

Research Paper: A Comparison of Time Use Patterns and Self-Efficacy Between Mothers of Children With Cerebral Palsy and Mothers of Typically Developing Children



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ABSTRACT

Objectives: Comparing time use patterns and self-efficacy in two groups of mothers, including mothers of children with Cerebral Palsy (CP) and mothers of children with typical development, is the main objective of this study.

Methods: This study was carried out in 2017 in Arak, Iran, on 200 mothers. Multiple sources of the evaluation, including Mothers' Time Use Questionnaire and Sherer General Self-efficacy Questionnaire, were used. SPSS v. 22 software was used to analyze the data.

Results: The Mean±SD age of children was 4.64±1.46 years in the group of children with CP and 4.64±1.47 in the group of children with typical development. Significant differences were found between groups in the amount of time spent in various occupations, including self-care, childcare and household, leisure, rest/sleep, and work. Mothers of children with CP significantly spent a bigger proportion of time on "rest/sleep" and "childcare and household" areas (P<0.001). However, mothers of children with typical development spent significantly more time in "Self-care" (P=0.01), "Leisure" (P<0.001), and "Work" (P<0.001) areas. Also, significant differences were found between groups in the level of satisfaction.

Discussion: Lower total score of the time use questionnaire in the group of mothers of children with CP might be because of the nature of limitations and the negative burden of this type of disease in terms of socio-cultural and fewer health system services.

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Highlights

- The occupational areas, where the mothers need to be more active to do them, could be limited to other areas like sleep/rest. This leads to an occupational imbalance in their roles and routines.
- Level of satisfaction of time use and general self-efficacy in mothers of children with CP decreased compared to mothers of typically developing children.

Plain Language Summary

The presence of a child with CP in the family imposes two pressures upon the family. First, the high cost of treatment that the family has to spend more time on employment and income-generating. Second, spending too much time to care for a child with CP may have a negative impact on family employment and income-generating. The mother, as the main caregiver, spends her time and energy for caring and doing her child's Activity of Daily Living (ADL) and may ignore her occupational balance in ADL.

1. Introduction

Cerebral Palsy (CP) is the most common cause of permanent disorders in the development of movement and posture. These permanent disorders are often accompanied by associated disorders, including the disturbances of sensation and perception, cognition, communication, and or seizure [1]. The prevalence of CP in most developed countries is 2 to 3 per 1000 live births [2]. It was mentioned that children with bilateral spastic CP had the most limitations in their motor function [3]. Children with CP have lower levels of physical activity than other children [4]. Having a child with disabilities causes physical and psychological stress on the family member. Parents of children with CP usually report high levels of stress [5]. Children with CP often have delayed motor development, sensory deficits, and cognitive delays, which can bring many challenges for their caregivers [6].

Evidence suggests that mothers are mostly the main caregiver of children [7-9]. Some interventions impact parents' physical and emotional health [10, 11]. Two studies found that some mothers feel worthless and blame themselves for their children's problems; thus, they experience higher levels of stress, which can lead to a decrease in their mental health and quality of life [12, 13]. Approximately, 85% of the main caregivers of children with CP are mothers [14]. The time required for the care of children with CP can impact mothers' occupation, including leisure activities and social activities. Dalvand, Rassafiani, and Hosseini found that almost 30% of the mothers reported reduced allocated time in vocational activities because of childcare responsibilities [10]. Not

having a balanced time use pattern can lead to mothers' depression, feelings of incompetence in parenting, poor emotional parent-child relationships, and higher levels of stress in the family [15].

Occupational Therapy Practice Framework introduced 8 occupation areas, in which a person may participate during a day [16]. These domains are playing, ADL, instrumental activities of daily living, education, sleep/rest, leisure, work, and social participation. Occupational therapy models emphasize the balance among different areas of life (self-care, sleep and rest, productivity, and leisure) [17]. Having balanced time use is defined as a proper and useful organization of everyday activities of an individual [18].

In some cases, to promote health and quality of life, changing time use patterns is needed [19]. Self-efficacy is one of the health-related variables that may be impaired in this group of mothers. Self-efficacy is defined as a person's judgment of his or her ability in performing activities to achieve specific goals [20]. High self-efficacy in mothers enhances their sufficiency and flexibility in different situations; while, mothers who have lower levels of self-efficacy often experience more challenges in their life [21]. Mothers of children with disabilities are more likely to have mental health problems than other mothers [13]. Because mothers of children with CP have less time to consider their own affairs such as leisure time and work, they are likely to have low efficacy in their stressful life experiences [22].

However, in assessing mothers with children with attention deficit hyperactivity disorder, there were no significant differences between mothers of these children

and mothers of children with typical development [23]. Time use is heavily influenced by culture [24]. For example, Gevir et al. did not find a significant difference in the time allocation of different occupational areas [25]. Whereas, in other studies, time use differences have been reported in mothers of children with autism, children with CP, and mothers of typically developing children [11, 14]. Here, we increased the number of participants to achieve a clear picture compared with the previous studies. The main aim of this study was to compare time use patterns and self-efficacy in mothers of children with CP and mothers of children with typical development.

2. Methods

To compare time use patterns and self-efficacy in mothers of children with CP and mothers of children with typical development, a cross-sectional survey with matched controls was designed. It seems that there is limited evidence about the time use patterns of mothers of typically developing children in Iran compared with mothers of children with CP. As an instance, Rassafiani et al. [14] found that mothers of typically developing children spent a big proportion of time on household activities and a small proportion of time on paid work. But, this evidence is limited; so, we decided to have a group of mothers of typically developing children for comparison.

Participants

The convenient sampling method was used to include 200 mothers (100 with typically developing children and 100 with children with CP) in this cross-sectional study. The inclusion criteria included 1) mothers able to read and write, 2) mothers aged 20 to 50 years, 3) children aged between 2 and 12 years, and 4) mothers with no severe depression. Mothers of children with treatment-resistant seizures and mothers, who lived alone, were excluded from the study. Informed written consent was received from the caregivers. The study was approved by the Ethics Committee for Human Experiments of the Arak University of Medical Sciences (ID: IR.ARAKMU.REC.1396.78).

Instruments

Mother's Time Use Questionnaire

An authored designed demographic questionnaire was used to collect the participants' characteristics. Time use patterns of mothers and their satisfaction with time use management was achieved by completing Mother's Time Use Questionnaire [25]. The questionnaire includes

activities in 6 categories, including self-care, child-related activities & housework, sleep/rest, leisure activities, work, and social participation [25]. Time log tables and general questions about time management of the Mothers Time Use Questionnaire are reported in this study. The time log section asked mothers to report typical day activities from morning to midnight. The test-retest reliability coefficient of this questionnaire was between 0.78 and 0.89 [14, 25].

Sherer general self-efficacy inventory

The Sherer General Self-efficacy Questionnaire was used to compare self-efficacy in two groups. This questionnaire consists of 17 items and each item uses a Likert scale from 1 to 5 points. It includes items like "when I make plans, I am certain I can make them work" or "If I cannot do a job the first time, I keep trying until I can". The maximum score is 87 and the minimum one is 17. The reliability of this scale in the study of Arabian et al. was 0.91 [20, 26, 27].

Depression, anxiety, and stress scale

This Depression, Anxiety, and Stress Scale (DASS-21) consists of 42 phrases about symptoms of negative emotions [28]. Depression, Anxiety, and Stress constitute 3 subscales of this scale. The short form (DASS-21) with each subscale consisting of 7 questions was used. The participant was asked to rate the intensity of the symptom in each statement based on what she experienced during the last week from 0 (without the experience of the intended symptom) to 3 (very high experience of the symptom). In the end, the obtained score was multiplied by 2, in which scores from 0 to 9 were normal, 10 to 13 indicated mild depression, 14 to 20 indicated moderate depression, 21 to 27 indicated severe depression, and scores more than 28 indicated very severe depression. In this research, a depression subscale was used. This instrument has a reliability coefficient of 0.84 for depression scale, 0.89 for anxiety, and 0.9 for stress; its Cronbach's alpha coefficient for depression is 0.93 [28-30].

Data collection

Mothers of children with CP were selected from the clients of occupational therapy clinics and mothers of children with typical development were selected from kindergarten or primary schools. Mothers who were eligible to be included were requested to sign an informed consent and, then, they were asked to consider a typical day from 5 am to 12 pm and complete the questionnaire. After they completed the Time Use Questionnaire, they

were also asked to complete the Sherer General Self-efficacy questionnaire. An occupational therapist (Third author) helped the mothers to complete the questionnaires.

Data analysis

SPSS V. 22 software was used to analyze the data. Chi-square and Fisher's exact tests were used to compare the gender of the children in the two groups and the economic level of the families, respectively. Independent t-test was used for the age of mothers and children and the number of children in the family. Independent t-test and Mann-Whitney test were used to compare the time use categories. In all cases, the significance level was considered as $P=0.05$.

3. Results

The Mean \pm SD age of the group of children with CP and the group of children with typical development was 4.64 ± 1.46 and 4.64 ± 1.47 years, respectively. In the group of typically developing children, 27 (27%) were male and 73 (73%) were female, but in the group of children with CP, 35 (35%) were male and 65 (65%) were female; 85% of children with CP were mostly distributed in levels II, III, and IV of Gross Motor Function Classification System (GMFCS). Table 1 presents the demographic characteristics of the participants.

In Table 2, the time allocation, self-efficacy, and satisfaction rate of time management in the mothers of the two

groups have been addressed. In the occupational areas between the two groups, there was a significant difference in the time spent in each of the 5 areas, except for social participation. There was no significant difference in self-efficacy, but this difference was significant in the level of satisfaction between the two groups (Table 3).

4. Discussion

The occupational balance will be created when the individual devotes a reasonable amount of time to each aspect of her occupations. Mothers who spend a significant amount of their daily time in taking care of a child with a disability are at risk of disruption of this balance [31]. In this study, the results showed that more responsibilities in caring for a child with CP along with ordinary other roles can cause time pressure for the mother. When the mothers are forced to take the role of caregiver in addition to their other responsibilities, they would inevitably have less time allocating to occupations like taking care of themselves, their work, and leisure time as McCann, Bull, and Winzenberg indicated in their systematic review [32].

The participants in the group of children with CP compared with mothers who had typically developing children spent more time on sleep/rest. So, the more caregiving is needed and the higher the degree of disability of the child is, the more restrictions, pressure, fatigue, and exhaustion are imposed upon them; thus, increasing the hours of sleep and rest can be expected [33]. When

Table 1. Distribution of demographic information in mothers of children with CP and mothers of children with typical development

	Item	Mothers of Children With CP	Mothers of Children With Typical Development	P
Education level, n (%)	Primary and middle school	38	8	-
	High school	41	38	-
	University degree	21	54	-
Job status, n (%)	Full-time	0	9	-
	Part-time	12	18	-
	No job	88	73	-
Economic level of family	High	2	6	
	Average	90	84	0.31*
	Low	8	10	
	Age (y), Mean \pm SD	31.05 \pm 6.77	31.83 \pm 6.85	0.41**

Notes: * Fisher's exact test, **independent t-test

Table 2. Distribution of demographic information in children with CP and children with typical development

	Item	Children With CP	Children With Typical Development	P
Sex, n (%)	Female	65	73	0.22***
	Mail	35	27	
GMFCS*, n (%)	I	4	--	-
	II	33	--	-
	III	23	--	-
	IV	29	--	-
	V	10	--	-
	Missing	1	--	-
MACS**, n (%)	I	17	--	-
	II	38	--	-
	III	22	--	-
	IV	19	--	-
	V	3	--	-
	Missing	1	--	-
Age (y), Mean±SD		4.64±1.46	4.64±1.47	0.96****

Notes: *Gross Motor Function Classification System; **Manual Ability Classification System

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*** Chi-Square test, **** independent t-test

mothers spend excessive time on one occupation like sleeping causes, other areas are neglected. In other studies such as Crowe et al. mothers of children with dis-

abilities spent a big proportion of time on taking care of children. Then, they could not consider reasonable time

Table 3. Comparing allocated time (in hours) spent on six various activities, satisfaction and self-efficacy scores in both groups

Variable	Mean±SD		P*
	Mothers of Children With CP	Typically Developing Children Mothers	
Self-care	1.47±1.25	1.91±1.02	0.01
Rest /sleep	5.36±1.25	4.67±1.23	<0.001
Childcare & household	9.32±2.29	4.52±3.99	<0.001
Leisure	1.42±1.31	3.43±2.4	<0.001
Work	0.78±2.42	2.92±4.5	<0.001
Social participation	0.61±0.76	0.71±0.98	0.67
Self-efficacy	45.52±5.76	46.95±7.21	0.1
Satisfaction	2.89±0.51	3.16±0.52	<0.001

*Mann-Whitney

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for their own leisure time [34-36]; similar results were achieved by Rassafiani et al. [14].

According to the findings of the study, the areas of leisure, work, and self-care also differed significantly between mothers in the two groups. This finding was consistent with some of the previous studies and contradictory with others [14, 25, 34]. One of the reasons for the difference between the findings of this study and the research conducted by Rassafiani et al. can be related to the place of research. A study by Rassafiani et al. was conducted in the capital city with more capabilities and facilities for mothers, while the current study was conducted in one of the provincial centers.

These findings can emphasize the importance of the context of people's lives as an important factor in spending time. Failure to pay more attention to refreshing occupational areas such as leisure or areas, where mothers can pay more attention to their interests and needs (work and self-care), has led to a significant difference in terms of satisfaction with time management between the two groups; it contradicted the results of Gevir et al. [25], who used same tools to measure satisfaction. In the present study, in all 3 areas (leisure, self-care, and work) mothers of children with CP spend less time, which could eventually be one of the reasons for their dissatisfaction with spending time on various occupations throughout the day. In the research by Gevir et al., there were no significant differences between the two groups in this area. Satisfaction is an internal matter and can, therefore, play an important role in the mental and physical health of individuals.

The second part of the findings of the study was about self-efficacy, in which no significant difference was found between the mothers in the two groups. Some previous studies believe that caring for children with disabilities, such as CP, can cause psychological problems in addition to placing more time stress on mothers [34, 37]. In this study, mothers of typically developing children had better self-efficacy, but this difference was not so obvious. Children's broad age spectrum may be one of the reasons for this indifference. Mothers, over time, are very likely to learn how to cope with problems.

Children in this study were 2 to 12 years old. Another reason to be noted is that the mothers of typically developing children also did not score a high self-efficacy score. The maximum score in Sherer's general self-efficacy questionnaire is 87; the average score of mothers of children without a disability was less than half of the maximum score. It seems that all mothers participating

in this study had a low level of self-efficacy, which requires more examination of mothers, regardless of having a child with a disability. The lack of self-efficacy difference between the two groups of mothers could also be considered as a reason for non-difference in the area of social participation. Social participation is defined as the desired engagement in community and family activities [16]. Since the probability of confronting new conditions in the community is much more than family circumstances and given the low level of self-efficacy, mothers prefer to participate less in social affairs.

The comparison of the two groups was limited to the working days of the week; so, possibly collecting time-use data on weekends and holidays would look different. Other limitations did not consider the level of intelligence and cognition of children in the two groups of children. Having a low cognitive level can provide more burden care for mothers. The results of this study cannot be generalized to mothers of children with other disabilities. Another limitation of the study was the lack of access to appropriate distribution in some types of population. A suggestion that can be considered for future studies is the investigation of assistance and participation of other family members and their impact on patterns of use of mothers. The use of tools that specifically address maternal self-efficacy can provide more information about the mothers' maternal role.

The presence of a child with CP in the family imposes two pressures upon the family. First, the high cost of treatment that the family has to spend more time on employment and income-generating. Second, spending too much time to care for a child with CP may have a negative impact on family employment and income-generating. The mother, as the main caregiver, spends her time and energy for caring and doing her child's ADL and may ignore her occupational balance in ADL.

This study was a prerequisite for paying attention to improve the quality of services for caregivers and increase social support for caregivers; it may ultimately lead to the development and design of efficient and effective training programs for caregivers to improve their time use patterns and their efficiency. Also, the results of the research can be used to train caregivers to balance their roles and routines.

5. Conclusion

The results of the study showed that the occupational areas, where the mothers need to be more active to do them, could be limited to other areas like sleep/rest. It

reduces the level of satisfaction of time use and general self-efficacy in mothers of children with CP compared to the mothers of typically developing children.

Ethical Considerations

Compliance with ethical guidelines

All ethical principles were considered in this article. The participants were informed about the purpose of the research and its implementation stages; they were also assured about the confidentiality of their information; Moreover, They were allowed to leave the study whenever they wish, and if desired, the results of the research would be available to them.

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Authors' contributions

All authors contributed in preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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