

Nutrition related knowledge and attitudes of mothers and teachers of kindergarten children

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ABSTRACT

Programs focusing on health and nutrition help ensure children's early development. Nutrition knowledge of families and teachers has a significant impact on children's eating habits and dietary patterns. Recently, there is an increase in the number of daycare schools in North Cyprus, offering services between 8 AM to 6 PM and provide two main meals and two snacks during the day. This study was carried out to understand the nutrition-related knowledge of kindergarten teachers and mothers of children aged 2-5 and their attitudes towards nutrition, and find the deficiencies in the knowledge and attitude of both groups as they significantly impact dietary habits of children. The 121 participants from the Kyrenia District, Turkish Republic of North Cyprus were enrolled, 79 were educators in the kindergarten and 42 were mothers. It was observed that there is no statistically significant difference between mothers' and teacher's knowledge and attitude of the nutritional content of foods. Our study also showed that though mothers were educated and possessed knowledge of nutrients yet their attitudes did not reflect it. Our study revealed that the current knowledge status of teachers and caregivers, as well as their attitudes towards various aspects of diet, are not sufficient to lay the foundation of healthy eating.

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1. INTRODUCTION

Every individual involved in providing care to the child, and interacting with the child at mealtime influences food choices [1]. Poor nutrition habits developed in preschool times cause multiple nutrition-related problems faced by many children in their adolescence and adulthood [2]. It is observed that inadequate knowledge of kindergarten teachers and management can cause picky eating habits in the pre-schoolers, illogical nutrition management, and irrational allocation of various nutrients. Poor nutrition habits open the doors to multiple infections which in turn can worsen the malnutrition, thus starting a vicious cycle [3]. Efforts to improve the knowledge of kindergarten teachers can bring change in the nutrition awareness of these pre-schoolers [4]. Nutrition awareness started at an early age is a tool that aids in building lifelong healthy eating habits by inculcating sensible dietary patterns in children [5]. Also, seeing the people in their environment consuming the same foods that are presented to them and repeated exposure to foods help overcome the food fear in children [1].

Many nations round the world are concerned about the increasing cases of stunted growth. This is blamed on poor nutrition and dietary insufficiencies which can cause short term effects like poor cognitive, motor and social development and in the long run can cause health and economic issues [6]. The nutrition knowledge of mothers, especially the mothers and caretakers of pre-school children has a significant contribution in molding a child's eating habits and dietary patterns as children spend a significant amount of their time away from the school environment [7]. Research has shown that there is a need to bring a change in the dietary habits of young children, taught by professionals involving kindergarten teachers, children, and their parents [8]. If not paid attention at an early age, the habit of poor physical activity and inadequate dietary intake can also be the underlying cause of metabolic syndromes in the years ahead for these children [9].

Among the various nutrition-related problems reported in kindergarten groups, picky eating is a very common one often complained of by the mothers of 2-5 years olds. This picky eating leaves little meal options for the choosy eaters who eat meals different from the rest of the family with lesser nutrient variants, fewer fruits and vegetables, and longer time to finish meals [10]. Another commonly encountered problem is childhood obesity, which is on the rise in developed and developing countries due to unhealthy eating habits, overconsumption of fast foods, sweets, canned foods, and giving up the habit of eating natural products especially fruits and vegetables [8], [11]. Malnutrition is another problem emerging from poor nutrition and dietary habits. It not only increases childhood morbidity and mortality but is also the cause of the economic burden on the country. Many developing and underdeveloped economies around the world are trying to combat this problem of malnutrition [12].

In the recent few years, the trend of daycare centers has been on the rise in North Cyprus, where a lot of working mothers leave their children. In the household settings due to the limitation of time and changing lifestyles as most of the mothers are now working mothers, little attention is now paid to meal preparation and the culture of eating food together. This particular study was carried out to study the nutrition-related knowledge of kindergarten teachers and mothers of children aged 2-5 and their attitudes towards nutrition and help find out the difference and mistakes in the nutrition related knowledge of both groups. So far no studies have been conducted in North Cyprus to evaluate the knowledge and attitudes towards nutrition and dietary practices of kindergarten teachers and mothers of preschoolers. Since these children spend nearly 10 hours a day, 5-6 days a week in these daycare facilities, identification of baseline knowledge regarding nutrition of preschool children and the attitudes held towards it will help identify where we are and find out the gaps that need to be bridged in order to have a healthy nation in future. The idea was also to detect the misconceptions and attitudes that are held by the kindergarten teachers and mothers of these children since finding shortcomings can pave the way for providing sufficient knowledge about the matter through planned workshops and organized community meetings [13]. The teachers in kindergarten facilities have a significant role to play in developing the overall health behavior and eating habits of their young learners and also their future lives; [14] and nutritional habits are one of them. If the knowledge of mothers and teachers is not adequate and the attitudes held towards food are different among the two groups, it can raise questions in the inquisitive brains of children [4].

2. RESEARCH METHOD

For this particular study, a total of 121 participants from the Kyrenia District of Turkish Republic of North Cyprus volunteered. Of the total participants, 79 were educators in the kindergarten and pre-school education system and 42 were mothers. The participants were selected using simple convenience-based sampling, which is one of the most applicable and widely used and accepted sampling method. It is a type of non-probability sampling which allows the researcher to select the study subjects based on their accessibility and ease [15]. Since, most of the mothers and school administrations were not consenting to participate in the study and also most of the children used school transport for pick and drop so it was difficult to access the mothers, so the researchers chose to apply convenience sampling technique. A pretested questionnaire developed by Tepe in 2010 was used for this particular research after getting permission from the developer [16]. The instrument was validated and tested for reliability by the developer and the researchers chose to use it, as the food culture as well as the overall culture of both nations is very close to each other. The survey was carried out after getting the approval of the Girne American University's Ethics Committee.

Face-to-face interviews were used by the researcher for data collection. The researchers visited the kindergartens as well as mothers of children who consented to participate in the study. A consent form was signed by the participants. The questionnaire comprised of two sections, one about sociodemographic characteristics and the other about nutrition-related knowledge and practices.

The tool had 35 items in total and a five-point Likert scale was used for each question. For positive statements in the questionnaire, a scale of 5-1 was assigned with 5 totally agree and 1 totally disagree, while for negative statements reverse scoring was done [9]. Five main variables were analyzed using this particular

tool namely attitude towards drinks, understanding of nutritional content of food, attitude towards children's interest in eating, attitude towards balanced and regular eating behavior, attitude towards unbalanced and irregular eating behavior. Questions number 8, 16, 17, 25, 26, and 29 were regarding beverages and were used to determine the attitudes of mothers and teachers towards beverages. Four questions (7, 11, 15, and 24) were related to attitude towards nutritional content. These items were used to determine the attitudes of mothers and teachers towards the nutritional contents of foods. Five questions (18, 19, 20, 21, and 27) were about the children's interest in eating. These items helped determine the attitudes of mothers and teachers towards children's interest in eating. Ten questions (1, 2, 4, 5, 9, 23, 28, 32, 34, and 35) addressed balanced and regular eating behavior. These were to determine the attitudes of mothers and teachers towards balanced and regular nutrition. Ten questions of the tool (3, 6, 10, 12, 13, 14, 22, 30, 31, and 33) addressed the dimension of unbalanced and irregular eating behavior to help determine the attitudes of mothers and teachers towards unbalanced and irregular eating behaviors.

Statistical Package for Social Sciences version 26.0 was used for the analysis of the data collected during the survey. Descriptive statistical analysis was employed for the analysis of the data set. Means and standard deviations were calculated using statistical package for the social sciences (SPSS). Before doing the quantitative data analysis, the compatibility of the data was done to show the normal distribution of the sample using the "Kolmogorov Smirnov Test". The data was found to be normally distributed. The average of the total scores obtained for each question was taken into consideration, and the t-test (independent samples t-test) and analysis of variance (one-way ANOVA) were applied to these averages.

3. RESULTS AND DISCUSSION

The demographic characteristics of the study participants are shown in Table 1. When the attitude of mothers and teachers towards balanced and regular nutrition was analyzed the average was 3.5 while for the teachers the average was 3.61. When understanding of nutritional content of food by the mothers and teachers was analyzed, the former had an average of 2.74, while the average of teachers' attitudes towards nutritional content was 2.82. The independent sample t-test showed that there is no statistically significant difference between mother's and teacher's knowledge of the nutritional content of foods as shown in Table 2.

Table 1. Demographic characteristics of participants

Characteristics	n	%
Number of children		
No child	34	28.1
One	32	26.4
Two	41	33.9
More than two	14	11.6
Total	121	100.0
Monthly income		
2,200 or less	55	45.5
More than 2,200	66	54.5
Total	121	100.0
Education level		
College/High school graduates	25	20.7
University and above	96	79.3
Total	121	100.0
Occupation		
Teachers	79	65.3
Mothers	42	34.7
Total	121	100.0

Table 2. Attitudes of mothers and teachers towards regular and balanced nutrition behaviors, and comparison of mothers and teachers understanding of nutrient content

Occupation		n	Mean	Std. deviation
Balanced	Teacher	79	3.61	.59
	Family	42	3.50	.84
Content	Teacher	79	2.82	.88
	Family	42	2.74	1.06
		Levene test for equality of variances	t-Test for equality of means	
		F	Sig.	t
				df
				Sig. (2-tailed)
				Mean difference
Balanced	Equal variances assumed	8.04	.005	.79
	Equal variances not assumed			.71
Content	Equal variances assumed	1.82	.17	.46
	Equal variances not assumed			.44

When answers given by mothers and teachers to the questions about the interest of children in eating were analyzed, the average for the responses by the mothers was 2.73, while the average of teachers' responses was 2.67. When the responses by the mothers and teachers to the questions related to attitude towards drinks, the average of the mothers' attitudes towards drinks is 2.64, while the average of the teachers' attitudes towards drinks is 2.68. When the mother's and teacher's responses to questions related to 'attitudes towards unbalanced and irregular eating behavior were statistically analyzed, the average for the mothers was 2.58, and for teachers, it was.

Considering the general attitude of the mothers and teachers towards nutrition, the average of the general attitude of the mothers is 2.89, while the average of the teachers' general attitude is 2.96. According to the independent sample t-test, there is no statistically significant difference between mothers and teachers' general attitudes.

The ANOVA analysis, which was done to investigate whether the mothers' attitudes towards regular and balanced nutrition behavior show a statistically significant difference according to their income levels, no statistically significant difference was found. Good income levels of mothers do not guarantee balanced nutritional behavior. It's observed that income levels are not the key factor that affects the understanding of ingredients in the foods which mothers feed their preschool children shown in Table 3. ANOVA analysis was done to examine whether teachers' educational status and their understanding of nutrient contents differ statistically, there was no statistically significant difference between teachers' educational status and their knowledge of nutrient contents as presented in Table 4.

Table 3. ANOVA test result of the attitudes of mothers towards regular and balanced nutrition and their understanding of nutrient ingredients according to income levels

		Sum of squares	df	Mean square	F	Sig.
Balanced	Between groups	.49	1	.49	1.04	.30
	Within groups	56.66	119	.47		
	Total	57.16	120			
Content	Between groups	.172	1	.17	.19	.66
	Within groups	107.40	119	.90		
	Total	107.57	120			

Table 4. ANOVA test result of teachers' understanding of nutrient ingredients and their educational status

		n	%		
	Under university	10	12.7		
	University and above	69	87.3		
	Total	79	100.0		
	Sum of squares	df	Mean square	F	Sig.
Between groups	1.05	1	1.05	1.35	.24
Within groups	60.13	77	.78		
Total	61.19	78			

The ANOVA analysis was done to determine if there is a statistically significant difference between the educational status of teachers and their understanding of the importance of regular and balanced nutrition behavior. The educational status of teachers has not had much influence on making the right choices when it comes to feeding their children and children at school as shown in Table 5.

Table 5. ANOVA test result of teachers' educational status and their knowledge of regular and balanced nutrition behaviors

	Sum of squares	df	Mean square	F	Sig.
Between groups	.229	1	.22	.64	.42
Within groups	27.37	77	.35		
Total	27.60	78			

The toddler years of life are very crucial for inculcating healthy eating practices which then lead to healthy years later in life as children learn the motor skills needed to feed themselves and develop food preferences that affect their food choices as well [17]. The nutritional practices of children are a reflection of

the knowledge of caretakers, mothers, and kindergarten teachers. This is quite comprehensible as a child in the age group of 2-5 is dependent on the ones around him. It is believed that educated mothers can understand the nutritional requirements at this age and hence plan meals in a way that can satisfy the nutrient requirements. The behavior adapted by the mothers at mealtimes, the feeding methods and techniques adopted by them, the variety of foods offered to children at mealtimes help build the nutrition habits of children and have a crucial role in their physical and mental development [18].

Most of the traditional foods offered to toddlers are rich sources of macro as well as micronutrients, but the changing cooking practices and drifting away from traditional cooking is a concern [19]. The results of our study failed to show any relation between the educational status of mothers, their nutrition knowledge, and nutrition practices. Similar results were also seen in a study done in Egypt where it was observed that nutritional knowledge of mothers did not have a significant effect on the nutritional practices of children [20]. Tepe in 2010 also found that the educational status does not have an impact on the nutritional practices of children [16]. A study done in Spain also showed that parental knowledge of nutrition is not essentially related to adequate nutrition in their children or leads to good quality of diet consumed by the family. The Spanish study also showed that even if the caretakers are significantly aware of the importance of nutrition in child development this does not always reflect in their attitude towards nutrition. Our study also showed that though mothers were educated and possessed knowledge of nutrients yet their attitudes did not reflect it. Similar findings were observed in a study showing no significant relation between the education level of the caregiver and the food diversification for toddlers [21]. The results contradict the results presented in a systematic review focusing on parent's knowledge and its impact on the quality of food when it comes to food choices for preschoolers [22].

The study also laid light on the fact that the nutrition knowledge of mothers is not significantly related to children's consumption of unhealthy drinks. The consumption of these sugary drinks causes teeth decay and problems related to weight in children. A study conducted in Australia also showed similar findings where it was concluded that exposure to attractive advertisements in social media has the power of influencing parents' choice of drinks as well the demands of children who are also exposed to these tempting media campaigns [23]. A study done in the United Kingdom showed that parents stated that they know about healthy nutrition, yet they were not clear in their concepts what comprises healthy nutrition and what amount is required to meet the requirements at a particular age. According to the study, this often leads to unnecessary dilution of juices or squashes [24]. When considering the socio-economic status of the families and its impact on food choices, the results failed to show any statistically significant difference similar to the findings in Turkey [16], [21]. This means that food choices are not influenced by the socioeconomic status of the families as also published in a study in 2017 [25].

When nutrition behaviors and attitudes of children are discussed, the role of teachers cannot be overlooked as children spend a substantial amount of their time in the facility settings where they are offered midday snacks and lunch by the school authorities. The children are not responsible for making food choices for themselves. On the contrary, they are dependent on the knowledge and food attitudes of their caregivers in the school settings. Sometimes children are rewarded in the class with candies and unhealthy snacks which can unknowingly develop the liking for the junk food items [26]. Healthy foods offered as snacks can help develop healthy food behaviors in future lives. It is observed that the tastes for foods refused by children before starting school are often accepted by them when they start going to these facilities. In a study in the United Kingdom, it was stated by a mother that her daughter started eating breadsticks and carrots after she joined a playgroup where they were offered to her as a midday snack [24]. Thus the role of kindergarten staff in inculcating healthy eating habits in children cannot be overlooked. A study conducted in Congo also showed that due to poor eating habits of children, lesser use of fruits and vegetables has led to increase in cases of obesity in the African region [11].

In contrast to a study conducted in Egypt, our results failed to show any statistically significant difference between the educational status of the kindergarten teachers and their nutrition practices. This result brings to light the deficiency in the education imparted to these teachers [27]. If they are not aware of healthy nutrition, nutrition requirements and do not practice healthy eating habits they will fail to develop healthy eating habits in children. A research carried out in Greece also showed that the teachers had deficient knowledge of nutrients due to the structure of teachers training program [28]. Even in Norway, a survey of student preschool teachers highlighted the deficiency of curriculum in preparing these future teachers in dealing with their important task [29]. Identifying the gaps in care givers' education can turn stones and make a great difference in years ahead by addressing them [30].

Offering vegetables and fruits repeatedly at mealtimes, sitting with children at mealtimes sharing foods with them, having small discussions about the significance of healthy foods, and creating awareness about junk foods can engrave lifelong lessons in their memories. Teachers are often role models for their students and they leave permanent impressions on their students so if the teachers are equipped with sufficient knowledge during their training it can help prevent many nutrition related diseases in children and

adolescents. Yet, if no intervention programs are designed for mothers of these children the desired results cannot be attained [31] as the role of parenting in appropriate growth and development of children is of utmost significance [32]. The family meals are very valuable in promoting healthy eating in toddlers and infants [33]. But, no effort on its own can be successful in developing healthy nutrition-related behaviors in the pre-school children unless mothers and teachers join hands with each other and are on the same page. The nutrition knowledge imparted at school and the practices opted at school should be continued in the home surroundings. It will reinforce the school practices and will lead to reduced incidences of problems of over and undernutrition [34]. Also, in the recent years it is observed that there is a rise in the cases of stunting which is easily preventable by paying attention to the nutrition of children [35]. All those involved in handling food must have sufficient knowledge and must implement best hygiene practices [36] at meal times to ensure that healthy practices are taught to the toddlers.

4. CONCLUSION

The study confirmed insufficient knowledge regarding nutrition and also reflected poor attitudes towards dietary habits for both the kindergarten teachers and mothers of preschoolers. Keeping in mind that nutritional knowledge of mothers and the preschool setup has a long-lasting impact on the nutrition habits of children. It was observed that the current knowledge status of teachers and mothers as well as their attitudes towards various aspects of diet are not satisfactory and hence can be the cause of multiple diet related problems in these children in the future.

This can be addressed by arranging interactive programs to impart nutrition-related knowledge to mothers, caregivers and teachers to develop healthy eating behavior and active lifestyles in the children. The Ministry of Education and Ministry of Health, Turkish Republic of North Cyprus should join hands in designing programs to impart this knowledge to the mothers of preschoolers in the form of workshops. Also, steps should be taken to inculcate the essentials of nutrition, food preparation and food hygiene practices in the curriculum of preschool teachers' university curriculum. The role of media cannot be overlooked in organizing these educational campaigns. The print media as well as the social media platforms should be recruited to ensure that desired results are achieved. Sustainable improvement and betterment can be bagged by making sure that community participation is the center of all activities. Healthy children of today will be the healthy nations of tomorrow and will be able to pay a vital role in the socio-economic development of their countries.

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