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RESEARCH ARTICLE
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FREQUENCY OF VITAMIN D LEVEL WITH NUTRITION STATUS IN YOUNG AGE OF 18-35 YEARS, OF LARKANA REGION SINDH PAKISTAN

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Abstract:

Background: In addition to being the sunshine hormone, vitamin D is a necessary component of a balanced diet.

It is vital for the growth of children's teeth and bones and aids in the body's absorption of calcium and phosphate. Insufficient levels of vitamin D lead to weak bones, osteoporosis in the elderly, and osteomalacia in young people. It also results in an increase in dental cavities, the loss of alveolar bone surrounding the teeth, and other gum disease-related issues. Depression, exhaustion, and appetite loss are possible side effects. The purpose of this study is to examine vitamin D deficiency, insufficiency, and sufficiency in Pakistani children, adults, adolescents, and elders.

Methods: 185 people who were referred from Larkana City participated in a cross-sectional survey that ran from January 2020 to July of that same year. The young age groups of both male and female genders were assessed for laboratory findings of serum 25 hydroxy vitamin D levels in order to determine vitamin D level.

Results: This study involved a total of 185 participants. In accordance with gender, participants were divided into two main groups. Male participants made up 57% of these subjects (105), while female subjects made up 43% (80). The average age of the population was 26.2 ± 5.94.

In addition to reported normal levels of vitamin D, Table 1.0 displays low (P = <0.001) and high (P = <0.001) vitamin levels. Women were more likely to have low vitamin D levels (P=0.001). Vitamin D deficiency is almost common in young people. Most of peoples skip sessional fruits and meat.

Conclusion: The results of the study on vitamin D deficiency in young adults showed that it was low in almost all cases, and that many people avoided occasional fast food and veganism due to poverty. These findings suggest that supplements are necessary for young adults to lead healthy lifestyles.

Keywords: Serum vitamin D level, Adults age 18-35 years, Nutritional Status

Introduction:

Research on vitamin D, a traditional hormone, is extensive. It is linked to several genes in the human body that carry vitamin D receptors [1]. The metabolite 1,25 dihydroxy vitamin D is known as vitamin D3, and retinoid X receptors mediate the proteins that signal for the uptake of calcium and phosphate ions. Consequently, the human body's calcium as well as skeletal balances are preserved by calcium phosphate complexes [2]. Amelogenin proteins are stimulated to differentiate the growing hard tissues of teeth through a similar physiochemical phenomenon [3]. Previous research on vitamin D supplementation has demonstrated both osseous and extra-osseous benefits for the skeletal and maxillofacial tissues [4, 5].

Through the stimulation of cathelicidin along with other defensins, vitamin D additionally exerts immunological antimicrobial effects in the oral cavity [6]. Acute and chronic systemic diseases [7], exposure to UVB sunlight for less than 30 minutes per week [8], and nutritional deficiencies [9] have all been linked to vitamin D deficiency. In children and adolescents, vitamin D deficiency can result in osteomalacia, rickets, and muscle aches [10]. It may lead to hypo-mineralization of the molar incisors [11], which raises the risk of dental caries [12]. Dental caries in the primary dentition may be linked to maternal vitamin D deficiency [13]. Supplementing with calcium and vitamin D together can help promote periodontal health [14].

The purpose of this research is to determine the individuals at elevated risk of vitamin D deficiency in adults based on family background and nutritional intake, as well as evaluate the status of vitamin D deficiency between adults and both sexes by monitoring levels of vitamin D in the blood in the people living in Larkana, Sindh, Pakistan.

METHODOLOGY

The cross-sectional study was carried out in Larkana from January 2020 to July 2020. A variety of Larkana professional adults' samples were gathered and examined in a laboratory. All individuals provided written authorization for the utilization of their anonymous data, including lifestyle specialists, supplement consumption, and receptive laboratory results.

The Roche Cobas e411, which uses the ELISA method, has been utilized to determine serum vitamin D levels. This advanced sensitivity and accuracy completely automated equipment is marketed through a California-based supply chain. Three to four CC of blood were collected and centrifuged in a gel tube for six minutes at 3000 RPM.

Data from 185 patients were collected over a period of seven months. We collected data from both male and female subjects in the 18–35 age range. Data from people with bone disorders were not included in the analysis. As a result, 185 people made up the entire sample size when exclusion. The primary outcome variable for vitamin D deficiency analysis was the serum vitamin D levels in both males and females. People who have serum vitamin D levels between 30 and 40 ng/ml are The main goal of this research was to determine the frequency of vitamin D insufficiency, sufficiency, and deficiency in Larkana's adult population, both male and female. considered to be in the suitable vitamin D group.

Statistical analysis

We used SPSS Version 28 to analyze the data. Vitamin D mean and standard deviation were calculated for the controls. Furthermore, the Vitamin D t-test was computed comparing the controls and the normal, high, and low results. Between 0.05 and significant P-values

RESULTS

Larkana City served as the study's location. This study involved a total of 185 participants. In accordance with gender, participants were divided into two main groups. Male participants made up 57% of these subjects (105), while female subjects made up 43% (80). The average age of the population was 26.2 ± 5.94.

Figure 1.0 show that 47% young peoples who have normal level of vitamin D level while 10% patients was reported with high level of vitamin D level. 43% patients were reported with low level of vitamin D level.

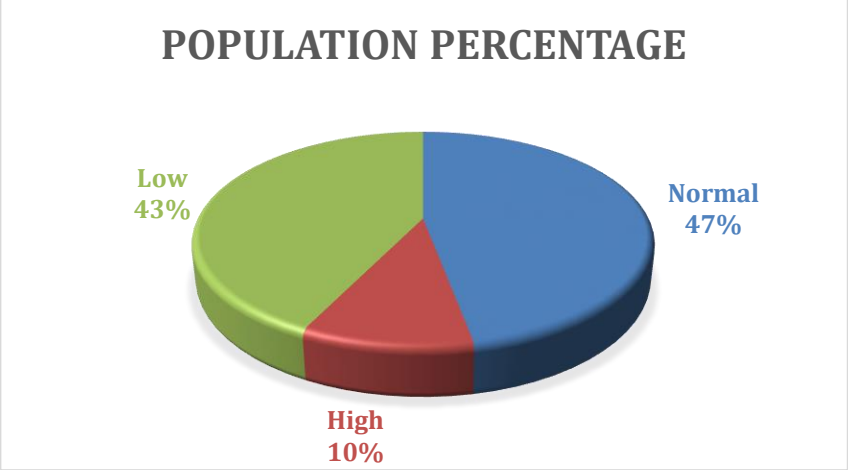


Fig.1 Status of Vitamin D level in young adults

Table 1.0 show that (9.18%), (4.32%), (9.72%), (4.32%) male patient while (4.32%), (4.32%), (4.86%), (5.94%) female patients was reported with normal vitamin D level in age group 18-22years, 22-26 years, 26-30years and 30-35 years of age. High level of vitamin D was reported in male with (1.62%), (1.08%), (2.16%) and (1.08%) while female was reported (1.08%), (0.54%), (1.62%), (1.08%) in age group 18-22year, 22-26 years, 26-30 years, 30-35 years. Low level of Vitamin D also reported in Both Gender male as well as female, (5.40%), (4.86%), (6.86%), (6.48%) was reported in male while (5.94%), 4.32%), (4.32%), (4.86%) low level of vitamin D reported in female with age group of 18-22years, 22-26 years, 26-30 years and 30-35 years of age.

Table 1.0 Vitamin D level in Male and Female of different age group

Age	Normal		High		Low	
	Male	Female	Male	Female	Male	Female
18-22 Years	9.18%	4.32%	1.62%	1.08%	5.40%	5.94%
22-26 Years	4.32%	4.32%	1.08%	0.54%	4.86%	4.32%
26-30 Years	9.72%	4.86%	2.16%	1.62%	6.48%	4.32%
30-35 Years	4.32%	5.94%	1.03%	1.08%	6.48%	4.86%

Table 2.0 show the mean value of vitamin D level in normal patients was (35.04±3.25) with (P=0.431) while high vitamin D level patients mean value was (64.73±11.76) with P value (P = <0.001). Patients who was suffering from low level of vitamin D mean value was 18.71±5.28) (P = <0.001).

Table 2.0 Serum vitamin D with three different range (Normal(30-40ng/ml), High, Low)

Range	Frequency(n=185)	Percentage	Mean±SD (ng/ml)	P-Value
Normal	86	47%	35.04±3.25	0.431
High	19	10%	64.73±11.76	<0.001*
Low	80	43%	18.71±5.28	<0.001*

Figure 2.0 displays the status of families. Compared to middle-class and upper-class families, low vitamin D levels were more common in poor patients, while high vitamin D levels were more common in upper-class families.

Figure 2.0 Show the Family status of Patients

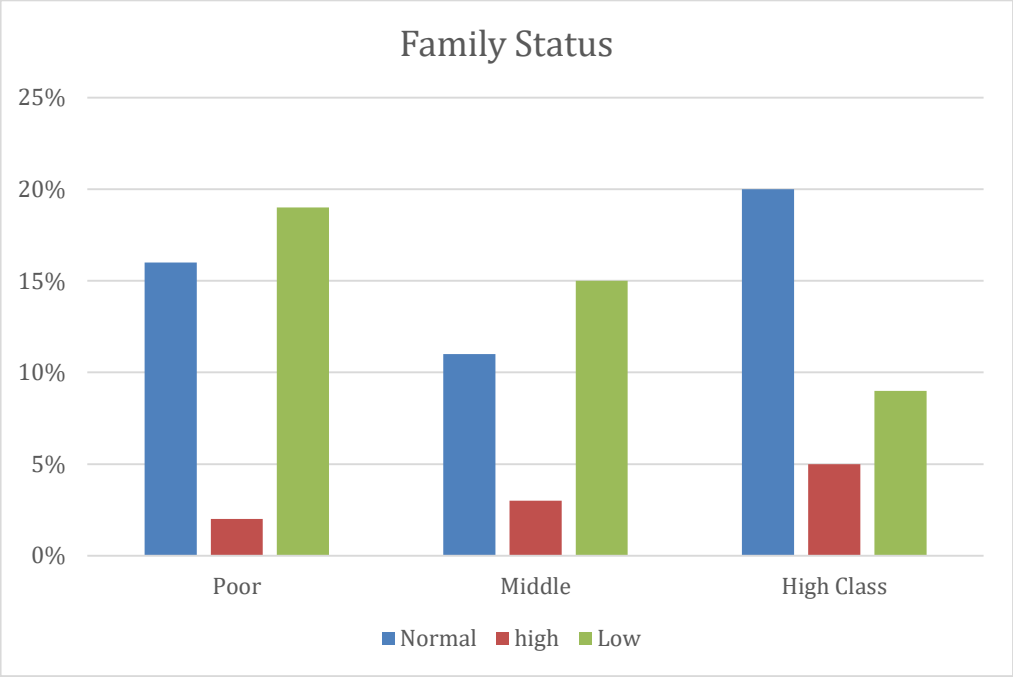
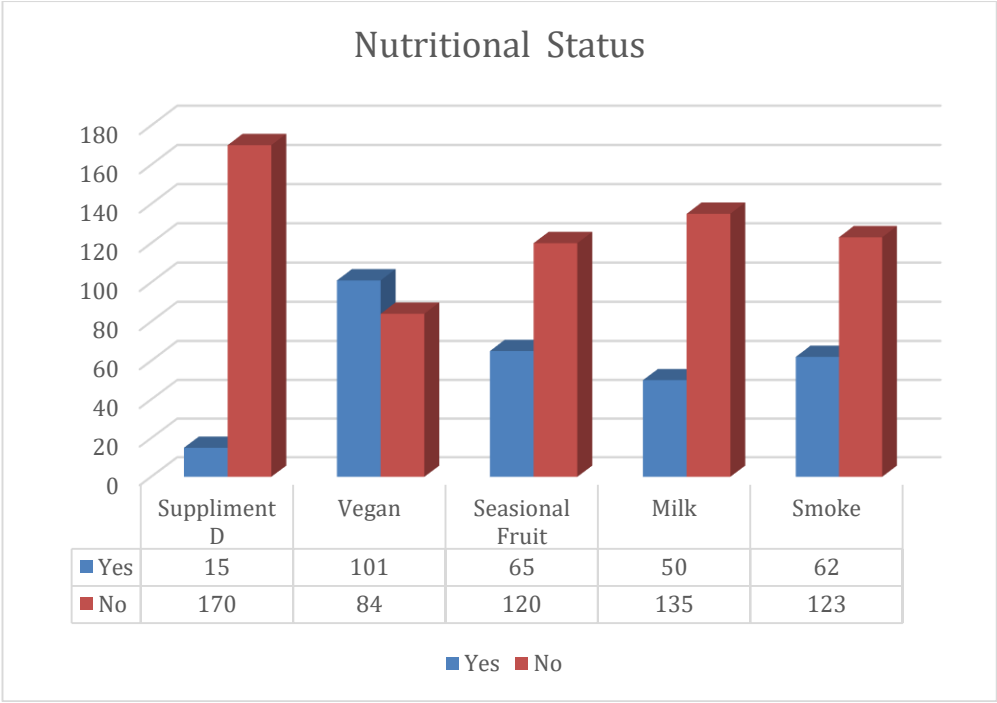


Figure 3.0 show the defieceny of nutrational status 15 patients was reported with who was dependent on Vitamin D suppliments while 170 was not. 101 patients intake vegan while 84 didn't take that. 120 patients skip the seasional fruits while 65 patients take seasional fruits. 50 patients consume milk on daily basis while 120 peoples skip that. 62 patients was reported who who was smoker while rest of 123 patients was not low nutartional is also cause of vitamin D defiecny level in young adults.

Figure 3.0 Nutrition status of young adults



	Suppliment D	Vegan	Seasional Fruit	Milk	Smoke
Yes	15	101	65	50	62
No	170	84	120	135	123

DISCUSION

This study set out to characterize the serum vitamin D levels in adults of both sexes in terms of deficiency, insufficiency, and sufficiency. Previous published scientific studies involving a variety of age groups found that there was an elevated risk of serum vitamin D deficiency in South Asians (61%), Europeans (40%), Canadians (36%), and Americans (25%) (15,16–18).

43 percent of people were found to be deficient in serum vitamin D. It had been noted that women had higher levels than men do. About 20% of the general population suffered from serum vitamin D insufficiency, with a higher female to male ratio. Thus, it can be concluded that women are more likely than men to suffer from vitamin D insufficiency and deficiency. In earlier research, Hussain et al. found that 59% of Quetta's female housewives were vitamin D deficient Pakistan. Women were identified to have a higher prevalence of vitamin D deficiency than men. These factors included low levels of education, less than 15 minutes of sunshine on weekdays, avoiding the sun or covering up when it was sunny, and consuming less or no eggs, milk, or fish per week [19]. These results are also consistent with those of other studies carried out in Khyber Pakhtunkhwa and Punjab, which showed 54% of asymptomatic individuals to have inadequate serum vitamin D levels [20].

The body needs vitamin D, and getting it from food is crucial. Researchers Crowe et al. have found that those who eat meat and fish have higher serum vitamin D levels than vegetarians and vegans. Dairy products and fortified milk can help people overcome vitamin D deficiency through self-management [21].

According to a 2015 survey at Agha Khan University in Karachi, up to 61% of ambulatory patients visiting general outpatient departments were found to be vitamin D deficient [22]. These results are more in line with the present study's findings. According to earlier research, there may be a correlation between low serum calcium and high serum phosphate and alkaline phosphatase levels and vitamin D deficiency [23]. The increased prevalence of vitamin D insufficiency may be brought on by indoor lifestyles, a lack of knowledge about how long exposure to sunshine is necessary for vitamin D synthesis, and vitamin D-enriched foods [24]. Therefore, the study's findings suggest that in order to stop the rapidly spreading condition of vitamin D deficiency and insufficiency, the public and private health sectors need to put preventive and treatment measures as well as public awareness programs into place. Therefore, the study's findings suggest that in order to stop the rapidly spreading condition of vitamin D deficiency, the public and private health sectors need to put preventive and treatment measures as well as public awareness campaigns into place.

The limitations of the research can be summed up as follows: the study participants' dietary habits, the financial status of their families, and the contributing factors of vitamin D deficiency linked to any associated diseases. The study involved patients who were referred by their physician for testing in a laboratory to determine their serum vitamin D levels due to suspicions from the physician regarding low vitamin D levels. This could have led to an exaggeration of the sample's reported prevalence of vitamin D deficiency. Additionally, because of time constraints and procedural limitations related to data extraction from the laboratory, the study was conducted over a seven-month period, from January 2020 to July 2020.

This study's strength lies in its ability to estimate serum vitamin D deficiency status among adults in Pakistan, a developing nation, as well as its large sample size, which allows the study's findings to be broadly applied to the population under investigation. It's important to run awareness campaigns about the causes, precautions, and treatment options for managing serum vitamin D levels because women seem to be more affected than men.

Conclusions

The results of the study on adult vitamin D level order higher authorities in the public and private health sectors to move quickly to screen and educate the high-risk population, as well as to intervene in the affected population by providing vitamin D supplements in order to establish medicinal properties and preventive measures. Vitamin D levels are more compromised in low-income

families. Among patients who took vitamin D supplements orally, high levels of vitamin D were noted. As compared male female was more reported with low level of vitamin D

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