

Role of Vitamin D3 in Erectile Dysfunction

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ABSTRACT

Objective: To determine the role of vitamin d3 in erectile dysfunction in our hospital.

Study Design: Prospective / cross-sectional study

Place and Duration of Study: This study was conducted at the Social Security Kidney Centre Hospital of Karachi from July 2017 to August 2018.

Materials and Methods: The sample size of study was 84 taking prevalence to 64.2%. All patients with Age > 18 yrs, patients presenting with complains of erectile dysfunction in outpatient department were included. Patients with cardiovascular diseases, depression, antipsychotic drugs and bleeding disorders were excluded.

Results: Out of 84 patients presented with erectile dysfunction the mean age of patients was 34.8 ± 4.4 years. Most of group affected was from 25yrs to 35yrs $n= 52(65\%)$, and 35 to 45yrs $n=28(35\%)$ respectively. The patients mostly presented with mean vitamin D levels of $14.6\text{ng/ml} \pm 4.82$. While mostly the range of vitamin D was between 10ng/ml to 20ng/ml i-e; $n=60$ (75%), from $>30\text{ng/ml}$, $n=15$ (18.8%) and $<10\text{ng/ml}$ $n=5$ (6.3%).

Conclusion: Erectile dysfunction was found to have severe vitamin d deficiency with improvement in ED after vitamin d supplementation together with some lifestyle modification.

Key Words: Erectile dysfunction, vitamin D

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INTRODUCTION

Vitamin D is a steroid hormone responsible for calcium homeostasis and its metabolism by human skin from sunlight exposure mainly by ultraviolet-B (UVB) forming around 80% of total vitamin D¹⁻³. vitamin D deficiency has been increasingly found in previous decades accounting from 64.2% to 97.3% in Pakistan however US reported 80% patients deficient. Different studies and meta-analysis have found its supplementation results in prevention of several diseases but also in reducing mortality^{3,4}.

Modern era researchers have found diverse role of vitamin D due to its effect on nearly every cell of our

body ranging from bone health to atherosclerotic heart diseases and even in erectile dysfunction⁵⁻⁷ although erectile dysfunction has multifactorial causes including both neurological, drugs, psychological as well as vascular causes. Nearly half of them are due to vascular cause, with resulting endothelial dysfunction and subsequently vasodilation inhibition.

Globally incidence of erectile dysfunction is increasing from 150 million in 1999 to an expected 322 million till 2025⁸. In Pakistan its incidence reported from recent study in 2016 in healthy individuals was 55.7% with mild 14.8%, moderate erectile dysfunction 29.5% and 11.4% severe ED dysfunction¹⁰. Several factors although contribute like advancing age, atherosclerotic cardiovascular diseases, high altitude, smoking, low income etc. Another study in 2013 reported high incidence of around 97.3% ED in patients with diabetes in northern Pakistan, while 2016 study reported 64.2%^{11,12}. The mechanism underlying is endothelial dysfunction with inhibition of nitrous oxide which is a potent vasodilator and its impairment results in erectile dysfunction. Different studies have shown vitamin D deficiency in patients with erectile dysfunction as well as with other atherosclerotic cardiovascular diseases^{4,13,14}. Direct causal relationship has not been established however deficiency of vitamin D has been seen in patients with severe erectile dysfunction with levels $<35\text{ng/ml}$ while levels above it were not found in erectile dysfunction¹⁵.

The aim of our study was to determine the levels of vitamin D in patients presenting with erectile dysfunction as no local study has been in our setup,

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despite of having high percentage of erectile dysfunction present in our population as evident from recent studies¹⁰⁻¹².

MATERIALS AND METHODS

This prospective cross-sectional study was conducted in n=84 patients in Social Security Kidney Centre Hospital of Karachi from July 2017 to August 2018. Informed consent was taken from patients or next to kin after approval from ethical committee board. The sample size of study was calculated from prevalence to 64.2%. All patients with Age > 18 yrs., patients presenting with complains of erectile dysfunction in outpatient department were included. Patients with cardiovascular diseases, depression, antipsychotic drugs and bleeding disorders were excluded. Detailed clinical history and examination was done and after patients were diagnosed of having erectile dysfunction were classified into mild, mild to moderate, moderate and severe dysfunction on the basis of five-item version of International Index of erectile function questionnaire. This questionnaire inquires symptoms over the period of six months and score from 1 to 5 with questions comprising five points. Patient total scoring >17 are considered having no erectile dysfunction, patients with score of 17-21 considered as mild, from 12 to 16 mild to moderate, 8 to 11 moderate and 5 to considered severe ED dysfunction. The serum vitamin D levels of all patients ranging from mild to severe dysfunction were sent and values below 35ng/ml are considered to have deficiency of vitamin D.

Data was analyzed by statistical software package SPSS version 20.0. Continuous variable that is patient’s age, vitamin D levels were expressed as mean±SD. Qualitative variables will be expressed as frequencies and percentages. Chi square was applied between serum vitamin D levels and severity of erectile dysfunction.

RESULTS

Out of 84 patients presented with erectile dysfunction the mean age of patients was 34.8 ± 4.4 years (table 1). Most of group affected was from 25yrs to 35yrs n= 52(65%), and 35 to 45yrs n=28(35%) respectively. (figure 1). The patients mostly presented with mean vitamin D levels of 14.6ng/ml ± 4.82. While mostly the range of vitamin D was between 10ng/ml to 20ng/ml i-e; n=60 (75%), from >30ng/ml, n=15 (18.8%) and <10ng/ml n=5(6.3%). (figure 2).

Table No.1: Demographic variables

Variables	Frequency (percentages)
Age in years Mean ± SD	34.8 ± 4.4 years
Serum vitamin D in ng/ml	14.6ng/ml ± 4.82

Patients with erectile dysfunction were treated with vitamin d for period of 6 weeks with 65% patients responded to treatment together with lifestyle modification.

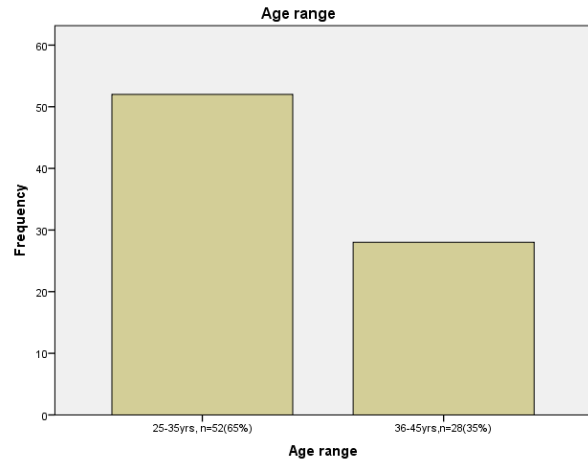


Figure No.1: Age range with percentage.

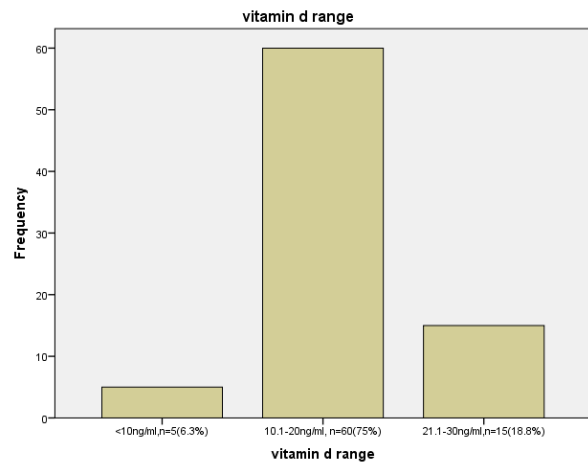


Figure No.2: Vitamin d range with percentage.

DISCUSSION

The erectile dysfunction is most prevalent in elderly age mostly related to atherosclerotic heart diseases, it also has many neurogenic, medical and psychogenic causes. In our study the patients with erectile dysfunction with other causes like vascular cause, drugs, neurogenic etc were excluded. All patients presented mostly belong age of >25yrs till 45yrs with no evident ischemic heart diseases etc. Most of patients with erectile dysfunction had severe vitamin D deficiency i-e; <20ng/ml while some patients have moderate deficiency > 30mg/ml while some also had levels of <10ng/ml. in US there are around 80%patients with erectile dysfunction secondary to atherosclerotic heart disease¹⁶.

The Endocrinology Society Clinical practice guidelines classifies vitamin D levels below <20ng/ml to be

deficient. In developing countries mostly patients have been seen to be deficient in vitamin D. In Pakistan too mostly patients have low levels of vitamin D affecting mostly weiled women. However, different studies have been done to evaluate the cause behind erectile dysfunction and vitamin D levels, but causal relationship cannot be established. Sorenson et al in 2012 has found in his prospective study has found levels of vitamin D to be <39ng/ml in men with erectile dysfunction¹⁸. Canguven et al in 2017 has found mean levels of 15ng/ml of vitamin D especially among young patients with improvement in erectile dysfunction after its supplementation¹⁹. Although other factors are also contributory like genetics, weight, exposure to sun etc. In our study most patients ages were between 25 to 35yrs with severe vitamin D deficiency of <15ng/ml. Vitamin D increases vascular health by inflammatory cascade inhibition. However some studies does not support the evidence as in some studies there was no improvement in erectile dysfunction even after supplementation²⁰. Not only this the patients with severe deficiency has been found to have diabetes mellitus in controlled range. By modification in lifestyle and some other changes patients with erectile dysfunction have revealed good results after treatment with vitamin D supplementation for six weeks.

CONCLUSION

Therefore, we concluded that patients presenting with erectile dysfunction were found to have severe vitamin d deficiency with improvement in ED after vitamin d supplementation together with some lifestyle modification.

Author's Contribution:

Concept & Design of Study:	Mahmood Ahmed Memon
Drafting:	Mumtaz Ali Chandio, Shah Muhammad Noonari
Data Analysis:	Pardeep Kkumar Maheshwari, Muhammad Shahid Bhatti, Feroze Mahar
Revisiting Critically:	Mahmood Ahmed Memon, Mumtaz Ali Chandio
Final Approval of version:	Mahmood Ahmed Memon

Conflict of Interest: The study has no conflict of interest to declare by any author.

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