

Knowledge, Attitude and Practice of Mothers Attending Kudai and Al-Hijrah Primary Health Care Center in Makkah towards Vitamin D Supplementation to Their Infants 2021

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Abstract A descriptive study design carried out to assess the mother's knowledge, attitudes and practices toward vitamin D supplementation to their infants at the south sector of Makkah Al-Mukarramah (Kudai and Al-Hijrah PHC center in the well-baby and vaccination clinics). The study sample includes (366) mothers of infants of one year or less attending Kudai and Al-Hijrah PHC center in Makkah city for well-baby clinic and vaccination clinic and all nationalities. The study instrument is a questionnaire composed of 4 parts includes: sociodemographic characteristic, knowledge, attitudes, and practices about vitamin D supplementation. The data collected from the respondents by using questionnaire. Content validity of the instrument was determined by panel of experts, while the reliability of the questionnaire determined by internal consistency reliability (Cronbach's Alpha reliability), and analyzed electronically by (SPSS) application. The study findings indicated that the highest proportion of mothers aged 15-35 years, secondary and highly educated, 85% not working. Doctor is the main source of information. The majority of mothers have weak to average knowledge, average to high attitude and high to average practice. Significant differences were found at mothers' knowledge in relation to age, nationality, education, occupation and income. Significant differences were found at mothers' attitude in relation to nationality, education, and income. Additionally, significant differences were found between mothers' practices in relation to education, and income.

Keywords: knowledge, attitude, practice, mothers, vitamin D supplementation, infants

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1. Introduction

Vitamin D is a fat-soluble vitamin. We have many sources to get vitamin D either by natural dietary sources in food such as (tuna, salmon, fatty liver, or fortified food), oral supplement, or ultraviolet sunlight. Vitamin D has an important role in the body, it facilitates and helps dietary calcium and phosphorus absorption from the intestine and inhibition of parathyroid hormone [1].

People who have a high risk of low vitamin D are Infants, children, and older adults because of insufficient vitamin D intake from diet, sun exposure, and infants who are consuming inadequate amounts of formula-fed (less than 1 Liter) per day or exclusively breastfeeding [2]. The classical manifestations of vitamin D deficiency in infants are rickets, seizures, and difficulty breathing. Most infants with rickets may present with very low serum

25(OH) D concentration and they didn't receive vitamin D supplements [3].

According to a systemic review about the prevalence of vitamin D deficiency in Saudi Arabia, among different populations (adults, children and adolescents, newborns, and pregnant/lactating women) is 81.0% (Confidence Interval 95% 68.0–90.0). And it was in the newborn 59%. Additionally, Mothers taking responsibility for the health status of their infants so the researches need to assess the knowledge, attitude, and practice of them and no similar studies were conducted in primary health care (PHC) in Makkah city, Saudi Arabia [4,5].

2. Aim of the Study

To assess the knowledge, attitude, and practice of mothers attending Kudai and Al-Hijrah PHC center towards vitamin D supplementation to their infants in Makkah city 2021.

3. Methodology

3.1. Study Design

A descriptive cross-sectional study design was used.

3.2. Study Area

The study was conducted at the south sector of Makkah Al-Mukarramah (Kudai and Al-Hijrah PHC center in the well-baby and vaccination clinics).

3.3. Study Population

Mothers of infants age 0-12 months attending Kudai and Al-Hijrah PHC center in Makkah city for well-baby clinic and vaccination clinic were involved in the study.

3.4. Inclusion Criteria

All mothers of infants age 0-12 months attending Kudai and Al-Hijrah PHC center in Makkah city for well-baby clinic and vaccination clinic and all nationalities.

3.5. Sample Size

The total number of mothers attending with their infants in the well-baby clinic and vaccination clinic in Kudai and Al-Hijrah PHC for 6 months was 7560. The sample size was calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95% and the response distribution was considered to be 50%) accordingly the sample size is 366 of mothers attending with their infants.

3.6. Data Collection Tool

A questionnaire was developed by the researchers adapted from two questionnaires of similar researches to collect the data for this study by Rasheed [6] Alramdhan El-Zubair[7].

The questionnaire consists of four parts. First part is consisting of questions related to Maternal and infant socio-demographic data. Second part composed of 11 questions to assess the mothers Knowledge. Third part consisted of 5 questions to assess the mothers Attitude toward vitamin D supplement. Fourth part concerned with assessment of the mothers' practice test through 5 questions.

Approval from the Ministry of Health (MOH) and permission from the primary health care director and mothers was obtained. The researchers explained the purpose of the study and interview the mothers attending the well-baby clinic and vaccination clinic while waiting for their time. The data was collected through 1 month in January 2021.

An interview will be conducted for each candidate to complete the questionnaire. The questionnaire was designed in the Arabic language with a cover letter-contains objective of the study, consent, and the assurance of confidentiality. The validity of the questionnaire was checked by three consultants in the fields of family medicine and preventive medicine. reliability of the questionnaire was tested (0.877).

Scoring system:

Questionnaire scoring:

Knowledge responses were divided into three categories according to the attained score (maximum score=15). A score of less than 50% (weak), from 50-75% (average), and more than or equal 75% (high) knowledge. And so on Attitude with (maximum score=10) and practices with (maximum score=4).

Data entry and analysis

Data was entered and analyzed by using the statistical package for the social sciences (SPSS) program version 23. A p-value of 0.05 or less will be considered as statistically significant.

Pilot study

The researchers were conducting the pilot study on 10% of the sample size. This sample was not included in the actual study and used only to assess the applicability, modify the questionnaire, and testing the time to complete it.

Ethical consideration:

- Written consent was obtained from each participant. All information was kept confidential and only used for the study purpose.

4. Results

Table 1 showed that more than half of mothers (52.04%) aged from 25-35 years while one quarter (26.98%) aged from 15-25 years. More than half of them (52.04%) were Saudi, secondary and highly educated (24.25%, 38.42%. most of them (85.56%) were not employed with a family income of less than 5000 (57.49%). More than half (50.95%) have 2-4 children.

Table 1. Frequency distribution of mothers' sociodemographic data

	N	%
Mother's age:		
15-25	99	26.98
25-35	191	52.04
35-45	75	20.44
>45	2	0.54
Mother's Nationality:		
Saudi	191	52.04
non Saudi	176	47.96
Educational qualification:		
uneducated	8	2.18
primary	67	18.26
middle	62	16.89
secondary	89	24.25
Undergraduate / Postgraduate	141	38.42
Occupation:		
student	17	4.63
Not employed	314	85.56
employee	36	9.81
Family income:		
<5000	211	57.49
5000-10000	101	27.52
>10000	55	14.99
number of children:		
one child	104	28.34
2-4 children	187	50.95
5 children or more	76	20.71

Table 2 revealed that more than half of children (61.85%) aged from 7 months – 1 year, male (51.50%), majority of them (39.24%) were fed by mixed breast feeding and bottle feeding, while most of them fed by breast feeding only (36.51%) for a time from the second month to years (37.77% from 2-7 months and 40.29% from 7-12 months). More than half of mothers (51.50%) used milk fortified with vitamin D. more than one third of them (38.63%) give one liter of milk daily for their children. Approximately all children (96.46%) have no health problems.

Table 2. Frequency distribution of children biosociodemographic characteristics

	N	%
Child's age:		
new born	6	1.63
1-3 months	48	13.08
4 – 6 months	86	23.43
7 months – 1 year	227	61.85
gender:		
Female	178	48.50
Male	189	51.50
The order of the child among the siblings:		
1 st	107	29.16
2 nd	81	22.07
3 rd	83	22.62
4 th	23	6.27
5 th	37	10.08
6 th or more	36	10.00
How do you breastfeed your child?		
Breast feeding	134	36.51
bottle feeding	89	24.25
both of them	144	39.24
If you breast-feed your baby or both, how long have you been on it?		
Month	21	7.55
2- 6 months	105	37.77
7 months-year	112	40.29
More than a year	35	12.59
I do not know	5	1.80
Is the milk used fortified with vitamin D?		
Yes	120	51.50
No	10	4.29
I do not know	103	44.21
“Does your child drink 1 liter of milk per day? (Approximately 8 small bottles of 120 ml)”		
Yes	90	38.63
Sometimes	58	24.89
No	66	28.33
I do not know	19	8.15
Does your child have any health problems:		
Yes	10	2.72
No	354	96.46
I do not know	3	0.82

Table 3 showed that majority of mothers (84.20%) read or heard about Vitamin D, reported a sun rays and food supplement as the natural sources of Vitamin D (84.74%) and think that vitamin D is important for their child's health (92.92%). More than half of them (59.13%) know that there are recommendations on how to use a vitamin D supplement for children from their doctors (68.66%). More than half of them (56.68%) reported that the appropriate age to start taking a vitamin D supplement is after birth and the dose will differ according to type of feeding (43.52%) with a recommended dose of 400

international units (four drops) (53.00%). Near to two thirds of mothers (69.48%) know that Vitamin D deficiency cause diseases in children as rachitis and Immunodeficiency (53.13%, 33.42%). Most of them (89.10%) approved that vitamin D important in bone growth and strengthening immunity for children.

Table 3. Frequency distribution of mothers' knowledge regarding infant vitamin D supplementation:

	N	%
Have you ever read or heard about Vitamin D?		
Yes	309	84.20
No	14	3.81
I do not know	44	11.99
What are the natural sources of Vitamin D?		
Sun rays	311	84.74
food supplement	311	84.74
Dairy products	68	18.53
sea food	46	12.53
Fruits and vegetables	95	25.89
Do you think that vitamin D is important for your child's health?		
Yes	341	92.92
No	2	0.54
I do not know	24	6.54
Did you know there are recommendations on how to use a vitamin D supplement for children?		
Yes	217	59.13
No	80	21.80
I do not know	70	19.07
What is the source of your information on recommendations for the way to use a vitamin D supplement for children?		
The media	30	13.82
A doctor	149	68.66
the family	36	16.59
friends	2	0.92
What is the appropriate age to start taking a vitamin D supplement?		
after birth	123	56.68
1 month - 3 months	39	17.97
4 - 6 months	27	12.44
year and over	18	8.29
I do not know	10	4.61
Is the required dose of vitamin D supplement different if the child is breast-fed or formula-fed?		
Yes	94	43.52
No	52	24.07
I do not know	70	32.41
What is the recommended dose from birth to one year of age?		
200 international units (two drops)	48	22.12
400 international units (four drops)	115	53.00
600 international units (six drops)	9	4.15
I do not know	45	20.74
Does Vitamin D deficiency cause diseases in children:		
Yes	255	69.48
No	27	7.36
I do not know	85	23.16
What are the expected diseases from vitamin D deficiency?		
rachitis	195	53.13
diabetic	6	1.63
asthma	4	1.09
Immunodeficiency	122	33.24
Is vitamin D important in bone growth and strengthening immunity for children?		
Yes	327	89.10
No	1	0.27
I do not know	39	10.63

Table 4 revealed that majority of mothers (91.83%) agrees to give vit D to their children if prescribed. A proportion of them agrees that breast feeding (59.40%) and exposed to the sun (39.78%) are not sufficient source of vit D for the child. More than half of them (58.31%) disagree about as long as the mother takes vitamin D, the child does not need to take a vitamin D supplement and they will advise their friends and relatives to give a vitamin D supplement to their children (78.2%).

Table 5 shows that half of mothers (49.86%) use vitamin D supplement for their children with a dose of

400 international units (four drops) (61.73%) from the time of birth (68.72%) for seven times daily (62.69%) and continue for 7-12 months (37.86%).

Regarding knowledge, Table 6 and Figure 1 (a,b,c) shows that most of mothers ranged from average (45.5%) and weak (42.5%) knowledge with a mean of 7.980 ± 2.994 . as for attitude, the highest percentage fluctuating from average (55.6%) and high (31.3%) with a mean of 6.588 ± 1.907 . Concerning practices, more than half of mothers (56.4%) have a high level of practice with a mean of 2.617 ± 1.138 .

Table 4. Frequency distribution of mothers' attitude regarding infant vitamin D supplementation

	N	%
If a doctor prescribes a vitamin D supplement for my child, I will give it to him		
I do not know	20	5.45
disagree	10	2.72
I agree	337	91.83
In my opinion, breastfeeding is sufficient for the child and does not need a vitamin D supplement		
I do not know	65	17.71
disagree	218	59.40
I agree	84	22.89
- In my opinion, as long as the child is exposed to the sun, there is no need to take a vitamin D supplement		
I do not know	81	22.07
disagree	146	39.78
I agree	140	38.15
"In my opinion, as long as the mother takes vitamin D, the child does not need to take a vitamin D supplement."		
I do not know	100	27.25
disagree	214	58.31
I agree	53	14.44
"I will advise my friends and relatives to give a vitamin D supplement to their children."		
I do not know	52	14.17
disagree	28	7.63
I agree	287	78.20

Table 5. Frequency distribution of mothers' practice regarding infant vitamin D supplementation

	N	%
Do you use your child a vitamin D supplement?		
Yes	183	49.86
Sometime	60	16.35
I do not use	124	33.79
What is the recommended dose of vitamin D for your child?		
200 international units (two drops)	58	23.87
400 international units (four drops)	150	61.73
600 international units (six drops)	19	7.82
I do not know	16	6.58
Question 3: How old was the child when he started giving him a vitamin D supplement?		
From the time of birth - 3 months	167	68.72
From 4-6 months	51	20.99
6 months later	22	9.05
I do not know	3	1.23
How many times does a child take a vitamin D supplement in a week:		
7 times (daily)	153	62.96
6- 4 times	40	16.46
3- 1 per week	49	20.16
does not take	1	0.41
How long did the child continue to take a vitamin D supplement?		
3 months or less	63	25.93
4-6 months	63	25.93
7 - 12 months	92	37.86
More than a year	25	10.29

Table 6. Ranking of mothers' knowledge, attitude and practice level by number, percent and Mean Score

	Data			Score	
		N	%	Range	Mean±SD
Knowledge	Weak	156	42.5	0-14	7.980± 2.994
	Average	167	45.5		
	High	44	12.0		
Attitude	Negative	48	13.1	0-10	6.588± 1.907
	Average	204	55.6		
	Positive	115	31.3		
Practices	Weak	41	16.9	0-4	2.617± 1.138
	Average	65	26.7		
	Good	137	56.4		

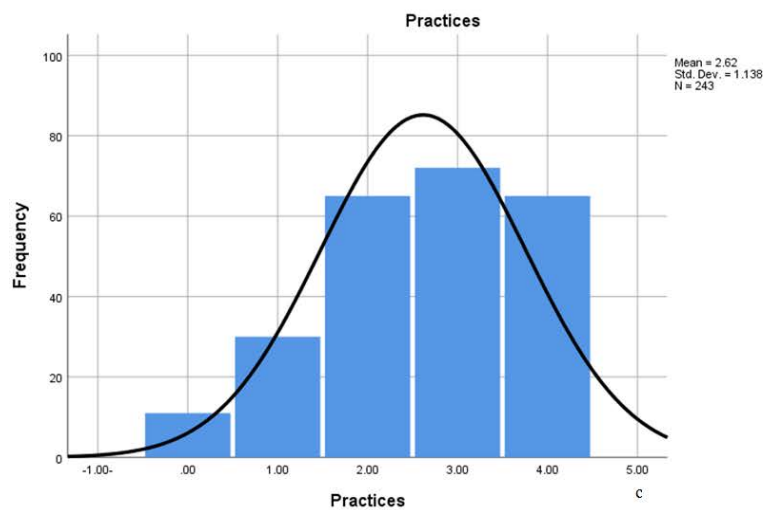
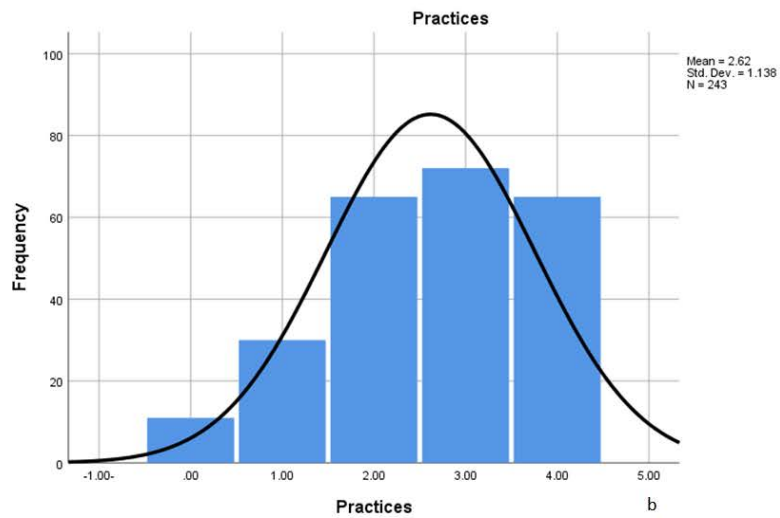
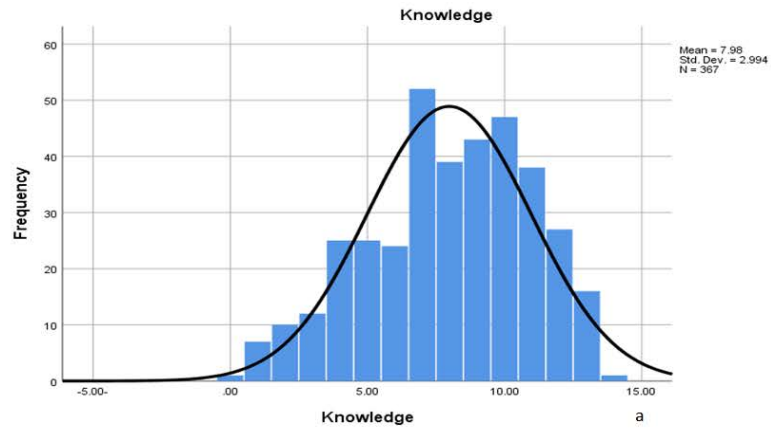


Figure 1a,b,c. Ranking of mothers' knowledge, attitude and practice level by number, percent and Mean Score

Table 7 and Figure 2 shows a statistical significant difference between mothers knowledge in relation to their age, nationality, education, occupation and family income (P=<0.001).

Table 7. The differences between mothers' knowledge and their demographic variables

Demographic variables		N	Knowledge		F or T	ANOVA or T-test		
			Mean	±		SD	Test value	P-value
Age	15-25	99	6.212	±	2.851	F	18.016	<0.001*
	25-35	191	8.597	±	2.711			
	35-45	75	8.733	±	2.901			
	>45	2	8.500	±	6.364			
Nationality	Saudi	191	9.241	±	2.345	T	9.334	<0.001*
	non Saudi	176	6.614	±	3.027			
Educational qualification	uneducated	8	5.000	±	2.878	F	37.562	<0.001*
	primary	67	6.030	±	2.668			
	middle	62	6.097	±	3.202			
	secondary	89	8.348	±	2.568			
	Undergraduate / Postgraduate	141	9.674	±	2.044			
Occupation	student	17	8.177	±	2.811	F	7.366	<0.001*
	Not employed	314	7.768	±	3.006			
	employee	36	9.750	±	2.383			
Family income	<5000	211	7.066	±	2.943	F	27.111	<0.001*
	5000-10000	101	9.030	±	2.692			
	>10000	55	9.564	±	2.402			

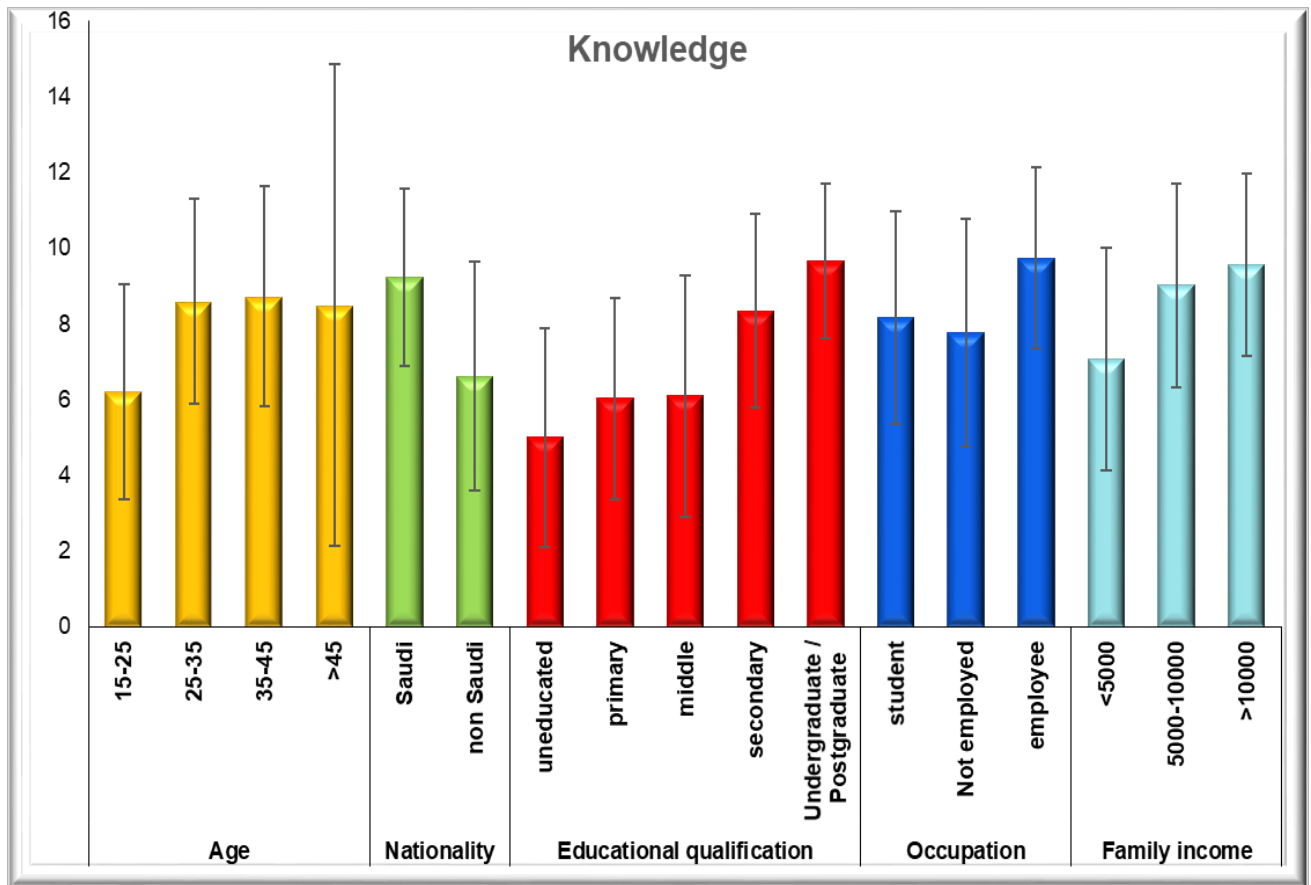


Figure 2. The differences between mothers' knowledge and their demographic variables

Table 8 and Figure 3 shows a statistical significant difference between mothers attitude in relation to their nationality, education, occupation and family income (P=<0.001).

Table 8. The differences between mothers' attitude and their demographic variables

Demographic variables		N	Attitude			F or T	ANOVA or T-test	
			Mean	±	SD		Test value	P-value
Age	15-25	99	6.212	±	2.305	F	1.851	0.138
	25-35	191	6.696	±	1.742			
	35-45	75	6.813	±	1.698			
	>45	2	6.500	±	0.707			
Nationality	Saudi	191	7.021	±	1.353	T	4.651	<0.001*
	non Saudi	176	6.119	±	2.278			
Educational qualification	uneducated	8	5.375	±	2.774	F	5.431	<0.001*
	primary	67	5.955	±	2.567			
	middle	62	6.177	±	2.021			
	secondary	89	6.933	±	1.684			
	Undergraduate / Postgraduate	141	6.922	±	1.384			
Occupation	student	17	6.588	±	1.906	F	0.197	0.822
	Not employed	314	6.567	±	1.959			
	employee	36	6.778	±	1.416			
Family income	<5000	211	6.332	±	2.192	F	4.591	0.011*
	5000-10000	101	6.931	±	1.344			
	>10000	55	6.946	±	1.420			

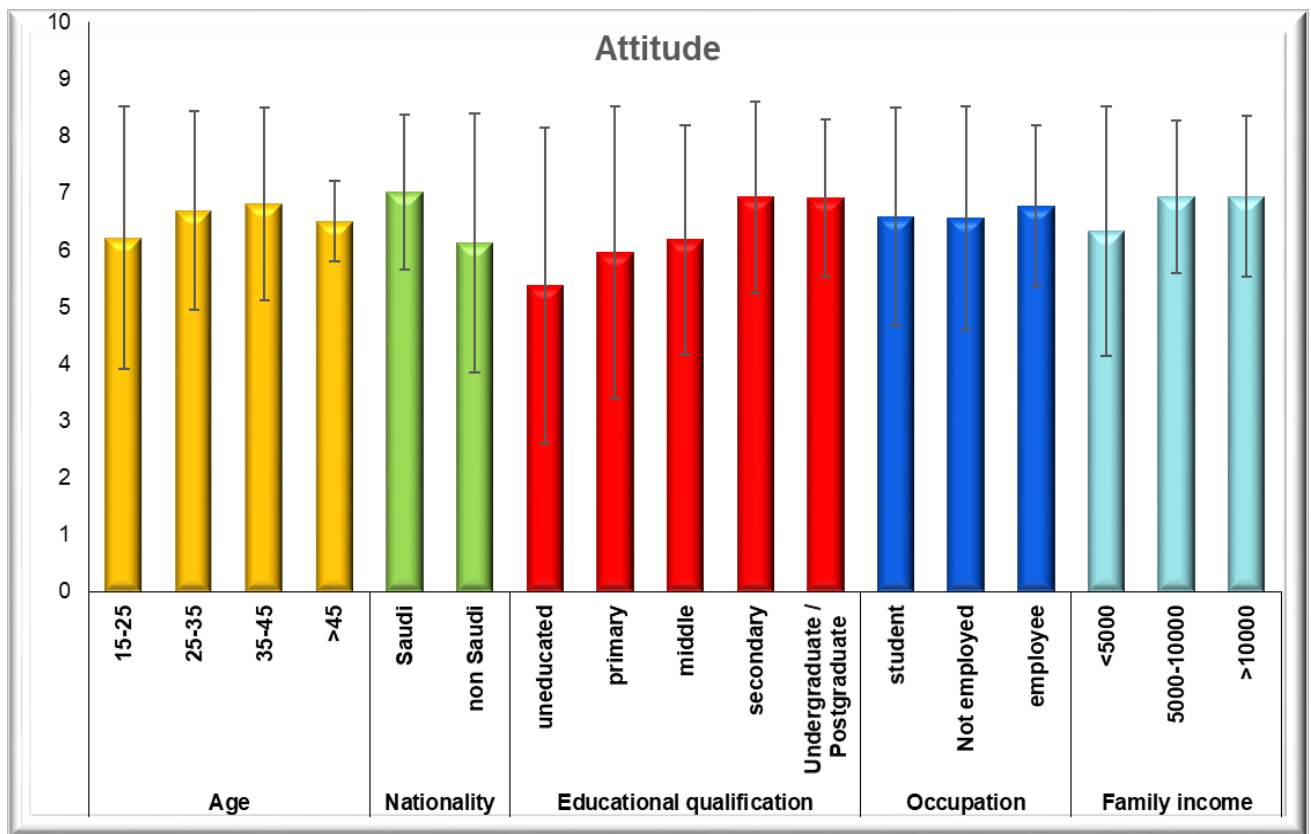


Figure 3. The differences between mothers' attitude and their demographic variables

Table 9 and Figure 4 shows a statistical significant difference between mothers practices in relation to their education (P=0.015) and family income (P=<0.006).

Table 9. The differences between mothers' practices and their demographic variables

Demographic variables		N	Practices			F or T	ANOVA or T-test	
			Mean	±	SD		Test value	P-value
Age	15-25	60	2.367	±	1.149	F	2.301	0.078
	25-35	133	2.782	±	1.047			
	35-45	48	2.500	±	1.255			
	>45	2	2.000	±	1.122			
Nationality	Saudi	141	2.638	±	1.161	T	0.338	0.736
	non Saudi	102	2.588	±	1.111			
Educational qualification	uneducated	2	3.500	±	0.707	F	3.153	0.015*
	primary	33	2.242	±	1.226			
	middle	33	2.485	±	1.093			
	secondary	62	2.419	±	1.235			
	Undergraduate / Postgraduate	113	2.858	±	1.025			
Occupation	student	13	2.154	±	1.281	F	1.827	0.163
	Not employed	201	2.677	±	1.100			
	employee	29	2.414	±	1.296			
Family income	<5000	122	2.418	±	1.149	F	5.302	0.006*
	5000-10000	81	2.938	±	1.065			
	>10000	40	2.575	±	1.130			

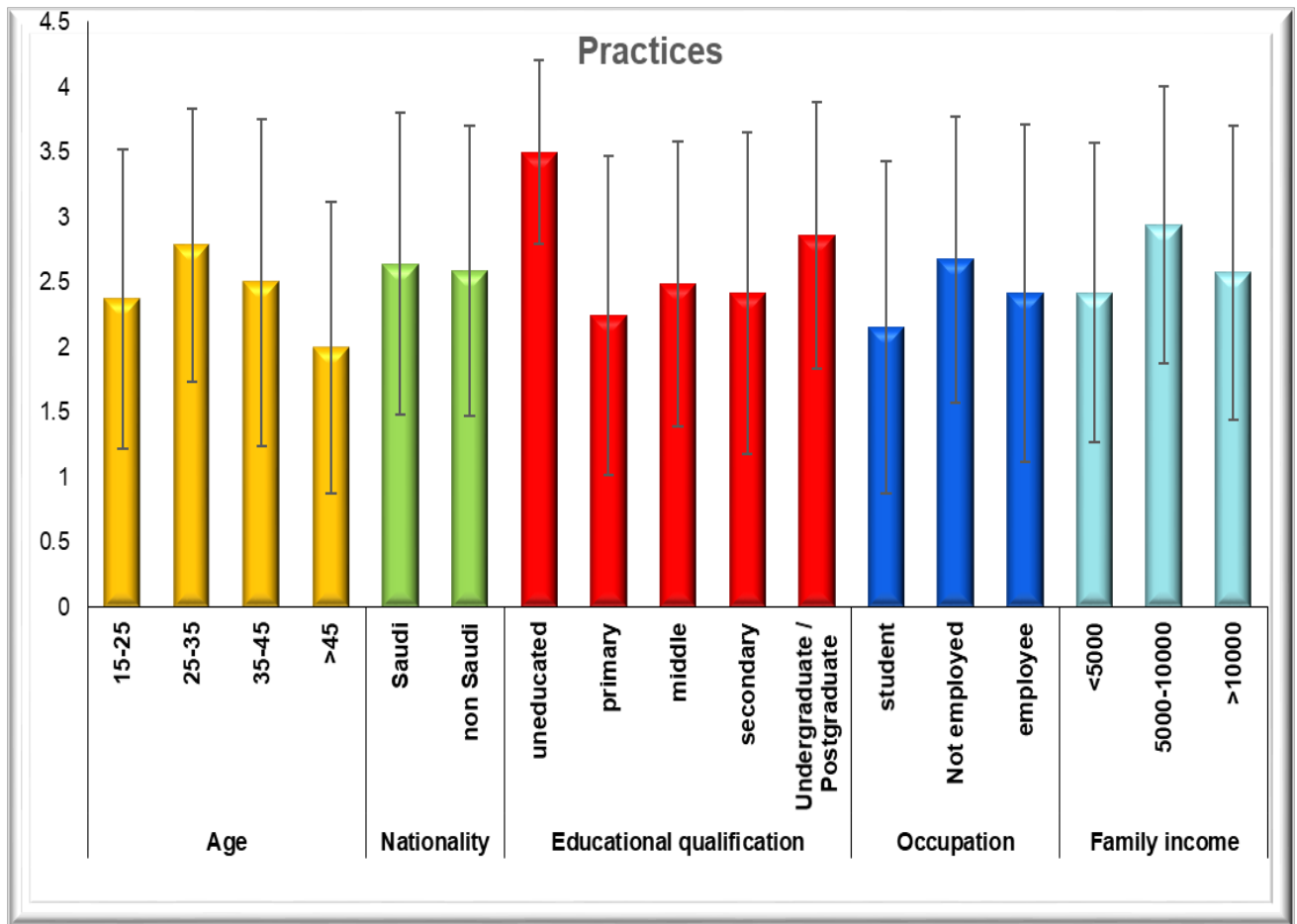


Figure 4. The differences between mothers' practices and their demographic variables

5. Discussion

Vitamin D is essential for the health of infants. Populations at risk for vitamin D deficiency are those for which, for environmental, cultural, or medical reasons, exposure to sunlight is poor and the dietary intake of vitamin D is low. The infants born in such populations have low vitamin D stores and may receive little additional vitamin D if they are breast-fed without supplements for long periods. In the short term, lack of vitamin D supplementation in infancy leads to biochemical disturbances, reduced bone mineralization, slower growth, and eventual alterations in bone shape and increased risk of fracture, the hallmarks of rickets. In the longer term, lack of vitamin D supplementation may result in reduced bone size and mass during childhood and an increased risk of type 1 diabetes mellitus. Clear recommendations are needed regarding the intake of vitamin D during pregnancy and infancy [2,8,9,10].

Based on the study results that showed that most of mothers were aged from 15-35 years, non-employed with a positive to average attitude regarding vitamin D supplement. When comparing these results with the study that conducted by Abbas et al. [11], we found that those in the same line regarding mothers age and occupation. Similar poor knowledge, fair attitude among mothers regarding vitamin D supplement for their infants were reported by Rasheed., 2017 [6].

While the study results revealed weak to average knowledge, average to positive attitude and high to average practice. Soliman et al. [12] concluded that Less than one quarter of the mothers had a good knowledge while about three fifths of the mothers had a positive attitude & less than half of them had a good practice towards vitamin D and its supplementation. It also recommended that awareness campaigns may help in improving awareness about vitamin D importance.

When questioning about the source of information regarding vitamin D it was found that the majority of participants in our study heard about it commonly from their doctors, in similar to Emirates and Irish mothers in whom the main source of their information were their doctors. The majority of mothers who gave vitamin D to their infant, got the advice from private doctors, indicating that appropriate communication about Vitamin D supplementation should be encouraged from health care providers [13,14,15].

Moreover, the study results found high level of knowledge in older Saudi mothers, highly educated, employed with high family income. Positive attitude was accompanied with educated Saudi mothers with high family income. Good practices were commonly found in highly educated mothers and high family income. These results are supported by Zadka et al. [16] who found statistically significant influences on the level of knowledge about the functions and sources of vitamin D were place of residence (i.e., better knowledge in the countryside) and mothers' level of education (i.e., the better educated, the greater knowledge). In the case of monthly income level, such impact was observed only in relation to the knowledge of vitamin D functions. Concerning the frequency of supplementation, only

maternal level of education had a statistically significant effect (i.e., the higher the education level, the higher the frequency of supplementation). In addition, mothers who were aware of functions of vitamin D and nutritional sources, significantly more frequently supplemented vitamin D.

6. Conclusion

The study findings indicated that the highest proportion of mothers aged 15-35 years, secondary and highly educated, 85% not working. Doctor is the main source of information. The majority of mothers have weak to average knowledge, average to high attitude and high to average practice. Significant differences were found at mothers' knowledge in relation to age, nationality, education, occupation and income. Significant differences were found at mothers' attitude in relation to nationality, education, and income. Additionally, significant differences were found between mothers' practices in relation to education, and income.

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