



## Determination of the level of knowledge and attitudes of mothers regarding vitamin d use in Konya

**Zeynep Cicek \***, Higher School of Health Department of Nutrition and Dietetics, Mevlana University, Konya, Turkey.

**Indrani Kalkan**, Higher School of Health Department of Nursing, Mevlana University Konya, Turkey.

**Birsen Bilgen Sivri**, Higher School of Health Department of Nursing, Mevlana University, Konya, Turkey.

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### Abstract

Objective: This study was conducted to determine the level of knowledge and attitudes of mothers having children 0-3 years of age, regarding Vitamin D use. Materials and Methods: The population of this descriptive study comprised of mothers having children 0-3 years of age, who registered in a family health center in Konya between the dates 15 December – 31 January, 2015. Of this population, the experimental sample consisted of mothers who voluntarily accepted to participate in the study. The data was collected by the researchers by means of a questionnaire having 25 questions based on literature review. Face to face interview was conducted with participants to fill up the questionnaire. Data was analysed statistically using SPSS 22.0 packet program. Means, percentages, frequencies and chi-square test was performed to evaluate the data. Results: 59% of mothers belonged to the age group of 26-35 years, 58% had an education level of at least high school or above. All of the participants had given birth in the hospital, and 66% stated that they had not attended any health related training prior to birth. 33% of the mothers mentioned that they gave vitamin D to their children on a regular basis and 40% stated that mothers milk contained adequate amounts of vitamin D. No difference was found between education level of mothers and health related training prior to birth, in regard to vitamin D usage for their children ( $p > 0,05$ ). Conclusion: The level of knowledge of mothers and their attitudes regarding regular vitamin D usage for their children were not found to be at an adequate level. In this respect, health personnels

\* ADDRESS FOR CORRESPONDENCE: **Zeynep Çiçek**, Higher School of Health Department of Nutrition and Dietetics, Mevlana University, Konya, Turkey. E-mail address: [ikalkan@mevlana.edu.tr](mailto:ikalkan@mevlana.edu.tr)

working at the family health centers must take more responsibility for the education and training of mothers visiting them.

Keywords: 0-3years aged children, vitamin D, level of knowledge, health personnels, mother

## 1. Introduction

Vitamin D helps in the absorption and retention of calcium and phosphorus which are both critical for building bone. It has been suggested that Vitamin D sufficiency enhances calcium and phosphorus absorption by 30– 40% and 80%, respectively [1]. Vitamin D deficiency can lead to rickets, a bone-softening disease that continues to be reported in both developed and developing countries mostly in children during the first two years of life. At greatest risk for rickets are infants exclusively breastfed who do not receive a daily vitamin D supplement [2]. Apart from its role in bone mineralization, numerous studies have reported a link between vitamin D deficiency and several chronic disorders such as type 1 diabetes mellitus (T1DM), systemic lupus erythematosus (SLE), multiple sclerosis (MS), cardiovascular disease (CVD) and several malignancies [3]. These recent findings have led to greater emphasis on treatment of vitamin D deficiency and vitamin D supplementation especially to infants and children.

Vitamin D is synthesized mainly from the action of ultraviolet (UV) radiation on 7 dehydrocholesterol in the skin. Vitamin D deficiency is more likely to occur in individuals with darker skin or in those with extensive covering of the skin and reduced exposure to the sunlight [1]. If maternal vitamin D status is poor during pregnancy, the newborn will also have low stores of 25-hydroxyvitamin [4]. Very little vitamin D is available from breast milk and breastfed infants depend on their stores at birth and their exposure to sunlight to maintain a satisfactory vitamin D status [5].

Low levels of vitamin D is known to lead to the development of rickets in children and only little vitamin D is generally sufficient to prevent or treat it [1]. Other than the effect of vitamin D on calcium metabolism and bone health, recent large-scale prospective cohort studies have shown inverse correlations between serum 25(OH)D levels and all-cause mortality or the cumulative development of cardiovascular disease, such as stroke, myocardial infarction or hypertension [6]. In another study, it has been reported that adequate vitamin D status seems to be protective against musculoskeletal disorders (muscle weakness, falls, fractures), infectious diseases, autoimmune diseases, cardiovascular disease, type 1 and type 2 diabetes mellitus, several types of cancer, neurocognitive dysfunction and mental illness, and other diseases, as well as infertility and adverse pregnancy and birth outcomes. Vitamin D deficiency/insufficiency is associated with all-cause mortality [7].

For several years now, vitamin D deficiency and nutritional rickets has continued to be a major public health problem, in Turkey. Pediatric Endocrinology and Bone health department of Diabetic Association, in collaboration with the Ministry of Health have recommended the use of Daily dose of 400 units of vitamin D for all neonates until one year at the least and preferably until 3 years of age. Following this collaboration and practise of the recommendation, a decrease in the rate of rickets in children aged 1-3 years, from 1.67 - 1.9% to 0.1% has been reported in Turkey on a national basis. Awareness and educational programs for families have been effectively conducted in primary health care service centers. In spite of the steps taken to alleviate the vitamin D deficiency in infants, this problem persists in the country [8].

Awareness and knowledge of mothers regarding importance of vitamin D supplementation would affect the health of their babies in a positive manner. Similar studies performed in Ankara and Istanbul demonstrated an inadequate knowledge of Turkish mothers in this aspect [8, 9]. This study was conducted in Konya in order to determine the level of knowledge and attitudes of mothers having children 0-3 years of age, regarding Vitamin D use.

## 2. Materials and Methods

This research was planned as a community based cross-sectional, descriptive study and was performed in the center of Konya province. The research was conducted during 15 December 2014 – 31 January 2015 in family health center number 40, located in Selçuklu county of Konya. The target population of the study comprised of mothers having children aged 0-3 years registered into this center. Any particular sampling method was not used for data collection. All women falling into this category, ones who visited the health care center during the mentioned dates and voluntarily accepted to participate in this study were included. Information regarding the research was provided to the participants and their approval was sought prior to the interview.

For data collection, a face to face interview was conducted using a questionnaire prepared by the researchers based upon literature review. The questionnaire comprised of 25 questions which included items on socio-demographic characteristics of the mothers with 0-3 year old babies and their knowledge and attitudes regarding vitamin D supplementation. The forms were filled in by the researchers based upon the face to face interview that lasted approximately 10 minutes for each participant. Data obtained was analysed using SPSS 22.0 statistical packet program. For evaluation purposes means, percentages, frequencies and chi-square test were performed.

## 3. Results

The sample population comprised of 100 individuals in total. 59% of mothers belonged to the age group of 26-35 years, 58% had an education level of at least high school or above (Table. 1).

Table 1. Relation between daily vitamin d use and education level of mothers

Education	Daily Use N (%)	Irregular Use n (%)	Total	p
Not Educated	0	1 (100%)	1	p > 0,05
Primary and Secondary School	2 (4,8%)	40 (95,2%)	42	
High School and above	2 (7,1%)	55 (92,9%)	57	
Total	4 (4%)	96 (96%)	100	

All of the participants had given birth in the hospital. Among the experimental group 75% of mothers had delivered babies with birth weight between 2.0 - 3.5 kg, 21% more than 3.5 kg and only 4% below 2 kg. When enquired about health related trainings prior to birth, 66% of the mothers stated that they had attended some kind of health related training before delivery, and 77% out of them were informed about vitamin D supplementation.

Regarding vitamin D usage, 59% of the mothers mentioned that they gave vitamin D to their children on a regular basis and 40% stated that mothers milk contained adequate amounts of vitamin D. No difference was found between education level of mothers and health related training prior to birth, in regard to vitamin D usage for their children (p >0,05) (Table. 1)

Table 2. Knowledge of mothers about vitamin d use and benefits (n=100)

Questions	Agree
1. Is vitamin D sufficient in mothers milk?	40

2. When should vitamin D supplementation begin?	
• One week	32
• 15 days	48
• One month	15
• Other	5
3. Do you expose your child to sun?	82
4. How long do you expose your child to sun?	
• 15 minutes	30
• 30 minutes	36
• No idea	21
• Other	13
5. Which is the richest in Vitamin D	
• Meat	8
• Milk	18
• Eggs	20
• Fish	7
• Spinach	7
• Other/don't know	40
6. How vitamin applications to be done in a day?	
• Once	70
• Twice	21
• Thrice	9
7. How many drops of vitamin D is to be given each time?	
• One drop	20
• Two Drops	16
• Three Drops	64

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Mothers were asked several questions in order to test their knowledge regarding vitamin D usage and their benefits as well as their practices (Table. 2).

The results indicated that 40% of mothers considered mothers milk to be a sufficient source of vitamin D. Approximately 50% of the mothers thought that vitamin D supplementation should be started at 15 days after birth. Most of the mothers (82%) exposed their infants to sunlight but had no idea as to the amount of exposure required (Table. 2). Regarding nutritional sources of vitamin D, eggs and milk received the highest responses; on the other hand, 40% of the mothers did not know the nutritional sources of vitamin D. Regarding vitamin D supplementation, 70% of mothers responded that single supplementation in a day was adequate and 645 stated that 3 drops were to be given to the baby during each supplementation. (Table. 2)

#### 4. Discussion

Vitamin D status is one of the public health problems in developing countries and knowledge and awareness of mothers regarding the benefits of vitamin D supplementation and practises, play a major role in overcoming this problem [10]. Geographic location, food, cultural habits and socio-economic conditions are among the other important other factors [8]. In this study, 66% of the women stated that they had received some kind of a health related training prior to delivery and more the 75% of them were informed about vitamin D supplementation, however, 96% of all did not practise the supplementation on a routine basis. In this context, it may be worth mentioning that the vitamin D campaign initiated by the Ministry of Health in primary health care centres, although helpful in general needs to be disseminated, some of the issues need to be addressed and further training may be necessary.

In our study, only 32% of mothers were aware that the supplementation was to be begun within one week of birth. This rate was considerably lower as reported in a study conducted in Montreal Canada where 78% of mothers started vitamin D supplementation within first week of delivery [11]. However, 64% of women knew that 3 drops (400 IU) of vitamin D were to be given each time of supplementation. This percentage although relatively satisfactory, was somewhat lower than that found in a study conducted in Ankara [8]. On the other hand, more than 40% were not aware of the nutritional sources of vitamin D. Inadequate exposure to sun especially in early childhood is a risk factor for vitamin D deficiency. Although Turkey is a country with adequate sunshine all throughout the year, cultural constraints and traditional practices of covering the child too much in order to keep him warm prevents the neonate from receiving adequate sunshine. Also, many women are covered due to cultural constraints and therefore are inadequately exposed to sunlight themselves. Van der Meer et al (2010) performed a study on Indian, Turkish and Moroccan women and found that serum 25(OH) D levels were lowest among Turkish covered women (mean 10nmol/l) [12]. Pregnant women with low levels of serum 25(OH) D are known to have adverse effects on vitamin D levels of fetus [13]. In our study 82% of the mothers exposed their neonate to the sun, but were not aware of the recommended exposure period.

The general age group of approximately 60% of the mothers in this study was between 26-35 years and 58% had an education of at least high school or above, therefore as expected 75% the birthweights were within normal range. However, daily application of vitamin D supplements to babies were found to be rather low, and level of education did not play a significant role in this case (Table. 1). This was unlike the findings by Besbenli et al who conducted breastfeeding and supplementation practices of mothers from different socio-economic groups in Istanbul in 2013 [9]. The authors in their study had suggested that education and economic level of mothers affected breastfeeding period and multivitamin supplementation practices in a positive manner. It may be suggested that our experimental population were from a more homogenous background.

In our study, more than half the mothers did not continue the supplementation until one year of age as a mandatory basis and preferably three years as per recommended by the Health Ministry [14]. One reason might be that 72% of mothers in our study exclusively breastfed their infants upto six months, after which the child was mixed fed and exposed to other sources of vitamin D. This rate was

somewhat higher compared to the study performed by Besbenli et al in 2013 [9]. Current supplementation recommendations are specifically for breastfed infants and mothers were not adequately informed about continuation of the supplementation. In this study, 25% of the mothers supplemented their babies with baby formulas during the first 6 months. However, 40% of them were not aware that mothers milk and /or infant formulas were not sufficient in vitamin D.

## 5. Conclusion and Recommendations

Although the level of knowledge of mothers regarding use of vitamin D supplementation and dosage were fairly adequate by majority of mothers in our study however their attitudes towards regular vitamin D usage for their children were not found to be at an acceptable level. They were also not aware of the period of supplementation and the fact that mothers milk or infant formulas alone were not a sufficient source for vitamin D. They were also not adequately informed of the importance of sunshine in the early years of their child's life. Although the vitamin D campaign, totally free of cost funded by the Health Ministry of Turkey through the primary health care centres have been fairly successful in raising the awareness in this aspect, however, health personnels working at these family centers must take more responsibility for continuing and disseminating education and training of mothers visiting them during pregnancy and after childbirth.

One limitation of this study was that the experimental group was somewhat homogenous since they were from a particular locality in Konya. Similar studies must be conducted in groups having different socio-economic status in order to understand the level of knowledge and attitudes of mothers regarding vitamin D use in Konya.

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