

VITAMIN D: A KEY FACTOR IN PROSTATE HEALTH

Abstract: This study examines the correlation between vitamin D levels and the severity of symptoms and quality of life in patients with benign prostatic hyperplasia (BPH). A total of 125 participants were categorized based on their prostate symptoms (mild, moderate, and severe) and vitamin D levels (deficient, insufficient, and optimal). Among those with mild symptoms (n=60), 37.93% were vitamin D deficient, 44.11% had insufficient vitamin D, and 54.83% had optimal levels. For moderate symptoms (n=55), 44.82% were deficient, 47.05% had insufficient, and 41.93% had optimal vitamin D levels. In severe cases (n=10), 17.04% were deficient, 8.82% had insufficient, and 3.22% had optimal vitamin D levels. Overall, 23.02% of participants were deficient, 27.02% had insufficient, and 49.6% had optimal vitamin D levels. Quality of life assessments revealed that 56.8% of participants reported a good quality of life, with 46.66% of these being vitamin D deficient, 57.57% insufficient, and 61.29% optimal. An indifferent quality of life was noted by 29.6% of participants, with 28.57% deficient, 27.27% insufficient, and 29.03% optimal vitamin D levels. A very poor quality of life was reported by 13.6% of participants, with 21.42% deficient, 15.15% insufficient, and 9.67% optimal vitamin D levels. These results indicate a potential association between higher vitamin D levels and improved prostate symptoms and quality of life in BPH patients. Further research is needed to establish causality and underlying mechanisms.

Key words: Vitamin D, Benign Prostatic Hyperplasia, Prostate Health, Quality Of Life

1. INTRODUCTION

Prostate health is one of the main pillars of men's health, and men in their advanced years, particularly those over 60, are more susceptible to changes in the prostate. One of the most common prostate conditions is benign prostatic hyperplasia (BPH), frequently diagnosed in men over 60 years old, although 25% of men experience the issue between the ages of 40 and 49 (Stewart and Lephart, 2023). This diagnosis pertains to the enlargement of the prostate and the potential symptoms it can cause, typically lower urinary tract symptoms [10]. BPH is characterized by hyperplasia of both epithelial and stromal tissue, primarily affecting the transition zone of the prostate (Kanaan and Copeland, 2022). Symptoms of BPH include frequent urination, abdominal pressure during urination, disrupted sleep, and residual urine presence. However, many studies have observed that vitamin D significantly impacts prostate health. In vitro studies and animal studies have shown that vitamin D reduces cellular proliferation and differentiation in the prostate by acting through vitamin D receptors (VDR) (Devlin et al., 2021). Additionally, low levels of vitamin D, particularly active 25-hydroxyvitamin D (25-OH D), are highlighted. Studies report that vitamin D supplementation is effective in reducing prostate size and improving BPH symptoms (Udom, 2021). Vitamin D plays a crucial role in preventing the onset and development of many chronic diseases, including various cardiovascular diseases, diabetes, and malignant tumors. Furthermore, physical activity is a highly significant factor; individuals with prostate issues should engage in physical activity to improve their quality of life (Yeo et al., 2023).

2. MATERIALS AND METHODS

This study involved 125 participants who had previously been diagnosed with benign prostatic hyperplasia within the primary healthcare centers of Canton Sarajevo. The research was conducted from February 10, 2024, to April 10, 2024. The questionnaire was administered on a voluntary basis, ensuring that each participant's privacy was protected, and the data were used solely for research purposes. The participants whose results were included in the study were those with an established diagnosis of malignant disease that is currently active or worsening. Additionally, patients who were in remission at the time of the study were not excluded. This non-exclusion category also included patients with osteoporosis, parathyroid gland disorders, and chronic kidney disease stages 3 or 4.

Following the completion of the study and data collection, all completed surveys were entered into the database of the statistical software package IBM SPSS 16 for data analysis.

3. RESULTS

Table 1. presents the correlation results between vitamin D levels and symptoms of benign prostatic hyperplasia (BPH). The total number of participants in this study was 125. The categories of prostate symptoms ranged from mild, to moderate, to severe. Regarding vitamin D levels, the categories included deficient, insufficient, and optimal values of vitamin D. For mild symptoms, a total of 60 patients were recorded: 11 patients (37.93%) had a vitamin D deficiency, 15 patients (44.11%) had insufficient vitamin D, and 34 patients (54.83%) had optimal vitamin D levels. For moderate symptoms, there were 55 patients: 13 patients (44.82%) had a vitamin D deficiency, 16 patients (47.05%) had insufficient vitamin D, and 26 patients (41.93%) had optimal vitamin D levels. For severe symptoms, there were 10 patients: 5 patients (17.04%) had a vitamin D deficiency, 3 patients (8.82%) had insufficient vitamin D, and 2 patients (3.22%) had optimal vitamin D levels. Overall, 29 patients (23.02%) had a vitamin D deficiency, 34 patients (27.02%) had insufficient vitamin D, and 62 patients (49.6%) had optimal vitamin D levels.

Table 2. presents the correlation results between vitamin D levels and quality of life in patients with prostate hyperplasia. The total number of participants in this table was 125. Vitamin D levels ranged from deficient, insufficient, to optimal, while quality of life was categorized as good, indifferent, and poor. A good quality of life was reported by 71 patients (56.8%): 14 patients (46.66%) had deficient vitamin D levels, 19 patients (57.57%) had insufficient levels, and 38 patients (61.29%) had optimal levels. An indifferent quality of life was reported by 37 patients (29.6%): 10 patients (28.57%) had deficient vitamin D levels, 9 patients (27.27%) had insufficient levels, and 18 patients (29.03%) had optimal levels. A very poor quality of life was reported by 17 patients (13.6%): 6 patients (21.42%) had deficient vitamin D levels, 5 patients (15.15%) had insufficient levels, and 6 patients (9.67%) had optimal levels. Overall, 30 patients (46.6%) had deficient vitamin D levels, 33 patients (26.4%) had insufficient

<i>Categories of prostate disease symptoms (IPSS)</i>	<i>Levels of Vitamin D</i>			<i>Total</i>
	<i>deficiency</i>	<i>insufficient</i>	<i>optimal</i>	
<i>mild form of symptoms</i>	11	15	34	60
	37,93%	44,11%	54,83%	48,0%
<i>moderate form of symptoms</i>	13	16	26	55
	44,82%	47,05%	41,93%	44,0%
<i>severe form of symptoms</i>	5	3	2	10
	17,24%	8,82%	3,22%	8,0%
<i>Total:</i>	29	34	62	125
	23,2%	27,2%	49,6%	100,0%

levels, and 62 patients (49.6%) had optimal levels.

Table 1. Correlation between prostate disease symptoms and vitamin D level

Table 2. Vitamin D Levels in Individuals with Prostatic Hyperplasia

	<i>Levels of vitamin D</i>			<i>Total</i>
	<i>deficiency</i>	<i>insufficient</i>	<i>optimal</i>	
<i>Adequate</i>	14	19	38	71
	46.66%	57.57%	61.29%	56.8%
<i>Indifferent</i>	10	9	18	37
	28.57%	27.27%	29.03%	29.6%
<i>poor</i>	6	5	6	17
	21.42%	15.15%	9.67%	13.6%
<i>Total:</i>	30	33	62	125
	46.6%	26.4%	49.6%	100.0%

4.

DISCUSSION

Vitamin D may play a significant role in managing benign prostatic hyperplasia (BPH), a condition characterized by the enlargement of the prostate, which can cause urinary problems. Studies have shown that vitamin D can reduce the proliferation of prostate cells, potentially helping to control prostate growth (Cho et al., 2020). Additionally, it has anti-inflammatory properties that can decrease inflammation in the prostate, further alleviating BPH symptoms. Low levels of vitamin D in the blood are associated with an increased risk of developing BPH and worsening of its symptoms (Yuan et al., 2021). Supplementation with vitamin D can help maintain optimal levels of this vitamin in the body, which may have a preventive effect on BPH. Moreover, vitamin D can enhance the immune response, aiding the body in combating infections that may complicate BPH. The vitamin D levels in this study ranged from deficient to optimal among individuals with mild, moderate, and severe symptoms. Out of 125 participants, 29 had a deficiency, 34 had insufficient levels, and 62 had optimal levels. However, studies by Kovačević et al. (2023) indicated that the average score for urological symptoms using the MSSP questionnaire in individuals with BPH was 8.54. Most participants (57 or 48.7%) had moderate symptoms, 56 (47.9%) had mild symptoms, and 4 (3.4%) had severe symptoms. Participants with higher levels of vitamin D exhibited significantly less severe BPH symptoms,

while those with lower levels of vitamin D had more pronounced symptoms. A negative correlation was found between vitamin D levels and all urinary symptoms in men with BPH, highlighting the importance of adequate vitamin D levels in the prevention and treatment of these symptoms. Additionally, when observing symptoms from mild to severe, the quality of life varied among the 125 participants. In our study, 71 participants (56,8%) reported a good quality of life, 37 (29,6%) had a fair quality of life, and 17 (13,6%) had a poor quality of life. According to the study by Brown et al. (2022) the quality of life was described as satisfactory (20%), strange (20%), and unsatisfactory (21,8%). Patients who were actively monitored showed improvement in their quality of life compared to other patients. Those actively monitored rated their quality of life as very good (15%), good (25,2%), and satisfactory (17,8%).

5. CONCLUSION

The results of this study indicate a clear correlation between vitamin D levels and both the symptoms and quality of life in patients with benign prostatic hyperplasia (BPH). Patients with higher vitamin D levels generally experienced milder BPH symptoms. Specifically, those with optimal vitamin D levels had the least severe symptoms, while those with a deficiency experienced more severe symptoms. Similarly, the quality of life was higher in patients with sufficient or optimal vitamin D levels. These findings suggest that maintaining adequate vitamin D levels may help mitigate BPH symptoms and improve overall quality of life. Therefore, vitamin D supplementation could be a beneficial strategy in the management and prevention of BPH.

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