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The Depressive Symptoms and Physical Performance of Mothers of Children with Different Types of Disability

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Abstract. [Purpose] The aim of this study was to investigate the relationship between depressive symptoms and physical performance of mothers of children with different types of disability. [Subjects] Twenty-three mothers of children with mental and motor retardation, 21 mothers of children with Down syndrome, 16 mothers of children with motor retardation, 12 mothers of children with mental retardation, and 20 mothers of healthy children were included in this study. [Method] Depressive symptoms were evaluated using the Beck Depression Inventory. Physical performance was evaluated using the Fifty-Foot Walk, and the Sit to Stand and Bend Forward Tests. [Results] There were statistically significant differences among the groups in depression score, walking velocity, balance and endurance. Walking velocity and balance ability were found to have an effect on mean Beck depression scores. [Conclusions] All mothers should be supported psychologically and physically, especially those who have children with mental and motor retardation.
Key words: Mothers of disabled children, Depression, Physical performance

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INTRODUCTION

A wide spectrum of mental and/or motor impairments, including cerebral palsy, traumatic brain injury, myelomeningocele, spinal cord injury, Down syndrome, and neuromuscular diseases, affect children and adolescents. There are variations in severity within each of these conditions. Many children with impairments attributable to these conditions will have some degree of disability that may limit their normal development and functions[1, 2)]. Parents and siblings of such disabled children, individually, as well as the family as a whole, are at risk of numerous difficulties such as depression, stress and anxiety[3, 4)]. Numerous studies have been carried out to investigate the effects of retarded children on their families, such as marital and family strength, and parental personality characteristics[5–7)]. It has been demonstrated that the mothers of learning disabled children and attention deficit disorder with hyperactivity children have higher hypochondriasis, depression, problems with assuming social responsibilities, dependency, anxiety, intervention, dominance, and/or neurotic-like personality disorders[8, 9)]. Associations have also been found between depressive symptoms and physical performance. Mothers of disabled children have lower physical performance and more severe depressive symptoms[5)]. On the other hand, a few studies have shown that emotional and social stress is not an inevitable consequence for these parents[10, 11)]. Andersson[6)] demonstrated that there were no differences between the mean values of anxiety and depression scores of parents of mentally retarded and non-disabled children. According to Abbott and Meredith[12)], parents with retarded children were less critical of family members, and had fewer persistent family problems. Factors such as a family's economic status, parents' education level, occupation, marital adjustment, presence or absence of social insurance, severity of a child's mental or physical disability, a disabled child's age, duration of disability and need level for medical assistance affect parents' disability acceptance level, perception of and adaptation to handicapped children and stress levels[13–15)]. Some studies have indicated that mothers of children with Down syndrome fare better than mothers of children with mental retardation and psychotic symptoms[16)]. One study directly evaluated the physical performance of the parents of disabled children and its relationship with depression symptoms[5)]. Therefore, we undertook this study (i) to find out if there was any difference in mothers depression symptoms levels in relation to the type of their child's disability; (ii) to establish whether physical performance levels change with the severity and type of their child's disability; and (iii) to find out if there was any correlation between the physical performance and depression in relation to the type of their child's disability.

SUBJECTS AND METHODS

Ninety-two women participated in this study. The mental-motor group (MMG) consisted of 23 mothers of children with mental and motor retardation (mean age 38.96±6.58 years, and mean body mass index 28.35±4.53), the Down group (DG) consisted of 21 mothers of children with Down syndrome (mean age 39.52±7.18 years, and mean body mass index 26.85±4.64), the motor group (MTG) consisted of 16 mothers of children with motor retardation (mean age 38±6.01 years, and mean body mass index 25.46±3.17), the mental group (MG) consisted of 12 mothers of children with mental retardation (mean age 37±8.23 years, and mean body mass index 26.41±3.30), and the control group consisted of 20 mothers of healthy children (mean age 38.70±7.64 years, and mean body mass index 25.95±4.25). The mothers regularly provide continuous attention and care for their children and attend a special education and rehabilitation center twice a week. Diagnosis of the children was made at a research center with direct contact with an official institution. Subjects were excluded from the study if they had severe neurological, metabolic, cardiovascular, mental or psychiatric diseases, motor or sensory dysfunction, pain or pregnancy. Depressive symptoms and physical performance tests were carried out by a psychologist and physiotherapist. Informed consent was received from each participant.

For the emotional status, depressive symptoms were evaluated using the Turkish version of Beck Depression Inventory (BDI) which is a well-validated self-report measure of cognitive, affective and neurovegetative symptoms of depression. It is composed of 21 statements on how respondents might have been feeling during the past week. The BDI statements were ranked from 0 to 3, with 0 representing the least serious and 3 the most serious symptoms. The cutoffs used are 0–13: minimal depression; 14–19: mild depression; 20–28: moderate depression; and 29–63: severe depression[17, 18].

Physical performance measures included walking velocity, balance ability, and muscle endurance. Walking velocity: The Fifty-Foot Walk Test (FWS) is a measure of gait velocity and function. Subjects were instructed to walk a distance of 25 feet and return as fast as they comfortably could without an assistive device. The time taken was measured by a chronometer[18–20].

Balance ability: The Sit-to Stand (or chair rise) Test (STS) is commonly used to assess lower extremity strength and balance[21]. Subjects performed STS 5 times with their arms crossed on their chests and sat with their backs against the chair. Subjects began in the seated position, and stood up and returned to the seated position as quickly as possible[18, 22]. The time taken was measured by a chronometer.

Muscle endurance: In this test, subjects bent forward and returned to standing 10 times as fast as possible. The time taken was measured by a chronometer[18].

Collected data were analyzed using SPSS v 16. The arithmetical mean and standard deviation were calculated to summarize the descriptive data. ANOVA was used for comparisons of the depressive symptoms and endurance among the five groups. Linear regression was employed to help determine which of the three physical performance tests could be used to predict the effect of physical performance on depression as assessed by the Beck Depression Inventory.

Table 1. The personal characteristics of the mothers in all the groups

	N	Age (years)	BMI (kg/cm^2)	Number of children
MMG	23	38.96 ± 6.58	28.35 ± 4.53	2.00 ± 0.85
DG	21	39.52 ± 7.18	26.85 ± 4.64	1.71 ± 0.64
MTG	16	38 ± 6.01	25.46 ± 3.17	1.94 ± 0.68
MG	12	37 ± 8.23	26.41 ± 3.30	1.5 ± 0.67
CG	20	38.70 ± 7.64	25.95 ± 4.25	1.89 ± 0.99

MMG: Mental-Motor disability group; DG: Down syndrome group; MTG: Motor disability group; MG: Mental disability group; CG: Control group

RESULTS

The personal characteristics of mothers in all the groups are given in Table 1. There were no significant differences between mean age, mean number of children and mean BMI of mothers among any of the five groups ($p>0.05$). All of the women in each group were married.

MBDS, walking velocity, balance and endurance values are seen in Table 2. There were statistically significant differences between the five groups in mean Beck depression score (MBDS), walking velocity, balance, and endurance ($F=20{,}808$, $p<0.001$; $F=7.62$, $p<0.001$; $F=9.59$, $p<0.001$; $F=2.64$, $p=0.05$).

The advance analysis showed that MBDS was significantly higher among mothers in MMG than among mothers in DG, MG, and CG ($p<0.001$, $p=0.01$, $p<0.001$). No significant difference was found between MMG and MTG ($p=0.067$). MBDS also was significantly higher among mothers in MTG than among the mothers in DG and CG ($p<0.01$, $p<0.001$). No significant difference was found between MTG and MG ($p=0.667$), between DG and CG ($p=0.864$), or between DG and MG ($p=0.223$).

Physical performance test results showed no significant differences in walking velocity among MMG, MTG, and MG ($p>0.05$). There was a significant difference between the mothers in CG and the mothers in MMG, MTG, and MG ($p<0.001$, $p<0.05$, $p<0.05$); however no significant difference was observed between CG and DG ($p>0.05$). Additionally, a significant difference was observed in the walking velocity of mothers in MMG and DG ($p<0.05$). The balance ability results showed no significant differences between MMG, MTG, and MG ($p>0.05$). There was a significant difference between CG and MMG, and MTG, and MG ($p<0.001$, $p<0.05$, $p<0.01$), and a significant difference was also observed between MMG and DG ($p<0.01$). No significant difference was observed between CG and DG ($p>0.05$). Linear regression showed that walking velocity and balance ability were found to have an effect on mean Beck depression scores ($p<0.01$, $p<0.05$). However, the endurance showed no similar effect ($p>0.05$).

Table 2. MBDS, walking velocity, balance and endurance values

	N	Balance	Endurance	Walking velocity	Beck depression scores
MMG	23	14.52 ± 3.64 (10–43)	21.96 ± 7.24 (10–43)	15.39 ± 2.77 (10–21)	31.65 ± 15.75 (9–63)
DG	21	10.76 ± 2.86 (6–17)	18.38 ± 3.72 (13–26)	12.57 ± 2.50 (9–18)	10.43 ± 6.72 (0–28)
MTG	16	11.81 ± 3.71 (8–21)	17.94 ± 5.50 (11–32)	13.75 ± 3.39 (8–19)	23.06 ± 6.76 (13–40)
MG	12	13.83 ± 4.66 (8–23)	17.08 ± 5.35 (10–26)	14.17 ± 3.53 (9–22)	18 ± 6.36 (9–29)
CG	20	8.60 ± 2.43 (5–13)	17.30 ± 4.97 (12–33)	10.85 ± 2.18 (8–17)	7.40 ± 7.30 (0–31)
	92	F=9.592**	F=2.646*	F=7.627**	F=20.808**

MBDS: Mean Beck depression scores; MMG: Mental-Motor disability group; DG: Down syndrome group; MTG: Motor disability group; MG: Mental disability group; CG: Control group. *: Statistical significance, $p<0.05$; **: Statistical significance, $p<0.001$

DISCUSSION

Parents in every society play complex roles in the education and socialization of their children. These responsibilities become more difficult, perplexing, and arduous in the case of retarded children. The parents of handicapped children face more problems than those who have normal children. Higher anxiety levels, more stress, depression as well as lower physical performance are frequently seen in parents with a physically or mentally disabled child[3–5, 23]. The present study focused on evaluation of the depressive symptoms and physical performance for each disability type. The results show that mothers of CG and DG had minimal depression scores, mothers of MG had mild depression scores, mothers of MTG had moderate depression scores, and mothers of MMG had severe depression scores. Brandt[16] observed that mood disturbances such as anxiety and depression seemed to be uncommon among mothers of primary school children with Down syndrome, and there were no major differences between the mothers of children with Down syndrome and the mothers of motor handicapped children. Their results indicate that mothers of children with Down syndrome fare better than mothers of children with mental retardation and psychotic symptoms. Fishman et al.[24] examined the role of parenting stress and parental depression and marital intimacy of parents of disabled children and developmentally normal children. Their results show that mothers and fathers of autistic children showed significantly greater stress and depression as well as lower marital intimacy than mothers and fathers of children with Down syndrome. The results of the present study show that mothers of children with mental and motor disability had the highest depression scores while mothers of children with Down syndrome had the lowest scores of depression among the disabilities; however, no significant differences were found between mothers of children with Down syndrome and mothers of children with mental disability, between mothers of children with mental and motor disability and mothers of children with motor disability, as well as between mothers of children with motor disability and children with mental disability.

According to Firat et al.[25], depression and anxiety state scores were significantly higher in the mothers of autistic children than those of mentally retarded children. The no-depression rate was 27.5% in mothers of autistic children, whereas it was 55.3% in mothers of children with mental disability. However, results published by Uğuz et al.[26] show that there were no differences in Beck Depression Inventory scores, among four groups of parents of 29 children with mental disability, 26 autistic children, 25 children with cerebral palsy and a control group. The physical performance of the mothers was another characteristic that we investigated. Poor physical function is associated with higher levels of depressive symptoms and worsening of symptoms over time[8]. Depression is directly related to poor health outcomes and contributes to a lack of motivation or effort, which in turn results in less activity. Similarly, a relationship between depression and physical performance has been found among the elderly[27–29]. Several studies[30, 31] have provided evidence that older persons who report depressive symptoms are at higher risk of subsequent physical decline. These results suggest that prevention or reduction of depressed mood could play a role in reducing the functional decline of older persons. However, few studies have directly evaluated the physical performance of parents of disabled children. Parents who have children with disabilities have low physical performance and high depressive symptoms compared to parents with healthy children. A previous study found a relationship between Beck depression scores and physical performance measures, and high depression scores correlated with low walking velocity, balance ability, and endurance levels[5]. In the present study, we found significant differences among the groups in depression score, walking velocity, balance ability and endurance. However comparisons following ANOVA showed no significant difference among mothers of children with mental and motor, motor, and mental disabilities in walking velocity or balance ability. Mothers of children with Down syndrome were the quickest at performing the physical performance tests and a significant difference was only found with the mental and motor disability group. The endurance test results showed that the mothers of children with mental and motor disability took the longest time to perform the test despite the absence of significant differences among the groups. Low performance in walking velocity and balance ability was associated with high depression scores.

The main limitation of the present study was that physical performance tests were performed consecutively, which may

have affected the results, especially those for endurance. Therefore, a further study should be organized to investigate the effect of physical performance on depression in this population.

In conclusion, mothers of children with various disabilities, especially those who have children with mental and motor disability may greatly benefit from psychological support and an exercise program to maintain their physical performance.

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