The Professional Medical Journal
www.theprofesional.com
**DOI:** 10.17957/TPMJ/15.2959

ORIGINAL PROF-2959

# VITAMIN D ASSOCIATION;
## MAJOR RISK FACTORS OF CARDIOVASCULAR DISEASE

**Dr. Sayed Fasih Ahmed Hashmi[1], Dr. Ambreen Haidar[2]**

1. MBBS, FCPS
Assistant Professor Department of Medicine,
LUMHS, Jamshoro, Sindh, Pakistan
2. MBBS, (FCPS trainee cardiology)
LUMHS, Jamshoro, Sindh, Pakistan

**Correspondence Address:**
Dr. Ambreen Haidar
Postal address:
C/ of - national medical
Center near national CNG khurshid
Town hala naka Hyderabad
dr.sajidarain@gmail.com

**Article received on:**
25/02/2015
**Accepted for publication:**
06/07/2015
**Received after proof reading:**
12/10/2015

**ABSTRACT… OBJECTIVE:** The target of this study to focus, vitamin D level is the significant risk factors for the patients with cardio vascular disease at Liaquat University Hospial Hyderabad / Jamshoro. **Materialand Methods:** This observational study was done at cardiology department of Liaquat University Hospital Hyderabad. All the cases with history of congenital heart disease, pregnancy, malignancy, renal failure and chronic liver disease, were excluded from the study. Complete medical history was taken, and major risk factors of the cardiovascular disease including, diabetes, smoking, family history, hypertension, hypercholestremia, dyslipidemia and history of alcohol consumption and others were documented. Serum VD level was tested by blood samples from research laboratory of Liaquat Medical hospital Hyderabad, and all the results were noted on the Performa according to the risk factors. Consequences of VD level were arranged by criteria, that's taken from the study of Satish Karur etal.[10] **Results:** Total 100 patients were incorporated in the study with the mean age of 48.2+ 12.4. Male were found in the majority. According to distribution of heart disease of his study ischemic heart disease had noted commonest58%. In the hypertensive patients VD deficiency had noted in 39. 63%. In smoker patients VD deficiency was noted in 52.77%. In patients with hypercholestremia 50.0%, Alcoholic patients were found with deficiency of VD were 50.0%. In patients with obesity 57.14%. In the diabetic patients deficiency 15.0%, insufficiency 50.0% and sufficiency was seen 35.0%. In the Patients of dyslipidemia deficiency5.0%, insufficiency 50.0% and sufficiency was seen 45.0%. Patients with family history of cardiovascular disease having deficiency 25.0% of the cases, insufficiency 12.50% while sufficiency in 62.50% in the cases. **Conclusion:** In this study we concluded that VD deficiency in one of the major risk factor for cardiovascular disease; its possible association was found in this study with many risk factors of heart diseases. Like our study there is very need of experimental and prospective more studies, to find out the mechanism undergoing increasing cardiovascular risk, and prevent the cardiovascular disease.

**Key words:** Cardiovascular disease (CVD),

**Article Citation:** Hashmi SFA, Haidar A. Vitamin D association; major risk factors of cardiovascular disease. Professional Med J 2015;22(10):1316-1320. **DOI:**10.17957/TPMJ/15.2959

## INTRODUCTION

Cardiovascular sicknesses additionally called ischemic heart disease, stroke, and peripheral vascular disease. CVD hardly associated with way of life, particularly the utilization of tobacco, poor habits of diet, physical activity, and psycho-social stress.[1]Risk factors of the CVD such as; hypertension, dyslipidemia, obesity, diabetes mellitus, and in addition myocardial infarction, coronary artery disease or stroke, are the most predominant illnesses and record for the real reasons for death around the world, particularly in Western countries.[2] The revelation that the VD receptor (VDR) is universally communicated in all body cells, for example, resistant, vascular or myocardial cells, proposes an association of VD -intervened impacts in a few different frameworks separated from musculoskeletal tissues.[2] This has prompted far reaching research on VD as a potential impacting consider the pathogenesis of a few unending non-skeletal illness, such as infectious or auto immune disease, growth or cardiovascular infections (CVD).[4,5]

VD insufficiency is connected with expanded risks for cardiovascular disease (CVD) and death.[6] A relationship of VD and several CV risk factors and illness has been widely assessed among the most

recent years. Various observational studies, observational meta-analysis, and additionally some interventional studies have tended to the possible linkage of VD inadequacy and the increased CVD and its risk factors.[7,8] Accordingly purpose of this study to focus VD level in the significant risk factors in the cases with cardiovascular diseases at cardiology department of Liaquat University Hospital Hyderabad / Jamshoro.

## Data Collection Procedure

This observational study was carried out at cardiology department of LUH Hyderabad. Study was done with the duration of time from June 2014 to November 2014.Total 100 cases were selected in this study including both genders. All the cases were included abovethe age of 20 years. All the patients were selected; those were admitted in the cardiology department with cardiovascular disease mostly hypertension, ischemic heart disease, stroke, heart failure and rheumatic heart disease including coronary artery disease. All the cases with the history of congenital heart disease, pregnancy, malignancy, renal failure and chronic liver disease, were excluded from the study. Complete history was taken, and major risk factors of the cardiovascular disease including, diabetic, smoking, family history, hypertension, hypercholestremia, dyslipidemia and history of alcohol consumption and others were recorded. Serum VD level was tested by blood samples from research and diagnostic laboratory of LUH Hyderabad, and all the results were noted on the Performa according to the risk factors. Results of VD level were classified according to criteria which was taken from the study of Satish Karur etal.[10]

| Serum 25 (OH)D (ng/ml) | VD status. |
|---|---|
| <20 | Deficient |
| 21–29 | Insufficient |
| ≥30 | Sufficient |

Table-I. Status of VD.

## RESULTS

Total 100 patients had integrated in the study with the mean age of 48.2± 12.4. Male were found in the majority with 73% while females were noted 27%. The most common age group of this study was noted 41 to 50 years of the age 51% and the second most common age group was found between 30 to 40 years of the age. Majority of the patients recorded areas. Table-II.

| Characteristics | Frequency | %age |
|---|---|---|
| **Age groups** | | |
| 20 – 30 | 02 | 2.0% |
| 31 – 40 | 31 | 31.0% |
| 41 – 50 | 51 | 51.0% |
| 51 – 60 | 11 | 11.0% |
| > 60 | 05 | 5.0% |
| **Gender** | | |
| Male | 73 | 73.0% |
| Female | 27 | 27.0% |
| **Residence** | | |
| Rural | 41 | 41.0% |
| Urban | 49 | 49.0% |

Table-II. Demographic characteristics. (n=100)

According to distribution of heart disease of his study ischeming heart disease was seen most common 58%, while stroke, rheumatic heart disease and heart failure were found with the percentage of 11%, 9% and 6% respectively. Figure-I.

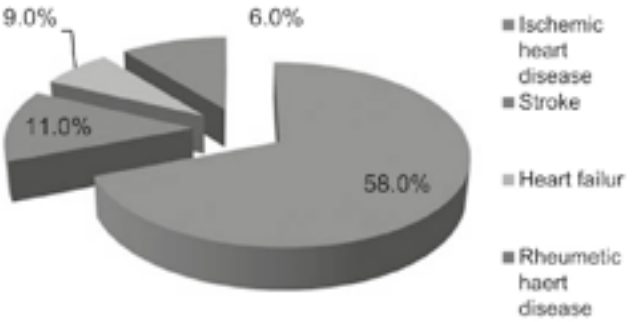


Figure-I. Prevalence of Cardiovascular disease. N=100

In the hypertensive patients VD deficiency was noted in 39. 63%, insufficiency 35.85% and sufficiency was seen 24.52%.In smoker patients VD deficiency was noted in 52.77%, insufficiency 33.33% and sufficiency was seen 13.0%. In the cases with hypercholestremia VD deficiency was recorded in 50.0%, insufficiency 25.0% and sufficiency was noted 25.0%. Alcoholic patients were seen with deficiency of VD was 50.0%, insufficiency was 25.0% and sufficiency was seen 25.0%. Patients with obesity were noted with VD deficien-

cy was noted in 57.14%, insufficiency 14.28% and sufficiency was seen 28.58%.In the diabetic patients VD deficiency was noted 15.0%, insufficiency 50.0% and sufficiency was seen 35.0%.In the Patients of dyslipidemia VD deficiency was found in 5.0%, insufficiency 50.0% and sufficiency was seen 45.0%. Patients with family history of cardiovascular disease having VD deficiency25.0% of the cases, insufficiency 12.50% while sufficiency in 62.50% in the cases. Table-III.

| Risk factors | Defi. <20 | Insuffi. 21-30 | Suffi. >30 | Total/ % |
|---|---|---|---|---|
| | No. of pt/% | No. of pt/% | No. of pt/% | No. of pt/% |
| Hypertension | 21/39.63% | 19/35.85% | 13/24.52% | 53/100% |
| Smoking Hypercholestremia | 19/52.77% | 12/33.33% | 05/13.0% | 36/100% |
| Alchohal | 20/50.0% | 10/25.0% | 10/25.0% | 40/100% |
| Obesity | 10/50.0% | 5/25.0% | 05/25.0% | 20/100% |
| Diabetes | 08/57.14% | 02/14.28% | 04/28.58% | 14/100% |
| Dyslipidemia | 03/15.0% | 10/50.0% | 07/35.0% | 20/100% |
| Family history | 01/5.0% | 10/50.0% | 09/45.0% | 20/100% |
| | 04/25.0% | 02/12.50% | 10/62.50% | 16/100% |

Table-III. Status of VD associate risk factors. n=100

## DISCUSSION

This observational data recommended that D deficiency is highly linked to developed CVD risk. In the study of Naeem Imran abbasi et al,[11] reported that male in the majority as compare to females with the percentage of male 65% and female 35%, in his study most common age group was seen 41-50 years and second most common age group above 60 years. Another study from Karachi in tertiary care hospital reported majority of the males with cardiovascular diseases.[12] Similarly in this study male were found in the majority with 73% while females were noted 27%. The important age group of this study was noted 40 to 50 years of the age 51% and the 2nd commonest age group was noted between 30 to 40 years of the age.

Like as are view prevalence of in Hong Kong, Taiwan, South Korea, Singapore, Malaysia, Thailand, Philippines and Indonesia, reported showed that frequency of ischemic and the hemorrhagic strokes different from 17 % to 33 % .[13]Some other series as of countries of Asia demonstrated incidence of ICH is above than in Caucasians with just about 20% to 30% being hemorrhagic.[13,14] A study conducted at Umm Al Qura University reported prevalence of cardiovascular disease as, stroke 17.54%, ischemic heart disease 33.33%, heart failure 15.79% and cardiac myopathy 8.77%.[15] While in the present study ischemic heart disease was seen most common 32%, second most common was acute MI 26% while stroke, rheumatic heart disease and heart failure were found with the percentage of 11%, 9% and 6% respectively.

Analysis of the "3rdNational Health and Nutrition Examination Survey (NHANES III) demonstrated lower 25(OH)-D ratio were linked to higher BP in a representative sample of population of U.S. through cultural difference in 25(OH)-D ratio b/w black and white cases.[16]In the study of forman JP et al.[17]demonstrated that potential linkage among measured plasma 25(OH)-D ratio levels and consequential cause of increasing hypertension. Similarly in the present series VD deficiency was noted in 39.63%and insufficiency 35.85% of the patients. In the study of Satis karur et al,[11] reported that VD deficiency in the smoking patients 53%, in the alcoholic patients 1%, in diabetic patients 50%, in the patients high level of cholesterol 72% and in the hypertensive patients 35%. As well as the present study also showing similar results. In smoker patients VD deficiency was noted in 52.77%, insufficiency 33.33% and sufficiency was seen 13.0%. In the cases with hypercholestremia VD deficiency was recorded in 50.0%, insufficiency 25.0% and sufficiency was noted 25.0%.

In the study of Ayman El-Menyar et al,[18] reported that VD deficiency in cardiac smoker male patients 7% and in the female patients 9%, in male diabetic patients deficiency in 38% while in females having 22%,further more in this study

showed VD deficiency in the male patients with dyslipidemia 41% while in the females 29%. Similarly in this study alcoholic patients were seen with deficiency of VD was 50.0%, insufficiency was 25.0% and sufficiency was seen 25.0%. Patients with obesity were noted with VD deficiency was noted in 57.14%, insufficiency 14.28% and sufficiency was seen 28.58%. In the diabetic patients VD deficiency was noted 15.0%, insufficiency 50.0% and sufficiency was seen 35.0%. In the Patients of dyslipidemia VD deficiency was found in 5.0%, insufficiency 50.0% and sufficiency was seen 45.0%. Patients with family history of cardiovascular disease having VD deficiency25.0% of the cases, insufficiency 12.50% while sufficiency in 62.50% in the cases. Thomas J,[19] also showed comparable result of VD deficiency in different risk factors of cardiovascular disease.

## CONCLUSION

In this study we concluded that VD deficiency in one of the risk factor for cardiovascular disease; it is also increase by other cardiac risk factors, because it is associated with many risk factors of cardiovascular disease in our study. Like our study there is very need of experimental and prospective more studies, to find out the mechanism undergoing increasing cardiovascular risk, and prevent the cardiovascular disease.



## REFRENCES:


1. World Health Organization. **Joint WHO/FAO Expert Consultation on Diet, Nutrition and the Prevention of Chronic Diseases.** 2002. Report No. 916.

2. Organization, W.H. **World Health Statistics 2012; World Health Organization:** Geneva, Switzerland, 2012.

3. Bouillon, R.; Carmeliet, G.; Verlinden, L.; van Etten, E.; Verstuyf, A.; Luderer, H.F.; Lieben, L.; Mathieu, C.; Demay, M. **VD and human health: Lessons from VD receptor null mice.**Endocr. Rev. **2008**, 29, 726–776.

4. Souberbielle, J.-C.; Body, J.-J.; Lappe, J.M.; Plebani, M.; Shoenfeld, Y.; Wang, T.J.; Bischoff-Ferrari, H.A.; Cavalier, E.; Ebeling, P.R.; Fardellone, P.; et al. **VD and musculoskeletal health, cardiovascular disease, autoimmunity and cancer: Recommendations for clinical practice.**Autoimmun. Rev. 2010,9, 709–715.

5. Pilz, S.; Tomaschitz, A.; März, W.; Drechsler, C.; Ritz, E.; Zittermann, A.; Cavalier, E.; Pieber, T.R.; Lappe, J.M.; Grant, W.B.; et al. VD , **cardiovascular disease and mortality.**Clin. Endocrinol. (Oxf.) **2011**, 75, 575–584

6. Michos ED, Melamed ML: **VD and cardiovascular disease risk.** Curr Opin Clin Nutr Metab Care.2008;11: 7–12.

7. Burgaz, A.; Orsini, N.; Larsson, S.C.; Wolk, A. **Blood 25-hydroxyVD concentration and hypertension: A meta-analysis.**J. Hypertens. **2011**, 29, 636–645.

8. Zittermann, A.; Iodice, S.; Pilz, S.; Grant, W.B.; Bagnardi, V.; Gandini, S. **VD deficiency and mortality risk in the general population: A meta-analysis of prospective cohort studies.**Am. J. Clin. Nutr. **2012**, 95, 91–100.

9. Grandi, N.C.; Breitling, L.P.; Brenner, H. **VD and cardiovascular disease: Systematic review and meta-analysis of prospective studies.**Prev. Med. **2010**, 51, 228–233.

10. Satish Karur, Virupakshappa Veerappa, Manjunath C. **Nanjappa. Study of VD deficiency prevalence in acute myocardial infarction.** IJC Heart & Vessels.2014;3; 57–59

11. **Imran Naeem Abbasi, Deedar Hussain Gajoo, Sunil Kumar, Saima Zainab, Zafar Fatmi. Pattern of cardiovascular diseases according to age and gender in a rural district of Pakistan.Pak Heart J 2013 Vol. 46 (03) : 178-183**

12. Abbas S. **Disease burden of ischemic heart diseases in Pakistan and its risk factors.** Ann Pak Inst Med Sci. 2009;5:145-50.

13. **Asian Acute Stroke Advisory Panel. Stroke epidemiological data of nine Asian countries. J Med Assoc Thai. 2000; 83, 1-7**

14. **Kay R, Woo J, Kreel L, Wong HY, Teoh R, Nicholls MG. Stroke subtypes among Chinese living in Hong Kong: the Shatin Stroke Registry. Neurology JID.1992;42:985-87.**

15. **Waleed H. Almalki. The prevalence of cardiovascular diseases and role of protective measures among hajj pilgrims 1432 (2011). Pakistan Journal of Pharmacology. 2012;29;2:29-34**

16. Scragg R, Sowers M, Bell C. **Serum 25-hydroxy VD, ethnicity, and blood pressure in the Third National Health and Nutrition Examination Survey.** Am J Hypertens. 2007;20(7):713-719

17. Forman JP, Giovannucci E, Holmes MD, et al. **Plasma 25- hydroxyVD levels and risk of incident hyperten-**

**sion.** Hypertension. 2007;49(5):1063-1069

18. Ayman El-Menyar*,1,2, Ali Rahil3, Khalid Dousa3, Walid Ibrahim3, Talal Ibrahim3, Rasha Khalifa3,and Mohamed Osman Abdel Rahman. **Low VD and Cardiovascular Risk Factors in Males and Femalesfrom a Sunny, Rich Country.** The Open Cardiovascular Medicine Journal, 2012, 6, 76-80

19. Thomas J. Wang, MD; Michael J. Pencina, PhD; Sarah L. Booth, PhD; Paul F. Jacques, DSc;Erik Ingelsson, MD, PhD; Katherine Lanier, BS; Emelia J. Benjamin, MD, MSc;Ralph B. D'Agostino, PhD; Myles Wolf, MD, MMSc*; Ramachandran S. Vasan, MD*.**VD Deficiency and Risk of Cardiovascular Disease. Circulation.** 2008;117:503-511.

## PREVIOUS RELATED STUDY

Ahmed Bilal, Muhammad Owais Fazal, Fraz Saeed Qureshi, Muqqadas Shaheen, Muhammad Irfan Iqbal, Sadia Khan, Abdullah Bin Saeed. SERUM VITAMIN D DEFICIENCY, A NEW EPIDEMIC (Original) Prof Med Jour 17(1) 111-116 Jan, Feb, Mar 2010.

Muzaffar Mehmood Khan, Muhammad Tahir, Mohsin Raza, Muhammad Ali Bhatti, Muhammad Riaz Khokhar. Hepatitis C; association of interferon-ribavirin therapy with hearing loss (Original) Professional Med J Mar-Apr 2012;19(2): 193-196.

Rizwana Kitchlew, Fuad Ahmad Siddiqi, Asif Hshmi. Hepatitis C (Original) Professional Med J May-Jun 2012;19(3): 375-381.

"Champions are willing to do what they hate,
In order to get what they love."

Unknown

## AUTHORSHIP AND CONTRIBUTION DECLARATION

| Sr. # | Author-s Full Name | Contribution to the paper | Author=s Signature |
|---|---|---|---|
| 1 | Dr. Sayed Fasih Ahmed Hashmi | 1st Author |  |
| 2 | Dr. Ambreen Haider | 2nd Author |  |