Pregnant Women's Perception Regarding Vitamin D Deficiency in Tanta University Hospital

Hend Raafat Fathy abo Shahba(1), Prof. Dr. Aziza Tosson Labib(2), Assist. Prof. Dr. Amira Morsy Yousif(3)

1) B.Sc. Nursing, Faculty of Nursing, Banha University.
2) Professor of Maternity and Neonatal Health Nursing, Faculty of Nursing, Ain Shams University.
3) Assist Professor of Maternity and Neonatal Health Nursing, Faculty of Nursing, Ain Shams University.

Abstract

Background: Pregnant women have a high prevalence of vitamin D deficiency and detrimental effects on fetal and maternal complications. **Aim of the study was** to assess pregnant women's perception regarding vitamin D deficiency in Tanta university hospital. **Research design:** A quantitative descriptive design was used in this study. **Setting:** This study conducted at Tanta University Hospital (Gharbia Governorate). **Sample type**: Simple random sample was used. The total sample of the study was included (285) pregnant women. **Tools:** Two tools were used for data collection**;Tool (1): A structured interviewing questionnaire assessment tool**: **Tool (2): Likert attitude scale:** was used to assess pregnant women's attitude regarding vitamin D deficiency. **Result:** 35.1% of pregnant women had poor knowledge regarding to vitamin D deficiency, while 31.2% of them had average knowledge regarding to vitamin D deficiency. While 38.6% of pregnant women had neutral attitudes towards vitamin D deficiency, and 29.8%of them had positive attitudes towards vitamin D deficiency. **Conclusion:** Slightly more than one third of pregnant women had poor knowledge regarding vitamin D deficiency. Also less than two fifths of pregnant women had neutral attitudes towards vitamin D deficiency. Additionally, there was a high statistical significant relation between total knowledge and total attitude of pregnant women regarding vitamin D deficiency. **Recommendation:** Booklets, posters and brochures should be available and distributed in all MCH and health centers to all women about vitamin D deficiency. **Further researchers:** Effect of Educational program on pregnant women regarding vitamin D deficiency and its importance.

Key wards: Pregnant Women's, Perception, Vitamin D Deficiency.

Introduction

Vitamin D is a fat-soluble lipophilic prohormone with many metabolic and biological functions. This vitamin is mainly synthetized in the skin as cholecalciferol through the action of ultraviolet light (vitamin D3), but it is also obtained from diet sources and food supplements such as ergocalciferol (vitamin D2) and food materials such as fish oil, fish flesh, dietary supplements, eggs, butter, fortified foods, liver, and mushrooms **(Sadiq, 2022).**

Vitamin D is essential; it is one of the most vital nutrients for pregnant women and essential for her fetus to grow strong bones, teeth, muscles, heart, kidneys, and nervous system. During pregnancy, there are significant alterations in phosphate and calcium metabolism owing to calcium accumulating in the fetal skeleton, and the fetus relies exclusively on the maternal supply of vitamin D, which it receives across the placenta, as it is not capable of synthesizing vitamin D on its own for adequate bone mineral formation **(Miller & Mueller, 2021).**

Pregnancy is a high-risk period for vitamin D deficiency, which is defined as a serum 25(OH) D level below 20ng/ml. There is a direct relationship between vitamin D deficiency and maternal and foetal complications, such as increasing the risk of preeclampsia, gestational diabetes, preterm birth and hypocalcemia crisis in the mother. As poor skeletal development, increase the risk birth of a small child for gestational age (SGA), also it is related to an inadequate immune system, wheezing, eczema and respiratory infections in infants **(Abed, Ali& Mahdi, 2022)**

Adequate supplement of vitamin D in all pregnant women should be considered to improve maternal and fetal vitamin D status during pregnancy; several health agencies have recommended vitamin D supplementation for pregnant women. However, there is significant variation in the dosage recommendations; the effects and safety of vitamin D supplementation during pregnancy are undergoing review. Institute of medicine recommends that pregnant and lactating women require at least 600IU/d of vitamin D and recognize that at least 1500–2000 IU/d of vitamin D may be needed to maintain a blood level of 25(OH) D above 30ng/ml **(Soliman et al., 2020).**

Nursing plays a significant role in the prevention and detection of vitamin D deficiency as well as in the management of this condition, The skills of critical thinking, effective communication and interacting with other members of the interdisciplinary team enable nurses to understand the needs of the pregnant women and the goals of vitamin D deficiency management **(Harris, 2020).**

Significant of the study:

Vitamin D deficiency is a global health problem. Approximately 1 billion people worldwide are affected with vitamin-D deficiency. In the Middle East (70% to 90%) have the highest prevalence of vitamin D deficiency (**Sizar, Khare & Goyal, 2022)**. In Egypt, the percentage of vitamin D deficiency reaches more than 70% and this percentage varies from one country to another and insufficient exposure to sunlight leads to a lack of calcium absorption from the body **(Adawy, 2018).**

Maternal vitamin D deficiency is a widespread public health problem, the prevalence of deficient vitamin D status in pregnant women ranges from 5 to 84% globally **(Ahmed, Salama& Baraia, 2020).**

Subjects and Methods

Aim of the study:

This study aimed to:

Assess pregnant women's perception regarding vitamin D deficiency in Tanta university hospital.

Through the following:-

1.Assess pregnant women's knowledge regarding vitamin D deficiency.

2. Assess pregnant women's attitude regarding vitamin D deficiency.

Research Question:

1.What are the pregnant women's knowledge regarding vitamin D deficiency?

2.What are the pregnant women's attitude regarding vitamin D deficiency?

Research design:

A quantitative descriptive design was used in this study.

Setting:

This study conducted at Tanta University Hospital (Gharbia Governorate) because of the increase flow rate of pregnant women's on antenatal outpatient clinic due to present of rural and urban pregnant women from the around district.

Research Subjects:

$$n = \frac{N}{1 + N(e)^2}$$

Type of sample: Simple random sample was used in this study.

- **Sampling size and criteria:**

Sample size was calculated based on the census of previous year flow record of the pregnant women at Tanta University Hospital attended the outpatient clinics. The last annual report was 1000 women using the sample equation 285 women was the representative sample. According to the following formula: Where n is sample size=285, N is totaling number of pregnant women= 1000 cases.

Thompson S, (2012): Sampling. Third Edition. Hoboken, NJ: John Wiley & Sons, Inc.

Sample criteria:

- **Inclusion criteria:**

- Age group from ≤ 25 years to more than ≥ 35 years.

- Pregnant women in different pregnancy trimester.

- **Exclusion criteria:**

- None.

Sampling technique:

Pregnant women who attended at the antenatal outpatient clinic during Sundays &Tuesdays every week were the target group. Using the simple random technique (each other women). The study sample was collected till it reached the determined size.

- The study sample size was 285 pregnant women.

Tools for data collection:

Tool (1): A structured interviewing questionnaire assessment tool:

It was developed by the researcher after review of literature and similar research papers. It consists of five parts:

Part one: Designed to assess general-characteristics of pregnant women which include age, education, occupation, residence, and income.

Part two: Designed to assess past medical history such as suffering from any diseases or health problems before pregnancy, if yes, what are these diseases and did you take any medication related to this problems.

Part three: Designed to assess previous and current pregnancy history such as number of pregnancy, the current pregnancy period, suffering from any health problems during your current pregnancy**.**

Part four: Designed to assess healthy habits during pregnancy such as Eat foods that contain vitamin D and calcium during pregnancy.

Part five: It was adapted from (**Kavitha et al., 2015)** and doing modification to fulfill the aim of this study designed to assess pregnant women's knowledge about vitamin D deficiency which includes definition and source of vitamin D, risk factors, signs and symptoms, complication, management of vitamin D deficiency. It was 14 statements and the researcher added 6 other statements to complete the required data needed and it became finally 21 statements.

Knowledge scoring system:

Its scoring system responses ranged from (1-2) in which score (2) denotes yes, score (1) denotes No or don't know and the total knowledge score was (42) which divided to: A score >70% (30-42score) were consider good knowledge, average knowledge from 50% to 70%, (21-29 score) while poor knowledge scored "<50. 0 %"(< 21 score)

Tool (2): Likert attitude scale:

Likert scale was used to assess pregnant women's attitude regarding vitamin D deficiency. Adapted from (**Kavitha et al., 2015).** The researcher added and modified some questions at likert scale for fulfilling the aim of the study. It contains 16 statements with 3 responses (agree=3 – uncertain =2 – disagree =1). The highest score given to the most positive perception and the total score **48** are categorized in the following manner:

- Positive attitude >70% (>34 -48score)

- Neutral attitude 50% to 70% (24-34 score)

- Negative attitude <5o% (<24 score)

Operational definition:

- **Perception**: means Knowledge and attitude for pregnant women's regarding vitamin D deficiency**.**

- **Pregnancy:** means the process of growth of the fetus inside the uterus of the mother, where the ovum is fertilized with the sperm that begins to grow for nine months.

- **Vitamin D deficiency:** means Serum 25-hydroxyvitamin D (25[OH] D levels less than 12 ng/mL (<30 nmol/L)**.**

I. Operational design:

It included the preparatory phase, validity, reliability, pilot study and field work.

-The Preparatory phase:

It will included reviewing of related literature and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection.

-Tools validity:

The revision of modified tools was done by 3 experts from Ain Sham University in Obstetric-Gynecological specialty to evaluate validity of tools and necessary modification in knowledge tool was done according panel judgment.

-Tools reliability:

The internal consistency was measured to identify the extent to which the items of tools measure the same concept and correlate with each other, using cronbach's alpha test on clarity of sentences, appropriateness of content and sequence of items. Cronbach's alpha for knowledge=. 805 for 21 items, cronbach's alpha for attitude=. . 813 for 16 items

-Pilot study:

A pilot study was carried out on women for three weeks (10%), the cases of the pilot study was (29women) who are included in the study sample, The aim of pilot study was used to evaluate study process, examine the simplicity and clarity of language, test the feasibility and suitability of designed tools, estimate the time needed to complete the tools by each study subjects and identify, obstacles and problem that may be faced during data collection.

-Field Work:

After obtaining official approval from the director of Tanta university hospital. The Data collection of the study was in antenatal outpatient Clinic at Tanta university hospital from 1/6/2021 to 30/11/2021. The researcher attended at the antenatal outpatient Clinic at Tanta university hospital 2 days (Sunday &Tuesday) per week from 9 am to 1 pm, interviewing 6-8 cases each visit. The researcher has introduced herself to women, the aim of the study explained to pregnant women to gain their confidence and trust to participate in the study. Then oral consent from women was obtained. The data collection was done using 2 tools interviewing questionnaire sheet and Likert scale tool.

The researcher started to fill tools for illiterate women and the educated women fill the questionnaire by herself to ensure confidentiality of data. It took from 15 to 20 minutes.

II. Administrative design:

An official written approval letter clarifying the purpose of study was obtained from Dean of faculty of nursing Ain Shams University and director of Tanta university hospital and an approval for data collection to conduct this study.

Ethical considerations:

The researcher approval was obtained from scientific Research Ethical committee in faculty of nursing at Ain Shams University before starting the study. The aim of the study was explained to each woman before applying the tools to gain her confidence and trust. An Oral consent was obtained from each woman prior to participate in the study. Data was confidential and using coding system for it. The study did not cause any harmful effects on participating women. Each woman has right to withdraw from the study at any time.

III. Statistical design:

Data Management and Analysis:

The collected data were organized, categorized, tabulated and analyzed using the statistical software package for social sciences (SPSS version 18 Program). Data were presented in tables and charts using numbers, percentages, means, Standard deviations**, Chi square test** was used to examine the relationship between two qualitative variables but when the expected count is less than 5 in

more than 20% of the cells; Fisher's Exact Test was used.

Levels of significance:

- P>0. 05: Insignificant (NS)
- P<0. 05: Significant (S)
- P<0. 01: Highly significant (HS)

Limitation of the study:

Narrowing of place of data collection.

Results

Table (1): Shows the age of pregnant women that was ranged between 25 to 35 years old among 42. 4% with **Mean± SD** 28. 11±3. 90. Also 48. 8% of them had secondary/ technical education and 74. 1% of them hadn't cover family needs income monthly. While 66. 3% of them had more than two family members. Regarding occupation, it shows that 59. 6% of them not worked. Additionally, 67. 4 % of them lived in urban areas.

Figure (1): Displays that 35. 1% of pregnant women had poor knowledge regarding to vitamin D deficiency, while 31. 2% of them had average knowledge regarding to vitamin D deficiency.

Figure (2): Shows that 38. 6% of pregnant women had neutral attitudes towards vitamin D deficiency, while 29. 8%of them had positive attitudes towards vitamin D deficiency.

Table (2): Shows that, there was high statistical significant relation between total knowledge and total attitude (p value 0. 000**).

Table (1): Distribution of the pregnant women according to their general characteristics (n=285).

Items	N	%
Age		
< 25 years old	84	29. 5
25 – 35years old	121	**42. 4**
> 35 years old	80	28. 1
Mean± SD 28. 11±3. 90		
Educational Level		
Illiterate	2	0. 7
Read and write	3	1. 1
Primary education	24	8. 4
Secondary/ Technical education	139	**48. 8**
University education	117	41. 0
Monthly income		
Enough (covering monthly family needs)	74	25. 9
Not enough (not covering monthly family needs)	211	**74. 1**
Number of family members		
2	96	33. 7
>2	189	**66. 3**
Occupation		
Working	115	40. 4
Not working	170	**59. 6**
Residence		
Urban	192	**67. 4**
Rural	93	32. 6

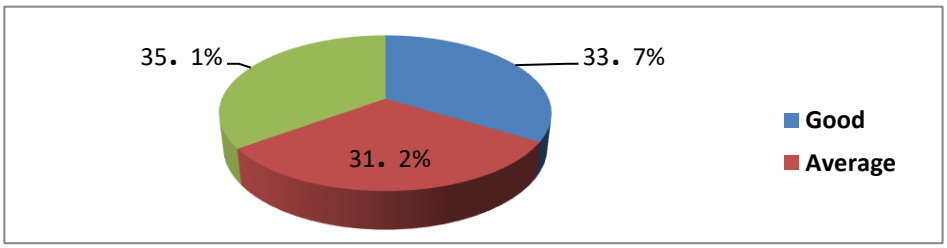

Figure (1): Distribution of pregnant women about total knowledge score regarding to vitamin D deficiency (n=285).

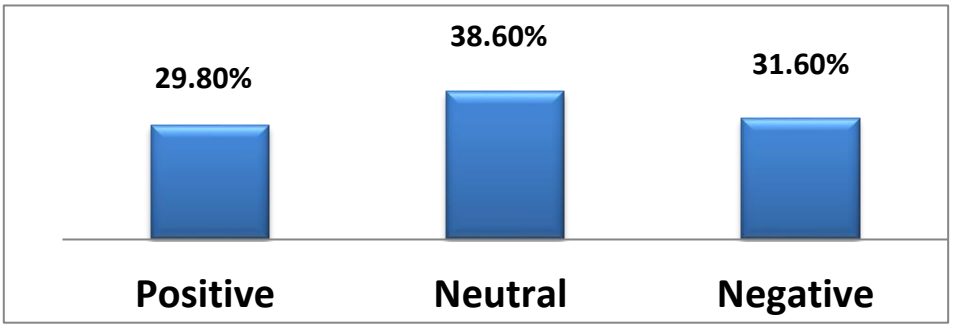

Figure (2): Distribution of pregnant women about total attitudes towards vitamin D deficiency (n=285).

Table (2): Relation between Total knowledge & Total attitude among pregnant women (n=285).

Items	Total attitude
Total knowledge	R. . 764 P. value. 000**

(**) Statistically significant at p<0. 01

Discussion

Vitamin D deficiency are Effect on both mother and fetus, also linked to a wide variety of adverse pregnancy out comes. Among the maternal complications are increased risk of pregnancy diabetes, bacterial vaginosis, preeclampsia, polyhy-dramnios, and abortion. The foetal complications of vit D deficiency are low birth weight, premature birth, musculoskeletal abnormalities, low levels of serum vit D, and hypocalcaemia-induced seizures in neonates. As a result, vit D deficiency prevention can reduce complications during pregnancy and promote maternal and foetal health (**Osman et al., 2020).** So this study aimed to assess pregnant women's perception regarding vitamin D deficiency in Tanta university hospital.

Regarding to general characteristic of the pregnant women in the current study, the results showed that more than two fifths of them their age ranged between 25 to 35 years old (Mean± SD 28. 11±3. 90). This result was in accordance with **Kumari et al., (2022)** who assessed the level of awareness about Vitamin D and its relation to pregnancy among pregnant ladies in India and found that their age ranged between 20 to 35 years old (Mean± SD 24. 85 ±2. 98).

Regarding the educational level of the pregnant women, the present study results showed that slightly less than half of them had secondary/ technical education. This finding was contrasted with **Manandhar, P, Manandhar, N & Joshi, (2020)** who assessed the knowledge, attitude, practice and importance of vitamin D among pregnant women and showed that one third of the pregnant women had intermediate level of education. Concerning the researcher's point of view this difference may be due to the difference of the studied samples.

As regard family income of the pregnant women, the present study result revealed that about three quarters their income didn't cover monthly family needs. This may be due to two thirds of them had more than two family members. This result was in agreement with **Ravinder et al., (2022)** who studied the Prevalence of vitamin D deficiency among South Indian pregnant women and found that the studied pregnant women had insufficient monthly income. This may be due to similarity of the economic status of the sample in both studies.

Regarding occupation of the pregnant women in the current study, more than half of them were not working. This result went in the same line with **Sabta et al., (2019)** who investigated vitamin D deficiency status and its related risk factors during early pregnancy and reported that highly percentage of the pregnant women were not working. This may due to the

working during pregnancy is very hard and can't bearable for the pregnant women.

As regard residence of the pregnant women more than two thirds of them lived in urban areas of Tanta city. The present study result went in the same line with **Chávez-Courtois et al., (2021)** who applied a comparative study for vitamin D status and its determinants in Mexican pregnant women from a rural and an urban area and reported that half of the pregnant women lived in urban areas. While this result disagreed with **Hu et al., (2021)** who studied vitamin D nutritional status of Chinese pregnant women and found that less than half of the pregnant women lived in rural areas. From the researcher's point of view, this difference may be due to the difference in socio-demographic characteristics between studied samples.

Concerning total knowledge score of the pregnant women regarding vitamin D deficiency, the current study result displayed that more than one third of pregnant women had poor knowledge regarding to vitamin D deficiency, while slightly less than one third of them had average knowledge. From the researcher's point of view, this result may be due to highly percentage of the studied pregnant women had secondary level of education or decrease health education from care providers during antenatal care.

This result was contrasted with **Kamarudin & Taha, (2022**) who assessed vitamin D dietary intake, knowledge, and practice among pregnant mothers in Malaysia and found that half of the women had a good knowledge regarding vitamin D deficiency. And this result was disagreed with **Shaheen, Tawfeek& Alkalash, (2021)** who assessed knowledge of women regarding vitamin D in Egypt and found that vast the majority of the studied women had poor knowledge. While the same results were found by **Dağhan et al., (2019)** who studied knowledge and practices of mothers regarding use of vitamin D and found that the level of knowledge regarding the use of Vitamin D supplementation was low.

Regarding total attitudes of pregnant women towards vitamin D deficiency, the current study result showed that less than two fifths of pregnant women had neutral attitudes towards vitamin D deficiency, while more than one quarter of them had positive attitudes.

This result was disagreed with **Elsobkey & Amer, (2019)** who investigated mothers' health education based on health belief model to prevent vitamin D deficiency and found that highly percentage of women had a negative attitude toward vitamin D. Also this result was contrasted with **Jamil et al., (2019)** who assessed knowledge, attitude and practice related to vitamin D and its relationship with vitamin D status among Malay women and found that more than three quarters of the studied women had neutral attitude related to vitamin D.

As regard relation between total knowledge & total attitude among pregnant women, the present study result showed that there was a high statistical significant relation between total knowledge and total attitude. This finding was supported with **Maryam et al., (2022)** who reported that, there was significant statistical relation between total knowledge & total attitude ($p = 0.001$). Also this result was agreed with **Elnagar et al., (2020)** who studied the effect of health belief model-based education on mothers' knowledge, practice and attitude regarding vitamin D deficiency and found that there was a highly statistically significant between total knowledge & total attitude.

Conclusion:

In the light of the current study findings, it can be concluded that,

Slightly more than one third of pregnant women had poor knowledge regarding vitamin D deficiency. Also less than two fifths of pregnant women had neutral attitudes towards vitamin D deficiency. Additionally, there was a high statistical significant relation between total knowledge and total attitude of pregnant women regarding vitamin D deficiency.

Recommendations:

Based on the current study finding, the following recommendations were suggested:

✓ Vitamin D deficiency prevention should be included in the routine antenatal counseling in MCH centers to improve their knowledge and prevent maternal and fetal complications.

✓ Booklets, posters and brochures should be available and distributed in all MCH and health centers to all women about vitamin D deficiency.

Further researchers:

✓ Effect of educational program on pregnant women regarding vitamin D deficiency and its importance.

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