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The effectiveness of cognitive rehabilitation on the quality of life and cognitive improvement of mothers with children with cerebral palsy and its effectiveness on the improvement process of their children's treatment

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Abstract

Introduction: Cerebral palsy is a non-progressive abnormality that occurs in the developing brain, which causes motor and postural neurological deficits in growing children. The present study is to investigate the effectiveness of cognitive rehabilitation on the quality of life and cognitive improvement of mothers with children with cerebral palsy, as well as its effectiveness on the improvement process of their children's treatment.

Research method: This research was an experimental type with a pre-test-post-test design with a control group. The statistical population of the current study includes mothers with children with cerebral palsy in Shiraz and the statistical sample includes.There were 30 mothers who were randomly divided into two groups of 15 intervention and control. A short mental state test was conducted to measure the mental state of mothers as a condition for entering the research. Then two World Health Organization quality of life tests and "Fever Test" were performed as pre-test and post-test to measure between these two groups before and after the intervention. The therapeutic intervention of mothers was carried out through cognitive rehabilitation protocols by Captain Log cognitive rehabilitation software in 20 one-hour sessions. Also, their children with cerebral palsy were evaluated by the therapist by performing the children's disability evaluation list test as a pre-test and post-test and were treated by him. The raw data of the questionnaires were collected in two descriptive levels Inferences were analyzed by SPSS software.

Findings: The results showed that cognitive rehabilitation has a positive and significant effect on the quality of life and cognitive improvement of mothers with children with cerebral palsy. Also, the cognitive rehabilitation of mothers with children with cerebral palsy was able to show its effect on the recovery process of children who were treated with occupational therapy, which had a positive and significant effect on the process of improving the treatment of children with cerebral palsy.

Conclusion: It is suggested that in the clinical and theoretical education of nursing students and personnel, the category of spiritual health is one of the important dimensions of mental health to empower more patients, especially chronic patients should be used more.

Keywords: cognitive rehabilitation, cerebral palsy, cognitive modification, treatment improvement, quality of life

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Introduction:

Cerebral palsy is a non-progressive abnormality that occurs in the developing brain, which causes motor and postural neurological deficits in growing children. The incidence of cerebral palsy in Western societies is about one and a half to five and a half per thousand live births. The prevalence of cerebral palsy in Iran is two per thousand live births. Children with cerebral palsy usually have a hard time doing basic daily activities such as eating, dressing, going to the bathroom, going to the bathroom, and moving independently, and for growth and They need help to get an independent life.(1)

General health is affected in all four areas of physical symptoms of anxiety, sleep disorder, social dysfunction and depression in parents with children with cerebral palsy. All aspects of these parents' lives, physical, social, economic, family, sleep, freedom and independence are affected. The parents of these children say that taking care of their children takes too much time considering the daily needs of children, especially those with severe injuries. Because they devote most of their time to taking care of their children, their duties have changed and some of them have become less, which ultimately decreases their satisfaction with life. so that in addition to the problem in taking care of the child, they also have problems in doing their personal and daily activities and do not have enough time to engage in leisure activities and cannot engage in other activities and are deprived of their social life. They are significantly larger than mothers of healthy children.(2) These mothers play a key role in providing care and treatment for children with cerebral palsy. They devote more hours to physical care of their children and spend less time on active hobbies and activities than mothers of healthy children. They allocate social participation, sometimes they cannot consider the necessary time for the things they like, such as having fun, or attending activities outside the home, or participating in sports classes, and they are less satisfied with the use of time, therefore, different aspects of the quality of life. These mothers are affected (3).

Quality of life is one of the words that does not have a clear and uniform definition; although people instinctively understand its meaning easily, this concept is not the same for all of them. Since, like other variables, its measurement will require a comprehensive and specific definition of it, it has always been tried to provide a suitable definition for it. Many studies do not provide a definition of quality of life. This is either because they think its definition is too simple or because of the complexity of this concept, they avoid defining it, while due to the lack of consensus on the definition of this term, it is expected that in the researches related to this concept and dimensions in it is intended for it transparently be specified.(4). Today, issues related to the quality of life are widely discussed in various scientific fields It is placed for this reason, despite the many definitions of this concept, none of them Existing definitions have not been universally accepted. (5).

On the other hand, quality of life is related to disease and conditions that endanger health, and parents of children with disabilities are exposed to many stressful factors for a long time. They create the results obtained from the study of the quality of life of these parents may help rehabilitation specialists to better understand the problems of disabled children and their parents. On the other hand, these children need more care and their parents experience the most stress to care for them. Yuen and Li Tsang (6) Caring for a child with cerebral palsy requires intense and long-term care activities, and

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this chronic condition causes the parents of these children to have health problems to experience more physical and mental (7).

Assessing the quality of life is very important to improve the doctor-patient relationship in evaluating the effectiveness and relative merit of different treatments, evaluating health services, researching and making treatment policies, and also the level of damage to the quality of life of families who have children with chronic and severe conditions may be determined by Complex environmental factors such as socio-economic status, social support, child's characteristics, parents' characteristics, child's behavioral problems, parents' coping strategies, and parents' stress level, which is related to the severity of the child's disability, are affected. (8).

On the other hand, anxiety is a part of every human's life and exists in all people in a moderate degree and to this extent it is considered as a compromised response, but anxiety may become chronic and continuous, in which case it cannot be considered as a compromised response. rather, it should be considered as a source of failure, irreconcilability and widespread desperation that deprives a person of a major part of his possibilities and creates a wide range of cognitive and physical disorders to unjustified fears and panics when that there are chronic and long-term diseases in the child, parents are exposed to more conflicts with emotional and behavioral problems, (9).

In this regard, the cognitive change and development of thinking processes, including remembering problem solving and decision-making, is from childhood to adolescence and adulthood. Cognitive rehabilitation is a therapeutic approach that is designed to improve cognitive function after central nervous system weakness, which One of the methods of treatment and retraining or reducing the problems caused by defects in attention, visual processing, language, memory, reasoning, problem solving, and executive function is included. Neurological systems are designed to improve the quality of life or the ability to improve performance in life at home and in the community. Cognitive rehabilitation may be performed by a psychologist or a physical therapist, occupational therapist, or speech therapist. (10).

In cognitive rehabilitation or cognitive rehabilitation, there are two major approaches, the compensatory or compromise approach and the cognitive therapy approach. It should be noted that in practice, the separation of these two approaches never happens and the overlapping of the two is inevitable in treatment. The first approach is the compensatory approach or adaptation. In this approach, the goal is to remove individual limitations by making changes in the environment, habits and ways of doing things, as well as implementation solutions. These three therapeutic goals are reminiscent of the concept of cognitive ergonomics, which is based on the principles of information processing and reduces the involvement of working memory. The second approach is the cognitive therapy approach. This approach is an attempt to restore lost cognitive capacities through exercises and providing targeted stimuli. Its purpose is to improve the individual's performance in performing activities. (11).

According to the mentioned materials and considering the high prevalence of cerebral palsy and mental retardation and severe disability caused by these disabilities, as well as the long-term effects of the child's disability on the family life of these children and especially their mothers in terms of the quality of life of this group of mothers. Until now, no research has been conducted in Iran on the

effectiveness of cognitive rehabilitation on the quality of life and cognitive improvement, and such research is necessary to determine the extent of injuries and possible damaged areas, so that according to the information obtained, it can be make appropriate planning for this group of people; Therefore, this study was carried out in order to improve the quality of life and cognitive improvement of mothers with children with cerebral palsy and its effect on the improvement process of their children's treatment. He left a lot in the process of improving the treatment of their children. Therefore, the main question of the current research is whether cognitive rehabilitation has an effect on the quality of life and cognitive improvement of mothers with children Cerebral palsy and the process of improving the treatment of their children is effective?

Research method:

According to the anticipated goals, the present research is a semi-experimental research and its design is pre-test-post-test with two intervention groups using the cognitive rehabilitation method and a control group. In this research, the possible difference between mothers with children with cerebral palsy in the two intervention groups using the cognitive rehabilitation method and the control group and finally the effectiveness of this intervention on the treatment process of their children was investigated. The statistical population of this research includes mothers with children with cerebral palsy in Shiraz. In this research, 30 mothers are selected by available sampling method and then randomly divided into two groups as follows. 15 people for the implementation of cognitive rehabilitation as the intervention group and 15 people for the control group, both groups were homogenized in terms of age, social class, economic status and education. The method of data collection was done through a questionnaire, in this way, 30 mothers with children with cerebral palsy were selected from public and private occupational therapy centers in Shiraz, and three World Health Organization quality of life tests, a fever test, and a short mental state test. And it is done as a pre-test to measure between these two groups before the intervention. The short mental state test is used to measure the mental state of mothers, and getting a score of 27 in this test is a condition for entering the research. The Ken Tab test is the most reliable computer test to evaluate cognitive functions, and also the World Health Organization quality of life test is used to check the quality of life of these mothers. After completing these three tests, the mothers are randomly divided into two groups of 15 people, intervention and control. At the same time as the tests that are taken from the mothers, their children with cerebral palsy are also evaluated by the occupational therapist by performing the children's disability evaluation list test as a pre-test and post-test and are treated by him. The mothers of the intervention group are also treated with cognitive rehabilitation protocols. It is placed by the Captain Log cognitive rehabilitation software and the level of improvement of their performance and cognitive improvement is measured by the Cantab test as a post-test. After the therapeutic intervention and cognitive modification, the World Health Organization quality of life test will be taken from the mothers as a post-test, and compared to the pre-test and post-test, the children's disability evaluation list will be measured until there is a significant difference between the mothers of the intervention group and the control group. And after the test, their quality of life should be evaluated. Finally, by determining the quality of life of mothers in two intervention and control groups before and after the tests, the recovery process of their children who have cerebral

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palsy will be measured. The raw data of the questionnaires were analyzed by SPSS software after being collected at two descriptive and inferential levels they got.

Cognitive correction: In order to evaluate the cognitive components, computerized cognitive evaluation (Ken) is used, which is mainly in research and clinical fields. Since, according to previous studies, mothers with children with cerebral palsy experience a lot of anxiety and stress, and based on this suffer from many cognitive disorders, in order to identify these disorders, Cantab software, which is a computerized neuropsychological assessment software, is used as a pre-test and post-test. This software is under the supervision of the University of Cambridge, England, and its manufacturer is Cambridge Cognition.

Cantab software is the most sensitive and reliable cognitive research software available in the world and currently there are many scientific, research, rehabilitation centers for cognitive sciences and neurosciences in Iran, including the psychology laboratory of the Faculty of Educational Sciences and Psychology of Shahid Beheshti University[1] in Tehran. Faculty of Modern Sciences, Shiraz University of Medical Sciences, private Dana Brain Health Clinic under the supervision of Dr. Nami in Shiraz, etc. This software is used for evaluation and sometimes cognitive rehabilitation.

This collection has 25 tests in 5 main areas, including visual memory (4), executive functions test (5), attention (3), semantic verbal memory test (2), decision-making and response control test, 4) social cognition test (1) test) is done on a computer or tablet.

Screening tests: Screening for visual, motor and perceptual problems. This is also used to familiarize the subject with the implementation

Ken Tab tests are used.

Assessment of learning and perception

Visual memory tests

Assessment of immediate and delayed perceptual adaptation

Evaluation of event memory and learning

Evaluation of visual recognition

Evaluation of spatial recognition

Executive function tests of working memory and planning

Assessment of cognitive flexibility

Evaluation of learning rules and changing attention

Evaluation of spatial planning

Evaluation of spatial planning and motor control

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Assessment of active memory capacity

Evaluation of active memory and strategic planning

Attention assessment tests

Evaluation of reaction speed in simple 2-choice paradigms

Assessment of ability to adapt to visual stimuli and assessment of reaction time

Assessment of reaction speed in 5-choice paradigms

Assessment of sustained visual attention

Evaluation of reaction speed to simple and individual stimuli

Semantic verbal memory evaluation tests

Semantic memory evaluation by evaluating the ability to name objects

Evaluation of retrieval, free immediate and delayed recognition for verbal information

Social cognition tests

Assessing social cognition by evaluating faces with different emotions

Quality of Life: To measure this variable, the quality of life questionnaire of the World Health Organization, according to the spectrum. A 5-point Likert scale with 26 questions is used. A general measurement tool for the organization's quality of life. There are two forms of global health, WHOQ0100 and WHOQOL-BREF. Quality questionnaire .The life of the World Health Organization after merging some areas and removing a number of questions WHOQOL-100 was created and has 26 questions. The results of these two questionnaires are consistent. They show satisfaction in different studies. In this study, the quality of life of the health organization Global was chosen due to the small number of questions and as a result ease of use. This tool in More than 15 countries of the world have been designed at the same time and translated into different languages. Therefore, concepts Questions are the same in different cultures. The direction of the validity of this variable considering that the measurement of this variable in Khayatzadeh Mahani's research (8) It has been used and has validity. Quality of life questionnaire according to Cronbach's alpha above 0.768) indicates that this variable has the necessary reliability.

The process of improving the treatment of children with cerebral palsy: Treatment of a child with cerebral palsy with the aim of improving functional abilities usually includes the role of various specialties including occupational therapy. Traditionally, the most common approach used for children with cerebral palsy is neuro-developmental therapy. This approach is designed to provide sensory-motor experiences that improve the development of normal movement patterns. In previous studies, it has been reported that more than 50% of children with cerebral palsy benefit from occupational therapy services. Occupational therapy focuses on the development of essential skills for daily life activities, including play and self-help activities, including dressing, cleaning, and eating, fine motor skills, including writing and drawing, and cognitive and perceptual abilities,

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especially in the visual and motor field. Another aspect of occupational therapy is the adaptation of equipment and chairs in order to make it possible to use the upper limbs better and promote functional independence. In addition to this, providing advice to parents is an important aspect of occupational therapy intervention in order to improve the functional abilities of a child with cerebral palsy. (12). Occupational therapy for children with cerebral palsy usually begins in the first days after diagnosis, often in the first months after birth. Occupational therapy evaluations of children with cerebral palsy is a dynamic process that uses the theoretical framework of work and neuro-development. Initial assessment results also provide a detailed profile of tasks that are meaningful to children and caregivers Includes (13).

Children's disability evaluation list: Cerebral palsy is one of the most common disorders in children that leads to dysfunction in their functioning; therefore, in order to provide a suitable treatment plan to improve the functioning of these children, we need a reliable evaluation tool. "The children's disability evaluation list is designed to evaluate the functioning of disabled children in three areas of self-care, mobility and social functioning. In Iran, the reliability of the Persian version of the Children's Disability Evaluation List test was conducted on cerebral palsy children aged 3 to 9 years. The results showed that the Persian version of the children's disability evaluation list test in order to examine the functioning of Persian-speaking children with cerebral palsy has internal consistency and test-retest reliability; therefore, this version can be used in a research and clinical way to evaluate children with cerebral palsy in Iran. The most important step in the rehabilitation process of children with developmental and learning disabilities is evaluation. In the traditional rehabilitation perspective, the assessment of the desired and expected growth of the child was emphasized, and the treatment program was also focused on the child reaching a normal growth pattern; But with the passage of time, therapists realized that disabled children never regain the desired developmental skills, but they can gain important and basic functional skills and improve their quality of life. Thus, achieving high levels of independence in basic functional skills became the main goal of rehabilitation interventions in children with disabilities. Functional characteristic is defined as a systematic explanation and description of a person's or child's ability to perform the activities needed in life. In addition, functional assessment in children requires special attention to expectations and developmental changes. From this point of view, the choice of tools and methods Evaluation is important in order to better understand functional skill changes.

Children's Disability Evaluation List Test has three functional skill scales of caregiver assistance and corrections. Each of the three test scales of the Children's Disability Evaluation List is responsible for functional evaluation in three areas of self-care, mobility and social functioning. Each of these areas consists of a number of subscales. Children's Disability Evaluation List Test is a tool for measuring clinical and research outcomes and provides extensive information on functional performance with 217 items. The scoring form of this test and the measurement scale of this test are also easy to understand and evaluate the performance. This list has been prepared to measure the functional characteristics of disabled children and it has three functional skill scales of caregiver assistance and corrections, each of the three scales of the children's disability evaluation list it is responsible for the function in three areas of self-care, mobility and social function.

The short mental state test evaluates both the ability of what the child can do and the performance of what the child does in the real environment) and is designed for children aged 6 months to 7.5 years and can also be used for children who are significantly They show a delay in the growth of the function, so it can be used in older ages. In the functional skill scale, the skills are measured in the three mentioned areas and they directly measure the ability to work and provide enough details to determine the clinical pattern of functional skill acquisition. The caregiver assistance scale measures the amount of assistance provided by the caregiver in everyday situations By determining the amount of caregiver's need to perform a functional activity, the child's performance in everyday functional activity is measured, and the scale of corrections also increases the awareness of the child's actual performance. OR a combination of both. Also, this test allows the therapist flexibility in execution. Depending on the child's interests, treatment priority or the therapist's diagnosis, these 3 areas are used independently. Because in our country, the outcome measurement tool for evaluating children's performance is limited, and designing a new tool for this purpose is costly and time-consuming in terms of money and human resources. From this point of view, children's disability evaluation list test is a comprehensive and approved tool.

Findings:

Table 1: Mean and standard deviation of cognitive improvement dimensions of mothers in experimental and control groups in pre-test and post-test stages.

Variable	step	Statistical index of the group	average	standard deviation	Number
Reaction speed	Pre-test	experimental	25/53	0/95	15
		Control	27/83	1/66	15
	post-test	experimental	27/21	2/05	15
		Control	27/93	1/60	15
Focus and attention	Pre-test	experimental	2.81	1/00	15
		Control	3./12	0/65	15
	post-test	experimental	3/54	1/03	15
		Control	3/18	0/74	15
The power of reasoning	Pre-test	experimental	1/27	0/68	15
		Control	1/81	1/00	15
	post-test	experimental	1/54	0/82	15
		Control	1/88	1/05	15

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Memory	Pre-test	experimental	2/62	1/30	15
		Control	2/79	0/70	15
	post-test	experimental	2/93	1/39	15
		Control	2/86	0/72	15

As shown in Table 1, in the pre-test and post-test stages, the mean and standard deviation of the dimensions of cognitive improvement of mothers were calculated in the control and experimental groups.

Table 2: The mean and standard deviation of the quality of life of mothers in the test and control groups in the pre-test and post-test stages.

Variable	step	Statistical index of the group	average	standard deviation	Number
Quality of Life	Pre-test	experimental	59/53	6/62	15
		Control	58/66	6/76	15
	post-test	experimental	76/60	12/72	15
		Control	60/46	7/21	15

As shown in Table 2, in the pre-test and post-test stages, the mean and standard deviation of the quality of life of mothers in the two control and experimental groups were calculated.

Table 3: The mean and standard deviation of children's performance in the test and control groups in the pre-test and post-test stages.

Variable	step	Statistical index of the group	average	standard deviation	Number
Self- care	Pre-test	experimental	19/13	2/66	15
		Control	18/86	2/44	15
	post-test	experimental	30/53	4/91	15
		Control	25/20	2/65	15
mobility	Pre-test	experimental	10/40	2/89	15
		Control	9/66	2/31	15
	post-test	experimental	20/46	3/22	15
		Control	17/46	2/64	15
	Pre-test	experimental	22/73	3/32	15

Social function	post-test	Control	23/00	2/61	15
		experimental	29/06	4/30	15
		Control	27/80	3/82	15

As shown in Table 3, in the pre-test and post-test stages, the mean and standard deviation of children's performance in two control and experimental groups were calculated.

First hypothesis: cognitive rehabilitation has a significant effect on the quality of life of mothers with children with cerebral palsy. To investigate this hypothesis, univariate covariance analysis test was used, the results of which are given below. Before examining this hypothesis with univariate analysis of covariance test, first the assumptions of this test including Levin's test and Kelomogrofe Smirionof's test will be checked.

Table 4: Examination of Levin's test and Kolmogorov–Smirnov test.

Variable	Levin's test			Kolmogorov–Smirnov test		
	Degrees of freedom	F	level of significance	N	Z	level of significance
Quality of Life	1	2/176	0/112	30	0/768	0/439

The results of the above table indicate that according to the significance levels obtained from these two tests, the presuppositions regarding the equality of variances and the normality of the data have been established and the analysis of covariance test can be used for the research variable.

Table 5: Univariate covariance analysis to check the first research hypothesis.

Variable	sum of squares	Degrees of freedom	Average of squares	F	level of significance
Pre-exam score	1416/906	1	1416/906	24/237	0/001
group	1727/892	1	1727/892	29/557	0/001
fault	1578/428	27	58/460		

According to the results of Table 5, it is clear that the value of F in the score after the quality of life test [$p<0.001$], $F=29.557$ is significant; Therefore, the first hypothesis of the research was confirmed; And since the quality of life of mothers in the test group increased after the test, it can be said that cognitive rehabilitation has a significant effect on increasing the quality of life of mothers with children with cerebral palsy.

Second hypothesis: cognitive rehabilitation has a significant effect on the cognitive improvement of mothers with children with cerebral palsy. To investigate this hypothesis, multivariate covariance analysis test was used, the results of which are given below. Before examining this hypothesis with

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the multivariate covariance analysis test, first the assumptions of this test including M box test, Levin test and Kolmogorof Simonof test will be checked.

Table 6: Examination of Levin's test and Kolmogorov–Smirnov test.

Variable	Levin's test			Kolmogorov–Smirnov test		
	Degrees of freedom	F	level of significance	N	Z	level of significance
Reaction speed	1	1/875	0/131	30	0/888	0/309
Focus and attention	1	1/236	0/165	30	1/215	0/159
The power of reasoning	1	1/098	0/187	30	1/457	0/134
Memory	1	1/987	0/126	30	1/564	0/126

The results of the above table indicate that according to the significance levels obtained from these two tests, the presuppositions regarding the equality of variances and the normality of the data have been established and the analysis of covariance test can be used for the research variable.

Table 7: M box exam review table.

First degree of freedom	Second degree of freedom	F	M Box	level of significance
10	3748/10	1/491	17/666	0/136

The results of the above table indicate that according to the significance levels obtained from this test, the presuppositions related to M box are valid and the covariance analysis test can be used for the research variable.

Table 8: Multivariate covariance analysis test to check the second research hypothesis.

test	value	F	Df	P
Pilai	0/361	2/961	28	0/044
Wilkes Lambda	0/639	2/961	28	0/044
T^2 Hotling	0/564	2/961	28	0/044
zinc root	0/564	2/961	28	0/044

As can be seen in the table above, the significance level of the multivariate covariance analysis test ($p \geq 0.044$) is smaller than the significance level ($\alpha=0.05$), so there is a significant difference between

the dimensions of cognitive improvement of the mothers of the two control and experimental groups in the post-test stage. Yes, in other words, cognitive rehabilitation has a significant effect on the cognitive improvement of mothers with children with cerebral palsy. In order to check which of the dimensions of cognitive improvement this treatment was effective, then a univariate covariance test was performed, the results of which are shown in Table 9.

Table 9: Analysis of covariance test to investigate the dimensions of cognitive improvement in two control and experimental groups.

Variable	SS	df	ms	F	P
Reaction speed	9/440	1	9/440	5/026	0/034
Focus and attention	1/405	1	1/405	7/145	0/013
The power of reasoning	0/178	1	0/178	2/015	0/169
Memory	0/506	1	0/506	3/625	0/069

According to the above table and the significance levels obtained, it is clear that out of the four dimensions of cognitive improvement, only the dimensions of reaction speed and concentration and attention of the two groups have a significant difference in the post-test phase, and according to the averages observed in the descriptive section, it was found that the scores of the group The test increased in the dimensions of reaction speed and concentration and attention in the post-test phase. In other words, the hypothesis of the research is confirmed and it can be said that cognitive rehabilitation has a significant effect on increasing the dimensions of reaction speed and concentration and attention of cognitive correction of mothers with children with cerebral palsy.

Third hypothesis: cognitive rehabilitation of mothers with cerebral palsy children has a significant effect on the improvement process of their children's treatment. To investigate this hypothesis, the multivariate covariance analysis test was used, the results of which are given below. Before examining this hypothesis with the multivariate covariance analysis test, first the assumptions of this test including M box test, Levin test and Klomogrov-Smironov test will be checked.

Table 10: Examination of Levin's test and Kolmogorov–Smirnov test.

Variable	Levin's test			Kolmogorov–Smirnov test.		
	Degrees of freedom	F	level of significance	N	Z	level of significance
Self-care	1	1/998	0/121	30	2/654	0/076
mobility	1	1/111	0/178	30	1/00	0/178

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Social function	1	1/377	0/1547	30	1/368	0/133

The results of the above table indicate that according to the significance levels obtained from these two tests, the presuppositions regarding the equality of variances and the normality of the data have been established and the analysis of covariance test can be used for the research variable.

Table 11: M box exam review table.

First degree of freedom	Second degree of freedom	F	M Box	level of significance
6	5680/30	1/719	11/685	0/112

The results of the above table indicate that according to the significance levels obtained from this test, the presuppositions related to M box are valid and the covariance analysis test can be used for the research variable.

Table 12: Multivariate covariance analysis test to investigate the third hypothesis of the research.

test	value	F	Df	P
Pilai	0/490	7/366	28	0/001
Wilkes Lambda	0/510	7/366	28	0/001
T^2 Hotling	0/961	7/366	28	0/0401
zinc root	0/961	7/366	28	0/001

As can be seen in the above table, the significance level of the multivariate covariance analysis test ($p \geq 0.001$) is smaller than the significance level ($\alpha=0.05$), so there is a significant difference between the performance dimensions of the children of the two control and experimental groups in the post-test stage. In other words, cognitive rehabilitation on mothers has a significant effect on their children's performance. In order to check which of the dimensions of children's performance this treatment was effective, then a univariate covariance test was performed, the results of which are shown in Table 13.

Table 13: Analysis of covariance test to investigate the dimensions of children's performance in two control and experimental groups

Variables	SS	df	ms	F	P
Self-care	181/946	1	181/96	15/256	0/001
mobility	47/022	1	47/022	10/861	0/003
Social function	13/697	1	13/697	2/443	0/131

According to the above table and the significance levels obtained, it is clear that from the three dimensions of children's performance, only the dimensions of self-care and mobility of the two groups have a significant difference in the post-test stage, and according to the averages observed in the descriptive section, it was found that the scores of the experimental group Increased self-care and mobility in the post-test phase. In other words, the hypothesis of the research is confirmed and it can be said that the cognitive rehabilitation of mothers with children with cerebral palsy has a significant effect on the process of improving the treatment of their children.

Discussion and conclusion:

The present study was conducted with the aim of the effectiveness of cognitive rehabilitation on the quality of life and cognitive improvement of mothers with children with cerebral palsy and its effectiveness on the process of improving the treatment of their children in Shiraz city. The first hypothesis: cognitive rehabilitation has a significant effect on the quality of life of mothers with children with cerebral palsy. To investigate this hypothesis, univariate covariance analysis was used, the results of which are shown in Table 5. According to the results of table 5, it is clear that the value of F in the score after the quality of life test is significant, therefore, the second hypothesis of the research was confirmed; and since the quality of life of mothers in the group There is an increase in the test after the test, it can be said that cognitive rehabilitation has a significant effect on increasing the quality of life of mothers with children with cerebral palsy. The result of this test with the research results of Shariat et al. (14), Dulag, Shaker. Narimani, Afrooz, Hosni, Baghdasarians, (15), Jalili et al. (16) are consistent. In explaining this result, it can be said that the quality of life of mothers has a significant relationship with the severity of the child's disability, considering all the physical dimensions. This means that with the severity of the child's disability, the physical health and quality of life of mothers decreases. A child with cerebral palsy often needs special and long-term care, which is why families with disabled children have less physical and mental health than families with healthy children and have a lower quality of life because the parents of these children are unable to do things. And the special needs of their children, such as bathing, transportation, feeding, etc., spend a lot of time, they are more likely to suffer from chronic pains and physical diseases; Therefore, the needs of severe disability of children have a negative effect on the physical health of parents.

Second hypothesis: Cognitive rehabilitation has a significant effect on the cognitive improvement of mothers with children with cerebral palsy. To investigate this hypothesis, multivariate covariance analysis test was used, the results of which can be seen in Table 8. According to the results of Table 8, it was found that the significance level of the multivariate covariance analysis test is smaller than the significance level, so there is a difference between the dimensions of cognitive improvement of the mothers of the two control and experimental groups in the post-test stage. There is significance, in other words, cognitive rehabilitation has a significant effect on the cognitive improvement of mothers with children with cerebral palsy; Therefore, the first hypothesis of the research was confirmed. Also, in order to check which of the dimensions of cognitive modification this treatment was effective, then a univariate covariance test was performed, according to Table 9 and the significance levels obtained, it is clear that out of the four dimensions of cognitive modification, only the dimensions of reaction speed and concentration and There is a significant difference in the attention of the two groups in the post-test stage, and according to the averages observed in the

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descriptive section, it was found that the scores of the experimental group increased in the dimensions of reaction speed and concentration and attention in the post-test stage. In other words, the hypothesis of the research is confirmed and it can be said that cognitive rehabilitation has a significant effect on increasing the dimensions of reaction speed, concentration, and cognitive correction of mothers with children with cerebral palsy. The result of this test with the results of Pasteur et al.'s research (17); Atkin (18); Wang et al. (19); Proti and Singh (20) are consistent. In explaining this result, it should be said that mothers with children with cerebral palsy, due to the special conditions of life that are under the influence of a child with a physical and mental disability, are less physically and mentally healthy have less These problems can appear in the areas of attention and concentration, memory, reaction speed or other cognitive components. Among the therapeutic approaches, we can mention cognitive rehabilitation therapy (4) which, according to the principle of brain plasticity, not only directly improves the indicators of executive functions, including attention (sustained attention, selective attention , divided attention, alternative attention), working memory (verbal and visual-spatial) and other cognitive skills, but it also improves other social functions of the person and at the same time it has no unpleasant side effects (9). The main goals of rehabilitation are to enable disabled people with such abnormalities, to reach an optimal level of health, to reduce the impact of their problems on their daily life, and to help them return to the most suitable environment. Therefore, in this research, mothers with children with cerebral palsy, who are naturally under the influence of conditions are their children's physical and mental health, they were cognitively evaluated in two stages (before cognitive rehabilitation treatment and after treatment) and the results showed that, in general, cognitive rehabilitation has a positive effect in improving and promoting the cognitive improvement of mothers with children He has cerebral palsy.

Third hypothesis: cognitive rehabilitation of mothers with cerebral palsy children has a significant effect on the improvement process of their children's treatment. To investigate this hypothesis, the multivariate covariance analysis test was used, the results of which are shown in Table 12. As can be seen in Table 12, the significance level of the multivariate covariance analysis test is smaller than the significance level, so there is a significant difference between the performance dimensions of the children of the two control and experimental groups in the post-test stage. In other words, cognitive rehabilitation on mothers has a significant effect on their children's performance. In order to check which of the dimensions of children's performance this treatment was effective, then a univariate covariance test was performed, the results of which are shown in Table 13. According to table 13 in chapter four and the significance levels obtained, it is clear that out of the three dimensions of children's performance, only the dimensions of self-care and mobility of the two groups have a significant difference in the post-test stage, and according to the averages observed in the descriptive section, it was determined that the scores of the experimental group in the aspects of self-care and mobility increased in the post-test phase. In other words, the research hypothesis is confirmed and it can be said that the cognitive rehabilitation of mothers with cerebral palsy children has a significant effect on the improvement process of their children's treatment. The result of this test is in line with the research results of Novak and Honan (21), Krujsen, Ketlar et al. (22). In explaining this finding, it can be said that the general goal of cognitive rehabilitation treatment is to increase self-awareness, facilitate better self-perception, and improve self-control through the appropriate development of cognitive skills. In fact, cognitive rehabilitation or CRT consists of a set of targeted programs that

are used with the aim of restoring or improving cognitive functions (10). Cognitive rehabilitation methods help to get to know the weaknesses and strengths of a person's brain comprehensively with the help of computer tools and strengthen brain function. In fact, the brain plays an active role in these methods and is directed towards self-regulation. Cognitive rehabilitation is a method to restore lost cognitive capacities, which is carried out by exercises and providing targeted stimuli, and its purpose is to improve a person's performance in performing his activities. In this method, the therapist takes into account the information obtained from the evaluation of the sessions and accordingly designs tasks to strengthen the cognitive functions of the brain, which increases with the progress of the disease. The cognitive rehabilitation program starts with the evaluation and ends with the evaluation after the intervention. Assessment includes: self-awareness, orientation, forgetting, attention, visual processing, motor vision, motor planning, memory, organization, problem solving, and executive functions. Based on the level of damage for each function, its improving task is presented during rehabilitation training sessions. After the end of the meetings, it is re-evaluated and the status of the desired functions is evaluated.

Limitations of the research:

The current research population included mothers with children with cerebral palsy in Shiraz, which creates limitations in the generalization of the results in other societies. Using a questionnaire as the only tool for collecting information has inherent limitations. Due to the limitation caused by the identification of all the people of the research group, random sampling was not possible and it was done as available.

Conflict of interest:

The authors hereby declare that this work is the result of an independent research and does not have any conflict of interest with other organizations and persons.

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