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Mothers' Knowledge Regarding Vitamin D Deficiency among their Infants in Kerbala Pediatric Teaching Hospital

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***Abstract:** This study aimed to assess the awareness level of mothers with infants concerning Vitamin D utilization. A non-probability purposive sample of 75 mothers participating in the study was selected from the Kerbala Pediatric Teaching Hospital. The data was gathered in two segments: the initial segment concentrated on the demographic information of the mother, while the subsequent segment assessed the mothers' knowledge of vitamin D.*
The findings indicated that 30.7% of the moms were aged 21-25, 69.3% resided in rural areas, and 32.0% had attained a primary education level. the survey results suggested that the majority of the sample have modest knowledge on vitamin D.

***Keywords:** Infant, Vitamin D, Mother, Knowledge.*

1. INTRODUCTION

Vitamin D enhances the absorption and retention of calcium and phosphorus, essential for bone formation. Vitamin D deficiency has been shown to increase calcium and phosphorus absorption by 30–40% and 80%, respectively (1). It regulates calcium and phosphate equilibrium, crucial for bone metabolism, and may also influence cell proliferation, neuromuscular function, immune response, and the reduction of inflammation. Prentice's (2008) research indicates that vitamin D deficiency during pregnancy and infancy can result in numerous health complications for both the mother and the child. Vitamin D is crucial for calcium metabolism, bone mineralization, immune function, and the prevention of conditions such as depression, cardiovascular diseases, type 1 diabetes, hypertension, cancer, and high blood pressure (2). Dietary sources of vitamin D are limited; the principal natural source is the production of vitamin D from sunlight exposure on the skin. Vitamin D insufficiency and rickets have resurfaced as a global health concern due to multiple factors, including cultural customs and sun avoidance for cancer prevention. Inadequate vitamin D concentrations in breast milk, along with recommendations to protect neonates and infants from direct sunlight,

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significantly increase the risk of vitamin D deficiency in this demographic (3). Vitamin D deficiency can result in rickets and physical weakness. Children affected may encounter challenges in standing and ambulating. Recent studies have established a link between low vitamin D levels and an increased incidence of dental caries in children. Mothers' understanding of the significance of vitamin D supplementation will positively impact their infants' health (1).

2. RELETED WORK

Vitamin D insufficiency and its related complications are common all across the world, even in nations with low levels of income. Toddlers must, therefore, take vitamin D supplements regularly. A suitable amount of vitamin D must be maintained in order to maintain the health of skeletal and external bones. Mothers' knowledge of the importance of vitamin D supplementation, when coupled with proper practices, improves their children's health. The human body makes vitamin D in reaction to sunlight; dietary sources include eggs, oily fish, and fortified meals. The vitamin D status of the mother at the moment of birth determines the concentration of vitamin D in neonates. In the first few months of life, babies get most of their vitamin D from breast milk, sunshine, or supplementation. Because breast milk does not contain enough vitamin D, vitamin D insufficiency is more common in babies born in cultures that limit sun exposure or in areas with high temperatures. Vitamin D insufficiency in children can lead to rickets, muscular cramping, and breathing problems (4). The skin primarily produces vitamin D when 7-dehydrocholesterol reacts with UV radiation. Vitamin D insufficiency is more common in those with dark skin or lots of skin covered who don't get enough sun exposure. Inadequate 25-hydroxyvitamin D reserves in the baby can be a result of low levels of maternal vitamin D during pregnancy (5). Vitamin D insufficiency is a major worldwide public health concern affecting people of all ages. 1.2 Of the projected 1 billion people globally, the majority are at risk of vitamin D insufficiency among the populations of Europe, the Middle East, China, and Japan. 3 According to Fuleihan, vitamin D insufficiency is prevalent and can have negative repercussions both now and in the future (6). Vitamin D supplementation should continue until weaning, and infants who are breastfed entirely or partially should consume more than 1000 mL of vitamin D-fortified formula daily. The American Academy of Pediatrics (AAP) recommends 400 IU of vitamin D daily after birth. During the first three months of infancy, supplementing with vitamin D-fortified milk at a dose of less than 1000 IU/day does not seem to raise vitamin D levels in France. Some people feel that vitamin D poisoning occurs when dairy milk is too fortified with vitamin D3 (7). Deficiencies in vitamin D are becoming increasingly common, especially among pregnant women, nursing mothers, and women of childbearing age around the world. One major contributor to the worldwide frequency of this nutritional disease is the population's lack of understanding of the importance of vitamin D and how to prevent insufficiency (8). Babies with vitamin D deficiencies are more likely to experience rickets, infantile eczema, and inadequate foetal development. Additionally, hypocalcemia, rickets, and other bone-related disorders might affect minors. Therefore, it is considered beneficial for newborns, moms, and neonates to have sufficient vitamin D levels so that their physiological processes can be well-regulated. The increasing incidence of vitamin D deficiency has prompted experts in the field

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to focus on finding ways to prevent it. This has led to a plethora of studies aimed at improving the health of those with insufficient vitamin D stores (9). The severity of vitamin D insufficiency is still little known, but it is becoming an ever-greater worry for worldwide public health throughout pregnancy and adolescence. In view of the current understanding of the possible negative health effects of low vitamin D levels, it is both necessary and appropriate to reassess prevention efforts and determine the prevalence of vitamin D insufficiency in mothers and their newborns. Serum 25-hydroxyvitamin D [25(OH)D] values below 50 nmol/L indicate poor vitamin D status in both adults and children, according to a 2010 study undertaken by the Institute of Medicine (10).

3. METHODOLOGY

The research approach encompassed the design, location, sample, research instrument, and data collection and analysis procedures.
Objectives
1- To evaluate moms' understanding of vitamin D insufficiency in their infants
2- To find out the association between mothers' knowledge with her selected demographic variable (age, educational level, and their child selected demographic variables (age of the child, gender of the child).

Hypothesis
The proposed hypothesis states: H0 - there is no significant correlation between maternal knowledge of vitamin D insufficiency.
There exists a significant correlation between a mother's understanding of vitamin D insufficiency.
Research sample
Non probability "purposive" sample of (75) mothers who attend the Kerbala Pediatric Teaching Hospital, Iraq.
Data collection and analysis
Data were obtained through face to face interview techniques as a method of data collection. Interview was conducted with parents after taking the initial consent of each parent to participate in the study.

The statistical analysis was conducted utilizing the SPSS25 software (SPSS, Chicago, IL).
Additionally, hypocalcemia, rickets, and other bone-related disorders might affect minors. Therefore, it is considered beneficial for newborns, moms, and neonates to have sufficient vitamin D levels so that their physiological processes can be well-regulated.
Inadequate 25-hydroxyvitamin D reserves in the baby can be a result of low levels of maternal vitamin D during pregnancy (5). Vitamin D insufficiency is a major worldwide public health concern affecting people of all ages. The skin primarily produces vitamin D when 7-dehydrocholesterol reacts with UV radiation. Vitamin D insufficiency is more common in those with dark skin or lots of skin covered who don't get enough sun exposure. Inadequate 25-hydroxyvitamin D reserves in the baby can be a result of low levels of maternal vitamin D during pregnancy (5).

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4. RESULTS AND DISCUSSION

Table 1. Demographic Data Distribution for the Study

Demographic data	Rating	F	%
Age/ year	15-19	13	17.4
	20-24	22	29.3
	25-29	21	28
	30-34	14	18.7
	35-40	5	6.7
Marital Status of mother	Married	70	93.4
	Widower	3	4
	Divorced	2	2.7
Level of education of mother	No read and write	20	26.7
	Primary	23	30.7
	Intermediate	13	17.4
	Secondary	9	12
	Diploma and Bachelors	10	13.4
	Masters and Doctorate	0	0
Job of mother	Housewife	63	84
	Officer	12	16
Residential Area	Urban	24	32
	Rural	51	68
Total sample	N	75	100

Table (2) Distribution the levels of Level of Knowledge among mother

	Frequency	Percent	Total Mean	Std. Deviation
Poor	55	73.3	28.0400	3.37895
Good	20	26.7		
Very good	0	0		
Total	75	100.0		

Poor (0 – 13.3), good (13.4 – 26.6), very good (26.7 – 40).

Table (3) Relationship between level of knowledge and their demographic data

Demographic data	p-value*	Sig
Age	.510	N.S
Marital status	.526	N.S
Level of education	.151	N.S
Job of mother	.629	N.S
Residential Area	.711	N.S

*chi-square, N.S: non-significant

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Discussion

Table (1): Presents the demographic information of the mother. The findings revealed that 30.7% of the mothers were aged 21-25 years, 32.0% had attained only a primary education, and 69.3% of the sample resided in rural areas. Additionally, a higher proportion of participants were married, and more than half of the mothers were housewives. The results aligned with other research [11,15,17,19,21].

Table (2): The outcomes of the current study suggested that the general evaluation of mothers' awareness on vitamin D deficiency was at a deficient level. This observation is corroborated by references [13,14]. Another study contradicts [12]. The study indicates that insufficient information regarding vitamin D deficiency may stem from the failure of healthcare professionals to educate women about the significance of nutrition and vitamins for a child's proper development. The moms' inadequate educational attainment adversely affects their understanding of their children's needs, specifically with vitamin D.

Table (3): The study indicated that there was no significant correlation between mothers' knowledge and their socio-demographic characteristics, including maternal age, marital status, educational attainment, occupation, and residential area. These results, corroborated by studies [16,13], contradict [20]. The current study's results indicated that no significant relationships were observed between the level of awareness and the demographic data shown in Table 5. The findings of the present investigation corroborated those of [18]

5. CONCLUSIONS

The study revealed poor knowledge, among mothers regarding vitamin D deficiency for their infants. The study recommended increasing the public knowledge about the importance the importance vit D implementing educational program and activating the role of traditional and social media

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