

Knowledge Levels of Preschool Teachers about Child Nutrition

Okul Öncesi Öğretmenlerinin Çocuk Beslenmesi Konusundaki Bilgi Düzeyleri

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ABSTRACT

The aim of this study is to determine and evaluate that knowledge level of preschool teachers about child nutrition and factors affect it. The study was carried out in 40 private preschool institutions in Ankara. Multiple-choice 20 questions about child nutrition have been asked to 200 teachers in survey form. The questions oriented to determine the factors affecting their knowledge levels and their interests to subjects related to nutrition have also taken place in the survey form. Applications have been conducted through face-to-face interview. Point averages of teachers were 69.85 ± 16.34 and when point averages of teachers were investigated considering several variables, it has been seen that point averages of female teachers were higher than of the male teachers and average knowledge points were increasing when the factors like age, occupational experience and educational status increase. It has been determined that 16.5% of the teachers had sufficient, 70.0% of them had average and 13.5% of them had insufficient nutrition knowledge level and differences between knowledge levels and age groups, occupational experience and taking courses related to nutrition have been found as important statistically. It has been determined that the number of teachers having sufficient nutrition knowledge is low. When considering the importance of preschool period, the teachers should have sufficient knowledge about nutrition and develop themselves in this regard.

Keywords: Nutrition Knowledge, Preschool Period, Children, Teacher

ÖZET

Bu çalışmanın amacı okulöncesi eğitim kurumlarında görev yapan öğretmenlerin çocuk beslenmesi ile bilgi düzeyleri ve bunu etkileyen faktörleri belirlemek ve değerlendirmektir. Çalışma Ankara'da çalışmanın yapılmasına izin veren 40 özel okul öncesi eğitim kurumunda gerçekleştirilmiştir. Anket formunda 200 öğretmene çocuk beslenmesi ile ilgili çoktan seçmeli 20 soru sorulmuştur. Bilgi düzeylerini etkileyen faktörler ve beslenmeyle ilgili konulara olan ilgilerini belirlemek amaçlı sorularda anket formunda yer almıştır. Uygulama yüz yüze görüşme yöntemiyle yapılmıştır. Tüm öğretmenlerin aldığı bilgi puan ortalaması $69,85 \pm 16,34$ 'dir ve öğretmenlerin ortalama bilgi puanları çeşitli değişkenler dikkate alınarak incelendiğinde; kadınların bilgi puanı ortalamasının erkeklerden yüksek olduğu, yaş, mesleki deneyim ve eğitim durumu arttıkça ortalama bilgi puanlarının arttığı görülmüştür. Öğretmenlerin %16,5'inin yeterli, %70,0'inin orta, %13,5'inin ise yetersiz beslenme bilgi düzeylerine sahip olduğu belirlenmiş ve bilgi düzeyleri ve yaş grupları, mesleki deneyim ve beslenme ile ilgili ders alma arasındaki fark istatistiksel olarak önemli bulunmuştur. Yeterli beslenme bilgisine sahip öğretmenlerin az olduğu saptanmıştır. Okul öncesi dönemin önemi göz önüne alındığında öğretmenlerin beslenme konusunda yeterli bilgiye sahip olması ve bu konuda kendilerini geliştirmeleri gerekmektedir.

Anahtar Kelimeler: Beslenme Bilgisi, Okulöncesi Dönem, Çocuklar, Öğretmen

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INTRODUCTION AND AIM

Preschool period is a critical and the most important period of an individual. Children in this period learn by imitating the individuals both at home and school. Personality and habits of the child are shaped in preschool period.¹ Most of the attitudes, behaviors and preferences of children also develop in this period.² Nutrition habits which they gain in this period may cause nutrition problems which may arise in upcoming periods of their lives. This period of life is important to the development of good attitudes toward maintaining a salubrious diet and learning to make advisable food choices.³ Poor nutrition habits among the children may have negative effects on chronic disease risks in long term and performance and participation statuses at school.⁴ Today, obesity is leading disease among the nutrition problems arising as a result of poor nutrition habits of individuals. Obesity rate across the world has increased more than two times in last 30 years.⁵ It's prevalence is alarming by affecting children and adolescents as well as adult age groups. According the results of National Nutrition and Health Study in United States (NHANES 2011-2012), obesity rate in children and adolescents between 2-19 ages has been determined as 16.9% (12.5 million) and this rate has been determined as 8.1% in newborns and preschool children.⁶ Childhood period obesity is an important health problem related to nutrition habits in our country.⁷ According to the Turkish Nutrition and Health Research (TBSA) which was conducted by Ministry of Health in 2010, overweightness rate is 17.9% and obesity rate is %8.5 in 0-5 age group children.⁸

The most important factor to prevent insufficient nutrition and poor nutrition problems is to give nutrition education as possible as in early ages.⁹ Education to be given at school plays an important role in order to gain children nutrition habits pursuant to nutrition principles as well as family environment. Preschools, primary and other education institutes and educationalists serving in these instates have major tasks. Teacher's fulfilling its duty in

terms of nutrition education successfully is possible when it has sufficient nutrition knowledge and necessary education tools and equipment are supplied.¹⁰ Scientific studies suggest that nutrition education is effective and make substantially positive changes on individuals.¹¹

Children who take preschool education spend one third of their daytimes and 14% of their annual hours in school.¹² People, to whom children entering a different environment by leaving family environment give importance, change in time. In this period, teacher takes place of the mother. Teachers may cause behavioral changes on children by behaving a good role model. One of the subjects in which the teachers affect the children behaviorally is nutrition. Teachers hold together with their students more than their parents and other fellows. They could monitor their behaviors, views and learning capabilities better than the others. For this reason, they may observe whether they are well nourished or not and they may found a solution to the problem at initial stages. They can achieve this only if they have sufficient nutrition knowledge. Therefore, it is necessary for teachers to take lessons on nutrition during their teaching education. Later on, it is important for teachers to access the right resources (scientific publications, books, courses, seminars) instead of television, internet etc. to improve themselves and get the correct information. If teaches serving preschool institutions are realize how important the knowledge and behaviors in terms of healthy nutrition, they may make more contribution to children's knowledge and behavior developments in terms of healthy nutrition.¹³ Previous studies suggested that nutrition knowledge of teachers is positively associated with teaching nutrition.^{14, 15, 16}

The aim of this study is to determine and evaluate that knowledge level of preschool teachers about child nutrition and factors affect it..

MATERIALS AND METHODS

This was a cross sectional study and applied to preschool teachers in 2012-2013 school year. Participants were total 200 preschool teachers working in 40 private preschools which allowed to the study in Ankara. Questionnaire form was used for collecting data of the study. Literature (thesis, article, proceeding, scientific study etc.) has been reviewed before the preparation of the survey form and survey form has been generated by utilizing related sources and previous studies. There were two sections in the questionnaire form in which general information and nutrition knowledge levels of teachers. There were total 20 multiple choice questions in a way that each question has five point value in the form in order to make a measurement on the nutrition knowledge level. Reliability of the questions have been tested and Cronbach α value has been found as 0.73. While nutrition knowledge level of the participants who have taken 86 or more points out of 100

has been accepted as “sufficient”, this level of those who have taken 85-55 points have been accepted as “average” and knowledge level of those who have taken 54 or less points is “insufficient”. Survey form has been filled by the researchers by interviewing face-to-face with teachers.

Quantitative data obtained from the study has been evaluated by using SPSS 16. Frequency distributions and descriptive statistics were examined. In statistical analysis of the data, sex, age, education, occupational experience and course taking about nutrition were considered as explanatory variable. In data analysis, independent samples t test was used for the variables of education and course taking about nutrition; variant analysis (one-way ANOVA) was used for the variables of age groups and occupational experience. p value less than 0.05 has been taken as statistically significant.

RESULTS AND DISCUSSION

6 of the teachers participating to the study were man and 194 of them were woman teachers. Ages of the participants differs between 17 and 56 and their average age was 27.84 ± 7.48 . When age range was investigated it has been determined that 37.0% of them were in 17-24 age range and 40.0% of them were in 25-30 age range, and 23.0% of them were over age of 31. When educational statuses of the participants were investigated, it has been determined that 47.0% of them were high school graduates and 53.0% of them have taken undergraduate/graduate education. Finally, occupational experiences of the teachers were investigated, 39.5% of them had 1-3 year, 27.5% of them had 4-6 year, 15.5% of them had 7-9 year and 17.5% of them had 10 year and over experiences.

When asked to the teachers about their views and applications related to nutrition, it

has been found that 87.5% of them have said “I am interested in nutritional subjects”, 74.0% of them have taken nutrition courses during their schooling period, 36.5% of them find that acquisitions related to nutrition in educational programs were sufficient. When asked about their willingness to participation to nutritional activities, it has been seen that 83.5% of them were willing to participate however 73.5% of them have not participated any nutritional activity before.

When nutrition oriented media follow-up status of the teachers were investigated, it has been found that internet (74.0%) and television (68.0%) were near the top. These were followed by newspaper (52.2%), book (44.5%), scientific journal (32.0%), radio (24.5%) and magazine journal (20.5%) respectively.

Table 1. Distribution of Correct and Wrong Answers Given to the Questions Related to Child Nutrition by the Teachers

Knowledge Question	Correct		Wrong	
	n	%	n	%
1. How many kind of food group is there?	68	34.0	132	66.0
2. Which one of the nutritional elements is not an energy source?	61	30.5	139	69.5
3. Which one of the foods is the richest fat source?	193	96.5	7	3.5
4. Which one of the foods is the best protein source?	176	88.0	24	12.0
5. Which one of the foods is the best carbohydrate source?	163	81.5	37	18.5
6. Which one of the foods is a vitamin source?	190	95.0	10	5.0
7. What is the most important function of proteins in the body?	121	60.5	79	39.5
8. Which disease is diagnosed as a result of lack of Vitamin C?	114	57.0	86	43.0
9. What are the most important functions of vitamins in the body?	181	90.5	19	9.5
10. Which one of the foods is the richest in terms of calcium?	170	85.0	30	15.0
11. Which one of the foods is the richest in terms of iron?	109	54.5	91	44.5
12. Which one's overconsumption is more effective on tooth decaying?	195	97.5	5	2.5
13. Which mineral is required for blood-forming?	159	79.5	41	20.5
14. Which disease is diagnosed as a result of lack of Vitamin D in children?	140	70.0	60	30.0
15. Which disease is diagnosed as a result of lack of Iodine in children?	63	31.5	137	68.5
16. Which one's lack among the nutritional elements may not cause anemia?	78	39.0	122	61.0
17. Which is not given to the child having diarrhea?	185	92.5	15	7.5
18. Which one's insufficiency among vitamins may cause nyctalopia?	127	63.5	73	36.5
19. Which one of the menu selections is not appropriate for snack consumption of preschool children?	156	78.0	44	22.0
20. Which one of the menu selections is more appropriate for preschool children?	145	72.5	55	27.5

Distribution of correct and wrong answers given to the questions related to child nutrition by the teachers was given as (n and %) in Table 1. Accordingly, it has been determined that while the teachers have given mostly correct answers to 3, 4, 5, 6, 9, 10, 12, 13, 14, 17, 19 and 20 numbered questions, they have given mostly wrong answers to 1, 2, 15 and 16 numbered questions. The question to which has been given correct answer in the highest rate (97.5%) was the question of "Which food has the most effect on tooth decaying?" in 12th sequence. Other questions to which have been given correct answer in the highest rate were as follows: 3th question (%96.5), 6th question (%95), 17th question (%92.5) and 9th question (%90.5). The question to which has been given correct answer by the teachers in the lowest rate (30.5%) was the question of "Which nutritional element is not an energy source?". Following questions to which have been given correct answer in the lowest rate were as follows: 15th question (%31.5), 1st question (%34.0) and 16th question (%39.0).

Average knowledge point of the teachers has been found as 69.85 ± 16.34 . Their nutrition knowledge levels have been classified by categorizing their knowledge points. It has been determined that 16.5% of the participants have "sufficient", 70.0% of them have "average" and 13.5% of them had "insufficient" nutrition knowledge level (Table 2).

Table 2. Knowledge Levels of the Teachers about Child Nutrition

Knowledge Levels	n	%
Sufficient (≥ 86 points)	33	16.5
Average (85-55 points)	140	70.0
Insufficient (≤ 54 points)	27	13.5

Knowledge point averages and nutrition knowledge levels of the teachers has been investigated considering several variables (Table 3).

Table 3. Knowledge Point Averages of Teachers According to Variables

	Knowledge Point Averages			
	n	%	Mean±SD	p
Sex				
Man	6	3.0	68.33±8.17	
Woman	194	97.0	69.90±16.54	-
Age Groups				
17-24 age	74	37.0	66.69±18.16	
25-30 age	80	40.0	71.44 ±14.37	0.108
Age of 31 and over	46	23.0	72.17±16.04	
Occupational Experience				
1-3 year	79	39.5	67.41±19.06	
4-6 year	55	27.5	71.45±13.01	
7-9 year	31	15.5	73.06±14.59	0.322
10 years and over	35	17.5	70.00±15.67	
Educational Status				
High School	94	47.0	67.29±17.49	
Undergraduate/Graduate	106	53.0	72.12±14.98	0.027
Taking Courses Related to Nutrition				
Yes	148	72.0	71.01±15.33	
No	52	28.0	66.54±18.71	0.066

When knowledge point averages of the teachers were investigated according to sex variable; while knowledge point average of the men 68.33±8.17, this is 69.90±16.54 for women.

When knowledge point averages of the teachers were investigated according to variable of age groups; while knowledge point average of the teachers in 17-24 age was 66.69±18.16, it has been found that knowledge point average of the teachers in 25-30 age was 71.44±14.37 knowledge point average of the teachers over age of 31 is 72.17±16.04. Difference between age groups and knowledge point averages of the teachers has not been found as statistically important (p=0.108). When knowledge point averages of the teachers were investigated according to variable of occupational experience; it has been determined that the highest point average belongs to the teachers having 7-9 year experience (73.06±14.59). This was followed by the teachers having 4-6 year experience (71.45±13.01), 10 year and over experience (70.00±15.67) and 1-3 year experience (67.41±19.06). Difference between occupational experience and knowledge point averages of the teachers

has not been found as statistically important (p=0.322). When educational status was considered, it has been determined that knowledge points were generally increasing as educational level was rising. Accordingly, knowledge point average of the teachers who have taken undergraduate and graduate education was 72.12±14.98 and high school graduates had 67.29±17.49. Difference between educational status and knowledge point averages of the teachers has been found as statistically important (p=0.027). When taking courses related to nutrition in schooling period and knowledge point averages were investigated, it has been found that knowledge point average of those who have taken nutrition education was 71.01±15.33 and those who have not taken this education had 66.54±18.71. Although difference between taking courses related to nutrition and knowledge point averages of the teachers has not been found as statistically important, it has been seen that the knowledge point average of teachers who have taken nutrition education was higher than the others.

When knowledge levels of the teachers about child nutrition are investigated considering the variables of sex, age groups, occupational experience, educational status and taking course related to nutrition (Table 4), following results have occurred.

It has been found that all of the men and vast majority of the women have “average” knowledge level in the scope of sex variable. “Average” knowledge level constitutes the greatest part of three groups in the scope of variable of age group. The group in 25-30 age range had “sufficient” knowledge level in the highest rate. It has been seen that only 17% of the teachers had sufficient knowledge level about child nutrition and share of those who had 1-3 year occupational experience is greater than the others (45.5%). It has been found that 70% of the teachers had average knowledge level and share of those who have 1-6 year occupational experience was greater than of those having 7 years and over (24.5%). Knowledge levels of the teachers have been

investigated by dividing them into two groups according to their educational statuses as of high school and undergraduate/graduate. Knowledge level of both groups about nutrition has been found as “average” predominantly. However, it has been established that teachers who have taken undergraduate/graduate education have higher “sufficient and average” knowledge level about nutrition than the

other group. When status of taking course about nutrition was evaluated, it has been seen that those having “sufficient and average” knowledge level have taken course about nutrition. Difference between age groups, occupational experience, taking course about nutrition and knowledge levels has been found as significant statistically (p=0.043; 0.049; 0.018).

Table 4. Knowledge Levels of the Teachers about Child Nutrition According to Variables

	Knowledge Levels						p
	Sufficient		Average		Insufficient		
	n	%	n	%	n	%	
Sex							
Man	0	0.0	6	3.0	0	0.0	-
Woman	33	16.5	134	67.0	27	13.5	
Age Groups							
17-24 age	11	5.5	47	23.5	16	8.0	
25-30 age	14	7.0	61	30.5	5	2.5	0.043
Age of 31 and over	9	4.5	32	16.0	5	2.5	
Occupational Experience							
1-3 year	16	8.0	46	23.0	17	8.5	
4-6 year	7	3.5	45	22.5	3	1.5	0.049
7-9 year	5	2.5	24	12.0	2	1.0	
10 years and over	6	3.0	25	12.5	4	2.0	
Educational Status							
High School	14	7.0	63	31.5	17	8.5	0.075
Undergraduate/Graduate	20	10.0	77	38.5	9	4.5	
Taking Courses related to Nutrition							
Yes	25	12.5	109	54.5	14	7.0	0.018
No	8	4.0	31	15.5	13	6.5	

Men preschool teachers’ being less than the women teachers may stemmed from the factors such as a belief that women were interested in children more than the men, perception of preschool education institutes as nursery and belief that women do this better.

It has been found that 77.0% of the teachers participating to study were at the age of 30 or below and 82.5% of them have less than 10 year occupational experience. Therefore, it can be said that there is a young and dynamic staff in the institutes. 47% of the teachers are high school graduates and 53% of them have undergraduate and graduate education. There were few teachers who have a graduate degree (n=7). It can be assumed that teachers are not interested in scientific progress in education.

74% of the teachers have stated that they have taken courses related to nutrition. Nutrition courses are given in universities and department of pediatric development in girls’ vocational high schools. While Gündoğdu (2009) states that 96.1% of the teachers have taken courses related to nutrition and Çongar and Özdemir (2004) state that 99% of physical education teachers have taken nutrition courses; Sabbağ (2003) states that 71.92% of primary education teachers have not taken courses about nutrition.^{17,18,19} While certain departments of the universities open courses about nutrition, others do not give such courses. It can be seen there is no unity in university curriculums related to nutrition. Minimum one course related to nutrition in university curriculums make significant contributions to individuals. Auld et.al. (1999) in their study have determined that specially trained

teachers are more effective than classroom teachers in terms of showing the correct eating behaviors of students.²⁰

While 73.5% of the teachers participating to the study have stated that they didn't attend to the activities related to nutrition, 83.5% of them have emphasized that they want to attend to such activities. Large majority of teachers' willingness to attend to such activities may be realized as a positive behavior and they may be made attended to nutritional activities regularly by providing necessary opportunities for them.

When nutrition oriented media follow-up statuses of teachers were investigated, internet (74.0%) and television (68.0%) took place near the top. In the studies of conducted by Gündoğdu (2009) and Sabbağ (2003) the source from which the teachers watch the news related to nutrition has been determined as television with 81.7% and 74.3%.^{17,19} Results in the studies show similarity with each other. Information pollution is so much as well as correct information in television and internet which are becoming indispensable part of daily life. Required informing and guidance should be conducted in order to make teachers achieve the most exact information with accurate sources.

The question among nutrition knowledge questions which have been answered mostly as correct by teachers was "Which one's overconsumption is more effective on tooth decaying?" (97.5%). This is followed by the questions related to the richest source of fat (96.5%), vitamin source (95.0%), the food which is not given to the child having diarrhea (92.5%) and the most important function of vitamin in body (90.5%). The question which have been answered mostly as wrong by teachers was "Which one of the nutritional elements is not an energy source?" (30.5%). This was followed by the questions of "What disease is seen in children as a result of lack of Iodine" (31.5%), "How many kind of nutrition group are there" (34.0%) and "Which one's lack among the nutritional elements may not cause anemia?" (39.0%).

Chronical diseases associated with nutrition such as growth and developmental retardation, iron deficiency anemia and rachitism are often seen in 0-5 age group children in Turkey. Iron deficiency anemia is an important public health problem in our country. According to the results obtained from several studies, average 50% of children in 0-5 age group are diagnosed as anemia in Turkey and anemia affects growth and intellectual and motor development of infants and children negatively and decreases resistance against infections.²¹ Moreover, iodine deficiency is still an important health problem especially for pregnant and children all across the world. Physical and mental development retardations, deafness and mutism, dwarfism, abortion, preterm delivery and disorders from birth as well as goiter develop as a result of iodine deficiency. Goiter prevalence has been found as 30.5% in all population in a study conducted at the national level in 1988.²² In school children, goiter prevalence which have been obtained with calculation from this study is 35.6% and this is severe prevalence value according to World Health Organization classification.²³ Wrong answers of teachers to the questions related to these public health problems, which so critical for children in preschool period, may indicate that early diagnosis for these problems may be difficult.

Nutrition knowledge point average of teachers was 69.85±16.34. When knowledge point averages of teachers were investigated considering several variables, it has been seen that knowledge point averages of women were higher than of men and knowledge point averages were increasing as age, occupational experience and educational status were increased. Moreover, Difference between age groups and occupational experiences and knowledge point averages have not been found as significant statistically (p=0.108; p=0.322; respectively). Difference between educational statuses and knowledge point averages have been found as significant statistically (p=0.038). When status of

taking course related to nutrition during schooling period and knowledge point averages were investigated, averages of teachers who have taken such courses were higher than of others.

It has been found that 16.5% of teachers had sufficient, 70.0% of them had average and 13.5% of them have insufficient nutrition knowledge level. In the study conducted by Gündoğdu¹⁷, it has been found that 0.78% of preschool teachers had so weak, 20.23% of them have weak, 46.3% of them had average level, 27.62% of them had good level and 5.06% of them had very good level of nutrition knowledge. In the study of Sabbağ (2003)¹⁹, while 71.39% of primary education teachers had sufficient, 24.94% of them had good and 3.67% of them had insufficient level of nutrition knowledge, 19.1% of primary education teachers had sufficient and 80.9% of them had insufficient level of nutrition knowledge in other study.²⁴

When nutrition knowledge levels were investigated according to the variable of sex, age groups, occupational experience, educational status and taking courses related to nutrition, it has been found that vast majority of them have average knowledge level. Difference between knowledge levels of teachers and age groups, occupational experience and taking course related to nutrition has been found as significant statistically ($p=0.043$; $p=0.049$; $p=0.018$; respectively). Decreasing knowledge level with increasing occupational experience of teachers may be realized as teachers' forgetting their knowledge in times because they have not renovated them. Knowledge levels of those who have taken courses related to nutrition are unsurprisingly higher than of others. This is an indicator of importance of such courses. When conducted studies were analyzed, it can be seen that nutrition knowledge levels of teachers are generally not sufficient.^{17-19,24}

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this study; we see that teachers need training about the relationship between nutrition and health. Institutionalization of nutrition education initiatives are important in this regard. The relationship between nutrition and health must be taught in schools where the teachers are trained and there should be practical courses on these subjects. Information obtained from mass media such as television, internet, etc. may not be accurate and sufficient for teachers. In addition, teacher training seminars, conferences, courses should be organized and their continuity should be ensured. In this way, teachers' lack of information on the subject of nutrition and misapplications arised from this lack of information can be prevented. Also, giving enough time for teachers to pass their knowledge to students, to correct deficiencies for practices in class and to allocate necessary money for this process should be among the duties of administrators. Especially, teachers are more experienced in terms of supporting the

preschool child's motor development. It can be more useful for teaching the relationship between nutrition and health if specialized teachers/employees are present at the main meal and snack times. At the national level, studies must be conducted on nutritional and health statuses of the teachers at certain intervals so that knowledge levels, attitudes and behaviors of teachers can be changed and developed in positive manner by conducting necessary arrangements according to the results and this should take place within the boundaries of education policies. In accordance with "Nutrition is the foundation of health" policy, institutions and organizations that produce state policy on the issue (such as Ministry of Health, Ministry of Education) should make the necessary legislative regulations, provide inter-agency coordination and by making their controls, these institutions and organizations should be involved in corrective actions when necessary.

To sum up briefly, proper nutrition is important for child growth and development, and it is critical that well eating habits be developed at a early age if they are to be carried throughout a time of life. Teachers of preschool children are protectors of child

nutrition issue. The issue of nutrition is one that day after day changes. Therefore, teachers and authorities should pay attention to this issue and should fulfill their duties in this issue.

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