



RESEARCH ARTICLE

A DEMOGRAPHIC STUDY TO ASSESS THE ASSOCIATION BETWEEN SMOKING AND VITAMIN D DEFICIENCY IN ADULT MALE POPULATION OF ALKAHARJ.

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Abstract

Background: vitamin d deficiency has come up as a major public health issue in many parts of the world despite the fact that it can be synthesized in the body. Tobacco smoking is found to be associated with a low bone mass and an increased risk of osteoporotic fracture.

Aim: to find the association between smoking status and vitamin D levels in young adult Arab male population.

Study design: cross sectional study design

Methods: interview method was used to assess the smoking status. WHO STEPS questionnaire was used. Vitamin D levels were recorded from respective patient files.

Results: Vitamin D deficiency was found in 75% of study population. no statistically significant association was found between smoking status and vitamin d deficiency.

Conclusion: High prevalence of vitamin D deficiency warrants the need of more studies.

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Introduction:-

Vitamin D concentration is increased by exposure to sunlight. Urban residents spend most of their time in indoor spaces, resulting in vitamin D deficiency, the prevalence of which is high worldwide. Vitamin D insufficiency (≤ 20 ng/mL) is 41.6% in US adults, based on data from the 2005-2006 National Health and Nutrition Examination Survey [1]. Vitamin D deficiency causes a mineralization defect in the adult's skeleton resulting in osteomalacia. The associated secondary hyperparathyroidism causes an increase in the mobilization of the matrix and mineral from the skeleton that can increase risk or precipitate osteoporosis [2]. Osteomalacia is not only associated with mineralization defect of the skeleton, but is also associated with isolated or global bone pain, muscle weakness, and muscle pain which are symptoms that often go undiagnosed or misdiagnosed as some type of collagen vascular disease, such as fibromyalgia [3,4].

The interest in vitamin D status has increased substantially over the past decade because of the many roles of vitamin D in physiological functions; the reported worldwide prevalence of vitamin D deficiency [5,6] including countries with sufficient sunshine and lack of enough evidence on the impact of inadequate and deficient status on public health. In eastern of Saudi Arabia revealed the prevalence of vitamin D deficiency between 28% to 37%

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Similarly, other are in Saudi Arabia on population at high risk reported the vitamin D deficiency to be 50% to 80%.[7]

In 2012, 21% of the global population aged 15 and above smoked tobacco. Men smoked at five times the rate of women; Smoking among men was highest in the WHO Western Pacific Region, with 48% of men smoking some form of tobacco. Smoking among women was highest in the WHO European Region at 19%.The rates at which adolescent girls aged 13–15 use tobacco average around 8% globally. This average does not include the WHO European Region or the WHO African Region due to unavailability of comparable data.[8]We tried to conduct this study to assess the association of vitamin d deficiency with smoking in young Saudi adults.

Objectives:-

- To assess the association between smoking and vitamin D deficiency in adult male population of Al Kharj.

Methodology:-

Study Area:-

The Study Was Conducted In Population Of Al Kharj Saudi Arabia.

Study Population:-

The Study Was Conducted In Males Of Al Kharj In The Age Group Of 20 Years And Above.

Inclusion Criterion:-

Respondents Satisfying The Following Inclusion Criteria Were Selected:

1. All males more than or equal to 20 years of age who have done vitamin D laboratory testing in the last 3 months
2. Those who have not taken vitamin D supplements in last 3 months

Study Period:-

The study was carried out over a period of two months i.e. From September 2015 to December 2015.During this period, finalization of study tool, field survey, data collection, data analysis and interpretation was done.

Study Design:-

A **hospital**basedcross-sectional design was adopted for studying the association of vitamin d deficiency and smoking among individuals aged 20 years and above in the study area.

Sample Size:-

The sample size was calculated by using website:www.surveysystem.com taking into consideration

- A) The population of al Kharj city
- B) Confidence limit of 95%
- C) Margin of sampling error 10%

Sampling Technique:-

The population of al Kharj city is 234607 in 2013.[9] So the study sample size comes out to be 96. The study subjects were chosen from two hospitals: Prince Sattam Bin Abdulaziz University hospital Al Kharj and Military hospital Al Kharj. The former hospital serves as the teaching hospital for the students and latter collaborates with university in various trainings and courses. So these two hospitals were chosen due to convenience to have the desired sample size.

Proforma To Assess The Smoking Behaviour:-

To study the smoking behavior of respondents, World Health Organization's STEPS proformawas followed. STEPS is a sequential process starting with gathering of information on factors like smoking by use of questionnaire (**Step I**), moving to simple anthropometric measurements (**Step II**) and then the collection of blood samples for biochemical assessment (**Step III**).

Step I:-

The questionnaire recommended by WHO for this purpose was used with suitable modifications. The questionnaire contained identification and socio-economic data and data on tobacco. The definitions of various types of tobacco users used in this study are mentioned below:

Current tobacco user/smoker:-

Someone who at time of the survey, smoked/used tobacco in any form either daily or occasionally. People who smoked or used tobacco everyday with rare exceptions such as not on the days of religious fasting or during acute illness were still classified as a current smoker.

Past Smoker/tobacco user:-

people who were former daily or current smokers/tobacco users but currently do not smoke at all or use tobacco.

Non-smokers /tobacco users:-

Those who have never smoked / used tobacco at all.

Step II:-**Blood Pressure:-**

Two BP readings were taken, one before the interview and second after the interview. The auscultatory method of BP monitoring with a properly calibrated and validated instrument was used. Participant was seated quietly for at least 5 minutes on the chair with feet on the floor and the arm supported at the heart level. An appropriate size cuff (cuff bladder encircling at least 80% of the arm) was used to ensure accuracy. SBP was the point at which the first Korotokoff's sound was heard (phase 1) and DBP was the point at which the Korotokoff's sound disappeared (phase 5).

Weight:-

A weighing machine was used for this purpose, which was standardized against known weight. The scale was kept on a hard and even surface and zero error was ensured. The participant was asked to remove the footwear and step on scale with one foot on each side of the scale. He/she was asked to stand still keeping his face forward and placing arms on the side. He was asked to wait until asked to step off. Weight was measured in kilograms up to nearest 100g.

Strategy:-

Males who fulfilled the eligibility were contacted once for data collection in the outpatient department of the two hospitals. The information about smoking behavior was taken by interview technique followed by general anthropometry. The results of vitamin d levels were obtained from the respective patient medical record file after completing all the codal formalities. Informed consent was taken from participants before taking interview and general anthropometry. Only those who were willing to participate were included in the study.

Ethical Consideration:-

The present study did not impose any financial burden to the patients and informed consent was taken from the participants before conducting the study. Prior permission was taken from the competent authority to have access to patient's record for vitamin d levels.

Statistical Analysis:-

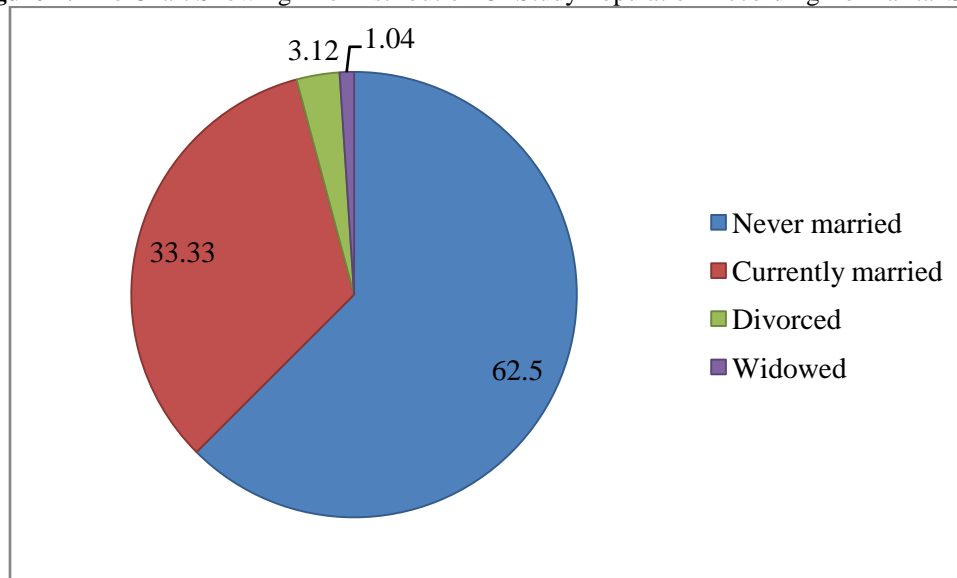
Data has been presented as means + SD for continuous variables and as frequencies for categorical variables. Comparisons between the two groups (smokers and non- smokers) have been performed as Pearson chi- square test for categorical variables. All reported p values are two sided and a p value of less than 0.05 has been considered to indicate statistical significance. All statistical analyses have been performed with SPSS17.0 (SPSS Inc, Chicago, IL)

Results:-**Table 1:-** Distribution Of Participants In The Study Population.

AGE GROUPS (IN YEARS)	n (%)
20-34	74(77.08)
35-49	10(9.60)
50-64	12(12.50)
Total	96(100)
Mean + SD	25.58+ 5.77
EDUCATIONAL STATUS	n (%)
Illiterate	5(5.20)
Primary school	12(12.50)
Sr. Secondary school	24(25)
Graduate	55(57.29)

TABLE 2 : DISTRIBUTION OF PARTICIPANTS ON THE BASIS OF OCCUPATION

Occupation	n (%)
Government employee	18(18.75)
Business	2(2.08)
Student	65 (67.70)
Retired	6(6.25)
Unemployed	5(5.20)

Figure 1:- Pie Chart Showing The Distribution Of Study Population According To Marital Status**Table 3:-** Association Of Vitamin D Levels With Smoking Status.

SMOKING STATUS	VITAMIN D STATUS		Total n (%)
	NORMAL n (%)	DEFICIENT n (%)	
Smoker	16	60	76
Never smoked	8	12	20
Total	(25%) 24	72(75%)	96

The chi-square statistic is 3.0316. The p-value is .081659. The result is not significant at $p < .05$

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Conclusion:-

1. In this study a statistically significant association was not found between Vitamin D levels and smoking status.($p < 0.08$)
2. A very high(75%) prevalence of vitamin D deficiency was found in the study.
3. A very large number (79.16%) of adults smoke which can be a potential stimulus for increased respiratory pathologies in the future to come.
4. Also an additional finding was an increase in body weights and blood sugar levels

Recommendations:-

- Although the statistically significant association was not found between vitamin d status and the smoking status, yet considering the magnitude of vitamin d deficiency and large number of smokers more studies need to be undertaken.
- Due to restraint of time and resources, the study was undertaken in a small population. So the results cannot be generalized to the whole Saudi population and more studies need to be done multicentrally.

References:-

1. Forrest KY, Stuhldreher WL. Prevalence and correlates of vitamin D deficiency in US adults. Nutr Res 2011;31(1):48-54.
2. Holick MF. 2002. Vitamin D: The underappreciated D light hormone that is important for skeletal and cellular health. Curr Opin Endocrinol Diabetes 9:87–98.
3. Glerup H, Mikkelsen K, Poulsen L, Hass E, Overbeck S, Thomsen J, Charles P, Eriksen EF. 2000. Commonly recommended daily intake of vitamin D is not sufficient if sunlight exposure is limited. J Intern Med 247:260–268.
4. Semba RD, Garrett E, Johnson BA. 2001. Vitamin D deficiency among older women with and without disability. Am J Clin Nutr 72:1529–1534.
5. Hilger, J., Friedel, A., Herr, R., Rausch, T., Roos, F., Wahl, D.A., Pierroz, D.D., Weber, P. and Hoffmann, K. (2014) A systematic review of vitamin D status in populations worldwide. Br. J. Nutr. 111, 23 – 45.
6. . Palacios, C. and Gonzalez, L. (2014) Is vitamin D deficiency a major global public health problem? J Steroid Biochem. Mol. Biol. Pt 144, 138 – 145.
7. Sadat-Ali M, Al Elq A, Al-Turki H, Al-Mulhim F, Al-Ali A. Vitamin D levels in healthy men in eastern Saudi Arabia. Ann Saudi Med. 2009;29:378–8.
8. Reference (WHO report on the global tobacco epidemic, 2015). Accessed on http://www.who.int/tobacco/global_report/2015/report/en/ dated 16/12/2015
9. <http://www.citypopulation.de/SaudiArabia.html>