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Female Awareness Regarding Vitamin D Deficiency

Esraa Abdel Rahman Abdel Nabi[(1)], Sahar Ahmad Shafik[(2)], Ahmed Ali Abdel HemidGhandour[(3)],Amany Mohamed Saad [(4)]

[(1)] *Demonstrator in Community health Nursing in Faculty of Nursing at Helwan University*
[(2)] *Professor of Community Health Nursing ،Faculty of Nursing, Helwan University,*
[(3)] *Lecturer of Community, Environmental and Occupational Medicine ،Faculty of Medicine, HelwanUniversity*
[(4)] *Lecturer of Community Health Nursing ،Faculty of Nursing, Helwan University*
Corresponding Author; Esraa Abdel Rahman Abdel Nabi

Abstract:*Vitamin D deficiency is a global health problem in allage groups, particularly in girls and women. Over one billion people worldwide are vitamin D deficient.****Aim*** *of the current study was to assess female awareness regarding vitamin D deficiency.****Design*** *A descriptive research design.****Setting:*** *This study was conducted in the administration building at Helwan University. The studied sample was 114 subjects.****Tools:*** *One tool was used for data collection (Structured Interviewing Questionnaire); consisted of three parts; Part I: Demographic characteristics. Part II: Knowledge about vitamin D, nutrition and deficiency. Part III: Reported practices regarding sunlight exposure.****Results*** *of the present study revealed that 46.5% of females had average level of knowledge regarding vitamin D deficiency, with high statistically significant differences,96.5% of females had adequate practices toward sunlight exposure andthere was a positive correlation but not statistically significant differences between total knowledge & total reported practice of females regarding sunlight exposure.****Conclusion****: Less than half of females had average level of knowledge regarding vitamin D deficiency, with high statistically significant differences, while majority of females had adequate reported practices toward sunlight exposure and there was a positive correlation but not statistically significant differences between total knowledge & total practice of females regarding sunlight exposure.****Recommendations****: Educational program for men and women about the effect of sunlight exposure on physical, psychosocial state and academic achievement.*

Key words:*Vitamin D, Deficiency and Female Awareness.*

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I. Introduction

Vitamin D is a fat-soluble vitamin that plays an important role in bone health which encourages the absorption and metabolism of calcium and phosphorous. There are many of the physiologic effects of vitamin D in both mineral metabolism and extra-skeletal effects have already been covered. Sunlight fulfills about 80- 90% of body requirement of Vitamin D while dietary source of Vitamin D provides only 10-20% of the total requirement. **[1]**There are many important roles of vitamin D such as cell differentiation, growth, preventing cancer cells from dividing, preventing cardiovascular disease and have anti-inflammatory properties. Vitamin D is involved in the regulation of insulin formation and secretion, which suggests a role in blood sugar maintenance and the development of diabetes mellitus. **[2]**

Vitamin D deficiency (VDD) is the most underdiagnosed medical condition in children and adults. This is largely because females do not typically present with overt clinical signs and symptoms until the deficiency is severe and prolonged. Females with established vitamin D deficiency present with features of bone pain and tenderness, proximal muscle weakness reported as difficulty rising from a sitting position. **[3]**Vitamin D deficiency is diagnosed with its level lower than 20 ng/mL in blood. Its insufficiency is the range of 21 to 29 ng/mL. Normal vitamin D level is more than 30 ng/mL.**[4]**The consequences of vitamin D deficiency cannot be under estimated. There has been an association of vitamin D deficiency with many of acute and chronic illnesses including preeclampsia, childhood dental caries, periodontitis, autoimmune disorders, infectious diseases, cardiovascular disease, deadly cancers, type 2 diabetes and neurological disorders. **[5]**

There are many reasons that cause (VDD) as increased indoor lifestyle, thereby preventing adequate exposure to sunlight, this is mainly in the urban population due to modernization. Also, pollution can hamper the synthesis of vitamin D in the skin by Ultraviolet (UV) ray. Changing food habits contribute to low dietary calcium and Vitamin D intake. Phytates and phosphates which are present in fiber rich diet can deplete Vitamin D stores and increase calcium requirement. Increased skin pigmentation and application of sunscreens.Unspaced

and unplanned pregnancies in women with dietary deficit can lead to worsening of vitamin D status in both mother and child. [6]

Community health nurse plays an important role in the prevention of VDD through health education. She should take urgent steps through motivation; create awareness about VDD, raising public knowledge about vitamin D, its importance to health, the consequences for its deficiency, sources of vitamin D and importance for sunlight exposure. Therefore, a combination of sunlight exposure with adequate intake of dietary sources of vitamin D and supplements can prevent occurrence of VDD. [7]

1.1 Significance of the Study

Vitamin D deficiency is a global health problem. With all the medical advances of the century, vitamin D deficiency is still epidemic. Over one billion people worldwide are vitamin D deficient or insufficient. [5]

In Egypt and the Middle East, 80% of females in the age group of 30 to 60 years suffer from vitamin D deficiency, which was resulted from lack of exposure to sunlight, although our country is famous for the brightness of the sun throughout the year, and poor intake of food rich in vitamin D. [8]

1.2 Aim of the study

The aim of the current study was to assess female awareness regarding vitamin D deficiency through:

- Assess females' knowledge about vitamin D, nutrition and deficiency.
- Assess females' reported practices regarding sunlight exposure.

1.3 Research question:

- What is the level of knowledge of females about vitamin D, nutrition and deficiency?
- What are females' reported practices regarding sunlight exposure?
- Is there a relation between females' demographic data, general knowledge, nutrition and reported practices regarding sunlight exposure?

II. Subjects and methods

2.1 Research design:

A descriptive research design was used to conduct the present study.

2.2 Research setting:

This study was conducted atthe administration building in Helwan University.

2.3 Subjects:

The actual sample was 114 females.

2.4 Sampling technique:

A systematic random sample of 126 female employees that represents 20% of total number (630 female employees aged from 20 to 59 years old), agree to participate in the study. Twelve female employees who shared in the pilot study were excluded from the total sample.

2.5 Tools of data collection:

The data were collected through using the following tool:

Structured Interviewing Questionnaire: This tool was developed by the investigator after reviewing the most recent and relevant national and international related literature. It composed of three parts:

Part I: Concerned with female employee's demographic characteristics that included: Age, marital status, place of residence, level of education, monthly income, nature of work and source of information.

Part II: Concerned with females' general knowledge about vitamin D that included: Vitamin D importance, high risk people for vitamin D deficiency, vitamin D proportion from the sun, high risk females for vitamin D deficiency, men are at risk of deficiency, all age groups are at risk of deficiency, vitamin D deficiency is one of the most important health issues in Egypt…etc.Nutritional knowledge which included: Sufficiency of vitamin D is from nutritional sources only, vitamin D content on food labels, consuming milk at least twice a week to be vitamin D sufficient, fatty fishes as tuna and mackerel are one of the main dietary sources of vitamin D…etc.

Scoring system:

General knowledge questions included 19 main questions. Scores of each question ranged from; correct = 2 points, incorrect = 1 points, don't know = 0 point and 5 questions scored as; complete correct = 2 points, incomplete correct = 1 point, wrong or don't know = 0 point. Nutritional knowledge included 13 questions scored as; correct = 2 points, incorrect = 1 point, don't know = 0 point. The total scores about general and

nutritional knowledgethat females had good knowledge when the total score equal 75% or above, average knowledge, when total score equal 50<75% and poor if below 50%.

Part III:Third part: Concerned with females' reported practices regarding sunlight exposure which included: I have enough exposure to sunlight, I usually use sunscreen on face and hands while in the sun, for sufficient exposure to sunlight I regularly engage in outdoor physical activities…etc.

Scoring system:

This part included 9 main questions. Scores of each question ranged from; always = 2 points, sometimes = 1 point, never = 0 point. The total scores about females had inadequate reported practice, when the total score equal below 50% and adequate if 50% or above.

2.6 Validity

The revision of the tool for clarity, relevance, comprehensiveness, understanding and applicability was done by a panel of 5 experts from the Community Health Nursing specialty and the necessary modification was done accordingly. The expertise recommended content validity of all tool's study variables.

2.7 Reliability

To assess reliability, the study tool was tested by the pilot subjects at first the reliability by calculating Cronbach's Alpha which was 0.824 for the questionnaire.

2.8 Pilot study

It was conducted on (12) female employees. They represented about 10% of the total study sample. The aim of the pilot study was to evaluate clarity, simplicity, applicability of data collection tools,as well as, to determine the time allowed to fulfill the developed tools.The number of the pilot study was excluded from the main study sample.

2.9 Fieldwork

An approval to carry out this study was obtained from Dean of Faculty of Nursing, Helwan University and official permission was obtained from the director of the administration building at Helwan University for conducting the study. The investigator started data collection by introducing herself to female employees and explained the aim of the study and its importance. They were assured that the information collected would be treated confidentially and would be used only for the purpose of the study (oral consent was taken from female employees). Data pertinent to the study variable were collected through structured face to face interview and all the tools filled by the investigator. Interviewing female employees was carried out in specialized room. It was taking 20-25 minutes to be filled. The data collection phase was taken 6 months through the academic year 2018-2019 from the beginning of January 2018 to the end of June 2019. Female employees were interviewed 2days/week (Sunday & Monday). Investigator was interviewed two or three female employees per day from 10 am to12 pm, till the needed sample completed.

2.10 Ethical considerations:

All ethical considerations was issued; a written approval was obtained from scientific ethical committee in Faculty of Nursing, Helwan University as well as an informed verbal and written consent was obtained from each study subject included in this study after explanation of the purpose and the nature of the study before data collection. They were given an opportunity to refuse to participate in the study, assured that the study is harmless and notified that they can withdraw at any stage of research. Also, they were assumed that the participation in the study was entirely voluntary, anonymity, privacy and confidentiality was assured through coding the data. Ethics, values, culture and beliefs were respected.

2.11Data management:

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 20, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison between total knowledge score and total reported practice score, also in this study using Chi-square test ($\chi 2$). Significance was adopted at $p<0.05$ for interpretation of results of tests of significance.

III. Results

Table 1. Shows that the mean age of females in the current study was 41.8 ± 10.86, as well as 70.2% of them were married, while 7.9% were divorced. 89.5% of them were resident in urban areas. Concerning to educational level 62.3% of the studied sample had university or more, while minority (8.8%) of them had primary education. 62.3% of them reported that they didn't have enough income, as regarded to work nature

most of them (82.5%) were employees. **Figure 1.** Shows that 12.3% of females had information about vitamin D from their families and friends, 27.3% of them had information about vitamin D from media (T.V, newspaper, …. etc.), while more than one third (35%) of them didn't know about it before. **Fig.2.** Represents that less than half (46.5%) of females had average level of knowledge regarding vitamin D deficiency, with high statically significant differences, P < 0.001.**Fig. 3.**This figure shows that 96.5% of females had adequate practices toward sunlight exposure. **Table 2.**This table shows that there is a positive relation between female's total knowledge score regarding vitamin D deficiency and their demographic characteristics but not statistically significant differences in all items except place of residence and nature of work. P-values = (0.037, 0.029) respectively.
Table 3 Presents that there is a positive relation between female's total reported practice score regarding sunlight exposure and their demographic characteristics but not statistically significant differences in all items except place of residence and level of education . P-values = (0.009, 0.023) respectively.
Table 4 Reveals that there is a positive correlation but not statistically significant differences between total knowledge & total practice of females regarding sunlight exposure. P-value = 0.388.

IV. Discussion

Regarding age of females, the present study delineated that the mean age of the studied subjects was 41.8 ± 10.86 years (20 to 59) years.This finding was in the same line with **Connor et al. [9]** published a study entitled: " Knowledge, attitudes and perceptions towards vitamin D in adult population: A cross-sectional study **"** conducted in United Kingdom**,** who reported that the mean age of females was 34.9 ±12.3 years (19 to 65) years. As well, this result in agreement with **Al-Amri et al. [10]** in Saudi Arabia conducted a study entitled: "Knowledge, attitude and practice regarding vitamin D among primary health care physicians in Riyadh city, Saudi Arabia"**,** who found that the mean age was 40.7±9.6.

However, this finding was contradicting with **Nasiruddin et al. [11]** in Oman conducted a study entitled: "Attitudes and behavior towards sunlight exposure and knowledge about vitamin D among Omani female university students" who reported that the age of females ranged from (16 to 30) years. From the investigator's point of view, this might be due to the highest incidence of vitamin D deficiency in the age 20-60 years as the physiological mechanism by which vitamin D impacts bone mineral density.
As regard to female's marital status**,** the current study revealed that more than two thirds of females were married. This finding was in agreement with **Alotaibi et al. [12]** in Saudi Arabia,who conducted a study titled:" Knowledge and practice of vitamin D deficiency and risk of hair loss among adult population in Majmaah city, Saudi Arabia" found that the majority of participants were married.

However, this finding was contradicting with **Habib et al [13]** in Saudi Arabia, titled: " Vitamin D deficiency: Knowledge and practice among adult Saudi females " who reported that about more than three quarters of the sample were singles. From the investigator's point of view, this is because of this age is considered the most suitable age for marriage which is a widely accepted social norm in the Egyptian culture.

Concerning female's place of residence**,** the present findings revealed that the majority of females lived in urban area. This is in the same line with**Bonevski et al. [14]** inAustralia, the study entitled: " Prescribing sunshine: A cross-sectional survey of 500 Australian general practitioners' practices and attitudes about vitamin D **"** who reported that 72.5% of the studied sample lived in major city .This result was in disagreement with**Kalyani& Sharma[15]** in India, who had a study entitled as "Awareness of vitamin D deficiency among females attending the outpatient department" that most of females reside in the rural area. From the investigator's point of view, this probably because the study setting was in Helwan University, Cairo Governorate which considered an urban area.

Regarding female's level of education, the present study delineated that less than two thirds of the females were university or more. This result was supported by **Babelghaith et al.[16]**in Saudi Arabia, a study entitled as: "Knowledge and practice of vitamin D deficiency among people lives in Riyadh, Saudi Arabia-A cross-sectional study" who found that half of (50.4%) participants had university degree. Also, this result was supported by **Alshahrani[17]**in Canada who conducted a study entitled as "Vitamin D deficiency and possible risk factors among Middle Eastern university students in London, Ontario, Canada" reported that 58% of the participants had a bachelor's degree. From the investigator's point of view, this probably because the majority of the studied sample were employees who had university degree.

Concerning female's monthly income, the present study showed that less than two third of females reported that their income wasn't enough. This finding was in disagreement with a study carried out in Egypt by **Kamal [18]**who found that 62.2% of the subjects had enough family income per month. From the investigator's point of view, this probably due to deterioration of economic conditions in Egypt and they work as employees and have no source of income other than their job.

Regarding female's work nature, the present study delineated that more than four fifths were employees. This finding was supported by **Vu et al. [19]**in Australia about "Knowledge and attitudes about

vitamin D and impact on sun protection practices among urban office workers in Brisbane, Australia" who carried out a survey and found that the majority of the studied sample was employees.

Respecting to females' sources of information about vitamin D more than one quarter of females had information about vitamin D from media (T.V, newspaper, …. etc.). This finding was in the same line with **Babelghaith et al.** [16]in Saudi Arabia who reported that 26.2% had information about vitamin D from media. This result was in disagreement with **Aziz et al.** [20]a study in Saudi Arabia about "Vitamin D deficiency awareness and behavior of the general population in Abha city: An internet-based survey" who reported that relatives and friends were the most dominant source (44.1%). From the investigator's point of view, this is probably because social media plays an important awareness dissemination role as an information source regarding vitamin D, importance, sources and its deficiency state, which has been elucidated in various studies conducted across the world.

Regarding to the total knowledge of females about vitamin D deficiency, the current study revealed that less than half of the females had average level of knowledge regarding vitamin D deficiency. This finding was in agreement with **Alotaibi et al.**[12]in Saudi Arabiawho reported that the score regarding knowledge 49.9% had average level knowledge.From the investigator's point of view, this might be due to more than two third of females heard about vitamin D and its importance and more than one quarter had information about it from media (T.V, newspaper, …. etc).

Concerning the total reported practices score of females regarding to sunlight exposure,the current study showed that the majority of females had adequate reported practices toward sunlight exposure. This result was disagreement with **Kavitha et al.** [21]In India who conducted a study entitled as " Knowledge, attitude and practice regarding vitamin D deficiency among antenatal mothers in Tamilandu: A phenomenological study "suggested that the majority of the study participants had inadequate reported practices toward sunlight exposure. From the investigator's point of view, this might be due to their average knowledge about vitamin D, deficiency and benefits of sunlight exposure.

According to the relation between females' total knowledge score regarding to vitamin D, nutrition and its deficiency and their demographic characteristics, the present study revealed that there was a positive relation between female's total knowledge score regarding vitamin D deficiency and their demographic characteristics but not statistically significant differences in all items except place of residence and nature of work. P-values = (0.037, 0.029) respectively. This result was in agreement with **Aziz et al. (2019)** [20]in Saudi Arabia, who found that the general population had a high level of knowledge regarding vitamin D deficiency and its consequences and had positive relation to demographic characteristics of the participants.

Related to the relation between total reported practice score of females regarding sunlight exposure and their demographic characteristics, this study clarified that there was a positive relation between female's total reported practice score regarding sunlight exposure and their demographic characteristics but not statistically significant differences in all items except place of residence and level of education. P-values = (0.009, 0.023) respectively. This finding was in opposite with a study carried by **Haluza et al.** [22] **(2016)** in German about " Sun exposure prevalence and associated skin health habits: Results from the Austrian population-based Ultraviolet skin risk survey " suggested that multifaceted socio-demographic characteristics including age and occupation had significant relation which stimulated leisure time sun exposure practices.

As regard to the correlation between females' total knowledge score and their total reported practice score regarding sunlight exposure the present study revealed that there was a positive relation between females total score knowledge and their total score reported practice regarding sunlight exposure, with highly statistically significant differences. This result was supported by**Habib et al.** [13] in Saudi Arabia, who reported that there was a positive association between the total knowledge and the total practice. The increase in total knowledge was associated with an increase in the total practice (p= 0.000).

As well as, this result was disagreement with **Salmanpour et al.** [23]in United Arab Emirates, who conducted a study titled: " Vitamin D deficiency: knowledge and practices among the adult population in Sharjah, United Arab Emirates ", reported that the majority of the participants demonstrated significant lack of knowledge and poor practices towards vitamin D and its deficiency. Also, this result was in disagreement with **Zhou et al.** [24]in China, who conducted a study titled: "Investigation on vitamin D knowledge, attitude and practice of university students in Nanjing, China ", suggested that subjects had poor knowledge about vitamin D and inadequate practices toward sunlight exposure. From the investigator's point of view, this is due to the average level of knowledge they had, which affected and stimulate them to increase their practices toward sunlight exposure.

V. Conclusion

The present study answered the research questions that related to first, knowledge of females about vitamin D, nutrition and deficiency, less than half of females had average level of knowledge regarding vitamin D deficiency, with high statically significant differences. Second, females' reported practices regarding sunlight exposure, that the majority of females had adequate practices toward sunlight exposure.

As well; the third question, which was the relation between females' demographic characteristics, general knowledge, nutrition and reported practices regarding sunlight exposure, there was a positive relation between female's total knowledge score regarding vitamin D deficiency and their demographic characteristics but not statistically significant differences in all items except place of residence and nature of work. P-values = (0.037, 0.029) respectively. There was a positive relation between female's total reported practice score regarding sunlight exposure and their demographic characteristics but not statistically significant differences in all items except place of residence and level of education. P-values = (0.009, 0.023) respectively. Finally, there was a positive correlation but not statistically significant differences between total knowledge & total practice of females regarding sunlight exposure. P-value = 0.388.

VI. Recommendations

On the light of the current study findings the following recommendations are suggested:

- Increase a smart sun campaign to enhance the awareness about potential negative effects of sun exposure during the periods where Ultraviolet (UV) rays is in moderate to extreme range, and not to encourage sun protection behaviors when the UV range is low.
- Implementing health programs like a workshop or training at the college level help in improving knowledge about the vitamin D importance.
- Interventions should be adopted through the mass media in terms of wide publicity of vitamin D awareness as a next step to ensure that all different ages of the population are acquiring adequate knowledge about vitamin D for optimal bone health.

Recommendations for further researches:

- Educational program for men and women about the effect of sunlight exposure on physical, psychosocial state and academic achievement.
- Preparing community health nurses with high level of efficiency, knowledge and practice to provide health education for adults suffering from vitamin D deficiency.
- Further studies are needed for making more investigations about vitamin D and its effect on bone health.

Table (1): Female distribution according to their demographic characteristics (n=114).

Demographic characteristics	**No**	**%**
Age (years)		
20: ≤ 30	23	20.2
>30 -	91	79.8
Mean ± SD **41.8 ± 10.86**		
Marital status		
Single	13	11.4
Married	80	70.2
Widowed	12	10.5
Divorced	9	7.9
Place of residence		
Rural	12	10.5
Urban	102	89.5
Level of education		
Primary	10	8.8
Secondary	13	11.4
Technical diploma	20	17.5
University or more	71	62.3
Monthly income		
Enough	41	36
Enough &save	2	1.8
Not enough	71	62.3
Nature of work		
Employee	94	82.5

Worker	20	17.5

Figure (1): Distribution of females' sources of information about vitamin D (n=114).

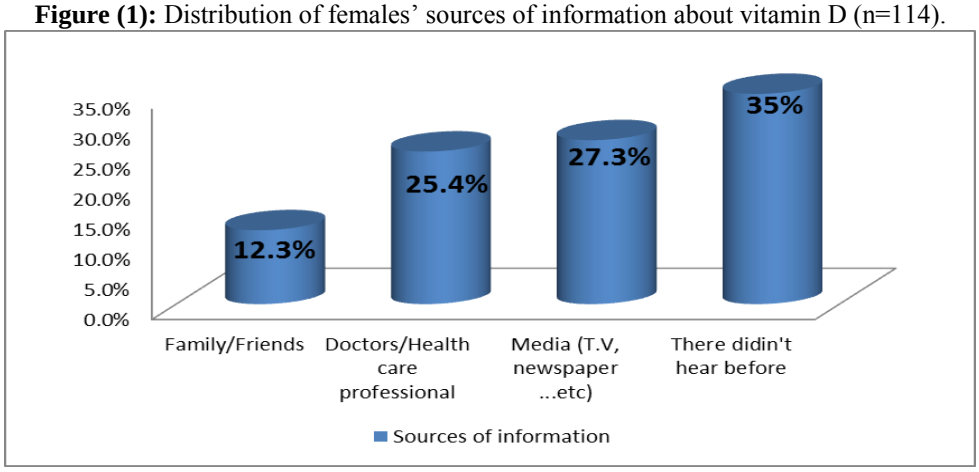


Figure (2): Total knowledge score of females about vitamin D, nutrition and its deficiency (n=114)

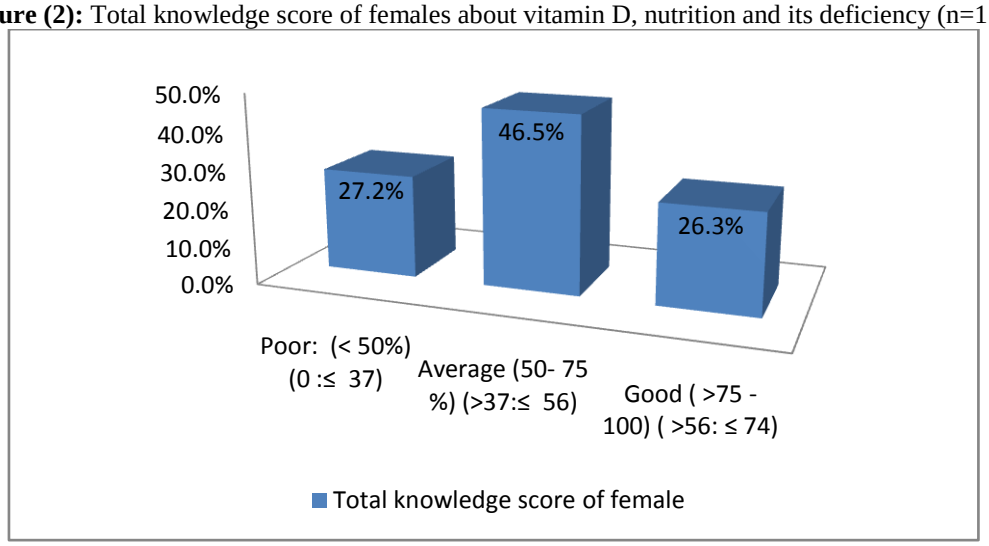
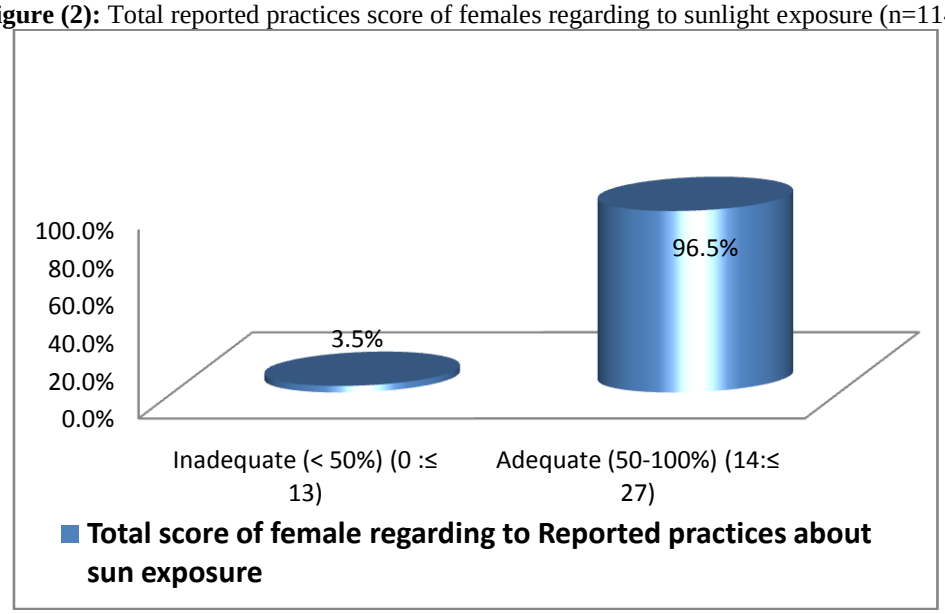


Figure (2): Total reported practices score of females regarding to sunlight exposure (n=114).



Range = (0-27) Mean ± SD = 23.4211 ± 4.01522 t-test = 62.280 P = 0.001*

Table (2): Relation between females' total knowledge score regarding vitamin D, nutrition and its deficiency and their demographic characteristics (n=114)

Demographic characteristics	Total score of female knowledge						χ^2	P value
	Poor		Average		Good			
	No.	%	No.	%	No.	%		
Age (years)								
20: ≤ 30	3	13	14	60.9	6	26.1	3.403	0.182
>30 -	28	30.8	39	42.9	24	26.4		
Marital status								
Single	3	23.1	3	23.1	7	53.8	8.116	0.230
Married	21	26.2	39	48.8	20	25		
Widowed	3	25	7	58.3	2	16.7		
Divorced	4	44.4	4	44.4	1	11.1		
Place of residence								
Rural	7	58.3	3	25	2	16.7	6.590	0.037*
Urban	24	23.5	50	49	28	27.5		
Level of education								
Primary	5	50	4	40	1	10	7.037	0.317
Secondary	2	15.4	8	61.5	3	23.1		
Technical diploma	5	40	7	35	8	25		
University or more	16	22.5	34	47.9	21	29.6		
Income								
Enough	9	22	19	46.3	13	31.7	2.082	0.721
Enough &save	1	50	1	50	0	0		
Not enough	21	29.6	33	46.5	17	23.9		
Nature of work								
Employee	22	23.4	43	45.7	29	30.9	7.080	0.029*
Worker	9	45	10	50	1	5		

*Statistically significant at (P<0.05)

Table (3): Relation between total reported practice score of females regarding sunlight exposure and their demographic characteristics (n=114)

Demographic characteristics	Total reported practice score				χ^2	P value
	Adequate		Inadequate			
	No.	%	No.	%		
Age (years)						
20: ≤ 30	23	100	0	0	1.651	0.648
>30 -	87	95.6	4	4.4		
Marital status						
Single	13	100	0	0	1.762	0.623
Married	76	95	4	5		
Widowed	12	100	0	0		
Divorced	9	100	0	0		
Place of residence						
Rural	10	83.3	2	16.7	6.858	0.009*
Urban	100	98	2	2		
level of education						

Primary	10	100	0	0	9.562	0.023*
Secondary	13	100	0	0		
Technical diploma	17	85	3	15		
University or more	70	98.6	1	1.4		
Income						
Enough	40	97.6	1	2.4	0.319	0.856
Enough &save	2	100	0	0		
Not enough	68	95.8	3	4.2		
Nature of work						
Employee	92	97.9	2	2.1	3.019	0.082*
Worker	18	90	2	10		

*Statistically significant at (P<0.05)

Table (4): Correlation between total knowledge score and their total reported practice score regarding sunlight exposure (n=114).

Reported practice / **Knowledge**	**Adequate**		**Inadequate**		χ^2	**P -value**
	No.	%	No.	%		
Poor	29	93.5	2	6.5	1.895	0.388
Average	51	96.2	2	3.8		
Good	30	100	0	0		

References

[1]. Chauhan N, Batul A, Bhatia A, Sachdev S, Gupta M., (2018) : Vitamin D deficiency among female students of a Government Medical College. National Journal of Physiology, Pharmacy and Pharmacology. 2018 | Vol 8 | Issue 12. https://www.ejmanager.com/fulltextpdf.php?mno=5659. 20/3/2019 10.28 pm.

[2]. Kloosterman, Beukers M, Jansen-van der Vliet, C. Ocké M., (2017) : Vitamin D intake of Dutch infants from the combination of (fortified) foods, infant formula, and dietary supplements. European Journal of Nutrition March 2017, Volume 56, Issue 2, pp 581–590. Access date 22/1/2019 at 12.02 am. https://link.springer.com/article/10.1007/s00394-015-1102-z.

[3]. Hossein N & Holick M., (2013): Vitamin D for health: a global perspective. Mayo Clin Proc. Jul; 88(7):720-55. https://www.ncbi.nlm.nih.gov/pubmed/23790560 . 26/11/2018 at 4.14pm.

[4]. Khazaei Z, Khazaei S, Beigrezaei S, Nasri H., (2017): Vitamin D deficiency in healthy people and its relationship with gender and age. DOI: 10.15171/jpd.2018.06. https://www.researchgate.net/publication/322964083_Vitamin_D_deficiency_in_healthy_people_and_its_relationship_with_gender_and_age . Access date 13/2/2019 at 5.05 pm.

[5]. Holick M., (2017): The vitamin D deficiency pandemic: Approaches for diagnosis, treatment and prevention. Rev EndocrMetabDisord. 2017 Jun;18(2):153-165. doi: 10.1007/s11154-017-9424-1. https://www.ncbi.nlm.nih.gov/pubmed/28516265 . 1/10/2018 at 6 pm.

[6]. Aparna P, Muthathal S, Nongkynrih B and Gupta S., (2018): Vitamin D deficiency in India. J Family Med Prim Care. Mar-Apr; 7(2): 324–330. doi: 10.4103/jfmpc.jfmpc_78_18. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6060930/. 3/3/2019 at 7.37pm.Potter, P. A., Stockert, P. A., Perry, A. G., and Hall, A. M. (2017): Older Adults, Fundamentals of Nursing, 9 th ed., USA, P 181.

[7]. Ferri F., (2018): Ferri's Clinical Advisor .ElSEVIER. USA Pages 1242-1243. https://www.elsevier.com/books/ferris-clinical-advisor-2018/ferri/978-0-323-52957-0 . 32/6/2019 at 7.18 pm.

[8]. National Council for Woman (2018): Risks of vitamin D deficiency and its Impact on Health of women and Egyptian Family, Akhbarelyom Newspaper Cairo: Sunday, 16 September Available at : https://akhbarelyom.com/news/newdetails/2702667/1/ .Date 10/9/18 at 7pm.

[9]. Connor C, Glatt D, White L, and Iniesta R., (2018): Knowledge, Attitudes and Perceptions towards Vitamin D in a UK Adult Population: A Cross-Sectional Study. Int J Environ Res Public Health. 2018 Oct 27;15(11). pii: E2387. doi: 10.3390/ijerph15112387. https://www.ncbi.nlm.nih.gov/pubmed/30373274 . 20/6/2019 at 12.20am.

[10]. Al-Amri F, Gad A, Al-Habib D, and Khair A., (2017): Knowledge, Attitude and Practice Regarding Vitamin D Among Primary Health Care Physicians in Riyadh City, Saudi Arabia, 2015. World Journal of Food Science and Technology. Vol. 1, No. 2, 2017, pp. 47-55. doi: 10.11648/j.wjfst.20170102.13. https://www.researchgate.net/publication/319044320_Knowledge_Attitude_and_Practice_Regarding_Vitamin_D_Among_Primary_Health_Care_Physicians_in_Riyadh_City_Saudi_Arabia _2015 . 18/7/2019 at 4.12pm.

[11]. Nasiruddin K, Hussain S, Bashar S, Hasan S, Palis E and Iqbal S., (2017): Attitudes and Behavior Towards Sunlight Exposure and Knowledge About Vitamin D Among Omani Female University Students". EC Nutrition 8.2 (2017): 35-42. https://webcache.googleusercontent.com/search?q=cache:eHbPHr2rwQQJ:https://www.ecronicon.com/ecnu/pdf/ECNU-08-00259.pdf+&cd=1&hl=en&ct=clnk&gl=eg&client=firefox-b-d .9/3/19 at 5.25pm.

[12]. Alotaibi A, Alsalhi W, Almutiri A, Alzahrani A, AlsaabA,andAlhassan M, Alotaibi K and Aleliwi Y., (2019): Knowledge and practice of vitamin D deficiency and risk of hair loss among adult population in Majmaah city, Saudi Arabia. International Journal of Medicine in Developing Countries. 2019; 3(2):001–006. https://doi.org/10.24911/IJMDC.51-1541624780 . 28/7/2019 at 4.15 pm.

[13]. Habib F, Al-Motairi W, and Al-Mutairi W., (2014): Vitamin D Deficiency: Knowledge and Practice among Adult Saudi Females. Global Advanced Research Journal of Medicine and Medical Sciences (GARJMMS) ISSN: 2315-5159. May 2014 Vol. 3(5), pp. 095-101. http://garj.org/garjmms/5/2014/3/5/vitamin-d-deficiency-knowledge-and-practice-among-adult-saudi-females . 22/6/2019 at 10.18 pm.

[14]. Bonevski B, Girgis A, Magin P, Horton G, Brozek I, and Armstrong B., (2012): Prescribing sunshine: a cross-sectional survey of 500 Australian general practitioners' practices and attitudes about vitamin D. Int J Cancer. 2012 May 1; 130(9):2138-45. doi: 10.1002/ijc.26225. Epub 2011 Aug 9. https://www.ncbi.nlm.nih.gov/pubmed/21647876 . 5/8/2019 at 9.45 pm.

[15]. Kalyani V& Sharma S., (2016): Awareness of Vitamin D Deficiency among Females Attending the Outpatient Department. IOSR Journal of Nursing and Health Science (IOSR-JNHS) e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 5, Issue 4 Ver. II (Jul. - Aug. 2016), PP 76-78. www.iosrjournals.org . 14/7/2019 at 7.22 pm.

[16]. Babelghaith S, Wajid S, Al-Zaaqi M, Al-Malki A, Al-Amri F, Alfadly S, Alghadeer S and Alarifi M., (2017): Knowledge and practice of vitamin D deficiency among people lives in Riyadh, Saudi Arabia-A cross-sectional study. Biomedical Research 2017; 28 (7): 3114-3118. https://www.researchgate.net/publication/316986645_Knowledge_and_practice_of_vitamin_d_deficiency_among_people_lives_in_riyadh_saudi_arabia-a_cross-sectional_study . 11/7/2019 at 11.14 pm.

[17]. Alshahrani A., (2014): Vitamin D Deficiency and Possible Risk Factors Among Middle Eastern University Students in London, Ontario, Canada. Electronic Thesis and Dissertation Repository. 2010. https://ir.lib.uwo.ca/etd/2010 . 22/6/2019 at 4.23pm.

[18]. Kamal W, Abd El-Hamid H, Abd El-Megeed H, and Mohy El-Deen H., (2018): Mothers' Awareness regarding Vitamin D Deficiency among Their Infants in Kalyobia Governorate Menoufia Nursing Journal, May2017, Vol.2, No. 1. https://www.researchgate.net/publication/326848109_Mothers'_Awareness_regarding_Vitamin_D_Deficiency_among_Their_Infants_in_Kalyobia_Governorate . 12/5/2019 at 6.13 pm.

[19]. Vu L, Pols V, Whiteman D, Kimlin M, and Neale R., (2010): Knowledge and attitudes about Vitamin D and impact on sun protection practices among urban office workers in Brisbane, Australia. Cancer Epidemiol Biomarkers Prev. 2010 Jul; 19(7):1784-9. doi: 10.1158/1055-9965.EPI-10-0127. Epub 2010 Jun 22. https://www.ncbi.nlm.nih.gov/pubmed/20570906 . 12/6/2019 5.20pm.

[20]. Aziz S, Hassan Alamri F, Alzyedy M, Alqahtani A, Asiri I and Alasmari A., (2019): Vitamin D deficiency awareness and behavior of the general population in Abha city: an Internet-based survey. 3(2):179–184. 23/2/2019 at 8.42 pm.

[21]. Kavitha D, Anjalakshi C, Venkataraman P, Rukmani J and Murali R., (2015): Knowledge, Attitude and Practice regarding Vitamin D Deficiency among Antenatal Mothers in Tamilandu: A Phenomenological Study. Asia Pacific Journal of Research Vol: I. Issue XXXI, September 2015. www.apjor.com . 5/8/2019 at 10.25 pm.

[22]. Haluza D, Simic S and Moshammer H., (2016): Sun Exposure Prevalence and Associated Skin Health Habits: Results from the Austrian Population-Based UV Skin Risk Survey. Int J Environ Res Public Health. 2016 Jan; 13(1): 141. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4730532/ . Access date 25/9/2019 at 9.13 pm.

[23]. Salmanpour V, Ibrahim H, Salameh A, YahyaA,andDebal B., (2016): Vitamin D deficiency: knowledge and practices among the adult population in Sharjah, United Arab Emirates. Arch Osteoporos. 2016; 11:15. doi: 10.1007/s11657-016-0269-0. Epub 2016 Mar 30. https://www.ncbi.nlm.nih.gov/pubmed/27026018 . 12/9/2019 at 8.56pm.

[24]. Zhou S, Gardner K, Taylor W, Marks E, and Goodson N., (2016): Vitamin D assessment in primary care: changing patterns of testing. London J Prim Care (Abingdon). 2015; 7(2): 15–22. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4494470/ . 5/5/2019 at 11.11pm

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