between Iranian Mothers Who Have a Child with CP and Those Who Have a Healthy Child Using SF-36 Scale Based on Its Individual Domains.

QOL domain	Mean of score \pm SD		<i>p</i>
	Have a CP child	Have a healthy child	
Physical functioning	68.83 \pm 22.87	79.00 \pm 19.53	.008
Role limitations because of physical health problems	43.75 \pm 39.76	75.00 \pm 31.55	<.001
Role limitations because of emotional problems	48.61 \pm 39.45	72.11 \pm 36.70	<.001
Vitality (energy/fatigue)	54.45 \pm 19.93	60.35 \pm 14.78	.100
General mental health (psychological distress and psychological well-being)	61.08 \pm 19.97	65.88 \pm 16.13	.300
Social functioning	58.96 \pm 24.46	80.87 \pm 20.79	<.001
Bodily pain	57.57 \pm 28.98	75.25 \pm 19.97	<.001
General health perceptions	53.14 \pm 20.50	67.09 \pm 19.04	<.001
Total scale score	57.35 \pm 18.39	71.70 \pm 13.58	<.001

CP = cerebral palsy; QOL = quality of life; SD = standard deviation.

respectively. Other characteristics of the participants are presented in Tables 1 and 2.

As shown in Table 1, there was a significant difference between mothers in the two groups regarding the time they spent in caring for their children ($p = .001$); mothers of children with CP devoted more time to care for their children. Nonetheless, no other reportable difference was found in terms of other specifications.

Based on the data shown in Table 2, in our study, 38 children with CP (63.3%) were also suffering from some degree of intellectual disability (mental retardation). The health and skill-related problems of children with CP were generally higher compared with healthy children ($p < .001$). With regard to behavioural problems, nail biting was significantly higher in healthy children ($p = .04$), whereas mothers reported higher levels of aggression in children with CP than with healthy children ($p = .003$).

Comparing the scores of QOL, it is clear that the QOL of mothers of children with CP is significantly ($p < .001$) lower than that of mothers of healthy children (mean score, 57.35 ± 18.39 vs. 71.7 ± 13.58). Table 3 shows the mean scores of QOL for each dimension for both groups.

As shown in Table 3, the differences between the two groups are significant in six of eight dimensions defined in the QOL questionnaire. In two other dimensions, namely, vitality and general mental health, although the differences are not significant, scores of mothers of healthy children are numerically higher than mothers of children with CP. Table 4 shows the results of data analysis using simple and multiple logistic regression models.

As is presented in Table 4, upon assessing the marginal association between each characteristic variable in the study and the QOL level, it was found that having a child with CP and intellectual disability simultaneously (compared with healthy children; OR = 5.3, $p \leq .001$), general health problems (OR = 2.16, $p = .01$), and problems in children (OR = 1.79, $p = .01$) significantly increased the chances of worse QOL for mothers. These findings were also true about mothers who had devoted more time to take care of their children (OR = 2.06, $p = .01$). By contrast, full-time employed mothers were more likely to have better QOL (OR = 0.27, $p = .046$).

In a multiple regression model, having a child with CP and intellectual disability simultaneously was the only dimension that kept its significant relationship with worsening the QOL of mothers.

Omitting less effective variables in the model and forming a reduced model, it was observed that only two factors had a significant relationship with mothers' QOL. These two factors were (a) having a child with CP and intellectual disability and (b) having full-time jobs; these two factors were related to QOL (adjusted OR = 5.4, $p < .001$ and adjusted OR = 0.2, $p = .02$, respectively).

Discussion

QOL is defined by the individual himself/herself, and is related to many factors, such as lifestyle, experiences, hopes, dreams, and aspirations (Walker et al., 2008). Parents of sick or disabled children experience more physical and mental health problems, and it can affect their QOL (Naitoh, Kawauchi, Soh, Kamoi, & Miki, 2012; Prudente et al., 2010).

The results of our study showed that the QOL of a mother of children with CP is significantly lower than that of mothers with healthy children. The results of this research are consistent with those reported by Ones et al. (2005), Romeo et al. (2010), and Kaya et al. (2010). In fact, because of the special care needs of children with disabilities, their diurnal care is different from that for normal children. Some, or all disabled children, are dependent on others for their activities of daily living (Sen & Yurtsever, 2007). Many secondary disorders may also be associated with these conditions (Kalay et al., 2010), and these children need intensive and long-term care (Davis et al., 2010; Kaya et al., 2010; Naitoh et al., 2012; Walker et al., 2008). QOL is related to diseases and conditions that endanger health. These diseases and conditions can reduce the QOL scores of mothers who have children with CP in terms of bodily pain, general health, and limitations of physical role. Therefore, it is likely that worsening QOL of mothers of children with CP is significantly related to physical and bodily health problems that

Table 4 Crude and Adjusted Odds Ratio for Deterioration of QOL (SF-36 score \leq 64.48%) by Each Factor of Interest.

Variables		Simple models		Multiple model		Reduced model	
		Crude OR (95% CI)	<i>p</i>	Adjusted OR (95% CI)	<i>p</i>	Adjusted OR (95% CI)	<i>p</i>
Group	Healthy	1	—	—	—	—	—
	CP without ID ^a	1.20 (0.52–2.78)	.70	3.79 (0.52–27.77)	.10	1.58 (0.64–3.89)	.30
	CP with ID	5.30 (2.20–12.75)	<.001	22.40 (1.72–291.06)	.02	5.40 (2.21–13.19)	<.001
Mother's age group (y)	\leq 30	1	—	—	—	—	—
	>30	1.30 (0.80–2.10)	.30	—	—	—	—
Lives with husband	Yes	1	—	—	—	—	—
	No	1.36 (0.96–1.92)	.08	1.90 (0.36–10.15)	.40	—	—
Employment	Housewife	1	—	—	—	—	—
	Part-time	2.50 (0.78–7.97)	.10	1.81 (0.43–7.52)	.40	1.59 (0.47–5.41)	.40
	Full-time	0.27 (0.08–1.00)	.046	0.22 (0.05–1.06)	.06	0.20 (0.50–0.77)	.02
Level of education	Primary	1	—	—	—	—	—
	Secondary	1.19 (0.70–2.00)	.50	—	—	—	—
	University	1.10 (0.60–2.01)	.70	—	—	—	—
Number of children	1	1	—	—	—	—	—
	2	1.46 (0.87–2.45)	.10	1.21 (0.42–3.53)	.70	—	—
	\geq 3	1.00 (0.40–2.52)	<.99	0.57 (0.15–2.19)	.40	—	—
Social class according to income	Low	1	—	—	—	—	—
	Middle	0.80 (0.37–1.71)	.60	—	—	—	—
	High	0.82 (0.34–1.97)	.60	—	—	—	—
Time devoted to diurnal child care	<4 h	1	—	—	—	—	—
	4–8 h	1.12 (0.58–2.15)	.70	1.02 (0.33–3.16)	.90	—	—
	\geq 8 h	2.06 (1.12–3.61)	.01	1.33 (0.42–4.22)	.60	—	—
Mother has regular exercise	No	1	—	—	—	—	—
	Yes	1.18 (0.53–2.64)	.70	—	—	—	—
Child's age group (y)	\leq 7	1	—	—	—	—	—
	>4	1.17 (0.92–1.59)	.20	0.73 (0.31–1.71)	.40	—	—
Sex	Male	1	—	—	—	—	—
	Female	1.17 (0.92–1.47)	.20	0.65 (0.27–1.53)	.30	—	—
Behavioural problem(s)	No	1	—	—	—	—	—
	Yes	1.60 (0.97–2.64)	.60	1.20 (0.50–2.87)	.60	—	—
General health problem(s)	No	1	—	—	—	—	—
	Yes	2.16 (1.25–3.72)	.01	0.79 (0.22–2.90)	.70	—	—
Skills problem(s)	No	1	—	—	—	—	—
	Yes	1.79 (1.12–2.84)	.01	1.01 (0.29–3.51)	.90	—	—
GMFCS		0.93 (0.38–2.25)	.90	—	—	—	—
MACS		0.78 (0.30–1.98)	.60	—	—	—	—

CI = confidence interval; CP = cerebral palsy; GMFCS = Gross Motor Function Classification System; ID = intellectual disability; MACS = Manual Ability Classification System; OR = odds ratio; QOL = quality of life.

are because of the obligation to provide constant special care for these children. However, another important issue that should never be missed is the psychological–emotional pressures on mothers that are caused because of these conditions (Davis et al., 2010). Mothers of children with disabilities blame themselves more, and this issue influences their occupational, social, and emotional life (Sen & Yurtsever, 2007). A study has shown that caregivers of children with CP show a higher level of physical and psychological symptoms (Kalay et al., 2010). Another factor that can be a source of worsening QOL in mothers having children with CP is that having a disabled child leads to social isolation of the family (Gorter et al., 2009; Laurvick et al., 2006). These mothers reduce their participation in social activities, and they face a lack of fulfilment of their social needs (Ones et al.; Sen & Yurtsever, 2007).

In our study, the scores of mothers who had CP children in the four dimensions of bodily pain, general health perceptions, physical role limitations, and mental role limitations were significantly lower than mothers of healthy children. In two other dimensions, namely, vitality and general mental health, no significant difference was found; nonetheless, the scores of mothers of children with CP were still lower than mothers of healthy children accordingly.

The results of our study are consistent with those of the study by Kuhlthau, Kahn, Hill, Gnanasekaran, and Ettner (2010) who reported no difference in the mental health of mothers having children with disabilities and mothers of children without disabilities. Kaya et al. (2010) have also reported that, unlike the other dimensions of QOL, there was no significant reduction in vitality and social functioning of mothers having children with CP.

In the study by Walker et al. (2008) it has been reported that in addition to care needs, maladaptive behavioural disorders in children have a negative effect on the physical and mental health of caregivers. However, no significant relationship was found between child behavioural problems and mothers' QOL in the present study.

As an important finding, the results of our study showed that intellectual disability is significantly associated with mothers' reduced QOL. Taking the results of simple and multiple analyses, it was found that there is no significant relationship between having children with CP alone (without intellectual disability or mental retardation), compared with having healthy children, and the odds of reduced QOL. Sen and Yurtsever (2007) reported that compared with caregivers of children with CP, caregivers of mentally retarded children experience more problems in communication and need constant supervision and attention. It seems that intellectual disability affects the social life of mothers. In addition, mothers who have children with CP experience more intensive caring activities and have less leisure time, and perhaps it might be said that they are taking care of a child with two problems at the same time: CP and mental retardation.

Another important finding was that having a full-time job has association with the QOL of all mothers, including mothers having a CP child. By having a permanent job, the social life of mothers is largely preserved and, perhaps, it is a limiting factor for childcare. Caring for a child with CP can affect a family's financial situation, as the presence of a child with CP can result in a large financial burden on families (Davis et al., 2010). In our study, income was investigated as an underlying variable along with other factors, and it did not have any significant relationship with mothers' QOL. Therefore, the relationship between job and QOL is suggested to be investigated while comparing the effects of job on social and psychological activities of Iranian mothers.

In this study, there was no significant relationship between gross motor ability and a child's fine movement—which are considered as reliable indicators of the severity of disability—and the QOL of mothers. The results of this study were consistent with those of Kaya et al. (2010), Ones et al. (2005), and Prudente et al. (2010). In addition, Rapin (2007) reported that according to some parents, the severity of disabilities is more related to some aspects of children's lives, and it may not affect parents' QOL.

Study limitations

The present study confirms the influence of two important factors on the QOL of mothers of children with CP. However, there are limitations of this study that deserve consideration, including the inability to randomly select mothers, and the inability to control all the factors affecting QOL, such as the role of fathers and mothers, their coping skills, and social support.

Conclusion

Based on the results of this study, after comparing the effects of some important and known individual and social factors, it was found that there is a relationship between

reduced QOL of Iranian mothers and having a CP child with intellectual disability; it might be one of the most important factors causing reduced QOL among mothers with a CP child. The only factor that was significantly associated with increased odds of having a better QOL in all mothers was having a full-time job. Thus, unemployed mothers who have a CP child with concurrent intellectual disability need more physical and psychological support to improve their QOL.

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