



## RETROSPECTIVE OBSERVATIONAL STUDY ON CORRELATION OF VITAMIN D LEVELS IN MALES AND FEMALES COVID -19 POSITIVE PATIENTS ADMITTED IN GOVERNMENT GENERAL HOSPITAL VIJAYAWADA IN THE YEAR 2021

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**ABSTRACT** Vitamin D, a sterol, produced in the skin by ultraviolet radiation, endogenously activated by kidneys, have hormone like function, and has a role in immunity by neutralizing the inflammatory response that damages the body. The association between Vitamin D and viral infection like influenza has been documented. Vitamin D was also widely administered during COVID 19 pandemic and the rationale of its use in protection from severity during COVID-19 is debatable. **AIM AND OBJECTIVES:** To assess Serum Vitamin D (25- hydroxyvitamin -D) levels in male and female COVID -19 positive patients and correlate with normal Vitamin D levels **METHODOLOGY:** Retrospective observational study of Serum Vitamin D levels of 94 subjects who are COVID 19 positive patients were studied, out of which there were 47 males and 47 females. Serum Vitamin D levels were analyzed on AU480 Beckman Coulter. Comparison of Vitamin D values in males and females was done in SPSS 2020

**KEYWORDS :** Vitamin D, Hypovitaminosis D, Covid-19

### Introduction:

Vitamin D, a sterol, produced in the skin by ultraviolet radiation, endogenously activated by kidneys, have hormone like function, and has a role in immunity by neutralizing the inflammatory response that damages the body. The association between Vitamin D and viral infection like influenza has been documented. Vitamin D was also widely administered during COVID 19 pandemic and the rationale of its use in protection from severity during COVID-19 is debatable

Vitamin D is a lipid-soluble vitamin that is essential for maintaining good health, growth, and strong bones. It can be produced in the skin with the help of exposure to sunlight. Most foods naturally contain little vitamin D, but some are fortified with vitamin D. Hypovitaminosis D is associated with cardiovascular disease, diabetes mellitus type 2, metabolic syndrome, cancer, and increased death rates. Advanced age and high body-fat mass lead to an increased risk of deficiency of vitamin D. A more serious deficiency can cause problems, such as osteomalacia in adults and rickets in children. Vitamin D has been recognized as essential to the skeletal system and plays a major role in monitoring the immune system, perhaps including immuno reactions to viral infection. The severity of influenza and respiratory-tract infections may be increased by vitamin D insufficiency. Cell-culture studies have shown that vitamin D has a particular role against enveloped viruses and direct antiviral effects. This might be because of the ability of vitamin D to upregulate human beta  $\beta$ -defensin2 and antimicrobial peptide37, and it is known that coronavirus is an enveloped virus. According to epidemiological and clinical studies, vitamin D safeguards against tuberculosis and plays a critical role in the defence against HIV and respiratory infections.

COVID-19 has a high death rate and affects almost the entire population of the world. Serious acute respiratory syndrome is the cause of death, as a consequence of an exacerbated inflammatory reaction followed by uncontrolled oxidative stress and a lung-level inflammatory reaction. Vitamin D could be a good option to tackle this problem, considering that it can balance and control immunity and oxidative reactions against COVID-19 infection. The renin-angiotensin system is related to the resulting inflammatory reaction, which has a principal function in the physiopathology of COVID-19 infection, and it might be downregulated by vitamin D in various organs. During the COVID-19 pandemic, a high proportion of moderate-severe cases and a high fatality rate have been observed among the elderly.

Descriptive and observational studies have reported that higher prevalence of mortality and critical cases of COVID-19 are more common among vitamin D-deficient patients. A narrative review aimed at collecting the literature available on involvement of vitamin D status in the pathogenesis of COVID-19 and the putative utility of

vitamin D supplementation in therapeutics concluded that poor vitamin D status seems to be associated with an increased risk of infection, whereas age, sex, and comorbidities seemed to play a more important role in COVID-19 severity and mortality. There is a need to generalize and summarize the findings of individual studies to synthesize evidence that helps make COVID-19 prevention effective.

### METHODS AND MATERIALS:

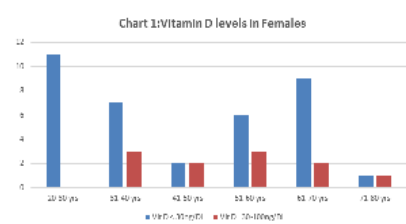
Retrospective observational study of Serum Vitamin D levels of 94 subjects who are COVID 19 positive patients were studied, out of which there were 47 males and 47 females. Serum Vitamin D levels were analyzed on AU480 Beckman Coulter. Comparison of Vitamin D values in males and females was done in SPSS 2020

In this Study Serum Vitamin D levels are evaluated in the Covid 19 positive patients who are hospitalized and observed whether the patients are Hypovitaminosis D which have Vitamin D levels of less than 30ng/dl and Vitamin D levels are in within normal limits i.e between 30-100 ng/Dl and assess the Vitamin D levels among the Covid 19 Positive patients who are admitted in Government general Hospital , Vijayawada.

### RESULTS AND DISCUSSION:

**Table 1 : Vitamin D levels in Females**

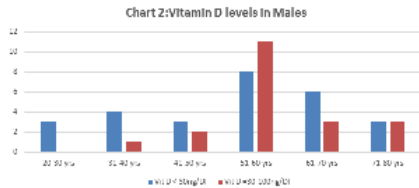
AGE in Years	Vit D < 30ng/dL	Vit D =30-100ng/dL
20-30 yrs.	11	0
31-40 yrs.	7	3
41-50 yrs.	2	2
51-60 yrs.	6	3
61-70 yrs.	9	2
71-80 yrs.	1	1



In this study out of 47 Female Covid Patients 36 female patients are with Hypovitaminosis D with Vitamin D levels are less than 30 ng/Dl and remaining 11 are with normal levels of Vitamin D.

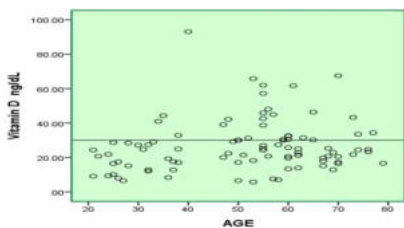
**Table 2 Vitamin D levels in Males**

AGE in Years	Vit D < 30ng/dL	Vit D =30-100ng/dL
20-30 yrs.	3	0
31-40 yrs.	4	1
41-50 yrs.	3	2
51-60 yrs	8	11
61-70 yrs	6	3
71-80 yrs	3	3



In this study out of 47 Male covid patients 27 are with Hypovitaminosis D with Vitamin D levels are less than 30ng/Dl and remaining 20 patients have normal Vitamin D levels.

**Chart 3: Correlation of Vitamin D levels in Covid 19 patients**



The above graph shows the most of Covid 19 patients who are hospitalized are with Hypovitaminosis D about 63 patients have a value of less than 30ng/dl and remaining 31 patients are with in normal limits of Vitamin D.

**Discussion:**

- In this study, out of 94 patients, 31 patients have Vitamin D levels within normal limits, 63 patients had a value below 30 ng/dL.
- In Female patients 36 have vitamin D levels less than 30 ng/dL, 11 have normal Vitamin D levels.
- In Male patients 27 have vitamin D levels less than 30ng/dL and 20 had within the normal limits.
- The prevalence of vitamin D deficiency is more in females when compared to males considering their stay indoors.

**CONCLUSION:**

Hypovitaminosis D was present in more than half of the patients admitted and Vitamin D levels are low more in females when compared to males. According to a study done on vitamin D status in hospitalized COVID 19 positive patients revealed the prevalence of hypovitaminosis D. This study also confirms hypovitaminosis D in hospitalized COVID 19 positive patients

**REFERENCES:**

1. DeLuca HF. Overview of general physiologic features and functions of vitamin D. *Am J Clin Nutr.* 2004;80(6):1689S–96S. doi: 10.1093
2. Galesanu C, Mocanu V. Vitamin D deficiency and the clinical consequences. *Rev Med Chir Soc Med Nat Iasi.* 2015;119(2):310–318.
3. Zdrenghea MT, Makrinioti H, Bagacean C, Bush A, Johnston SL, Stanciu LA. Vitamin D modulation of innate immune responses to respiratory viral infections. *Rev Med Virol.* 2017;27(1):e1909. doi: 10.1002/rmv.1909
4. Beard JA, Bearden A, Striker R. Vitamin D and the anti-viral state. *J Clin Virol.* 2011;50(3):194–200. doi: 10.1016/j.jcv.2010.12.006
5. Sturman LS, Holmes KV. Characterization of a coronavirus. *Virology.* 1977;77(2):637–649. doi: 10.1016/0042-6822(77)90488-3
6. Dini C, Bianchi A. The potential role of vitamin D for prevention and treatment of tuberculosis and infectious diseases. *Ann Ist Super Sanità.* 2012;48(3):319–327. doi: 10.4415/ANN\_12\_03\_13
7. Jiménez-Sousa M, Martínez I, Medrano LM, Fernández-Rodríguez A, Resino S. Vitamin D in human immunodeficiency virus infection: influence on immunity and disease. *Front Immunol.* 2018;9:458. doi: 10.3389/fimmu.2018.00458
8. Hansdotir S, Monick MM. Vitamin D effects on lung immunity and respiratory diseases. *Vitam Horm.* 2011;86:217–237.
9. Martín Giménez VM, Inéserra F, Tajer CD, et al. Lungs as target of COVID-19 infection: protective common molecular mechanisms of vitamin D and melatonin as a new potential synergistic treatment. *Life Sci.* 2020;254:117808. doi: 10.1016/j.lfs.2020.117808
10. Zabetakis I, Lordan R, Norton C, Tsoupras A. COVID-19: the inflammation link and the role of nutrition in potential mitigation. *Nutrients.* 2020;12(5):1466. doi: 10.3390/nu12051466