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Assessment of Mothers' Knowledge and Attitude Regarding their Rachitic Children

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Abstract

Rickets is a common bone disease worldwide that is associated with disturbances in calcium and phosphate homeostasis and can lead to short stature and joint deformities. However, nutritional rickets, due to vitamin D deficiency or dietary calcium inadequate intake, remain the most common form. The study aimed to assess mothers' knowledge and attitude regarding their rachitic children. A descriptive research design was used. This study was conducted at an outpatient clinic in Mostafa Hassan Hospital affiliated to University Hospital and General Hospital affiliated to Ministry of Health. A non-probability purposive sampling approach was employed, which specifically selected 100 mothers and their children under five years old. Two tools were used for data collection, A structured interview questionnaire to assess mothers' knowledge regarding their rachitic children, and attitude -type likert scale to assess mothers' attitude regarding their rachitic children. Revealed that the mean age of studied mothers was 28.60 $\pm$ 5.23 years and more than two thirds of the studied mothers had inadequate knowledge and three fifths of the studied them had negative attitude regarding their rachitic children. Also, there were statistically significant relation between the studied mothers' total level of knowledge and attitude and their characteristic with p- value = $\leq$ 0.01. Based on results of the present study, it can be concluded that more than two thirds of the studied mothers had adequate knowledge regarding their rachitic children. Also, three fifths of the studied mothers had negative attitude regarding their rachitic children. Furthermore, there were statistically highly significant relation between the studied mothers total level of knowledge and attitude and their characteristics namely; age ,marital status ,educational level and income with p- value = $\leq$ 0.01. Constantly educational training program for mothers to increase their knowledge and attitude regarding caring of their rachitic children. The current study aimed to assess mothers' knowledge and attitude regarding their rachitic children.

Keywords: Attitude, Children, Knowledge, Mothers, Rickets.

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1. Introduction

Rickets, a common disease worldwide, substantially affects the health, growth, and development of children and adolescents. It results from abnormalities of the growth plate cartilage predominantly affecting longer bones and leads to poor bone growth, defective mineralization, and bony deformities, such as bowlegs and knock-knees.This is usually secondary to deficiencies of calcium or phosphate because they are essential for normal bone growth and mineralization [1]. Consequently, absence of phosphate at the growth plate and mineralizing bone surfaces due to inadequate vitamin D supply either from sunlight exposure or diet is the main cause of rickets. Vitamin D is extremely important for normal skeletal development and proper cellular function because of its effect on calcium homeostasis as it promotes intestinal calcium absorption. It is metabolized in the liver to 25(OH) D and then in the kidneys to 1, 25(OH) D2. Therefore, rickets can be classified according to etiology in regard to the underlying deficiency of calcium or phosphorus into two main types calcipenic and phosphopenic rickets [1] .Vitamin D deficiency is a global health problem in children and is considered a pandemic problem. It is a vital metabolically active compound however, low levels of vitamin D can result in brittle bones, bone pain and muscle weakness. So, it is necessary for mothers to determine and know the optimal dose of vitamin D to ensure vitamin D sufficiency [3]. Therefore, approximately 80% - 90% of the vitamin D in the human body is synthesized from the skin after UVB exposure, while 10% - 20 % enters the body through the diet which, there are only a few foods that are naturally rich in vitamin D such as fatty fish and fish liver oils. Vitamin D is found in other foods, such as in beef liver, cheese, and egg yolks [4]. Nurses have played a major role in rachitic children through educating mothers about target who high risk factors for rickets such as, limited exposure to

sunlight, mother who has a vitamin D deficiency, dark-pigmented skin, prematurity. Therefore, nurses ensure child receive the correct therapy and encourage mothers communicating with doctors about administer calcium and phosphorus supplements at alternate times to promote proper absorption of both of these supplements. Furthermore, teach mother about good dietary sources of vitamin D [5]. Mother plays an essential role in child health control not only during infancy but also in the embryo stage. Maternal health and vitamin D level during pregnancy have an impact on the fetus level of vitamin D additionally; children are highly vulnerable to rickets because of their need to vitamin D during growth. Meanwhile, mothers who have children with age less than 5 years should increase their awareness and knowledge about rickets, understand the physiological changes and nutritional need during each stage of child growth.[6] Rickets is still from a common disease worldwide. However, high incidence increase particularly among children who live in crowded houses. Therefore, nutritional rickets remains the most common type globally; its consequences also are associated with the increase morbidity and mortality in childhood. It is more common in low-and middle-income countries, especially the Indian subcontinent, Africa, and the Middle East ranging from 1% to 24% in children and re-emerged in high-income countries prevalence ranging from 3 to 120 per 100,000 children [7]. In Egypt indicate for 58% showed vitamin D deficiency (VDD) and 25% showed insufficiency [8]. Although heritable forms of rickets are extremely rare, x-linked dominant hypophosphatemia (XLHR) form remains the most common heritable form, with an incidence of 3.9 per 100,000 live births and a prevalence of 1.7 per 100,000 children [3]. In addition, rickets was very common in the Arabian countries, such as Saudi Arabia the prevalence was 68%, Oman 55%, United Arab Emirate 60%, and Jordon 57%. In spite of, the sun is shining all the year in Egypt, the prevalence of rickets was high and ranges between 50%–90% in the general pediatric population with a higher incidence in critically ill children [9]. So, it is important to conduct the current study to highlight mother's knowledge and attitude regarding their rachitic children. The aim of this study was to assess mothers' knowledge and attitude regarding their rachitic children. The research questions are as follows: what are the mothers' level of knowledge and attitude regarding their rachitic children? Is there relation between mothers' knowledge and attitude regarding their rachitic children and their characteristics?

2. Materials and methods

2.1. Research Technical design

2.1.1. Research design

A descriptive research design was used for conducting this study.

2.1.2. Research settings

The study was carried out in outpatient clinic at Mostafa Hassan Hospital affiliated to Fayoum University and Fayoum General Hospital affiliated to Ministry of Health.

2.1.3. Research subject

A purposive sample was used to select 100 mothers have children less than five years from both sex confirmed rickets as a result of vitamin D deficiency diagnosis and free from other physical, mental and neurological disease and other congenital problem having the same rickets manifestation attended to the previous mentioned settings during the study period.

2.2. Research tools

Two tools were developed by the researcher to collect the necessary data for this study through using the following tools:

2.2.1. A structured interviewing questionnaire sheet

The researcher in the light of content relevant to assess mothers' knowledge about rickets designed it. It was in Arabic language and consisted of two parts.

Part (I) it was including data about

- **A.** Characteristics of the studied children namely age, gender, weight at birth and current weight and height. Weight and height also were evaluated by using a child growth chart to distinguish between normal and abnormal height and weight.
- **B.** Characteristics of studied mothers namely mothers' age, educational level, occupation, and place of residence.

Part (II): Predesigned questionnaire sheet

This tool was adopted from *(Kamal, 2018) and (Zien-AlDien, 2019),* it was used to assess mothers' knowledge regarding their rachitic children. It consisted of (9) close end and (10) open end question about; meaning of vitamin D, source, importance, complication of vitamin D deficiency, meaning of rickets, , signs and symptoms, the risky children to rickets and Prophylactic measures of rickets [10-11].

Scoring system

Knowledge of mothers was scored and calculated according to their answers, it was evaluated using the model key answers sheet that was prepared by the researcher. Each question had a score ranging from 0-2 grades, whereas, correct and complete answer had score 2 grades, correct but incomplete answer had score 1 grade and score zero was for an incorrect or unknown answer. The total score was 38 grades (equal 100%). The total scores converted to percentage and then categorized as following: if percent score was ≥ 60% (23: 38 grades) considered adequate knowledge, while if the percent score < 60% (zero: 22 grades) considered inadequate level of knowledge.

2.2.2. Mothers' attitude likert scale

This scale was designed by the researcher in the light of related references *(Kamal, 2018)* to assess the attitude of the mothers toward rickets. It included 13 statements.

Scoring system

Mothers' responses were classified as "agree", "uncertainl", "disagree" and respectively scored 2, 1 and 0. The scoring of the items summed up and converted into a percentage scores. Then all data classified into 2 categories (positive attitude if score ≥ 60% equal (16: ≥ 26) grads. and negative attitude if score equal (zero: < 16) grads.

2.3. Operational Design

The operational design includes preparatory phase, content validity, pilot study and fieldwork.

2.3.1. The Preparatory Phase

It included reviewing of related literature using textbooks, journals, scientific periodicals and web-sites was conducted to develop the study tools and to get acquainted with the various aspects of the research problem.

2.3.2. Pilot Study

A Pilot study involved 10 mothers and their children (10% of the total sample size) to test feasibility and applicability of the tools and to assess the time required to fulfill the tools. The result of the data obtained from the pilot study helped in modification of the study tools, where some items were corrected, omitted and added as necessary. Subjects included in the pilot study were excluded later from the study sample.

2.3.3. Content Validity and reliability

The tools were revised by a jury of three experts from staff at Faculty of Nursing - Helwan University (2experts specialized in pediatrics health nursing and one expert in community health nursing). The jury reviewed the tools for its validity, comprehensiveness, accuracy, clarity and relevance. The internal consistency of the developed tools was tested for their reliability using Cranach's alpha coefficient test by a statistician to assess reliability of the tools; the tools were reliable at too I r=0.978 and tool(II) was reliable at r =0.739 .

2.3.4. Field work

The actual field work was carried out for data collection over 6 months started from June 2022 years till ended of November 2022years to gather the data using the previously mentioned tools. The researcher introduced himself to the mothers to explain the purpose of the study to gain their cooperation and to assure the studied mothers about the anonymity of their answers and that information will be used for scientific research only and was being strictly confidential. The researcher was available in each study settings during the morning shifts twice weekly from 9 am to 12 pm, the purpose of the study was explained by the researcher to each mother who providing care for their rachitic children. The average time needed for completion of each questionnaire sheet was approximately 15 minutes, where each study, mother was interviewed individually using the previously mentioned tools (questionnaire and attitude sheet) the investigator taken about 5 mothers each week consists about 20 mothers per month, total number of mothers equal 100mothers around 6 months.

2.4. Administrative Design

An official letter requesting permission to conduct the study was submitted from the Dean of Faculty of Nursing-Fayoum University to the director of previously mentioned study setting to collect the necessary data for the current study. The letter included the aim of the study in order to get permission and help for collection of data. The necessary approval was obtained from the units' directors.

2.5. Ethical considerations

An official permission to conduct the proposed study was obtained from The Scientific Research Ethics Committee, Faculty of Nursing, Helwan University. Participation in the study was voluntary and subjects were given complete full information about the study and their role before signing the informed consent and that they had the right to refuse to participate. The ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs was respected.

2.6. Statistical Design

Upon completion of data collection, data was organized, categorized, tabulated, entered and analyzed using Statistical Package for the Social Science (SPSS), IBM SPSS Statistics for Windows, and Version 20.0. Armonk, NY: IBM Corp. Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation (SD), chi-square test (X^2) was used to compare between groups in qualitative and linear correlation coefficient was used for detection of correlation between two quantitative variables in one group. Statistical significance was considered at (P-value <0.05), P value >0.05 mean Non-significant, while P value <0.001mean High significant.

3. Results and Discussions

Table (1) showed that, 37% of the studied children were in the age group of 1< 2 years with Mean ± SD = 2.31 ± 1.17. Concerning children's weight at birth, it was clear that, 33% of them their weight was 2.5< 3 Kg at birth with Mean ± SD = 3.04 ± 0.597 Kg. Additionally, the Mean ± SD of current child weight and height was 11.31 ± 2.79 & 81.68 ± 10.21 respectively. Figure (1): shows that, more than half (54%) of the studied children were male with a male to female ratio = 0.8:1. Table (2) showed that, more than one-third (35%) of the studied mothers were in age group ranged from 25 < 30 years old with Mean ± SD = 28.60 ± 5.23.

Concerning marital status, more than three-quarters (76%) of the studied mothers were married, while the minority (10%) were widows. Regarding educational level, more than one-third (34%) of them were held a basic education. Additionally, 80% of the studied mothers hadn't enough income. Figure (2) illustrates 62% & 70% of the studied mothers had in-adequate ventilation and in-adequate Sunlight entering the home respectively. Table (3) showed that, 64% , 56% & 55% the studied mothers had wrong answer about comorbidities, symptoms and risk factor of rickets respectively. As regards total knowledge level of the studied mothers' figure (3) illustrated that, only 29% of the studied mothers had adequate knowledge about rickets. As regards the studied mothers' total attitude figure (**4**) illustrated that, 60% of the studied mothers had negative attitude regarding their rachitic children. Table (4): illustrated that, there were a high significant statistically relation between studied mothers' characteristics namely; age , educational level and income & total level of knowledge about rickets with P = ≤ 0.01. Table (5): Illustrated that, there were a high significant statistically relation between studied mothers' characteristics namely; age, marital status and educational level & total level of attitude regarding their rachitic children with P = ≤ 0.01. Figure (5) revealed positive statistically significant correlation between total mothers' knowledge and attitude regarding care of their rachitic children with P= 0.000**. Rickets considers a major worldwide health issue around the world. It is a preventable condition but cases continue to be reported in infants and children due to lack of mothers' awareness about the importance of vitamin D, benefits & prevention of its deficiency [12]. However, mother plays an essential role in child health control not only during infancy but also in the embryo stage. Meanwhile, mothers who have children with age less than 5 years should increase their awareness and knowledge about rickets, and understand the physiological changes and nutritional need during each stage of child growth [13]. Meanwhile, the current study was aimed to assess mothers' knowledge and attitude regarding their rachitic children. The personal characteristics of the studied children (table, 1 & figure 1) the findings of the present study showed that, the Mean ± SD was 2.31 ± 1.17 and more than half of the studied children were male. This result was in accordance with Sisay et al., (2019) who carried out a study entitled "Rickets and its Associated Factors among under-Five Children in Selected Public Hospitals in Eastern Ethiopia" and reported that, more than one fifth of studied children had ranged age from 24 to 35 months [14]. Also, this result was agreement with Akram et al., (2022) who studied "Analyzing Causes of Rickets in Children under Five Years and Solutions Available in India" and reported that, more than half of studied children were male [15]. Mumtaz et al., (2023) who performed a study about "Risk Factors of Nutritional Rickets among Children Under-five Years of Age" and stated that more than two thirds were male and mean age of the study children was 2.70 with SD of±1.64years [16]. While the personal characteristics of the studied mother (table, 2) the findings of the present study showed that, mean ± SD was 28.60 ± 5.23 among the studied mothers and more than one-third of them were held a basic education. This results was consistent with Gedamu & Tafere, (2019) who performed a study entitled "Assessment of knowledge, Attitude, and Practice of Sunlight Exposure of Infants among Mothers Attending in Governmental Health Facilities in Farta District, South Gondar Zone, North West Ethiopia" and reported that, the mean age of the studied mothers was 28.8, SD = 6.2 [17]. Also, Sumi, (2022) who conducted a study entitled "Uncovering the Root Causes of Nutritional Rickets in Children-an Observational Study in a Bangladeshi Hospital" and detected that, mean age of 29.40 years (SD=11.65) [18]. Concerning the housing related data about ventilation and entry of sunlight (figure, 1) the current study results indicated that, more than two-thirds of the studied mothers had in-adequate ventilation plus in-adequate entry of sunlight into the home. Consistently, this result agreed with a study performed by Islam et al., (2020) stated that, about three quarters of the studied children had insufficient sunlight entry and inadequate ventilation in their houses [19]. In the opposite line, a study done by Kamal, (2018) entitled "Mothers' Awareness regarding Vitamin D Deficiency among their Infants in Kalyobia Governorate" and reported that; the highest percentage 97.2 % of the studied mothers had adequate ventilation and less than three quarters the sun enters their houses. From the researcher point of view this, might be due to slightly less than three quarters of mothers lived in rural areas and Subscriber houses where there was not enough distance between houses which not helped in sun entry into their houses which resulting in risk for rickets. As regard the studied mothers' knowledge about rickets (table, 3) the current study portrayed that, nearly two-thirds and more than half of them didn't know comorbidities diseases with rickets, symptoms and risk factor of rickets. In the same line, Soliman et al., (2020) who carried out a study entitled "Knowledge, Attitude and Practice towards Vitamin D Importance and Supplementation among Mothers of under Five Children in A Primary Health Care Center in Cairo" and reported that the largest proportion of the studied mothers (77.4%) had poor knowledge about rickets [20]. These findings were against Abuhussein & Al Sbaihi, (2021) who studied "Maternal Awareness of Vitamin D Deficiency in Infants and up to the Age of 6 years" and declared that more than half of the studied mothers had satisfactory knowledge about rickets. From the researcher's point of view, it may due to studied mothers had low knowledge level and obtained their knowledge about rickets from media and relatives. Concerning studied mothers, total level of knowledge about their rachitic children (Figure, 2) the current study revealed that, more than two-thirds of the studied mothers had inadequate level of knowledge. These findings were in the same line with, Alsuwat et al., (2018) who conducted a study entitled "Knowledge and Attitude Practice (KAP) of Rickets Disease among Mothers in KSA" and reported that, most of the studied mothers had unsatisfactory knowledge about rickets [21]. In the opposite line, Alzahrani, (2022) who studied "Perception of Rickets Disease among Parents in Al-Baha Province, Saudi Arabia" and stated that, the majority of participants had good knowledge about rickets [22]. From the researcher's point of view, this may be attributed to more than one third the studied mothers' were held a basic education and more than two-thirds of them had inadequate level of knowledge about rickets which could have an impact on mothers' awareness and their desire to seek and obtain information about rickets. Also, these results answered research questions. Concerning total mothers' attitude regarding their rachitic children (figure, 3) the present study demonstrated that, three fifths of the studied mothers had negative attitude.

Table 1. Distribution of studied children according to their personal characteristics (n= 100)

Children' characteristics	No.	%
Age (year)		
< 1 year	17	17.0
1< 2	37	**37.0**
2 < 3	27	27.0
4 ≤ 5	19	19.0
Mean ± SD	**2.31 ± 1.17**	
Child weight (at birth)		
< 2.5 Kg	28	28.0
2.5< 3 Kg	33	**33.0**
3< 4 Kg	29	29.0
≥ 4 Kg	10	10.0
Mean ± SD (at birth)	**3.04 ± 0.597**	
Current child weight with Mean ± SD	**11.31 ± 2.79**	
Current child height with **Mean ± SD**	**81.68 ± 10.21**	

Age 3:4 no case

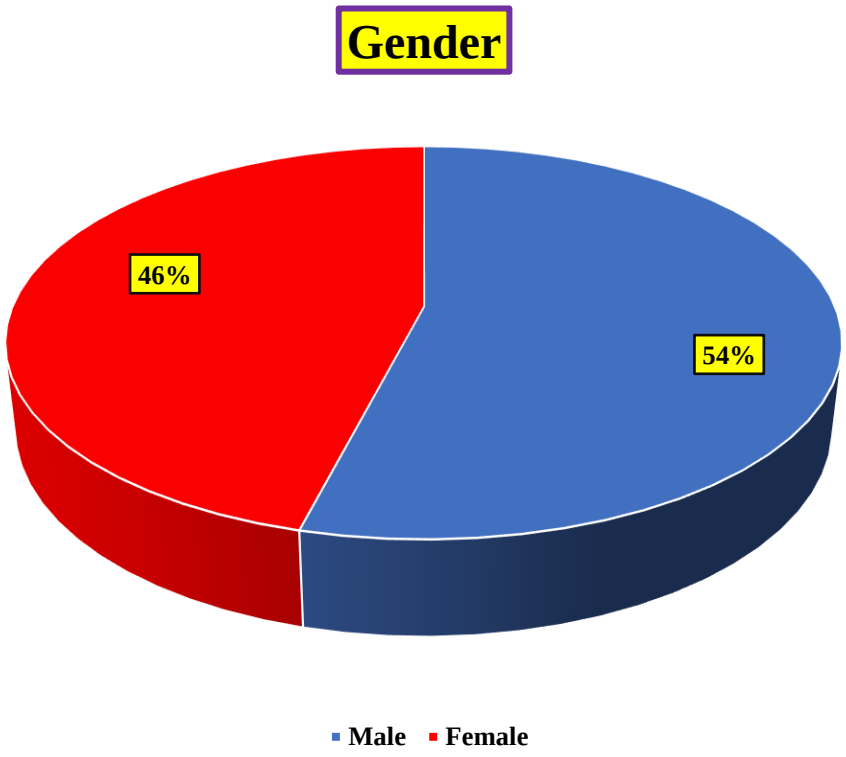

Figure 1. Frequency distribution of studied children regarding their gender (n= 100)

Table 2. Distribution of studied mother according to their personal characteristics (n= 100)

Mothers' characteristics	No.	%
Age (year)		
20 < 25	26	26.0
25 < 30	35	**35.0**
30 < 35	27	27.0
≥ 35	12	12.0
Mean ± SD	**28.60 ± 5.23**	
Marital status		
Married	76	**76.0**
Widow	10	10.0
Divorced	14	14.0
Educational level		
Don't read and write	17	17.0
Basic education	34	**34.0**
Secondary school	28	28.0
Bachelor	21	21.0
Income		
Enough	20	20.0
Not enough	80	**80.0**

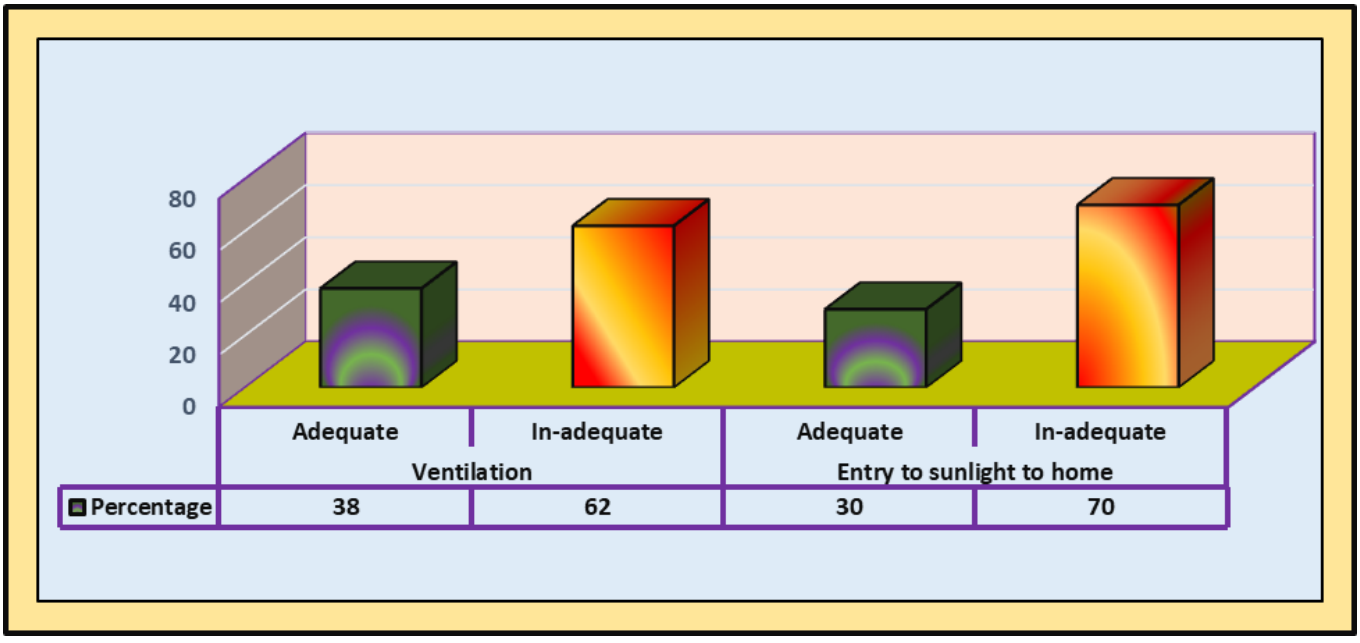

Figure 2. Frequency distribution of the studied mother according to housing ventilation and entry of sunlight (n= 100)

Table 3. Distribution of the studied mother's knowledge about rickets (n= 100)

Rickets	I don't know& wrong answer		Correct & Incomplete		Correct & complete	
	N	%	N	%	N	%
Definition of rickets	4	4.0	50	50.0	46	46.0
Symptoms of rickets	56	**56.0**	23	23.0	21	21.0
Causes of rickets	42	42.0	30	30.0	28	28.0
Comorbidities of disease with rickets	64	**64.0**	21	21.0	15	15.0
Prophylactic measures of rickets	3	3.0	47	47.0	50	50.0
Risk factors of rickets	55	**55.0**	24	24.0	21	21.0

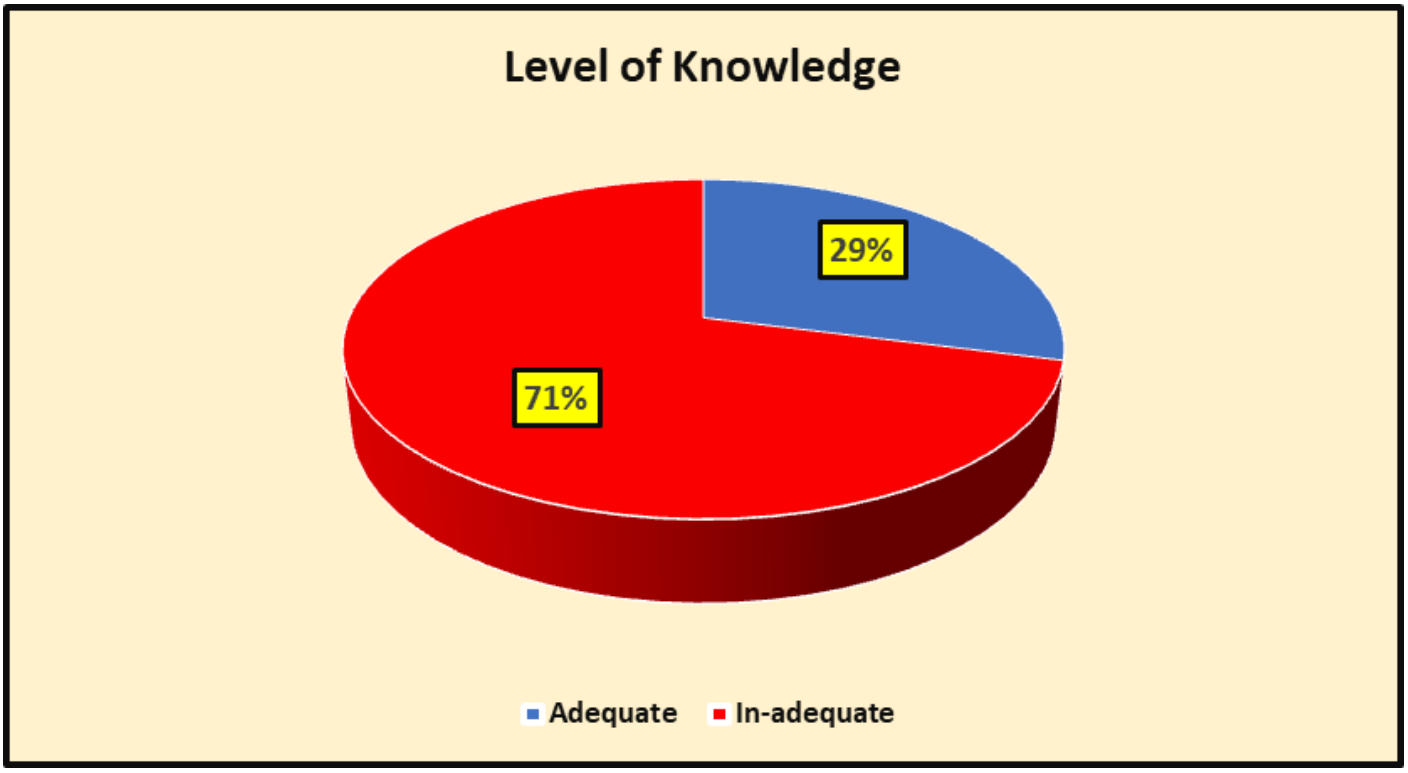

Figure 3. Distribution of the studied mothers' total knowledge regarding their rachitic children (n= 100)

Table 4. Relation between the studied mother' characteristics and their total knowledge regarding rickets (n= 100)

Items	No	Level of knowledge				χ^2	P-Value
		Inadequate		Adequate			
		71	71.0	29	29.0		
		N	%	N	%		
Age (year)						50.3	0.000**
20 < 25	26	25	25.0	1	1.0		
25 < 30	35	34	34.0	1	1.0		
30 < 35	27	8	8.0	19	19.0		
≥ 35	12	7	7.0	8	8.0		
Marital status						3.65	0.161 NS
Married	76	56	56.0	20	20.0		
Widow	10	8	8.0	2	2.0		
Divorced	14	7	7.0	7	7.0		
Educational level						55.0	0.000**
Don't read and write	17	17	17.0	0	0.0		
Basic education	34	34	34.0	0	0.0		
Secondary school	28	17	17.0	11	11.0		
Bachelor	21	3	3.0	18	18.0		
Occupation						2.51 F	0.090 NS
Work	30	18		12	12.0		
Don't work	70	53		17	17.0		
Income						8.20 F	0.006**
Enough	20	9	9.0	11	11.0		
Not enough	80	62	62.0	18	18.0		
Accommodation						1.10 F	0.212 NS
Civilized region	24	15	15.0	9	9.0		
Countryside	76	56	56.0	20	20.0		

*Significant $p \leq 0.05$ **highly significant $p \leq 0.01$ NS: Not significant at $P > 0.05$

Table 5. Relation between the studied mother' characteristics and their total attitude regarding their rachitic children (n= 100)

Items	No	Level of attitude				χ^2	P-Value
		Negative		Positive			
		60	60.0	40	40.0		
		N	%	N	%		
Age (year)						75.1	0.000**
20 < 25	26	25	25.0	1	1.0		
25 < 30	35	32	32.0	3	3.0		
30 < 35	27	0	0.0	27	27.0		
≥ 35	12	3	3.0	9	9.0		
Marital status						9.67	0.008**
Married	76	52	52.0	24	24.0		
Widow	10	4	4.0	6	6.0		
Divorced	14	4	4.0	10	10.		
Educational level						57.9	0.000**
Don't read and write	17	14	14.0	3	3.0		
Basic education	34	34	34.0	0	0.0		
Secondary school	28	11	11.0	17	17.0		
Bachelor	21	1	1.0	20	20.0		
Occupation						0.794 F	0.251 NS
Work	30	16	16.0	14	14.0		
Don't work	70	44	44.0	26	26.0		
Income						2.34 F	0.102 NS
Enough	20	9	9.0	11	11.0		
Not enough	80	51	51.0	29	29.0		
Accommodation						0.082 F	0.484 NS
Civilized region	24	15	15.0	9	9.0		
Countryside	76	45	45.0	31	31.0		

*Significant $p \leq 0.05$ **highly significant $p \leq 0.01$ NS: Not significant at $P > 0.05$ F: Fisher Exact Test

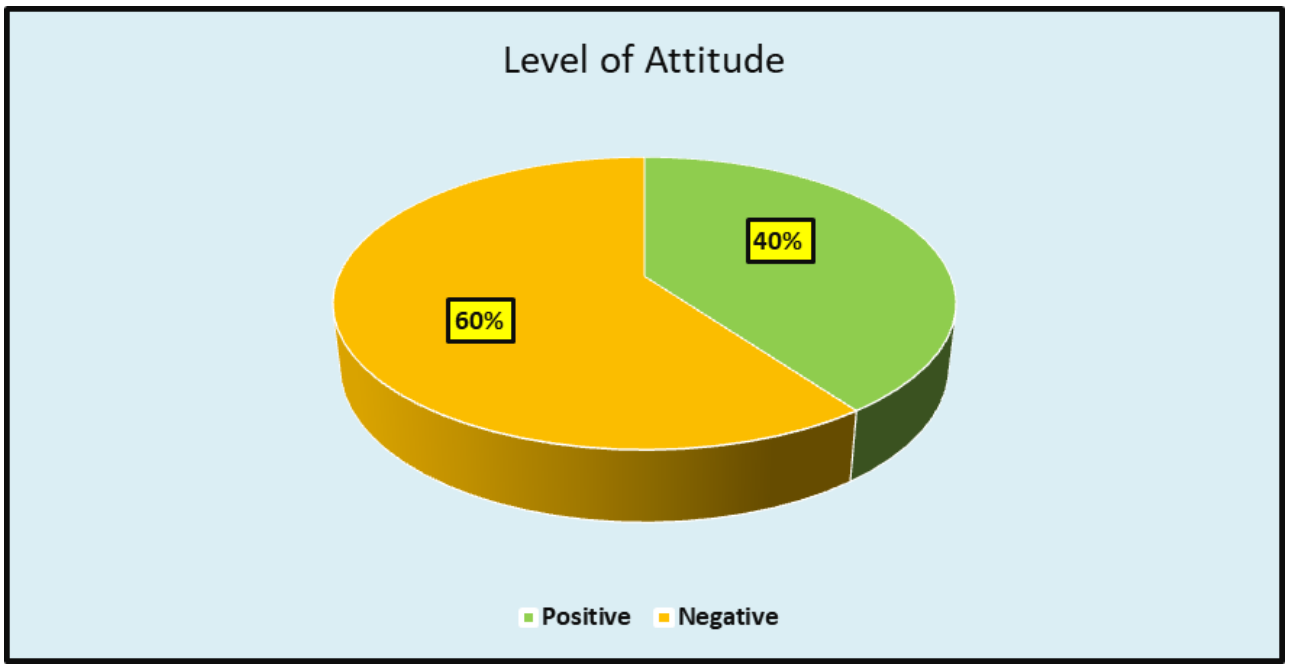

Figure 4. Distribution of the studied mothers' total attitude regarding their rachitic children (n= 100)

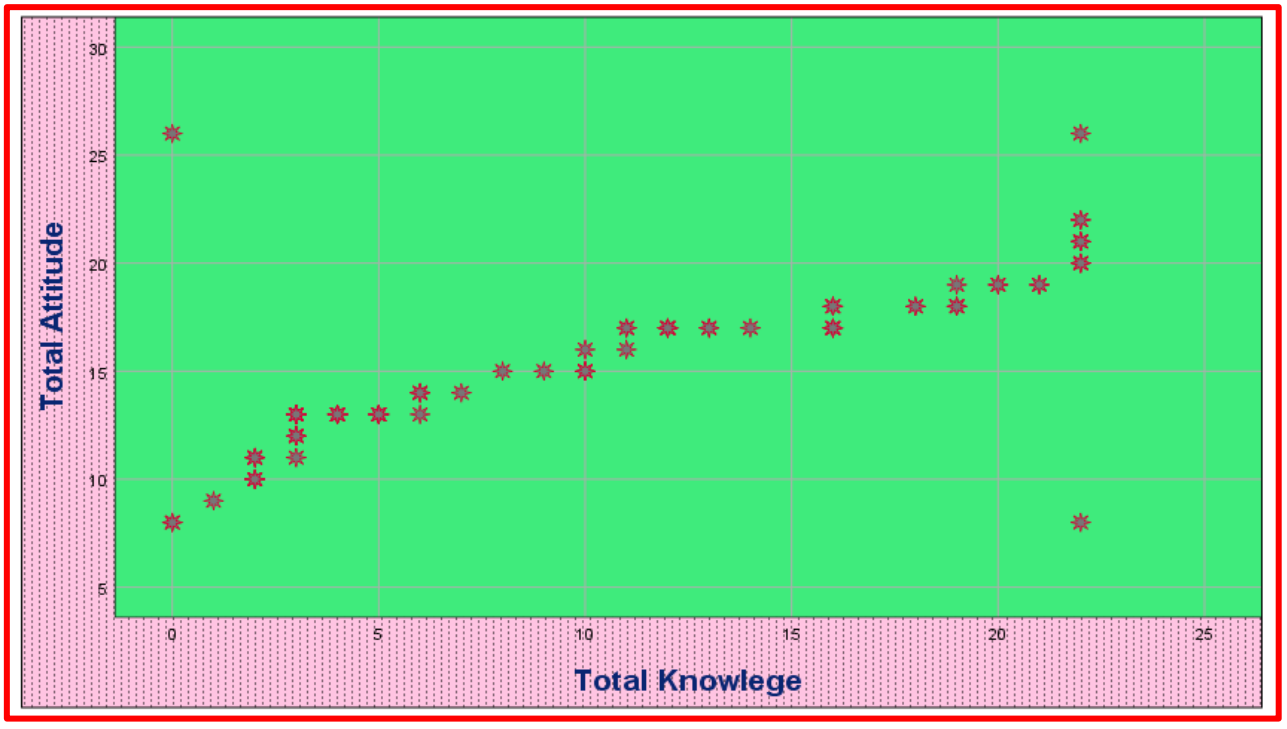

Figure 5. Correlation between total mothers' knowledge and attitude regarding their rachitic children n = (100)

This result was in a harmony with study carried out by Elnagar et al., (2020) entitled "Effect of Health Belief Model-Based Education on Mothers' Knowledge, Practice and Attitude Regarding Vitamin D Deficiency of their Children" and reported that, most of the studied mothers had three quarter negative attitude towards rickets before implementation of the program [23]. In contrast, this result was incongruent with a study done by Alzahrani, (2022) whose study reported that, the highest percentage of the studied mothers had positive attitude toward rickets. From the researcher‘s point of view, this may be attributed to lack of knowledge and awareness among the studied mothers regarding rickets and the spread of wrong beliefs, customs and traditions in rural country [22]. Regarding relation between total knowledge about rachitic children and personal characteristics of the studied mothers (table, 4) the current study represented that, there were high significant statistical relation between studied mothers’ age, educational level, and income and their total level of knowledge regarding their rachitic children. This result matched with Alamoudi et al., (2019) who conducted a study entitled "Awareness of Vitamin D Deficiency among the General Population in Jeddah, Saudi Arabia", and found that, there was a significant association between knowledge level and education level [24]. Likewise, a study carried out by Alahmadi et al., (2022), about "Assessment of Awareness and Knowledge about Rickets in Primary Health Care Centers in Saudi Arabia" and stated that, there was significant relation between mothers' level of knowledge and their age and education [25]. On contrary, a study carried out by Thabit., (2022) declared that, there was no association between monthly income and mothers' level of knowledge regarding rickets. From researcher point of view, this result may be due to higher illiteracy rate in rural area and the urgent need of studied mothers to improve their knowledge regarding their children care [26]. In assessing the relation between the studied mother ‘s characteristics and their total attitude regarding care of their rachitic children (table,5) the present study indicated that, there was high significant statistical relation between studied mothers’ age, marital status and educational level and their total level of attitude regarding their rachitic children. Consistently, a study conducted by Feleke et al., (2020) whose study reported that age, educational status, and marital status of the mother showed statically significant association with their attitude toward rickets [27]. In contrast, a study carried out by Abbas et al., (2021) stated that there was no significant statistical relationship between mothers' attitudes about vitamin D deficiency and their socio-demographic characteristics. From the researcher’s point of view, this result may be due to higher illiteracy rate in rural areas and more than two fifth of studied mothers still in middle age [2]. Therefore, the studied mothers had insufficient awareness to deal with their children during illness. As regard correlation between total knowledge and attitude regarding rachitic children among the studied mothers (figure, 4) the current study revealed that, there was a positive strong highly statistically significant correlation between total knowledge and attitude regarding rachitic children among the studied mothers. This result was compatible with Alsuwat et al., (2018) whose study found that there was significant positive correlation between the studied mothers' level of knowledge and attitude toward rickets disease [21]. In addition, this finding agreed with the study of Liang et al., (2018), entitled "Associations between Maternal Nutrition Knowledge, Attitude, and Practice and 25-Hydroxyvitamin D Levels and Rickets in Children in Xinjiang Province, People’s Republic of China" and found that there was highly significant positive correlation between mothers' knowledge and attitude [28]. In the same line, Bassam et al., (2022) whose study results affirmed that there was a strong positive correlation between mothers' total knowledge, and total attitude related vitamin D deficiency [29]. From the researcher‘s point of view, this can be interpreted as the level of knowledge directly reflected on the level of attitude among mothers of rachitic children and have a greatest influence on it.

4. Conclusions

Based on the study finding, it can be concluded that, more than two thirds of the studied mothers had inadequate level of knowledge regarding their rachitic children. In addition, three fifths of them had negative attitude regarding care of their children suffering from rickets. Finally, there were statistically a high significant relation between the studied mothers total level of knowledge and attitude and their characteristics namely; age ,marital status, educational level and income with p- value = ≤ 0.01.

Recommendations

Based upon the results of the current study the following recommendations are suggested that Implementation of mother classes program about rickets and its prevention for their children in outpatient pediatric clinics to increase their knowledge and attitude regarding care of their children suffering from rickets. Distribution of guidelines booklets for mothers about rickets in pediatric care settings. Emphasize the importance of raising the awareness of the newly mothers regarding prevention of rickets. Replication of this study on a larger sample from the different geographical locations at the Arab Republic of Egypt and further research.

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