



Article

Evaluation of Mothers' Awareness and Perceptions about Vitamin D Deficiency among Young Children

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Abstract: Vitamin D deficiency is a major public health problem worldwide in all age groups. It is a common problem in pediatrics, especially those who have chronic illness, and malnourished, limited geographically to the amount of sun exposure, as well as those with darker skin. This study aim to assess mothers' awareness and perceptions towards vitamin D deficiency among young children. A cross-sectional study, descriptive design was conducted in AL-Najaf health/ primary health care centers October 2023 to February 2024. The findings of present study indicate that the majority of mothers' awareness about vitamin D was poor. Regarding to mothers perceptions was positive. There is a significant relationship between mother's awareness about vitamin D deficiency and their demographic data such as level of education, mother occupation and type of family at (p -value > 0.05), while there is a non- significant relationship with remaining demographic variables. Most of the study sample received information about the importance of vitamin D; the doctors is the main source of these information. The study recommended the need to emphasize the educational sessions provided to mothers about importance of vitamin D to increase their knowledge and interest.

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1. Introduction

Vitamin D is a fat-soluble vitamin that plays a key role as a hormone in promoting the absorption and metabolism of calcium and phosphorus for bone formation. Most of the details of its role in mineral metabolism and the extra-skeletal actions in the body have been revealed. This issue is well manifested and characteristic in a pediatric population through its manifestation in children with chronic diseases, and malnutrition, and baptized restrictedly by geographical location and skin color. globally one billion individuals suffer from vitamin D deficiency, and Europe, the Middle East, China, and Japan inhabitants are at the highest risk [1].

The American Academy of Pediatrics recommended vitamin D supplement for (1) breastfed infants who do not consume at least 500 mL of a vitamin D-fortified formula/beverage and (2) non-breastfed infants who do not consume 500 mL of vitamin D fortified beverages. The supplementation should start during the first two months of life

and continue throughout childhood, because vitamin D stores in the newborn, which obtained through transplacental passage from the vitamin D-replete mother, should last for at least 8 weeks after delivery [2].

Sunlight is the principal source of vitamin D. Oily fish like sardines, tuna, salmon, mackerel, egg yolks, cod liver oil, and mushrooms are all excellent sources of vitamin D. Compared to animal milk, human milk is deficient in vitamin D. Hypocalcaemia seizures or convulsions may be caused by vitamin D insufficiency, especially in newborns and adolescents growing rapidly. Bone deformities can be seen in infants as young as six months old if vitamin D insufficiency is present (rickets) [3].

Mothers must obtain more instruction as the prevalence of vitamin D insufficiency in children rises. Given that a mother is the child's primary caregiver, the health of an infant is intimately related to her education. Therefore, it's crucial to aid moms in understanding the potential reasons for the drop in these vital compounds' levels. How much UVB exposure and supplementation may be required despite one's daily dietary patterns [4].

Pediatric nurses play an essential role in educate mothers about vit. D. for improve understanding and prevention vitamin D insufficiency. Nurses could instruct women about the value of sun exposure and the sources of vitamin D. by giving kids enough vitamin D supplements and exposing them to sunlight, vitamin D insufficiency can be avoided [5].

The main possible reasons for deficiency of this vitamin were a lack of knowledge about (use of sunscreen and lack of exposure for sun, and fully covering the body during sun exposure for children). The primary care centers were not able to provide information on the importance of vitamin D in bone health, growth, and development in children. Increase awareness of the benefits of sunlight by providing specific information about how often, for how long, and how much of the body should be exposed for optimal vitamin D uptake [6].

2. Materials and Methods

Design of the study

Descriptive design cross-sectional study was adopted in the present study to achieve the early stated objectives. The study started from October 2023 to February 2024.

Setting of the study

The research was carried out at Al-Najaf City/ Health Directorate of Al-Najaf Al-Ashraf / Primary Health Care Centers.

Sample of the study

A Non-probability (Purposive sample) of (150) Iraqi mothers live in Najaf and have children under five years old.

The Study Instrument

The evaluation tool was adopted and developed by the researcher to assess the knowledge and perceptions of mothers about vitamin D deficiency for their children. The final study tool consisted of (3) three parts as follows: Part (1): Socio-demographic data for mother includes (age, education level, monthly income, occupation , number of family and family type), socio-demographic data for children (age, gender, the sequence of the child in the family).

Part (2) Mother Awareness about vitamin D deficiency: This part of the questionnaire includes 14 items that explain the mother's Awareness about vitamin D deficiency, which measured through multiple-choice questions.

Part (3) Mother's perceptions about vitamin D deficiency: Which includes 15 paragraphs that explain the mother's perceptions about vitamin D deficiency for children, which is measured through multiple-choice questions.

Data Collection

The data collection is done by constructing modify developmental questionnaire with self-administrative report by using the Arabic questionnaire version.

Statistical analysis

In this study, the data were analyzed by using SPSS 2024 and Microsoft Excel (2015). Below are the statistical data analysis methods to analyze the study result: Descriptive Data Analysis (frequencies and percentages. inferential Data Analysis (Chi-Square test (X^2) for measuring the association between the studies variables according to its type. The significant was accepted at p-value less than 0.05.

3. Results

Table 1. Socio-Demographic Characteristic of the studied Simple

Socio-Demographic Data	Rating and intervals	Frequency	Percent
Age	18 - 23	36	24.0
	24 - 29	61	40.7
	30 - 35	42	28.0
	36 - 41	8	5.3
	42+	3	2.0
	Total	150	100.0
Level of Education	read and write	28	18.7
	primary	58	38.7
	secondary	23	15.3
	intermediate	14	9.3
	institute	17	11.3
	college	10	6.7
	Total	150	100.0
Occupation	Housewife	87	58.0
	employee	63	42.0
	Total	150	100.0
Family member	1	3	2.0
	2	11	7.3
	3	47	31.3
	4	43	28.7
	5	26	17.3
	6	11	7.3
	7	9	6.0
	Total	150	100.0
Socio-economic	sufficient	53	35.3
	some need	69	46.0
	insufficient	28	18.7
	Total	150	100.0
Family Type	nuclear	102	68.0
	extend	48	31.1
	Total	150	100.0

This table shows that the majority of the mothers' subgroups are: those with ages ranging between (24-29) years (40.7%); concerning education, about (38.7%) graduated from primary school and 58 % from them housewives. Those who have (3) family member (31.3%) and live with nuclear family (68%). Regarding socioeconomic status, about (46%) sufficient monthly income.

Table 2. Socio-Demographic Characteristic of the Children

Socio-Demographic Data	Rating and intervals	Frequency	Percent
Gender	Male	84	56.0
	Female	66	44.0
	Total	150	100.0
Sequence of the child in the family	1	54	36.0
	2	32	21.3
	3	29	19.3
	4	17	11.3
	5	18	12
	Total	150	100.0
Child's Age(month)	<= 3	10	6.7
	4 - 12	51	34.0
	13 - 21	7	4.7
	22 - 30	36	24.0
	31 - 39	18	12.0
	40 - 48	24	16.0
	49+	4	2.7
	Total	150	100.0

This table shows that the majority of the children within ages group between (4-12) months (34%); and more than half were male children (56%), About 36% of them were the first child in the family.

Table 3. Sources of Mother Information about importance of vitamin D

Items	Rating and intervals	Frequency	Percent
Have get information	No	84	56.0
	Yes	66	44.0
	Total	150	100.0
Source of information	Dr.	33	22.0
	Nurse	11	7.4
	Family	9	6
	Friend	7	4.6
	Mass media	6	4
	Total	150	100.0

This table reveals that sources of mother's information about vitamin D, she had a score of 44% out of 150 samples get information about study topic. Doctors is the main source of information.

Table 4. Statistical Description of mothers' Awareness about vitamin D deficiency

List	Questions	M.S	Assessment
1	Did you have information about importance of vitamin D.	1.77	Fair
2	Vitamin D is synthesized inside the body	1.4	Poor
3	Vitamin D is important in maintaining the level of calcium and phosphate in the body	1.32	Poor
4	Vitamin D promotes absorption of minerals in the intestine	1.56	Poor
5	Vitamin D is important immunity	1.76	Fair
6	Vitamin D helps heal the bones after any injury or surgery	2.01	Fair
7	Sunlight is the best source of vitamin D production in the body	1.48	Poor
8	Children are at greater risk than adults for vitamin D deficiency	1.68	Fair
9	Males are more likely to have vitamin D deficiency than females	1.02	Poor
10	obesity and digestive disorders are one of the factors that cause vitamin D deficiency in children	1.18	Poor
11	It is important for the child to take vitamin D supplements, and this varies with different age groups	2	Fair
12	Diets that contain fat are one of the major dietary sources of vitamin D	2.08	Fair
13	Vitamin D helps protect bones from fragility	1.67	Fair
14	Eggs are a nutritious source of vitamin D	2	Fair

Cut-off point (≥ 2.34 = Good / ≥ 1.67 =fair / ≥ 1 =poor)

This table shows that the mothers' responses about vitamin D importance for their children were poor for items numbered (2, 3, 4, 7, 9, and 10); while for the remaining items, their responses were fair.

Table 5. Overall assessment of mothers' Awareness regarding vitamin D deficiency

Questions No. = 14	M.S	Assessment
Overall mothers Awareness	1.63	Poor

The table above indicates that the overall assessment of mothers' awareness of the dangers of vitamin D deficiency toward their children was insufficient.

Table 6. A statistical description of mothers' perceptions among vitamin D deficiency

List	Questions	M.S.	Assessment
1	Give vitamin D supplements to our children	2.67	Positive
2	I think that being unfamiliar with the benefits of sun exposure prevents production of the vitamin D required for a child's need	2.55	Positive
3	I worry that the sun will damage my child's skin	2.56	Positive
4	Should support taking vitamin D supplements while breast-feeding	2.81	Positive
5	One of the barriers that prevents children from consuming food sources that contain vitamin D is the undesirable taste of some foods.	2.66	Positive
6	Be sure to use nutritional supplements to replace vitamin D as directed by your doctor	2.58	Positive
7	Taking more vitamin D than the recommended amount may be harmful.	1.95	Neutral
8	Baby does not need to get extra vitamin D from nutritional supplements at the age of less than 6 months, because breast milk contains everything my baby needs.	1.86	Neutral
9	You are afraid to stay in residential buildings for a long time without exposing my child to the sunlight needed to produce Vitamin D.	2.09	Neutral
10	I believe that vitamin D deficiency is one of the most common health problems for children in our country.	2.57	Positive
11	Fear is that my child will not be exposed to sunlight enough to meet the body's need for vitamin D.	2.09	Neutral
12	I suspect that taking nutritional supplements is necessary to treat vitamin D deficiency, but not to prevent it.	2.46	Positive
13	The high material cost of food sources that contain vitamin D is one of the obstacles to providing these sources	2.79	Positive
14	Vitamin D deficiency can be linked to some diseases, such as rickets and stiffness.	2.09	Neutral
15	Provide special places for children to play games and engage in outdoor activities as exposure to sunlight aids in the production of vitamin D.	2.09	Neutral

Cut-off point (≥ 2.34 = Positive / ≥ 1.67 =neutral/ ≥ 1 = Negative)

In this table the result show that mothers perceptions about vitamin D were positive for all items except (7,8,9, 10, 11, 14, and 15) were neutral.

Table 7. Overall assessment of mothers' perceptions about vitamin D deficiency

Questions	M.S.	Assessment
Overall assessment of mothers perceptions	2.38	Positive

Cut-off point (≥ 2.34 = Positive / ≥ 1.67 =neutral/ ≥ 1 = Negative)

This table shows the general evaluation of the mothers' perceptions towards vitamin D deficiency among their young children, the mothers' perceptions were positive.

Table 8. Relationship between Mother Knowledge and their Socio demographic data

Socio-Demographic Data	Value	Df.	F	P-value (Sig.)
Age	.355	5	.557	.733 (NS)
Level of Education	1.699	5	2.879	.017 (S)
Mother's Occupation	1.279	1	10.868	.001 (S)
Number of Children	.400	4	.792	.532 (NS)
Socio-economic status	.150	2	.594	.553 (NS)
Type of Family	3.149	9	3.151	.002 (S)

Table 8 reveals that there is a significant relationship between a mother's knowledge about vitamin D deficiency and their demographic data, such as level of education, mother's occupation, and type of family (p-value > 0.05), while there is a non-significant relationship with the other remaining variables.

4. Discussion

According to Table 1, about 40.7% of the study sample is within the age range of 24–29 years old and 58 % of them are housewives. This result is in agreement with other studies done by [7], they reported that age 26 is the dominant age for the study sample and 79% from them were housewives. Concerning mothers' education about 38.7% graduated from primary school. Regarding socioeconomic status, 46% had a sufficient monthly income. About the type of family, the highest percentage of participants live with a nuclear family. Regarding the child age and gender, more than thirty percent of the children within the age group between 4 - 12 months and 56% were male. From the researcher's point of view, this age group is a critical period for the development of vitamin D, as infants have limited reserves at birth and depend on external sources such as sunlight or nutritional supplements (researcher).

Table 3 indicates that only 44% of study participants received information about the importance of vitamin D; and the doctors were the main source of this information. This outcome is consistent with previous research conducted by [7], who reported that 76% of the sample got information about the importance of vitamin D from a private doctor. Concerning mothers' responses about vitamin D in table 4, were poor responses for items (vitamin D is synthesized inside the body; vitamin D is important in maintaining the level of calcium and phosphate in the body; vitamin D promotes absorption of minerals in the intestine; sunlight is the best source of vitamin D production in the body; males are more likely to have vitamin D deficiency than females; obesity and digestive disorders are some of the factors that cause vitamin D deficiency in children); while for the remaining items, their responses were fair.

In general the overall assessment of mothers' knowledge about importance of vitamin D (Table 5), indicate that the mothers have poor knowledge. This result is agreement with the results of the study done by [6] reported that the mothers in the Middle Euphrates

had poor level of knowledge about vitamin D deficiency among children. In addition, another study done by [8] in UAE found that the Emirates mothers have poor knowledge about vitamin D. Through what was mentioned previously, the need appears for improvement of the knowledge level of mothers regarding the duration of giving vitamin D supplements to their children, the number of times of sun exposure, and the best time for sunning. This can be achieved through raising awareness and education campaigns for mothers regarding vitamin D deficiency.

Discussion of mothers' perceptions about vitamin D, the current study result show that mothers perceptions about vitamin D were positive for all items except (taking more vitamin D than the recommended amount may be harmful; baby does not need to get extra vitamin D from nutritional supplements at the age of less than 6 months, because breast milk contains everything my baby needs; afraid to stay in residential buildings for a long time without exposing my child to the sunlight needed to produce Vitamin D; believe that vitamin D deficiency is one of the most common health problems for children in our country; fear is that my child will not be exposed to sunlight enough to meet the body's need for vitamin D; vitamin D deficiency can be linked to some diseases, such as rickets and stiffness; provide special places for children to play games and engage in outdoor activities as exposure to sunlight aids in the production of vitamin D) were neutral perceptions.

This result supported by a previous study conducted [9], the study found that the majority of mothers (88%) had a positive attitude towards vitamin D, with only 12% having a negative attitude. The study also reported the mean and standard deviation of the mothers' attitude scores towards vitamin D, which were 3.96 ± 0.75 , respectively. This information provides insights into the central tendency of the data and the extent to which the responses were spread out or clustered together. The general assessment of a mother's perceptions towards her child can provide important information about the quality of the mother-child relationship and the child's developmental outcomes. Attitude towards the child is a complex construct that involves various aspects, including maternal warmth, sensitivity, responsiveness, and involvement. The current study result in Table 7 showed that mothers have a positive attitude about the importance of vitamin D. This result was supported by [5], who reported that 64.4% of the mothers had a positive attitude regarding the importance of vitamin D.

Discussion the relationship between mother knowledge and their Socio-demographic data: Table 8 shows that there is a significant relationship between a mother's knowledge about vitamin D deficiency and their demographic data, such as level of education, mothers' occupation, and type of family. This result agrees with the result done by [5], who reported that there was a highly statistically significant relation between the knowledge score of mothers, educational level, and occupation.

While there is no significant relationship with the other remaining variables, this result is supported by a study [10], who reported that, on the other hand, no significant differences were found among the place of residency, work status, and family income.

5. Conclusion

Most mothers have poor awareness about vitamin D deficiency among their children; the overall assessment of mothers' perceptions of vitamin D deficiency was positive. There is a significant relationship between mothers' awareness of vitamin D deficiency and their demographic data such as level of education, mothers' occupation, and type of family at ($p\text{-value} > 0.05$). At the same time, there is no-significant relationship with the remaining demographic variables.

6. Recommendations

Based on the study's conclusions, the researcher recommends the following: Enhancing educational programs for mothers will increase their knowledge and interest toward vitamin D. Healthcare workers play a contributing role in bringing awareness about the

importance of vitamin D in rural areas by conducting awareness campaigns or distributing leaflets. Providing pamphlets for mothers about the importance of vitamin D.

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