Journal of Endocrinology and Metabolism Research

ISSN: 25827960
Eljamay SM, et al. 2022- J Endo Metabol Res
Research Article

Incident of Vitamin D Deficiency in Derna City\Libya

Salwa Muftah Eljamay[1*], Mohammed Abdul-Aziz Alghazali[2] and Hend Hani Ali Eldalal[3]

[1]Department of Public Health, Assistant professor at Collage of Medical Technology, Derna, Libya

[2]Department of Genetic Engineering, Assistant lecturer at College of Medical Technology, Derna, Libya

[3]Public Health, Ministry of Health, Derna, Libya

[*]**Corresponding Author:** Salwa Muftah Eljamay, Department of Public Health, Assistant professor at Collage of Medical Technology, Derna, Libya.

Received Date: 21-02-2022
Accepted Date: 11-03-2022
Published Date: 25-03-2022

Abstract

The study explained the incident of vitamin D deficiency in Derna city, in the Eastern part of Libya.

Aim: To find out the causes of Vitamin D deficiency.

Material and Methods: Cross-sectional study for 590 samples were given a questionnaire, about demographic characters started in 01\05\2018 up to 15\ 01\2020.

Result: A 590 case were 360 who suffering from Vit D deficiency , that the frequency & the percent % of skin color, was highest percent for wheaten skin color by 164(45.6%), followed by white color skin 122(33.9%), brownish color by 68(18.9%), then black skin color by 6(1.0%), Mean(2.15), SD(0.917), as followed by Smoking were 94(26.1%) not smoking 266(73.9%), Mean 1.74, SD(0.440), about sporting the percent was who keep exercising were 144(40.0%), the percent who do not continue to exercise were 216(60.0%), the percent who do not exercise were 164(45.6%), Mean(1.60), SD(0.491). As for the percent whose expose to sun were 103(17.5), then who not expose to sun were 213(36.1), who Sometimes expose to sun were 274(46.4), Mean(2.31), SD(0.710), p–value=0.000 that their relationship between Vitamin D Deficiencies and demographic characters, skin color, smoking, sporting, nutrition, expose to sun, diabetes, and hypertension.

Conclusion: The obtained results prove that their relationship between, age, gender, skin color, smoking, nutrition, expose to sun, sporting, diabetes, hypertension, different type of diseases, and other type of vitamins, there is also a direct proportion between vitamin D deficiency and S. Ca^{+} deficiency.

Keywords: S. Ca^{+}; Smoking; Sporting; Sun; Vitamin D deficiency.

Aim

1. The prevalence of vitamin D deficiency in Derna city\Libya.
2. Find out the causes of Vitamin D deficiency.
3. Relationship between Vitamin D deficiency with lifestyle and demographic characters.

Introduction

Lack of Vitamin D is a significant medical condition in Derna City\Libya. The Vitamin D inadequacy is a pandemic medical problem. The lack of Vitamin D is presently recognized all around the globe. Factors assume an essential part in Vitamin D synthesis [1]. Vitamin D is one of most significant nutrients in body, it is dissolvable in fats [2]. Vitamin D lack is a significant general medical issue in both created and non-industrial nations, with a detailed overall pervasiveness of 30-80% in youngsters and adults [3]. Vitamin D inadequacy is predominant around the world. This inadequacy has numerous outcomes which are as yet being investigated, aside from the notable skeletal inconveniences [4]. Pubescence is an extra gamble factor for lack of Vitamin D particularly in young ladies and fat children [5]. Vitamin D inadequacy is related with various antagonistic wellbeing results remembering expanded bleakness and mortality for everybody and in fundamentally sick patients [6]. Diabetes mellitus is a constant issue that influences a few populaces among the entire world, and it is viewed as a far and wide medical issue [7]. Nutrient D_2 is fabricated through the bright illumination of ergosterol from yeast, and nutrient D_3 through the bright light of 7 dehydrocholesterol from lanolin [8]. Vitamin D is a fat-solvent nutrient that is changed over in the body into naturally dynamic metabolites, 25-hydroxy Vitamin D(25(OH)D) and 1, 25-dihydroxy Vitamin D [9]. Vitamin D inadequacy is profoundly common in fundamentally sick patients [10]. Solar bright B photons are consumed by the skin, prompting change of 7 dehydrocholesterol into nutrient D3 (cholecalciferol) [11]. A low admission of calcium and restricted openness to sun based bright (UV) light in summer were related with Vitamin D-lack [12]. Lack of Vitamin D in grown-ups can accelerate or worsen osteopenia and osteoporosis, cause osteocalcin and muscle shortcoming, and increment the gamble of fracture [13].

Lack of Vitamin D has been related with expanded gamble of normal malignant growths, immune system sicknesses, hypertension, and irresistible diseases [14].

Dietary wellsprings of Vitamin D give off an impression of being deficient and lack of Vitamin D has been demonstrated to be the reason for rickets and osteomalacia [15]. High lighting likely intense inconveniences. The pervasiveness of lack of Vitamin D and its importance in the emergency unit are unknown [16]. Maternal hypovitaminosis D might impede fetal development and cause antagonistic pregnancy results including intrauterine development limitation and neonatal low birth weight [17]. The proof is progressively pointing towards Vitamin D critical job in diminishing the rate of immune system infections [18]. The standard capacity of vitamin D is help of the dynamic vehicle part of gastrointestinal calcium retention [19]. Children and young people with corpulence

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

have higher gamble of vitamin D deficiency [20]. A few examinations explored vit. D_3 inadequacy base on orientation in any case, without real correlation between sexes that is mean vit. D_3 inadequacy and hazard factors [2].

The PTH levels showed a huge positive relationship with the WC part of Mets, and the Vit D levels were adversely connected with the BP and fatty oils parts as well likewise with the Mets [21]. Vitamin D lack is related with a few illnesses like various sclerosis, rheumatoid joint pain, respiratory contamination, etc. In the Field of transplantation (kidney transplantation) [22]. Vitamin D inadequacy has been related with respiratory pain disorder, pneumonic fibrosis expanded degrees of IL-2, and cardiovascular antagonistic events [23]. Generally devoured food things, for example, dairy items are seldom sustained with vitamin D [24]. Vitamin D inadequacy was available in numerous US young people in this metropolitan center-based example [25]. The proposed meaning of Vit D supplementation in the clinical administration of COVID-19 remaining parts elusive [26]. The lower the Vitamin D increase during pregnancy, the more prominent the gamble of GDM, particularly in overweight/heftiness ladies. Besides [27]. Vitamin D lack is normal in the number of inhabitants in Zahedan. In view of our outcomes, stronghold of milk and the utilization of enhancements is recommended around here [28]. Interventional concentrates on Vit D supplementation in SARS-CoV-2 tainted individuals [29]. A fundamental component for the guideline of serum calcium, phosphate, and basic phosphatase (Alk Ph) [30].

Material & Methods

Data collection

Cross-sectional study for 590 samples were given a questionnaire, the data was study from different population area and private clinic in Derna city, a city in the Eastern part of Libya. Each case was given a questionnaire and interview during the period of the research, which started in 01\05\2018 up to 15\01\2020. The data for the present study was acquired from different population area and private clinic in Derna city, a city in the Eastern part of Libya. From these regions, Elsafa clinic (Department of Orthopedic), Elwahda Teaching Hospital (Gynecology Department), Community health Office clinic (Nutrition Department) were selected randomly.

The questionnaire and family information

The questionnaire contained four sections: Sociodemographic data, age between(18-79 years), gender, salary, expose to sun, nutrition, smoking, suffering of different disease, supplement, color of skin, sporting, deficiency of any Vitamins, and so on.

Measurable examination

A PC program was utilized for information examination. The spellbinding and recurrence information was given as a mean ± standard deviation (SD). The Statistical bundle for the Social Science (SPSS) form 26 under Microsoft Windows 10 were utilized for information investigation, and unmistakable measurements (mean, standard deviation, X_2, P-Value, cross-tab).

Result and Discussion

The recurrence of segment characters for 590 cases were in Table 1 and Figure 1. The results show that the skin color , the highest percent were wheaten skin color by 222(37.6%), followed by white color skin 204(34.6%), brownish color by 158(26.8%), then black skin color by 6(1.0%) patients, 360 suffering from vitamin D deficiency, about sporting the percent was who Keep exercising were 103(17.5%), the percent who do not continue to exercise were 274(46.4%), the percent who do not exercise were 213(36.1%).

As for the percent whose expose to sun were 103(17.5%), who are not expose to sun were 213(36.1%), then who are some time expose to sun were 274(46.4%), the patients who suffering from hypertension were 120(20.3%), who not suffering from hypertension were 470(79.7%), the patients who suffering from diabetes were 54(9.2%) who not suffering from diabetes were 536(90.8%).

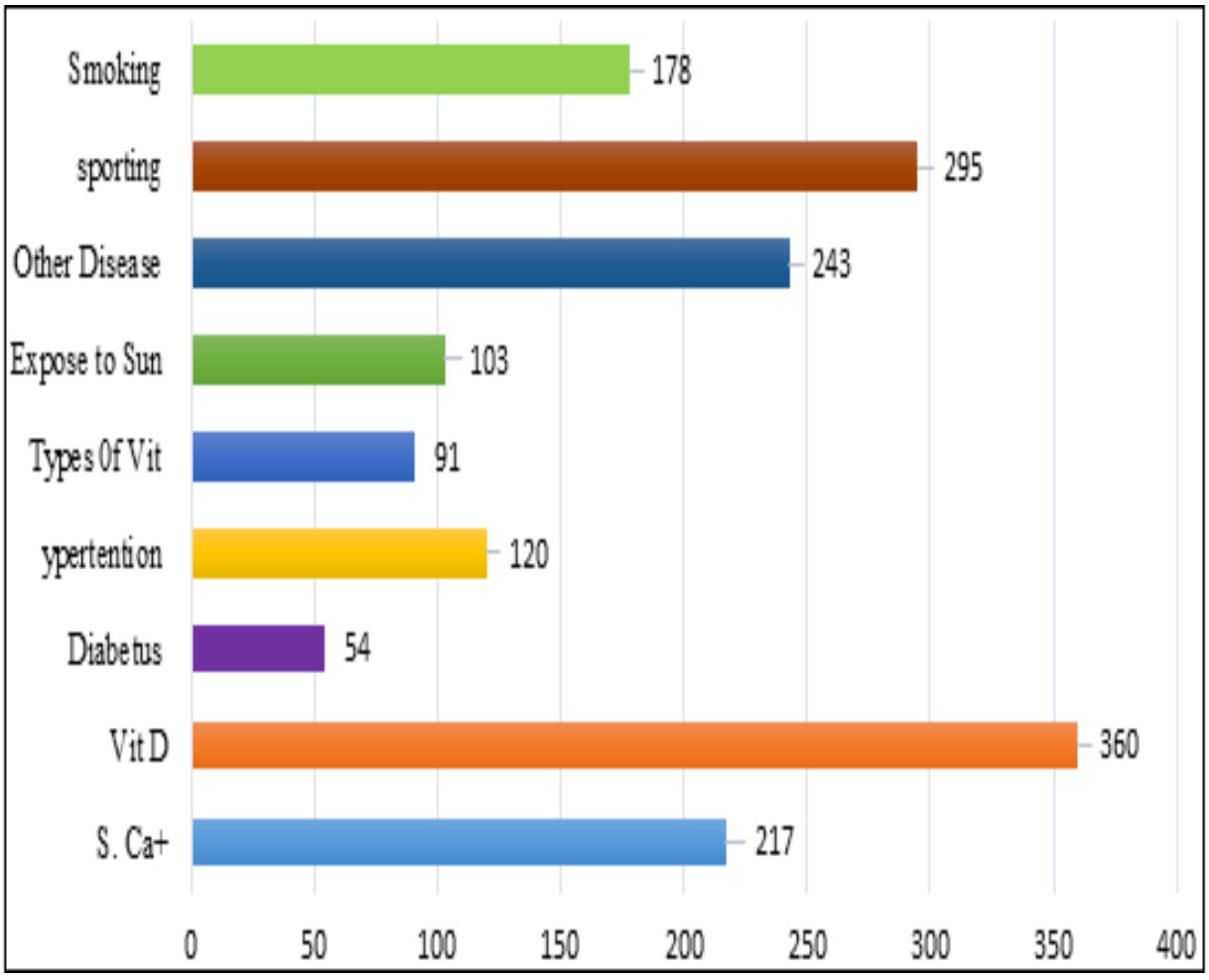

Figure 1: Frequency of demographic characteristics n=590.

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

Demographic Characteristics n=590		Number of participants (%)
Gender	Male	268(45.4)
	Female	322(54.6)
Age (Year)	18-28	355(60.2)
	29-39	59(16.1)
	40-49	44(20.0)
	45-54	41(6.9)
	50-59	39(6.1)
	70-79	15(2,5)
Marital situation	Single	384(65.1)
	Married	198(33.6)
	Divorce	8(1.4)
Monthly household income	High(more than 2400)	36(6.1)
	Medium(from 1200 to 2400)	468(79.3)
	Low(less than 1000)	86(14.6)
Skin color	White	204(34.6)
	Brownish	158(26.8)
	Black	6(1.0)
	Wheaten	222(37.6)
Smoking	Yes	178(30.2)
	No	412(69.8)
Sporting	Yes	103(17.5)
	No	213(36.1)
	Some Time	274(46.4)
Expose to Sun	Yes	103(17.5)
	No	213(36.1)
	Sometimes	274(46.4)
Hypertension	Yes	120(20.3)
	No	470(79.7)
Diabetes	Yes	54(9.2)
	No	536(90.8)
Total	590(100)	

Table 1: Frequency of demographic characteristics for all data n=590.

In Table 2 illustrates that correlation between Vitamin D Deficiencies & Demographic characteristics for 590, that there are relationship which the p–value was<=0.000 for gender, age, skin color, smoking, expose to sun, diorites, hypertension, sporting $S.Ca^{+}$. Other types of Vitamins, and different diseases. These agree with previous study, p-value for there's was>0.000, that`s mean there's not relationships between Vit D deficiency and nutation

	P-Value	X_2
Age	0	78.711
Gender	0	56.984
Skin color	0.001	40.859
Smoking	0.007	7.22
Nutrition	0.856	6.586
Expose to Sun	0.012	8.846
Diabetes	0.003	8.657
Hypertension	0	47.256
Sporting	0	36.939
Ca+ deficiency	0	127.859
Vit B, C, E,	0	185.788
Other Disease	0	1467.308
Total	590	

Table 2: Correlation between Vitamin D deficiencies and demographic characteristics for 590.

From 590 patients there were 360 who suffering from Vit D deficiency in Table 3 Figure 2-14. The results show that the frequency & the percent % of color skin, the highest percent were wheaten skin color by 164(45.6%), followed by white color skin 122(33.9%). Brownish color by 68(18.9%), then black skin color by 6(1.0%), Mean(2.15), SD(0.917), as followed by Smoking were 94(26.1%) not smoking 266(73.9%), Mean 1.74, SD(0.440), about sporting the percent was who keep exercising were 144(40.0%), the percent who do not continue to exercise were 216(60.0%), the percent who do not exercise were 164(45.6%), Mean(1.60), SD(0.491). As for the percent whose expose to sun were 52(14.4%), who's not expose to sun were 144(40.0%), then who's some time expose to sun were 164(45.6%), Mean(2.31), SD(0.710).

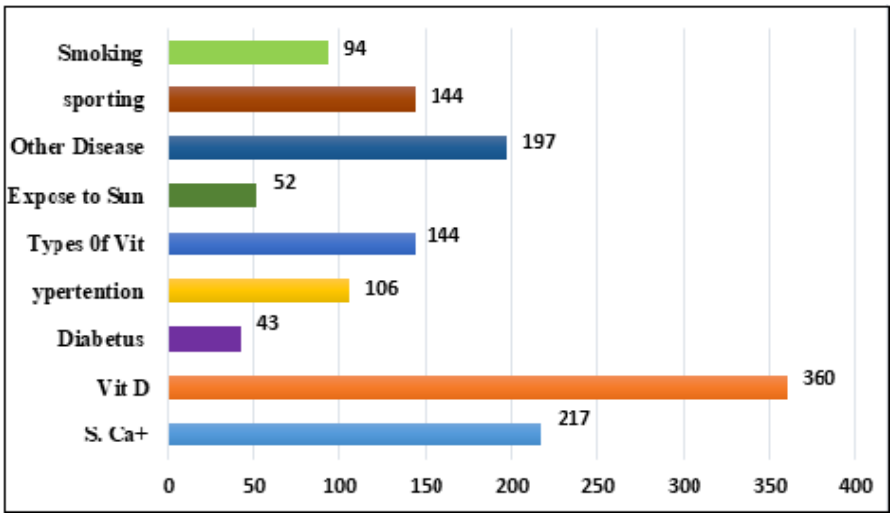

Figure 2: Frequency of demographic characteristics n=360 who suffering from vit D deficiency.

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

Demographic Characteristics n=360		Number of participants (%)	Mean	SD
Gender	Male	119(33.1)	1.67	0.471
	Female	241(66.9)		
Age(Year)	18-28	168(46.7)	2.27	1.542
	29-39	70(19.4)		
	40-49	42(11.7)		
	50-59	31(8.6)		
	60-69	34(9.4)		
	70-79	15(4.2)		
Marital situation	Single	180(50.0)	1.52	0.543
	Married	172(47.8)		
	Divorce	8(2.2)		
Monthly household income	High(more than 2400)	27(7.5)	1.91	0.484
	Medium(from 1200 to 2400)	273(75.8)		
	Low(less than 1000)	60(16.7)		
Skin color	White	122(33.9)	2.15	0.917
	Brownish	68(18.9)		
	Black	6(1.0)		
	Wheaten	164(45.6)		
Smoking	Yes	94(26.1)	1.74	0.44
	No	266(73.9)		
Sporting	Yes	144(40.0)	1.6	0.491
	No	216(60.0)		
	Some Time	0(0.00)		
Expose to Sun	Yes	52(14.4)	2.31	0.71
	No	144(40.0)		
	Sometimes	164(45.6)		
Hypertension	Yes	106(29.4)	1.71	0.456
	No	254(70.6)		
Diabetes	Yes	43(11.9)	1.88	0.325
	No	317(88.1)		
Total		360(100)		

Table 3: Frequency, mean, and standard deviation of demographic characteristics of Demographic characteristics for who suffering from Vit D deficiency n=360.

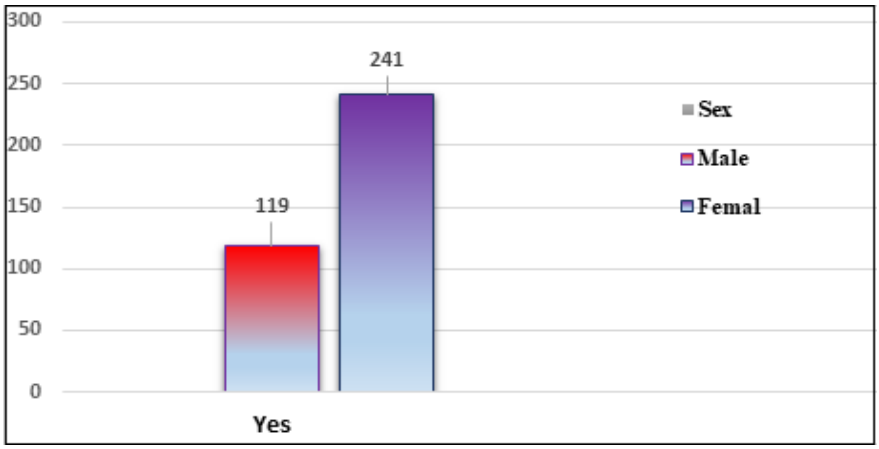

Figure 3: Frequency of gender those suffering from Vit D deficiency.

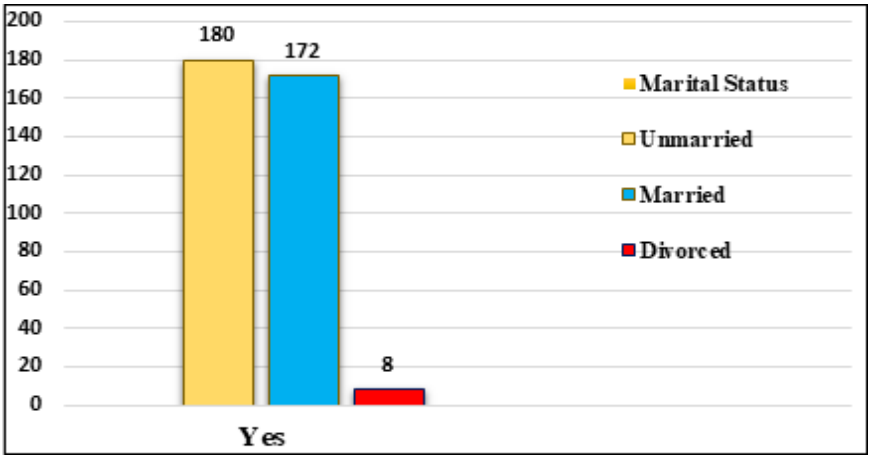

Figure 4: Frequency of marital status those suffering from Vit D deficiency.

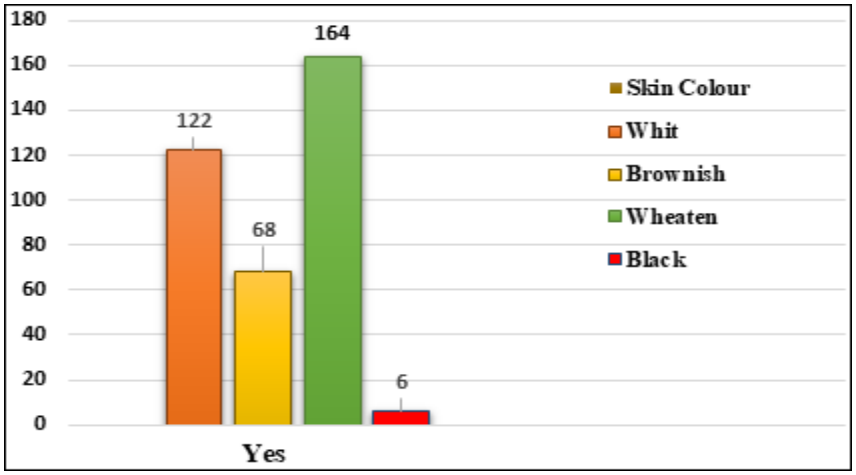

Figure 5: Frequency of skin color those suffering from Vit D deficiency.

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

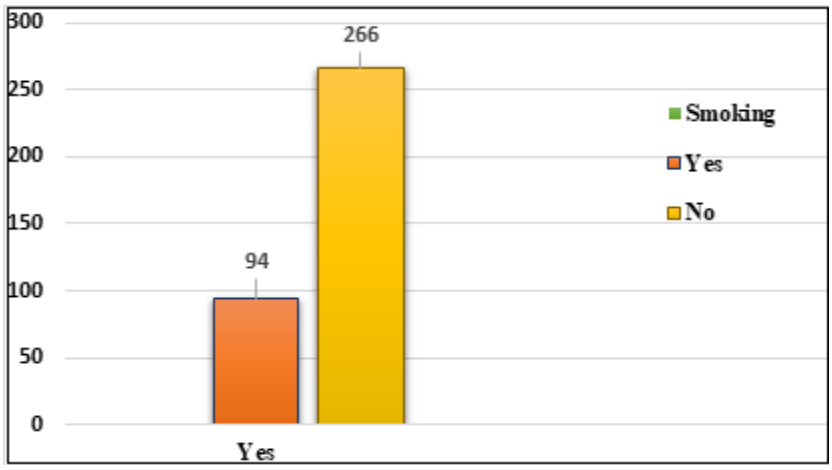

Figure 6: Frequency of smokers those suffering from Vit D deficiency.

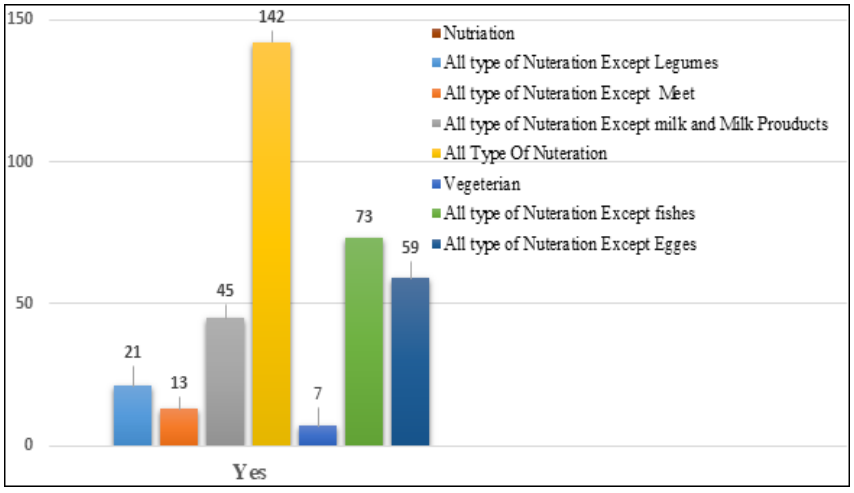

Figure 7: Frequency of types of nutrition those suffering from Vit D deficiency.

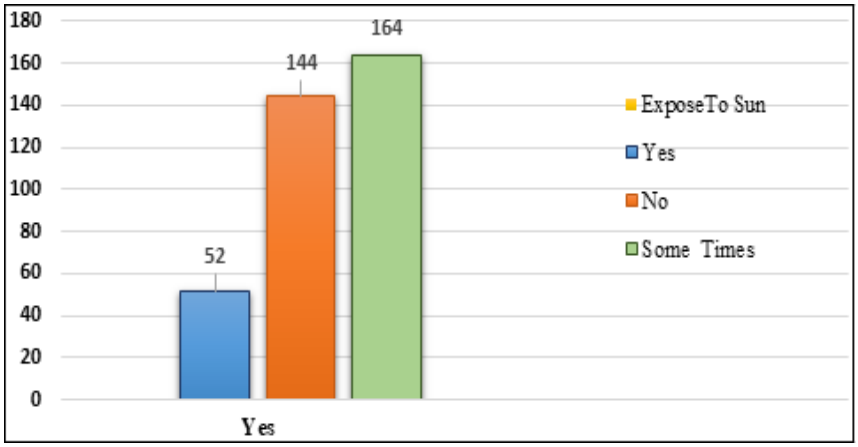

Figure 8: Frequency of skin expose of sun those suffering from Vit D deficiency.

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

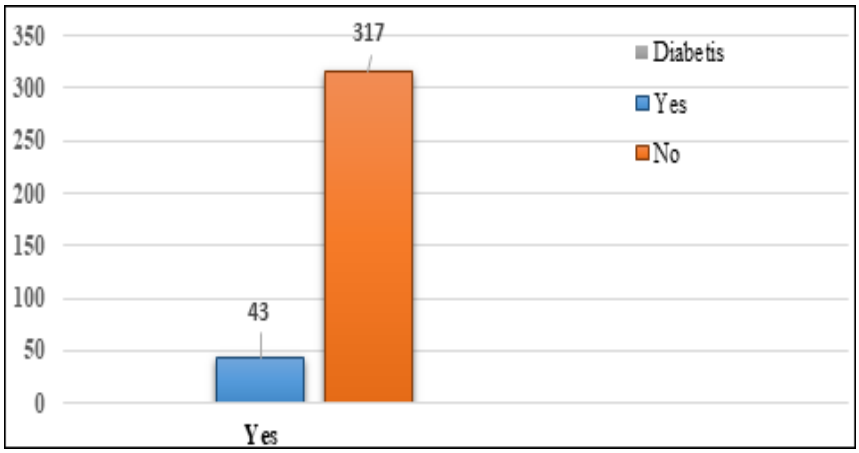

Figure 9: Frequency of diabetics with Vitamin D deficiency.

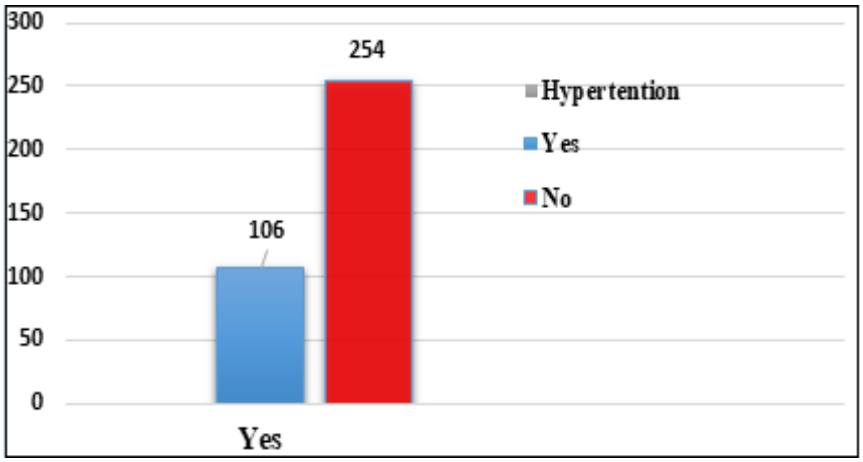

Figure 10: Frequency of hypertensive patients with Vitamin D deficiency.

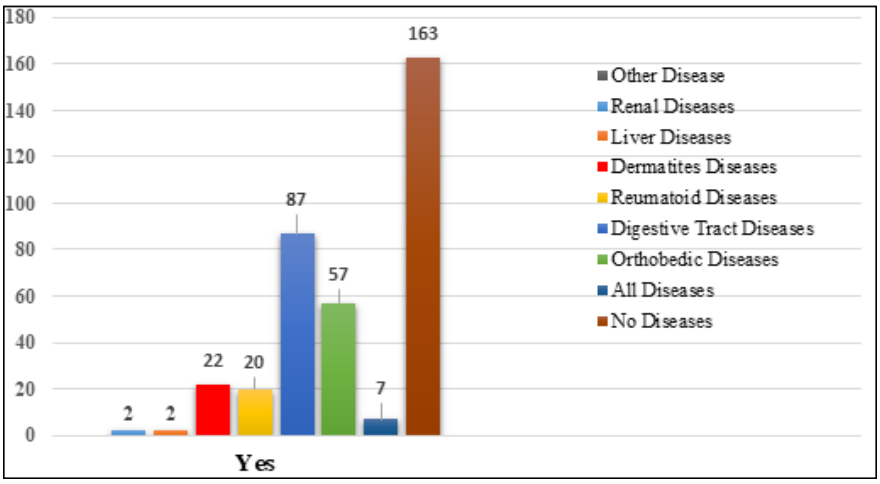

Figure 11: Frequency of patients with Vitamin D deficiency.

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

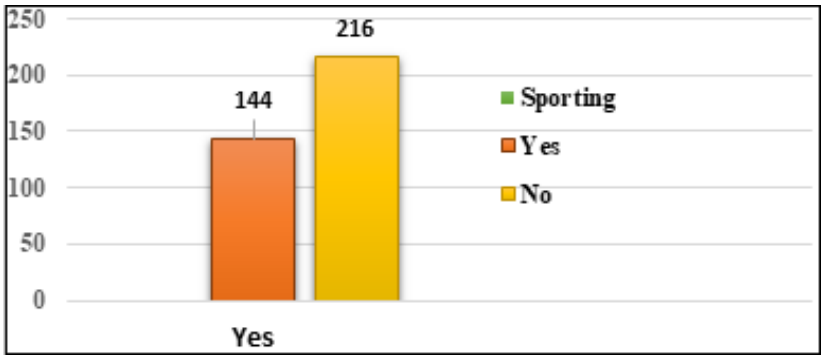

Figure 12: Frequency of exercisers with Vitamin D deficiency.

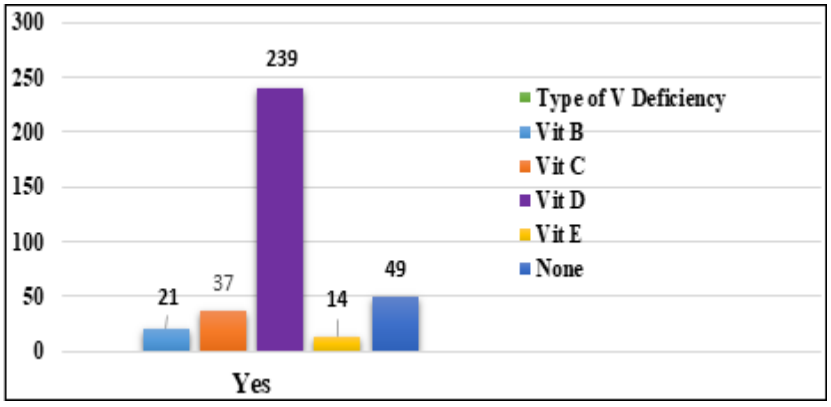

Figure 13: Frequency of different types of Vit with Vitamin D deficiency.

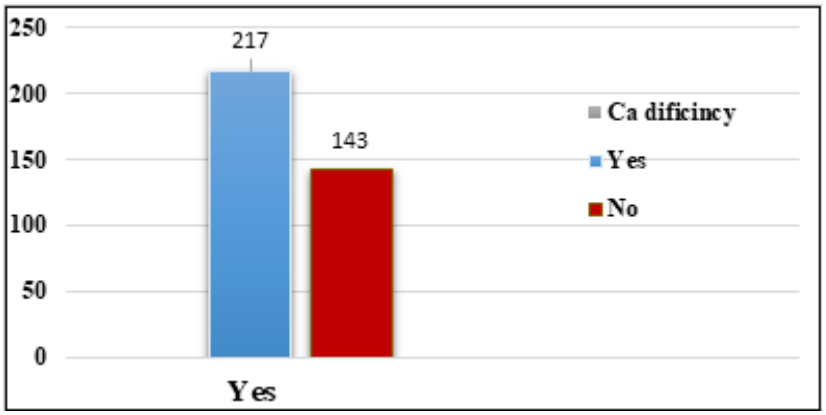

Figure 14: Frequency of those suffering from calcium deficiency with Vitamin D deficiency.

The patients who have hypertension were 106(29.4%), who not suffering from hypertension were 254(70.6%), mean(1.71) SD(0.456), the patients who suffering from diabetes were 43(11.9%) who not suffering from diabetes were 317(88.1%). Mean(1.88), SD(0.325) in Table 4. Correlation between Vitamin D deficiencies of 360 Vit D Deficiency and demographic characters, skin color, smoking, sporting, nutrition, expose to

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

sun, diabetes, and hypertension p-value=0.000 that their relationship between Vitamin D deficiencies and demographics characters, skin color, smoking, sporting, nutrition, expose to sun, diabetes, and hypertension.

	P–Value	X_2
Age	0	261.5
Gender	0	41.344
Skin color	0	156
Smoking	0	82.178
Nutrition	0	255.572
Expose to Sun	0	59.467
Diabetes	0	208.544
Hypertension	0	60.844
Sporting	0	14.4
Ca+ deficiency	0	15.211
Vit B, C, E,	0	494.556
Other Disease	0	491.733
Total	360	

Table 4: Correlation between Vitamin D deficiencies of 360 Vit D deficiency.

Lack of vitamin D is a significant medical condition in both created and non-industrial nations, in this learn about episode if lack of vitamin D in Derna City\Libya. The patients who have hypertension were 106(29.4%), who not suffering from hypertension were 254(70.6%), mean(1.71) SD(0.456), the patients who suffering from diabetes were 43(11.9%) who not suffering from diabetes were 317(88.1%), mean(1.88), SD(0.325) in Table 4. Correlation between Vitamin D Deficiencies of 360 Vit D Deficiency and demographic characters, skin color, smoking, sporting, nutrition, expose to sun, diabetes, and hypertension p–value=0.000 that their relationship between Vitamin D Deficiencies and demographics characters, skin color, smoking, sporting, nutrition, expose to sun, diabetes, and hypertension. The obtained results in Table 4 the Correlation between Vitamin D Deficiencies of 360 who suffering from Vitamin D Deficiencies and demographic character, skin color, sporting, smoking, expose to sun. Hypertension, and diabetes prove that there is relationship between demographic character, skin color, sporting, smoking, and expose to sun. Hypertension, and diabetes & vit D deficiency which P-Value=0.000 that agree with previous study as, [31] which conclude that there is a relation between VD3 either alone or with its elements as VDBP and VDR, play a significant role in regulation of blood sugar levels particularly related to insulin sensitivity, and [32]. Which concluded that on the global level, the main source of Vitamin D is the sun. The impact of sun-based radiation on vitamin D blend depends somewhat on the underlying Vitamin D levels [7] which presumed that Vitamin D Deficiency was predominant in the two guys and females across various age bunches in the residents of Saudi. In Brazil, especially in the areas where sun beams are more bountiful, the distinction

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

in daylight openness between subjects showed no huge variety in serum 25-hydroxyvitamin D(25OHD). which inferred that, [33,34] scope openness to daylight between the long periods of 11 a.m. What's more 2 p.m. will advance vitamin D creation in the skin all year. which reasoned that, vitamin D inadequacy has a positive connection with pulse and lack of vitamin D could be connected with nontipper hypertension [35]. Vitamin D lack in patients with blood vessel hypertension ought to be genuinely considered [36]. The connection between Vitamin D and hypertension among different populaces [37]. CS openness or lack of Vitamin D alone didn't lessen the hypertrophic reaction of over-burden plantaris muscles, yet this hypertrophic reaction was debilitated when the two circumstances were joined. This information proposes that current smokers who likewise present with lack of Vitamin D might be more averse to react to a preparation program [38]. An enormous piece of Type-2 diabetes mellitus(DM) subjects in Bangladesh has odd Vitamin D as uncovered by our review. Vitamin D level had a critical negative connection with BMI just male subjects and showed no relationship with sex and different factors. Nonetheless, more extensive scale studies are expected to appropriately comprehend the Vitamin D status in Type-2 diabetes mellitus(DM) in our country [39]. Those cooperative people preparing outside with supplementation had higher complete Vitamin D focuses than those with inside preparing as well as supplementation [40]. This study concurs with the uncover to sun [41]. Yet not concur with the relationship with nourishment lack in Vitamin D. Openness to the sun and a decent eating routine are frequently sufficiently not to forestall a Vitamin D deficiency. Also not concur with [41]. The most noteworthy pace of Vitamin D inadequacy was found in spring(40%). A positive huge impact was noticed for the collaboration between indoor/open air preparing and supplementation with 25(OH)D focuses($p<0.05$). Those helpful people getting ready outside with supplementation had higher complete Vitamin D obsessions than those with inside planning as well as supplementation.

A positive association of outside planning with supplementation exists to conclude 25(OH)D concentrations in helpful people, that skin pigmentation created responding to extended interest for subcutaneous Vitamin D mix in high extension conditions [11].

Conclusion

The obtained results prove that their relationship between, age, gender, skin color, smoking, nutrition, expose to sun, sporting, diabetes, hypertension, different type of diseases, and other type of Vitamins, there is also a direct proportion between Vitamin D deficiency and $S.Ca^{+}$ deficiency.

Acknowledgment

To the soul of my brothers Tariq and Ahmed & my sister Eman.

References

1. Adnan F. Prevalence of vit-d deficiency in medical students: Vit-d deficiency in medical students. Med J So Pun. 2021;2(1).

2. Al-Samarraie MQ, Mokdadhatamabdulwahed A, Mustafa MA, Alkanaani MI, Abdulateef ID, Hameed RS, et al. Vitamin D Deficiency and It Relation with Weight, Age and Gender in Number of Men and Women in Samarra City. Ann Rom Soc Cell Biol. 2021:257-63.
3. Andıran N, Çelik N, Akca H, Doğan G. Vitamin D deficiency in children and adolescents. J Clin Res Pediatr Endocrinol. 2012;4(1):25. PubMed | CrossRef
4. Aparna P, Muthathal S, Nongkynrih B, Gupta SK. Vitamin D deficiency in India. J Family Med Prim Care. 2018;7(2):324. PubMed | CrossRef
5. Saneifard H, Shakiba M, Sheikhy A, Baniadam L, Abdollah Gorji F, Fallahzadeh A. Vitamin D Deficiency in Children and Adolescents: Role of Puberty and Obesity on Vitamin D Status. Nutr Metab Insights. 2021;14:11786388211018726. PubMed | CrossRef
6. Amrein K, Venkatesh B. Vitamin D and the critically ill patient. Current Opinion in Clinical Nutrition & Metabolic Care. 2012;15(2):188-93. PubMed | CrossRef
7. Alfatlawi WR, Ali ZM, Aldabagh MA. Impact of Vitamin D Elements in Insulin Sensitivity in Type 2 Diabetes Mellitus (DM2). Med-Leg. 2021;21(1):1581.
8. Holick MF. Vitamin D deficiency: what a pain it is. In Mayo clinic proceedings. Elsevier. 2003;78(12):1457-1459. PubMed | CrossRef
9. Anwar E, Hamdy G, Taher E, Fawzy E, Abdulattif S, Attia MH. Burden and outcome of vitamin D deficiency among critically ill patients: a prospective study. Nutr Clin Pract. 2017;32(3):378-84. PubMed | CrossRef
10. Azim A, Ahmed A, Yadav S, Baronia AK, Gurjar M, Godbole MM, et al. Prevalence of vitamin D deficiency in critically ill patients and its influence on outcome: experience from a tertiary care centre in North India(an observational study). J Intensive Care. 2013;1(1):1-5. PubMed | CrossRef
11. Bandeira F, Griz L, Dreyer P, Eufrazino C, Bandeira C, Freese E. Vitamin D deficiency: a global perspective. Arq Bras Endocrinol Metabol. 2006;50(6):40-6. PubMed | CrossRef
12. Fraser DR. Vitamin D-deficiency in Asia. Trends Endocrinol Metab. 2004;89:491-5. PubMed | CrossRef
13. Holick MF. Vitamin D deficiency. N Engl J Med. 2007;357(3):266-81. PubMed | CrossRef
14. Holick MF, Chen TC. Vitamin D deficiency: a worldwide problem with health consequences. Am J Clin Nutr. 2008;87(4):1080S-6S. PubMed | CrossRef
15. Preece MA, Tomlinson S, Ribot CA, Pietrek J, Korn HT, Davies DM, et al. Studies of vitamin D deficiency in man. Q J Med. 1975;44(4):575-89. PubMed
16. Schwartz GG, Hulka BS. Is vitamin D deficiency a risk factor for prostate cancer? (Hypothesis). Anticancer Res. 1990;10(5A):1307-11. PubMed
17. Khalessi N, Kalani M, Araghi M, Farahani Z. The relationship between maternal vitamin D deficiency and low birth weight neonates. J Res Health Sci. 2015;9(3):113. PubMed
18. Mackawy AM, Al-Ayed BM, Al-Rashidi BM. Vitamin D deficiency and its association with thyroid disease. Int J Health Sci. 2013;7(3):267. PubMed | CrossRef
19. Heaney RP. Functional indices of vitamin D status and ramifications of vitamin D deficiency. Am J Clin Nutr. 2004;80(6):1706S-9S. PubMed | CrossRef
20. Fiamenghi VI, Mello ED. Vitamin D deficiency in children and adolescents with obesity: a meta-analysis. J Pediatr. 2021;97:273-9. PubMed | CrossRef
21. Raposo L, Martins S, Ferreira D, Guimarães JT, Santos AC. Vitamin D, parathyroid hormone and metabolic syndrome–the PORMETS study. BMC Endocr Disord. 2017;17(1):1-0. PubMed | CrossRef
22. Mirzakhani M, Mohammadkhani S, Hekmatirad S, Aghapour S, Gorjizadeh N, Shahbazi M, et al. The association between vitamin D and acute rejection in human kidney transplantation: A systematic review and meta-analysis study. Transpl Immunol. 2021;67:101410. PubMed | CrossRef
23. Cuñat T, Ojeda A, Calvo A. Vitamin D deficiency in critically ill patients diagnosed with COVID-19. Are we doing enough? A retrospective analysis of 226 patients.
24. Gordon CM, DePeter KC, Feldman HA, Grace E, Emans SJ. Prevalence of vitamin D deficiency among healthy adolescents. Arch Pediatr. 2004;158(6):531-7. PubMed | CrossRef
25. Pizzini A, Aichner M, Sahanic S, Böhm A, Egger A, Hoermann G, et al. Impact of vitamin D deficiency on COVID-19-a prospective analysis from the CovILD Registry. Nutrients. 2020;12(9):2775. PubMed | CrossRef

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020

26. Shao B, Mo M, Xin X, Jiang W, Wu J, Huang M, et al. The interaction between prepregnancy BMI and gestational vitamin D deficiency on the risk of gestational diabetes mellitus subtypes with elevated fasting blood glucose. Clin Nutr. 2020;39(7):2265-73. PubMed | CrossRef
27. Kaykhaei MA, Hashemi M, Narouie B, Shikhzadeh A, Rashidi H, Moulaei N, et al. High prevalence of vitamin D deficiency in Zahedan, southeast Iran. Ann Nutr Metab. 2011;58(1):37-41. PubMed | CrossRef
28. Radujkovic A, Hippchen T, Tiwari-Heckler S, Dreher S, Boxberger M, Merle U. Vitamin D deficiency and outcome of COVID-19 patients. Nutrients. 2020;12(9):2757. PubMed | CrossRef
29. Hashemipour S, Larijani B, Adibi H, Sedaghat M, Pajouhi M, Bastan-Hagh MH, et al. The status of biochemical parameters in varying degrees of vitamin D deficiency. J Bone Miner Metab. 2006;24(3):213-8. PubMed | CrossRef
30. Engelsen O. The relationship between ultraviolet radiation exposure and vitamin D status. Nutrients. 2010;2(5):482-95. PubMed | CrossRef
31. Alloubani A, Akhu-Zaheya L, Samara R, Abdulhafiz I, Saleh A, Altowijri A. Relationship between vitamin D deficiency, diabetes, and obesity. Diabetes Metab Syndr. 2019;13(2):1457-61. PubMed | CrossRef
32. Correia A, Azevedo MD, Gondim F, Bandeira F. Ethnic aspects of vitamin D deficiency. Arq Bras Endocrinol Metabol. 2014;58:540-4. PubMed | CrossRef
33. Harinarayan CV, Holick MF, Prasad UV, Vani PS, Himabindu G. Vitamin D status and sun exposure in India. Dermatoendocrinol. 2013;5(1):130–41. PubMed | CrossRef
34. Demir M, Uyan U, Keçeoçlu S, Demir C. The relationship between vitamin D deficiency and pulmonary hypertension. Prague Med Rep. 2015;114(3):154-61. PubMed | CrossRef
35. Pilz S, Tomaschitz A. Role of vitamin D in arterial hypertension. Expert Rev Cardiovasc Ther. 2010;8(11):1599-608. PubMed | CrossRef
36. Jeong HY, Park KM, Lee MJ, Yang DH, Kim SH, Lee SY. Vitamin D and hypertension. Electrolytes & Blood Pressure. 2017;15(1):1-1. PubMed | CrossRef
37. Krishna Paul, Dr. A., Sultana, Dr. A., Ara Begum, Dr. I. The Relationship of Vitamin D Deficiency in Type 2 Diabetes Patients: Dhaka, Bangladesh. SAS J Med. 2021;7(3):79–84.
38. Valtueña J, Aparicio-Ugarriza R, Medina D, Lizarraga A, Rodas G, González-Gross M, et al. Vitamin D Status in Spanish Elite Team Sport Players. Nutrients. 2021;13(4):1311. PubMed | CrossRef
39. Knechtle B, Jastrzębski Z, Nikolaidis PT. Vitamin-D-Mangel im Sport. Praxis. 2021. PubMed | CrossRef
40. Jakobsen MM, Nygaard RH, Hojbjerg JA, Larsen JB. The association between vitamin D status and overuse sport injuries: A systematic review and meta-analysis. Transl Sports Med. 2021;4(5):553-64.
41. Batai K, Cui Z, Arora A, Shah-Williams E, Hernandez W, Ruden M, et al. Genetic loci associated with skin pigmentation in African Americans and their effects on vitamin D deficiency. PL0S Genet. 2021;17(2):1009319. PubMed | CrossRef

Citation: Eljamay SM, Alghazali MAA, Eldalal HHA. Incident of Vitamin D Deficiency in Derna City\Libya. J Endo Metabol Res. 2022;3(1):1-15
DOI: https://doi.org/10.37191/Mapsci-2582-7960-3(1)-020