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Parents' Awareness and Knowledge about Rickets Prevention in Erbil City:A cross-sectional study

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ABSTRACT
Background: Vitamin D deficiency and nutritional rickets are still health problems in developing countries.
Aim of the study: To assess the parents' knowledge and awareness about rickets prevention.
Methods: A cross-sectional design was used. Four hundred (400) samples were selected, who visited the Primary health care Centers by purposive sampling. The researchers interviewed face-to-face parents to collect data through the questionnaire. The data was collected for two months from the 1st May 2023 to the 1st July 2023, after approving the proposal from the Ethical Committee at the College of Nursing / Hawler Medical University (code No.12, - 19 June 2022). Regarding the reliability analysis, Cronbach's alpha was $\alpha = 0.81$ and $\alpha = 0.79$ for the Parents' Knowledge and Awareness about Rickets.
Result: A total number of 400 parents participated in this study. The mothers were two-thirds (270, 67.5%) of the samples. The highest percentage of age groups of 20 – 30 and 31 – 40 years old were among mothers (133,33.3%) and (137,34.3%) respectively, level of education (127,31.8%) was Secondary degree, and the economic status of most parents (300,75%) was fair. The highest percentage of knowledge was (123,45.6%) and (74,56.9%) appropriate level of Rickets among mothers and fathers themselves respectively and of Awareness (123,45.6%) and (74,56.9%) moderately aware level among mothers and fathers themselves respectively. A significant association was found between the level of education and economic status of participants and levels of total knowledge and awareness about rickets because of the P-value < 0.05.
Conclusion: Most visitors to Primary Health care centers were mothers. Most of the participants had a fair level of knowledge and moderately aware level. Finally, a significant association was found between the level of education and economic status of participants and levels of total knowledge and awareness about rickets because of the P-value < 0.05.

Keywords: Knowledge, Awareness, Rickets, Parent, Primary Health care

INTRODUCTION

Vitamin D (VD) is one of the fat-soluble vitamins. Approximately 90% of its requirement comes from sunlight exposure and the remaining from diet and/or dietary supplements[1.] Vitamin D deficiency and nutritional rickets are still health problems in developing countries. Despite Turkey being in a geographical location with abundant sunlight exposure, vitamin D deficiency continues to be a major health problem. Yearly incidence rates of vitamin D deficiency revealed in Turkey vary from 1.67% to 19%. Thus, sunning for bone development is still being advised [2].In Brazil, the prevalence of children with Rickets between the ages of 8 to 24 months was 6%. On the other hand, the prevalence of vitamin D insufficiency was 30% in studies done in Brazil and Pennsylvania was 30% and 16% respectively [1]. The prevalence of children with Rickets between the ages of 8 to 24 months was 6%. On the other hand, the prevalence of vitamin D insufficiency was 30% in studies done in Brazil and Pennsylvania was 30% and 16% respectively.

Nutritional rickets are gaining the attention of public health professionals and individual clinicians worldwide as the disease remains an endemic problem in many developing countries and has re-emerged in some developed countries[2].

The peak age at which rickets are most prevalent is 3–18 months, especially among exclusively breast-fed infants and infants of dark-skinned immigrants living in temperate climates. Rickets is the softening of bones in

children and osteopenia with disordered calcification, leading to a higher proportion of osteoid tissue before epiphyseal closure[4]. Another study indicated that 50% of parents were aware of the sources of vitamin D and that 80% of parents were aware of its significance for human health and physiology[5]. The predominance of vitamin D insufficiency in kids' school from Makkah was high and the inadequacy was higher in females than guys. The principal explanation behind vitamin D inadequacy was the confinement to daylight introduction[6].During the last decade, there has been major concern about vitamin D status in the health and biomedical fields, and many studies have been conducted examining its benefits, use, and deficiency[7].

Aim of the study

To assess the knowledge and awareness of parents about rickets prevention in Maternal and Child Health Centers in Erbil City.

Subjects and Methods

A quantitative, descriptive study design was conducted in 2023 among parents about rickets prevention in Maternal and Child Health Centers in Erbil City. The sample size of the study was 400 participants. The study participants were purposively selected from several Maternal and Child Health Centers in Erbil City. which were (Serweran, Kurdistan, Brayety, Shahidan, Najdy Haider, Zhian Maternal Child Health Center) in Erbil City. Participants were informed about the study and the questionnaires were face-to-face interviews done. The required sample size was 385 which was found by using Cochran's sample size unlimited formula. In addition to that the researchers increased to 400 participants to decrease the margin of error from 5 to 4.9

$$n = \frac{z^2 \times \hat{p}\,(1-\hat{p}\,)}{E^2}$$

$$n = \frac{1.96^2 \times 0.50\ (1-0.50\ )}{5^2} = 385 \approx 400$$

n: Sample size., **z**: it is the z score which is (1.96) for 95% of confidence level.**ε: is** the margin of error. **N** is the population size. **p̂**: is the population proportion which is 50%

This proposal got the permission from Ethical Committee at the College of Nursing / Hawler Medical University (Registration No.12, - 19 June 2022). Following this, confirmation was taken from the administration of the Maternal and Child Health Centers in Erbil City-Iraq. The questionnaire was used in the data collection. The questionnaire internal consistency tests displayed that the Alpha Cronbach was α = 0.81 for the Parents' Knowledge and Parents' Awareness was α = 0.79 for Rickets where the value >0.7 is considered acceptable [1]. The tool consisted of four parts; socio-demographic characteristics of the respondents, Knowledge about Rickets, and Parents' Awareness. Knowledge was measured by asking about general knowledge of Rickets, signs/symptoms of Rickets, foods rich in vitamin D and calcium, and the benefit of sun exposure. Moreover, Awareness was assessed by the complication of Rickets.

The data were analyzed through the Statistical Package for Social Sciences software (SPSS, version 26). The descriptive analysis was utilized to assess the data which were presented in frequency and percentage. In addition, the chi-square test independence was used to determine the association between socio-demographics and parents' knowledge and practice about Rickets A p-value of <0.05 was considered statistically significant.

RESULTS

1. Socio-demographic Characteristics of the Parents

Table 1 demonstrates the Socio-demographic variables of the parents. A total number of 400 parents participated in this study. The mothers were two-thirds (270, 67.5%) of the samples. The age groups of 20 – 30 and 31 – 40 years old had the highest percentage (133,33.3%) and (137,34.3%) respectively, among mothers. Likewise, the lowest age group of 20 – 30 years old (0,0%) was among mothers. The highest percentage (127,31.8%) in level of education was Secondary degree and almost all (387,96.8%) of the participants lived in urban. Finally, the economic status of most parents (300,75%) was fair.

2. Assessment of Levels Total Knowledge and Awareness about Rickets Prevention

Table 2 illustrates the Assessment of Levels of total Knowledge about Rickets prevention between mothers and fathers. The highest percentage level was (123,45.6%) and (74,56.9%) fair level of knowledge among parents themselves respectively. In addition, the lowest level was (44,16.3%) and (19,14.6%) poor level of knowledge of parents themselves respectively.

3. Assessment of the levels of total awareness about rickets

Table 3 reveals the Assessment of Levels of total Awareness about Rickets prevention between mothers and fathers. The highest percentage level was (123,45.6%) and (74,56.9%) moderately aware level among mothers and fathers themselves respectively. In addition, the lowest levels were (36,13.3%) and (17,13.1%) slightly aware level among mothers and fathers themselves respectively.

4. Association between Participants' sociodemographic characteristics and Levels Total Knowledge and Awareness about Rickets

Table 4 shows the association between Parents` socio-demographic characteristics and levels of total knowledge about rickets. There was a significant association found between the level of education and economic status of participants and levels of total knowledge about rickets prevention because of the P-value < 0.05. However, there was no association found between Parents, Age of parents, and address and levels of total knowledge about rickets prevention because of the P-value > 0.05.

5. Association between socio-demographic characteristics and the Levels of Total Awareness about Rickets.

Table 5 shows the association between Parents` socio-demographic characteristics and levels of total awareness about rickets. There was a significant association found between the level of education and economic status of participants and levels of total awareness about rickets prevention because of the P-value < 0.05. However, there was no association found between Parents, Age of parents, and address and levels of total awareness about rickets prevention because of the P-value > 0.05.

DISCUSSION

As we know the mother includes a role model in caring for their kids, the current study shows that the mothers presented higher than fathers, aged between 20 to 40 years old, graduated from secondary school, living in urban areas, living within middle socio-economic status. It has been confirmed by a study done in southern Iraq, and Indonesia reported that the highest proportion of mothers (43.89%) in the age group 20-30 years, the majority from urban residency [8,9]. However, parents naturally take responsibility for taking care of their kids, but the result shows fair knowledge about rickets among both parents. Information about vitamin D deficiency was observed in 56% of individuals10, however, the knowledge of mothers regarding nutritional rickets was satisfactory with more encouraging responses regarding ways of preventing and controlling, the rickets [8]. Moreover, the Rickets are a major public health problem in many countries, especially in developing countries including Ethiopia, however they have the opportunity to be exposed to sunshine [11]. However some of the mothers expressed a need for meaningful access to healthy start vitamins, but various barriers thwarted Rickets's prevention [12]. Another idea stated that the further it is important to recognize awareness regarding the causes and prevention of vitamin D deficiency as an avenue to be explored by the public health offices, which should begin by conducting conclusive studies to determine general public knowledge regarding this pertinent issue[13]. The majority believed that failure to grow is the most obvious symptom, inadequate milk is the main cause, and exclusive breast-feeding is a major risk factor [14]. Eighteen percent of people were unaware of the bone benefits of vitamin D. Nevertheless, a higher proportion of females were unaware of the dose of vitamin D they were taking, and preventing Rickets disease[13]. Mother's knowledge and practice towards sunshine exposure of children was quite low in Ethiopia[11]. desire to have fair and beautiful skin, sedentary lifestyle, indoor workplace, weather, lack of social support, living arrangement, safety concerns, and religious or cultural practices [15]. Around two-thirds had a severe deficiency and were having toxic levels. The study concluded that mothers along the Middle Euphrates; had poor levels of knowledge, negative attitudes, and poor practices toward vitamin D deficiency among children [16].

Unfortunately, around half of the participants were not aware of the prevention, of the diseases,

Mass awareness campaign over the electronic media against Hypovitaminosis D and its prevention. Parents reported a low level of satisfaction with vitamin D information: many thought it was limited and recommendations on supplements were unclear[17]. the awareness of mothers about rickets in Nigeria is still very low [24]. Education was associated with vitamin D nutrition knowledge ($p = 0.014$): women with high school education had significantly lower scores on knowledge about vitamin D nutrition compared to those with a professional bachelor's education [18]. Two elements such as level of education, and economics are two integrated parts of the health system, which is that the individual can prevent diseases when living with a good economic and a high level of education. The current result reveals a significant association between the level of education and economic status of participants and levels of total knowledge about rickets prevention. The study reported that poverty and negative cultural perceptions about the etiology and treatment of rickets in the community are more preponderance among unskilled mothers [24]. A significant association was found between occupation and level of education [19]. For such information, the majority of Saudi Arabia participants had not received any information about vitamin D from primary care centers and they got their information from other sources like the internet and social media [24]. The survey indicates that knowledge and behavior are both less satisfactory among men and people in lower socio-economic groups [20]. 70% of parents do not know how to prevent the complications of the disease [21]. Most of the researchers indicated that providing an educational session might increase knowledge, awareness, and attitude regarding rickets prevention [22]. the majority of mothers are housewives and not working, so it affects the economic situation, that's the reason less than two-thirds of the study population responded as sufficient income to some extent which indicates their level of

awareness and satisfaction [16]. There was a significant association found between the level of education and economic status of participants and levels of total awareness about rickets prevention. The knowledge of the etiology of rickets was influenced by education, skilled occupation [24]. Significantly confirmed that occupation such as housewife is a factor that affects the economic status, and reflects awareness regarding prevention of Rickets [22]. In Bangladesh a study of regular sunlight exposure can be a good, and perhaps sustainable, and socioeconomic contexts [21,23]. Education was associated with awareness and sources of vitamin D nutrition, contrariwise some of the researchers reported that most of the participants were aware of the importance of calcium and vitamin D and the prevention of rickets [24]. Encourage individuals who live in low economic status, to sunlight exposure [15]. Providing educational intervention program were found to have power in improving mother's knowledge and practices regarding rickets by decreasing barriers to good and healthy behaviors [21,22].

CONCLUSION

The majority of visitors to primary health care centers were mothers the highest percentage were levels of education with was secondary degree and almost all of the participants lived in urban. Most of the participants had a fair level of knowledge and moderately aware level. Finally, there was a significant association found between the level of education and economic status of participants and levels of total knowledge and awareness about rickets.

RECOMMENDATION

Mothers' nutrition education programs need to be implemented. It is necessary to set up a nutritional surveillance system. More research on the rickets is required to provide more information.

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Table 1: Sociodemographic Variables of Parents; n= 400

Variables		**No.**	**(%)**
Parents	**Father**	130	(32.5)
	Mother	270	(67.5)
Age of Parents			
Fathers	**20 -30 years old**	44	(11)
	31 -40 years old	66	(16.5)
	41 ≥ years old	20	(5)
Mothers	**20 -30 years old**	133	(33.3)
	31 -40 years old	137	(34.3)
	41 ≥ years old	0	(0)
Level Education of Parents	**Illiterate**	39	(9.8)
	Primary Degree	105	(26.3)
	Secondary Degree	127	(31.8)
	Institute	63	(15.8)
	University	49	(12.3)
	Master or PhD	17	(4.3)
Address	**urban**	387	(96.8)
	rural	11	(3.2)
Economic Status of Parents	**sufficient**	64	(16)
	Fair	300	(75)
	insufficient	36	(9)
Total		400	(100)

Table 2: Assessment of Levels Total Knowledge about Rickets Prevention; n= 400

Items		Parents					
		Father		Mother		Total	
		No.	(%)	No.	(%)	No.	(%)
Levels of Total Knowledge about Rickets	Poor Level of knowledge	19	(14.6)	44	(16.3)	63	(15.8)
	Fair Level of knowledge	74	(56.9)	123	(45.6)	197	(49.2)
	High Level of knowledge	37	(28.5)	103	(38.1)	140	(35)
	Total	130	(100)	270	(100)	400	(100)

Table 3: Assessment of Levels Total Awareness about Rickets; n= 400

Items		Parents					
		Father		Mother		Total	
		No.	(%)	No.	(%)	No.	(%)
Levels of Total Awareness about Rickets.	Slightly Aware Level	17	(13.1)	36	(13.3)	53	(13.2)
	Somewhat Aware Level	54	(41.5)	105	(38.9)	159	(39.8)
	Moderately Aware Level	59	(45.4)	129	(47.8)	188	(47)
	Total	130	(100)	270	(100)	400	(100)

Table 4: Association between Participants' sociodemographic characteristics and Levels of Total Awareness about Rickets; n= 400

Items	Levels of Total knowledge about Rickets								P value
	Poor Level of knowledge No. (%)		Fair Level of knowledge No. (%)		High Level of knowledge No. (%)		Total		
Parents									
Father	19	(30.2)	74	(37.6)	37	(26.4)	130	(32.5)	0.90
Mother	44	(69.8)	123	(62.4)	103	(73.6)	270	(67.5)	
Age of Parents									
20 -30 years old	33	(52.4)	83	(42.1)	61	(43.6)	177	(44.3)	0.130
31 -40 years old	29	(46.0)	99	(50.3)	75	(53.6)	203	(50.7)	
41 ≥ years old	1	(1.6)	15	(7.6)	4	(2.9)	20	(5)	
Level Education of Parents									
Illiterate	9	(14.3)	21	(10.7)	9	(6.4)	39	(9.8)	0.004
Primary	14	(22.2)	57	(28.9)	34	((24.3)	105	(26.3)	
Secondary	18	(28.6)	56	(28.4)	53	(37.9)	127	(31.8)	
Institute	13	(20.6)	33	(16.8)	17	(12.1)	63	(15.8)	
University	3	(4.8)	20	(10.2)	26	(18.6)	49	(12.3)	
Master or PhD	6	(9.5)	10	(5.1)	1	(0.7)	17	(4.3)	
Address									
Urban	59	(93.7)	191	(97)	137	(97.9)	387	(96.8)	0.287
Rural	4	(6.3)	6	(3)	3	(2.1)	13	(3.3)	
Economic Status of Parents									
Sufficient	16	(25.4)	28	(14.2)	20	(14.3)	64	(16)	0.007
Fair	36	(57.1)	152	(77.2)	112	(80)	300	(75)	
Insufficient	11	(17.5)	17	(8.6)	8	(5.7)	36	(9.0)	
Total	63	(100)	197	(100)	140	(100)	400	(100)	

Table 5: Association between socio-demographic characteristics and the Levels of Total Awareness about Rickets; n= 400

Items	Levels of Total Awareness about Rickets								P value
	Slightly Aware Level No. (%)		Somewhat Aware Level No. (%)		Moderately Aware Level No. (%)		Total		
Parents									

● **Father**	17	(32.1)	54	(34.0)	59	(31.4)	130	(32.5)	0.875
● **Mother**	36	(67.9)	105	(66)	129	(68.6)	270	(67.5)	
Age of Parents									
● **20 -30 years old**	30	(56.6)	77	(48.4)	70	(37.2)	177	(44.3)	0.042
● **31 -40 years old**	22	(41.5)	72	(45.3)	109	(58)	203	(50.7)	
● **41 ≥ years old**	1	(1.9)	10	(6.3)	9	(4.8)	20	(5)	
Level Education of Parents									
● **Illiterate**	7	(13.2)	19	(11.9)	13	(6.9)	39	(9.8)	0.000
● **Primary**	17	(32.1)	43	(27)	45	(23.9)	105	(26.3)	
● **Secondary**	12	(22.6)	41	(25.8)	74	(39.4)	127	(31.8)	
● **Institute**	9	(17.0)	30	(18.9)	24	(12.8)	63	(15.8)	
● **University**	1	(1.9)	19	(11.9)	29	(15.4)	49	(12.3)	
● **Master or PhD**	7	(13.2)	7	(4.4)	3	(1.6)	17	(4.3)	
Address									
● **Urban**	51	(96.2)	152	(95.6)	184	(97.9)	387	(96.8)	0.479
● **Rural**	2	(3.8)	7	(4.4)	4	(2.1)	13	(3.3)	
Economic Status of Parents									
● **Sufficient**	16	(30.2)	29	(18.2)	19	(10.1)	64	(16)	0.005
● **Fair**	33	(62.3)	113	(71.1)	154	(81.9)	300	(75)	
● **Insufficient**	4	(7.5)	17	(10.7)	15	(8.0)	36	(9)	