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The effect of preschool children's motor skills on self-care skills

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ABSTRACT

The study was conducted to examine the effect the 60–72 months of preschool children's motor skills have on their self-care skills. This is an analytical and sectional type of research. This study was conducted with aged 60–72 months of 126 preschool children between 15 March and 30 May 2019. The data were collected using the Self-Care Skills Scale-Teacher Form for Preschool Children (36–72 months) and the Lincoln Oseretsky Motor Development Test. It was found in the study that the preschool children's motor and self-care skills were affected by the duration of stay in kindergarten. In addition, there was a positive statistically significant relationship between the children's motor skills and self-care skills and the subscales ($p < .05$). It was seen that as the motor skills of the children increased, their self-care skills also increased.

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Self-care skills; motor skills; preschool children

Introduction

The preschool period is an important period of time for early and effective intervention in children's physical and cognitive development (Wittkowski, Dowling, & Smith, 2016). In the school period, preschool education is needed that can develop motor skills and competencies that form the basis of compulsory school age. Preschool education aims to support children in all areas of development in order to help them acquire new skills and behaviours and prepare them for primary education (Ishimine & Tayler, 2014). However, it was not at the desired level in Turkey where the schooling rate was found to be 58.79% in 5-year-old children (TMoNe, 2017). The majority of working parents in Turkey send their children to kindergarten full time, while some parents send their children to kindergarten half a day and the children receive caregiver support in the remaining half a day. The majority of the unemployed mothers send their children to socialize and to get used to school half a day. Children, who receive preschool education for various reasons and times, show different stages of development. In order to ensure the full development of the child, it should be guided systematically to acquire more complex skills. This can be competently done only by an adult in this field. Only the expert underwent a training programme for the child can accelerate children's cognitive, psychomotor, physical and social development (Bredekamp, 2015).

Motor development is a process that involves movement skills and extends from the prenatal period to the end of life (Haywood & Getchell, 2014). Fine motor skills require the use of small muscle groups that are needed for writing, cutting and drawing and also the use of large muscle groups that are needed for throwing, catching and running and other actions acquired from gross motor skills (Bellows, Davies, Anderson, & Kennedy, 2013; Liu, Hoffmann, & Hamilton, 2017). The motor skills acquired during the development process are necessary for self-sufficiency in the individual development of the child as well as for quality of life and acceptance by society. Although preschool education is very important in gaining motor skills and new behaviours, self-care skills with

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individual care and attention further can be developed in the home. The self-care concept developed by Dorothea Orem in 1959 states: "Self-Care is the practice of activities that persons initiate and perform within time frames, on their own behalf in the interest of maintaining life and wellbeing" (Ageborg, Allenıus, & Cederfjall, 2005). Self-care skills, on the other hand, refer to the ability to fulfil the basic needs of the child (eating food, dressing–undressing, personal care, toilet, etc.) without adult support. The child, who acquires self-care skills, becomes independent. These skills, therefore, make it easier for children to make decisions on their own. They also contribute to a child's personality development (Onder, 2003).

Preschool children also need to acquire motor skills in order to improve their self-care skills. Children's motor skills in advances and developments reflect their functions in carrying out daily life activities. Therefore, the deficiencies in children's motor skills (in fine motor skills) can prevent self-care skills such as food eating, dressing–undressing (Feder et al., 2005). Insufficiency in motor and self-care skills of preschool children also affects school performance negatively (Feder & Majnemer, 2007). Liew, Cameron, and Lockman (2018) in the study in 2018 investigated the relationship between children's self-regulation, motor skills and school academic success and showed as an integral whole. For this reason, it is important to evaluate children's daily life skills (dressing–undressing, personal care) and motor skills together (Park, 2017). Children's motor skills make them independently perform self-care skill assessment for normal development process in understanding the existing problems in the motor development problems by identifying vital points in the creation of training and treatment plans. It also provides at every age and motor skills in the best way contribute to the planning of activities that enable the development and teaching (Payne & Isaacs, 2012). Different studies have found a relationship between fine motor skills and self-care skills among children with autism or Down syndrome (Frank & Esbensen, 2015; Jasmin et al., 2009). There are also studies showing the relationship between gross motor skills and self-care skills in children with cerebral palsy (Chiarello, Palisano, Bartlett, & McCoy, 2011; Ketelaar, Gorter, Westers, Hanna, & Verhoef, 2014). However, there are no studies in the literature that examine the relationship between motor and self-care skills among preschool children registered kindergarten in Turkey. This research aims to contribute to the literature in terms of determining together healthy preschool children's levels of self-care and motor skills and the factors that affect, making early identification of deficiencies and carrying out the needed interventions. Accordingly, the research was conducted to examine the relationship between self-care skills and motor skills of preschool children registered in kindergarten. For this purpose, answers were sought to the following questions in the study:

- Are there differences in children's motor skill scores in terms of their school attendance time?
- Are there differences in children's self-care skill scores in terms of their school attendance time?
- Is there a relationship between children's motor skills, self-care skills and the sub-scales?

Method

Study design

This analytical and cross-sectional study was conducted between 15 March and 30 May 2019 in kindergartens affiliated to the Ministry of National Education in the city of Kutahya, Turkey.

Setting and participants

The study was conducted in two biggest kindergartens in Kutahya, Turkey. The kindergarten includes children from high-, medium-, and low-income families. Some students were enrolled in full-day programmes, while others were enrolled in half-day programmes. The participants included 60–72 month-old kindergarten children with no oral or aural disabilities and whose parents agreed to

participate in the study. The entire study population was achieved without sampling. One hundred twenty-six children and their parents participated in the study.

Data collection

In order to collect the data, the school management and teachers were interviewed to determine suitable days and hours for the parent's meeting. At the meeting, parents, who volunteered to participate in the study, were asked to complete the voluntary consent form and the data collection form.

The researcher spent some time with the children, playing with toys with them before starting the process in order to arouse the interest of the children so that they could take part and participate willingly in the test (Lincoln Oseretsky Motor Development Test). Each child was individually admitted into the test. The test took approximately 20 min per child. The researcher clearly explained and demonstrated each item on the test to ensure that the children had a better understanding. An attempt was made to determine whether the child sufficiently understood by asking questions. The test was administered for the large part in the form of a game to ensure the active and willing participation of the children. The children were continuously encouraged to perform better. The test items in which the children were successful were added to yield the psychomotor development score by the researcher.

The psychomotor development score calculated for each child was also evaluated by the preschool teachers and researcher on the self-care skills scale. The researcher and evaluating teacher were observed according to the scale items of the children for a month. A preschool teacher and the researcher together calculated of each observed child's self-care skill scale score. Data collection instruments were collected between 15 March and 30 May 2019.

Data collection tools

The data were obtained by The Data Collection Form, Self-Care Skills Scale-Teacher Form for Preschool Children (36–72 months) and the Lincoln Oseretsky Motor Development Test (LOS KF 18).

The Data Collection Form consisted of six questions that included the sociodemographic characteristics of the children and parents (gender, age, birth order, school attendance time [half-time or full-time], mother's working status).

Self-Care Skills Scale for Preschool Children (36–72 months)-Teacher Form was developed by Dinçer, Demiriz, and Ergül (2017), who tested the scale for validity and reliability. The scale has four subscales: dressing–undressing, eating, neatness-order, personal hygiene-toilet habits. The scale items were rated as 'Not observed (0 points)', 'Not significant (1 point)', 'Significant (2 points)' 'Very significant (3 points)' on a 4-point Likert-type scale. The total number of questions is 46. Scores range from a minimum of 0 to a maximum of 138. As the scores obtained from the scale increase, the level of fulfilment of self-care skills of the child increases, and the level of fulfilment of self-care skills decreases as the scores decrease. The reliability coefficient of the scale was calculated as .93 for dressing–undressing, .86 for eating, .86 for neatness-order, .79 for personal hygiene-toilet habits. In the reliability analysis for the overall scale, Cronbach's alpha reliability coefficient was calculated as .95. In this study, the reliability coefficient of the scale was .97 for dressing–undressing, .96 for eating, .82 for neatness-order, .87 for personal hygiene-toilet, and .96 for the overall scale. This scale was filled separately for each child by their own classroom teachers (11 preschool teachers in total).

Lincoln Oseretsky Motor Development Test (LOS KF 18) was first developed by Oseretsky in 1929 (Oseretsky, 1955). The test, which can be applied to children aged 5–13 years, was adapted for Turkish children by Inan (1996). The 18-item test assesses balance, bilateral coordination, visual-motor control, upper-limb coordination and upper-limb dexterity, speed, accord in isolated and

simultaneous movements. There is a protocol sheet for each child. Each item on the test is related to the child's performing the action mentioned in that statement. The researcher assigns a score of '1' or '0' depending on the child's status of performing each action. There are instructions as to how the researcher is to administer each item. The psychomotor development score is calculated by adding up the scores of the items in which the child has been successful. This test was selected for the current research. Because a) it covers a variety of gross and fine motor skills, (b) the materials used are simple, (c) the administration time is short (d). Since the test is done by showing all the items, the tester does not need any training.

Ethical approval

The study was approved by the Kutahya Provincial Directorate of National Education and the Kutahya Health Sciences University Rectorate Non-Interventional Clinical Trials Ethics Committee (dated 27 February 2019 and approval number 2019/03). The children and parents provided verbal and written informed consent after being informed of the purpose of the study and assured that the study data would remain confidential.

Data analysis

The study data were analysed using the SPSS package program. Using the Kolmogorov–Smirnov test, we determined that the data were not normally distributed. Data were shown in terms of frequency and median (25th–75th percentiles). The Mann–Whitney *U*-test was used for a comparison of two groups of categorical variables, and the Kruskal–Wallis *H* test for a comparison of three or more categorical variables. Spearman's correlation analysis was employed to determine the relationships between the scales and subscales. A value of $p < .05$ was considered statistically significant.

Results

Of the children participating in the research, 40.5% were girls ($n = 51$) and 59.5% were boys ($n = 75$). The mean age of children was 65.79 (±4.33) months and more than half (73.8%, $n = 93$) had siblings. Of the children, 111 (88.1%) were attending kindergarten for half a day; 86 (68.3%) were the children of working mothers (Table 1).

A statistically significant difference was found between the motor and self-care skills of children according to their attendance in kindergarten ($Z = -3.509$, $p = .001$; $Z = -4.237$, $p = .001$). According to these results, the motor skill scores of children, who attended kindergarten full-time, were higher, while the self-care skill scores of children who attended kindergarten half-day were higher (Table 1).

Tables 2 and 3 shows the Spearman Test results for the relationship between the children's motor skills and the self-care subscales. The correlation coefficient in the tables was interpreted as displaying a high correlation at 0.70–1.00, a moderate correlation at 0.70–0.30 and a low correlation at 0.30–0.00.

There was a statistically significant positive correlation between the children's motor skills and self-care subscales ($p = .001$). The positive moderate correlations were observed between motor skills and personal hygiene-toilet habits ($r = .333$, $p = .001$), while positive low correlations were observed between dressing–undressing, neatness-order, and eating ($r = .212$, $p = .017$; $r = .298$, $p = .001$; $r = .198$, $p = .026$). And the positive high correlations were observed between eating and dressing–undressing scores ($r = .813$, $p = .001$) (Table 2).

A statistically significant positive and moderate correlation was found between the children's motor skills and self-care skills ($r = .272$, $p = .002$) (Table 3).

Table 1. Comparison of the children's sociodemographic characteristics and their motor and self-care skills' overall scores.

Variable	*n*	%	Motor skill score Median (25p–75p)	Self-care skills score Median (25p–75p)
Gender				
Female	51	40.5	16.0 (15.0–17.0)	116.0 (92.0–126.0)
Male	75	59.5	16.0 (15.0–17.0)	118.0 (90.0–123.0)
Z			−0.611	−1.334
P			.541	.182
Birth order				
First	63	50.0	16.0 (15.0–17.0)	112.0 (92.0–123.0)
Second	57	45.2	16.0 (15.0–17.0)	120.0 (91.5–126.0)
Third	6	4.8	14.5 (13.5–17.0)	122.0 (89.75–124.5)
x^2			3.383	0.209
p			.184	.901
Has siblings?				
Yes	93	73.8	16.0 (15.0–17.0)	118.0 (92.0–124.5)
No	33	26.2	16.0 (15.0–17.0)	109.0 (90.0–123.0)
Z			−1.237	−1.431
p			.216	.152
School attendance time				
Half a day	111	88.1	16.0 (15.0–17.0)	120.0 (97.0–125.0)
Full-time daily	15	11.9	17.0 (17.0–18.0)	92.0 (78.0–92.0)
Z			−3.509	−4.237
p			.001	.001
Mother's working status				
Working	86	68.3	16.0 (15.0–17.0)	110.0 (92.0–124.0)
Not working	40	31.7	16.0 (15.0–17.0)	122.5 (97.5–123.75)
Z			−0.070	−1.386
p			.944	.166

Z = Mann–Whitney *U*-test, x^2 = Kruskal–Wallis *H* test.

Table 2. Relationship between children's motor skills and self-care skills subscales.

Subscales		Dressing–undressing	Neatness-order	Eating	Personal hygiene-toilet habits	Motor skill score
Dressing–undressing	*r*	1				
	p					
Neatness-order	*r*	.601	1			
	p	.001				
Food	*r*	.813	.511	1		
	p	.001	.001			
Personal hygiene-toilet habits	*r*	.559	.545	.480	1	
	p	.001	.001	.001		
Motor skill score	*r*	.212	.298	.198	.333	1
	p	.017	.001	.026	.001	

Note: *r* = Spearman's correlation coefficients.

Table 3. The relationship between children's motor and self-care skills scores.

		Motor skill score	Self-care skills score
Motor skill score	*r*	1	
	p		
Self-care skills score	*r*	.272	1
	p	.002	

Note: *r* = Spearman's correlation coefficients.

Discussion

Many activities are involved in preschool education. Assuming that these activities will affect the child's motor abilities, it was questioned between the children's time spent in kindergarten and the relationship LOS KF 18 was sought. In this study, a significant difference was found between

children's motor skills according to their attendance in kindergarten. According to these results, the motor skill scores of children who attended kindergarten full-time were higher. It was emphasized that school-based education in kindergartens is important for the development of children's motor skills and as the duration of education increases, children's motor skills improve (Iivonen & Sääkslahti, 2014). Koksalan, Yayan, Ulutas, and Emre (2017) carried out a study to improve the self-care skills of preschool children and showed that the duration of pre-school education increases fine motor skills of children. Another study determined that starting early pre-school education and taking for a long time contributes to the development of children's motor skills (Yalçın, Başar, & Çetinkaya, 2013).

During pre-school period the child that is expected to grow up should meet basic needs. In this period, practices to support self-care skills provided to the child have an important place. Preschool period is important to support self-care skills in the preschool environment. However, acquiring these skills has important roles and responsibility for parents, especially mothers (Kaçan, Seda, Kimzan, & Karayol, 2019). Because of the crowded class environment, preschool teachers may have difficulty developing preschool children's self-care skills (Dinçer et al., 2017). In addition, the relationship between mothers' practices that support children's self-care skills and the duration of school attendance is given in the literature. Children who spend less time in kindergarten have reported to have more self-care skills supported by their mothers at home. Children, who are supported with more self-care skills by their mothers individually, showed more improvement than other children of the same age in terms of self-care skills (Kaçan et al., 2019). Oğuz and Derin (2013), a study with preschool children showed that children who eat with family members, spend time in using fork-spoons correctly and develop faster self-care skill development. Another study showed that children's mothers who spend more time play an important role in developing children's self-care skills (Demiriz & Dinçer, 2001). In the study, a statistically significant difference was found between the self-care skills of the children according to their attendance in kindergarten. According to these results, the self-care skill scores of children who attended kindergarten half-day were higher.

Since there is very rapid progress in all areas of development (cognitive, language, social, emotional, motor) in early childhood, it is very important to correctly support, evaluate and follow up each development area in this period. A balance should be achieved in all these areas of development with all being supported equally (Kılıç, Balat, & Sarı, 2017). Still in another study, statistically significant correlations at positive and moderate levels were found between children's self-care skill subscales. In the validity and reliability study of the self-care scale used in the data collection in this study, there was a positive correlation between the self-care skills subscales (dressing–undressing, neatness-order, eating and personal hygiene-toilet habits) (Dinçer et al., 2017).

It was demonstrated in a study that children need to acquire coarse and fine motor skills to acquire self-care skills in the preschool period (Frank & Esbensen, 2015). In this study, a statistically significant correlation was found between children's motor skills and self-care skills. Accordingly, as the children's motor skills score increases, so does the self-care skill score. A statistically significant and positive correlation was found between the gross and fine motor skills and self-care skills of children (Canbeldek & Erdoğan, 2016). In their study, Gaeta, Cavazos, Cabrera, and Rosário (2018) found a positive correlation between psychomotor development and self-care skills and it is emphasized that children with good psychomotor development are more successful in acquiring self-care skills. In the study conducted to define the mobility and self-care abilities of children with cerebral palsy and determine the effect of motor functions on self-care skills, there is a positive relationship between motor skills and self-care skills, where motor skills have been reported to affect self-care skills (Ketelaar et al., 2014). In another study of children with cerebral palsy, a parallel relationship was found between children's self-care skills and mobility (Kruijsen-Terpstra et al., 2016). In a scale validity and reliability study conducted to evaluate the general development of 48–72-month-old children, it was found that there was a positive and moderately significant relationship between gross and fine motor skills and self-care skills (Tunçeli & Zembat, 2018). This result of the study is parallel to the literature and can be explained by the ability of children to meet their self-care needs when they use large and small muscle groups successfully.

Limitations

Only two schools were used in the study, and findings may not be representative of others in different geographical locations. Therefore, the first limitation of our study is that the findings cannot be generalized. Due to the high number of working parents, participation was very low in the meetings. This case is a limitation for our study, but more meetings were held to reach the number of sample size. Additionally, the testing duration was around 20 min per child, which could have resulted in fatigue effects, possibly attenuating the obtained associations.

Conclusions

This study reveals that the motor and self-care skills of preschool children are affected by time in kindergarten and there was a positive relationship between the children's motor skills and self-care skills and the subscales. It may be suggested that the subject should be investigated further in different sample groups in new studies in the future.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

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