

knowledge and Practice Regarding Vitamin D Supplement in Infancy among Primary Health Care Centers Doctors in Al karkh/ Baghdad City 2020

Dr.Huda Wala Aldeen Khairi

Dr. Amal Abdulkadir Saleh

Dr. Sura Ibrahim Akmoosh

M.B.Ch.B.,F.I.C.M.S/F.M

M.B.Ch.B.,F.I.C.M.S/F.M

M.B.Ch.B.,F.I.C.M.S/F.M

Abstract

Background: Vitamin D deficiency and insufficiency is a worldwide issue. In addition to its well-known impact on bone health and musculoskeletal function, recent studies relate it to many other diseases like cancer, diabetes mellitus, autoimmunity and infectious diseases. This problem may be aggravated by the inconsistent implementation of current clinical practice guidelines for vitamin D supplementation by the primary health care providers

Objectives: To assess the knowledge and practice of primary health care doctors regarding vitamin D supplements in infancy.

Methods: A descriptive cross-sectional study conducted between the 1st of February to 30th of July 2020 at 24 primary health care centers selected randomly from six sectors in Al –Karkh health directorate in Baghdad city, and a convenient sample of 240 primary health care doctors involved. Data were collected through direct interview.

Results Regarding knowledge, more than half of the study sample (53%) found to have fair knowledge ,while good knowledge detected in 20% and 27% shows poor knowledge level. less than half (47%)of doctors possess a fair practice level, whereas 29%, 24% had poor and good practice levels respectively. Poor practice noticed regarding recommending sun exposure. Most of the participants choose vitamin D drops supplement.

Conclusion: There was a significant association between knowledge and practice level and gender, age, specialty, years of experience. About half of participants had fair level of knowledge and practice, The Majority of vitamin D prescriber shows higher level of knowledge and practice.

Keywords: Vitamin D Supplement in Infancy, knowledge , Practice .

Introduction

Vitamin D is a fat-soluble vitamin ⁽¹⁾ .commonly known as "sunshine vitamin", it's steroid with hormone-like activity give it an important role in human growth and development.⁽²⁾ In 1922, McCollum *et al.* showed that the anti-rachitic substance in cod liver oil was distinct from vitamin A and he named the anti-rachitic substance Vitamin D.⁽³⁾ Vitamin D responsible for bone metabolism through the regulation of calcium and phosphate homeostasis and also play an important role in the modulation of cell growth , neuromuscular, immune function and reduction of inflammation.⁽⁴⁾ In 2003 the World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life , followed by continued breast feeding with complementary food until two years of age and beyond, so infants are particularly vulnerable to vitamin D deficiency. ⁽⁵⁾ There are concerns that breastfed infants may not maintain adequate vitamin D status from their mother's milk, ^(4, 6) in addition to the limited exposure of infants to sunlight due to long indoor period.⁽⁷⁾ Vitamin D deficiency remains the most common cause of rickets globally. ⁽⁸⁾ In nutritional rickets , once skeletal deformity occurs , unfortunately , it can be irreversible. Therefore, it is important to prevent nutritional rickets in vulnerable groups ⁽⁵⁾ To prevent this problem , a fairly large consensus exists that all

infants should receive 400 international units (IU) (10 µg) daily during their first year of life.⁽⁹⁾ Despite the higher prevalence of micronutrient deficiencies , the use of the dietary supplements has been reported to be low in various Middle East countries. ⁽²⁾

A survey takes place in IRAQ / Ramadi city in the period between 2001-2002 among children attending the outpatient clinic of Maternity and Children Hospital shows the prevalence of rickets was 10.5%, The majority of cases (97.6%) were within the age range from 3-24 months.⁽¹⁰⁾

The majority of the Iraqi mothers affirmed the importance of doctor guidance for their supplement adherence. ⁽⁴⁾ So this research was conducted to highlight vitamin D supplements in infancy.

Methods

A descriptive cross sectional study, conducted between the 1st of February to 30th of July 2020 at 24 primary health centers selected randomly from six sectors in Al -Karkh health directorate of Baghdad city. A convenient sample of 240 doctors at morning shift were involved and interviewed over a period of three months (2-3 visits weekly) regardless of their gender, age, job title and experience.

Through face to face interview after obtaining verbal consent, data were gathered by organized questionnaire involving the following: Knowledge questions divided into two sections the first one includes close-ended questions, while the second one involved three multiple choices questions. All covering doctor's knowledge regarding: last guideline for vitamin D supplement in infancy like dose, the right time to start and stop, risk group, consistency of supplement). Last guideline recommendation regarding sun exposure in infancy. Appropriate time and duration for sun exposure to get vitamin D and serum vitamin D value.

Questions covering doctor's practice regarding vitamin D prescription: Pursuing the last vitamin D guidelines. Counseling parents for their supplement compliance and its importance. Whether the time sufficient to counsel the family. Sun exposure and their practice toward the dose, time, and duration. Data collected and introduced into Microsoft excel sheet 2016 and loaded into statistical package for social science (SPSS) version 26 a statistical software program, and they were illustrated as proportions (percentile) and

frequencies (numbers) and Descriptive statistics were presented using tables. Chi-square was used to test the associations between categorical variables. $P\text{-value} \leq 0.05$ was considered significant.

In order to score the answers, one mark was given to each right answer and zero mark to the wrong answer. The Total score for knowledge and practice was calculated by dividing the true answer mark by the total question of knowledge and practice elements multiplied by 100. Then the elements were classified in to: Poor if the achieved score was less than 50%, Fair if the participant achieved 50-75% and Good if the score was >75%.

Result:

240 PHC doctors who joined this study, female doctors were obviously dominant by forming 85% of the participant, 93.8% were married, 75.5% were below 45 years old, 44.2% were specialist. Resident and GP account for 19.2%, and 36.7% respectively. Regarding years of experience, 40.4% have less than 10 years while only 21.7% have more than 20 years, as shown in table 1.

Table (1): Distribution of studied sample according to sociodemographic characteristics (n=240), in Baghdad city, 2020.

Variable		N	%
Gender	Male	36	15%
	Female	204	85%
Age	<35 yr	82	34.2%
	35-45 yr	99	41.3%
	>45 yr	59	24.6%
Marital status	Married	225	93.8%
	Single	15	6.3%
Job title	Specialist	106	44.2%
	Resident	46	19.2%
	GP	88	36.7%
Experience	<10 yr	97	40.4%
	10-20yr	91	37.9%
	>20 yr	52	21.7%

More than half of the study sample 127 (53%) found to have fair knowledge (score 50-75%). Good knowledge was detected in 48 (20%) of respondents (score above 75%), while 65 (27%) shows poor knowledge level (score less than 50%). There is a significant association between P.H.C doctor's knowledge level and their

gender, age, job title, and years of experience ($P\text{-value} < 0.05$) where female, age below 45 years old, specialist and those with less than 20 years' experience found to be more knowledgeable respectively. As shown in the table (2)

Table (2): Association between sociodemographic characteristics and knowledge level (N=240), in Baghdad city , 2020.

Variable		Knowledge levels.						P value
		Poor		Fair		Good		
		N	%	N	%	N	%	
Gender	Male	20	55.6%	10	27.8%	6	16.7%	0.001
	Female	44	21.6%	117	57.4%	43	21.1%	
Age	<35 yr	11	13.4%	44	53.7%	27	32.9%	0.001
	35-45 yr	23	23.2%	58	58.6%	18	18.2%	
	>45 yr	30	50.8%	25	42.4%	4	6.8%	
Marital status	Married	61	27.1%	117	52%	47	20.9%	0.540
	Single	3	20%	10	66.7%	2	13.3%	
Job title	Specialist	15	14.2%	59	55.7%	32	30.2%	0.001
	Resident	6	13%	30	65.2%	10	21.7%	
	GP	43	48.9%	38	43.2%	7	8%	
Experience	<10 yr	14	14.4%	52	53.6%	31	32%	0.001
	10-20yr	25	27.5%	51	56%	15	16.5%	
	>20 yr	25	48.1%	24	46.2%	3	5.8%	

Less than half 112 (47%) of the doctors possessed a fair practice level, whereas 58 (24%) had good practice level and 70 doctors (29%) had poor practice level. Among vitamin D prescribers of study sample 146 (71%) had good practice level, 49 (24%) have fair level of practice and only 10 (5%) had poor level of practice.

There is a significant association between participant practice level and their gender, age, job title, and practice years (p-value < 0.05) where female age below 45 years, specialist, and those with less than 20 years' experience own higher practice level respectively as shown in table (3).

Table (3): Association between socio demographic characteristics and practice level of the studied sample , in Baghdad city , 2020.

Variable		Practice level						P value
		Poor		Fair		Good		
		N	%	N	%	N	%	
Gender	Male	20	55.6%	9	25%	7	19.4%	0.001
	Female	50	24.5%	104	51%	50	24.5%	
Age	<35 yr	18	22%	41	50%	23	28%	0.001
	35-45 yr	23	23.2%	56	56.6%	20	20.2%	
	>45 yr	29	49.2%	16	27.1%	14	23.7%	
Marital status	Married	64	28.4%	107	47.6%	54	24%	0.635
	Single	6	40%	6	40%	3	20%	
Job title	Specialist	22	20.8%	53	50%	31	29.2%	0.001
	Resident	7	15.2%	31	67.4%	8	17.4%	
	GP	41	46.6%	29	33%	18	20.5%	
Experience	<10 yr	20	20.6%	55	56.7%	22	22.7%	0.007
	10-20yr	25	27.5%	42	46.2%	24	26.4%	
	>20 yr	25	48.1%	16	30.8%	11	21.2%	

A clear significant relation between knowledge and practice among participant used to offer vitamin D to infants as compared to

those who don't. Vitamin D giver shows a higher level of knowledge and practice unlike those who don't (Table 4).

Table (4): Association between giving vitamin D , knowledge and practice levels of studied sample , in Baghdad city , 2020 .

	Vitamin D giver							P value
		Poor		Fair		Good		
		N	%	N	%	N	%	
Knowledge	Yes (n=205)	35	17.1	123	60	47	22.9	0.001
	No (n=35)	29	82.9	4	11.4	2	5.7	
Practice	Yes (n=205)	36	17.6	112	54.6	57	27.8	0.001
	No (n=35)	34	97.1	1	2.9	0	0	

Discussion:

The majority of participants (86.3%) recognize appropriately the recommended daily dose of 400 IU to maintain adequate vitamin D serum indicator, analogs to the American study by Oberhelman *et al.* ⁽¹¹⁾ were 92.9% of family physician recognized the right answer.

Only 40.8% answered correctly when to start a supplement for the infant. This result disagrees with astudy regulated by Al Bishi *et al.* ⁽¹²⁾ in Tabuk –Saudi Arabia where 74% of the participant identifies it. This may be due to the fact that KSA possesses a guideline for vitamin D that announced in recent years. ^(13, 14)

Cholecalciferol (D3) as main constitute for most vitamin D supplements distinguished by 93.3%of doctors. Although 85.4% recognize exclusive breastfeeding as a risk factor, only 53.3% mention the formula-fed infants on less than one liter of formula to be at risk of deficiency .Those results may reflect a gap in our primary health centers doctor's knowledge with this regard .74.6%of the participants were knowledgeable for the fact that vitamin D in the antenatal period found to be not enough to protect infants after birth.

Regarding the best time to get vitamin D from the sun. only 38.3% of study participants distinguish the midday as the best time, this result came in agreement with Al Bishi *et al.* ⁽¹²⁾ in which only 14% identify it. While 71.6% identify the appropriate duration requirement of ten minutes to generate this vitamin, these data differ from the results of Al Bishi *et al.* ⁽¹²⁾ were only 25% of participants answered correctly, this discrepancy may be the result of the difference in the explored sample in which our study involves participant with the different job title, unlike the comparable study that targeted only General practitioners. While most guidelines identified serum 25-hydroxyvitamin D level of less than 50 nmol per Litter as insufficiency.⁽¹⁵⁾ More than half (56.3%) in this study properly identify this value, close to the

finding of the Saudi study by Al Bishi *et al.* (2018) ⁽¹²⁾ where 68% of participants meet the right standards. This might be explained by that guidelines not recommend for infants screening, in addition to test inaccessibility in the primary health centers so doctors not concern with it.

No significant association of knowledge with marital status was detected just similar to Babli *et al.* ⁽¹⁶⁾, while age, gender, spatiality, and experience years was significantly correlated to the level of knowledge , this dissimilar to Babli *et al.* ⁽¹⁶⁾ This may be due the majority of participant were female and variations in sample characteristics.

Good practice levels were found in 73.2% of Participants who follow the international guidelines. This could be explained that specialists account for 44.2% of the participants.

The majority confirm parental counseling regarding vitamin D supplement importance on their infant's health, this result agrees with Saudi study in Tabuk area by Al Bishi *et al.* ⁽¹²⁾ where 88% of their health care professional provider claimed parental counseling. about tow third of the surveyed physician inquire regarding parent's commitment to supplement, heterogeneously, these disagree with Babli *et al.* ⁽¹⁶⁾ paper were just about quarter of doctors reveal similar manner . Regarding time sufficiency for parental counseling, more than half of participants agreed on its inadequacy.

Frustratingly the bulk of respondents in the study confirm their regular sunshine encouragement for parents, while 67.3% of respondents for Babli *et al.* ⁽¹⁶⁾ study reveal that similar approach. could be explained by a deficit of the global recommendation against sunshine or can be due to the unavailability of the supplement in the health centers that force physicians to find an alternative root.

Most doctors in this study choose to recommend vitamin D through drops to infants

this agree with Oberhelman *et al.*⁽¹¹⁾ 87.5% of the sample have similar drops preference. A large proportion (85.4%) of the practitioners advise for infantile vitamin D supplementation.

The majority of participants describe 400 IU for infants as daily dose requirement, comparable to the results of Oberhelman *et al.*⁽¹¹⁾ (92.9%), Al Bishi *et al* (66%)⁽¹²⁾ Kara Elitok *et al* involves both pediatrician (98.4%) and family physician (76.8%).⁽¹⁷⁾ Karabulut *et al.* (pediatrician) 75.5%.⁽¹⁸⁾ Editor *et al.*(pediatrician) 88%.⁽¹⁹⁾. This result can explain their familiarity as well as previous good education concerning the dose.

Concerning the appropriate time to initiate or to terminate vitamin D supplement, about half of participants misdiagnose the proper initiation time. This outcome was in common with Karabulut *et al.* (pediatrician)⁽¹⁸⁾ were 52.9% of them having similar findings. Regarding the accurate time for cessation the supplement, 66.8% claimed till 1st year of age. This is similar to the Turkish study (67.8%) by Kara Elitok *et al.*⁽¹⁷⁾ While Elitok *et al.* (pediatrician)⁽¹⁹⁾ 48.6% gave similar result. Those achieved results may be explained by the inefficiency of most respondents to cope with the frequent guideline modifications.

Most of P.H.C doctors recommended supplement of vitamin D in the form of oral drops, much like Oberhelman *et al.*⁽¹¹⁾ and Kara Elitok *et al*⁽¹⁷⁾ where physician had a similar preference 94.2% , and 93.6% respectively. This may be clarified by their good understanding of the risk of overdose toxicity that can be achieved by using the multivitamin form.

Conclusion:

The overall knowledge level concerning vitamin D supplement was good only in one-fifth of the respondents. Higher knowledge proportion found in young, married, female, specialist. Most of participants recognize the recommended dose, while less than half of them recognize when to start supplement, and knew when to stop it. Poor knowledge regarding sun exposure risk on infants, and the day time of exposure to generate vitamin D in the body. Majority was obtained fair practice level regarding following guidelines, parents counseling, using drops form of vitamin D supplement. Higher level of knowledge was among vitamin D prescribers.

Recommendation:

Improving knowledge regarding vitamin D supplements and the impact of its deficiency through continuous training courses for doctors

and health providers and enhancement of health education messages and counseling as they represent the main source of parent's knowledge regarding vitamin D supplements. In details education regarding sun exposure required to be investigated, also study the main barrier regarding vitamin D supplement as not provide it in P.H.Cs, its cost, frequent daily doses, doctors not insist on vitamin D supplement and put a policy to overcome this barrier and utilizing powerful role of media and internet in health promotion .

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