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ORIGINAL ARTICLE
ORİJİNAL ARAŞTIRMA

Evaluation of the Relationship between Vitamin Supplement Use Levels and Diagnoses of Patients Referred to Dermatology Outpatient Clinic

Dermatoloji Polikliniğine Başvuran Hastaların Takviye Vitamin Kullanım Durumları ve Tanıları Arasındaki İlişkinin Değerlendirilmesi

Bahar ÜRÜN ÜNAL[1], Furkan URCAN[1], Cahit YAVUZ[2]

[1]Selcuk University, Faculty of Medicine, Department of Family Medicine, Konya, Turkey
[2]Selcuk University, Faculty of Medicine, Department of Dermatology, Konya, Turkey

ABSTRACT

Aim: The aim of this study was to evaluate vitamin D levels of patients with skin diseases and the effect of vitamin D supplementation on different dermatologic diseases and the complaints caused by these diseases.

Material and Method: The study was conducted on 150 patients aged 15-79 years who applied to the Skin and Venereal Diseases Outpatient Clinic between July and September 2023. In this descriptive and cross-sectional study, a questionnaire consisting of 18 questions was applied.

Results: The mean age of the participants was 37.07±15.95 years and 56.7% (n=85) of these participants were women. Patients over 45 years of age were significantly less likely to use supplements (vitamins, minerals, herbal supplements) compared to other ages. No significant difference was found in the relationship between chronic disease and vitamin D levels. In addition, the deficiency in vitamin D levels of those who did not use supplements was 1.4 times higher than those who did.

Conclusion: New research on vitamin supplementation continues to emerge and is becoming an increasingly important topic. Vitamin D supplementation, which is frequently prescribed by both dermatologists and family physicians and recommended to be used when necessary, has been observed to be important both in our study and in different and large scale studies.

Keywords: Vitamin D supplementation, skin diseases, family medicine

ÖZ

Amaç: Bu çalışmada cilt hastalığı olan hastaların D vitamin düzeyleri ile takviye vitamin kullanımının farklı dermatolojik hastalıklar ve bu hastalıkların yol açtığı şikayetlerin üzerindeki etkisinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Çalışma, Temmuz- Eylül 2023 tarihleri arasında Deri ve Zührevi Hastalıkları Polikliniği'ne başvuran, 15-79 yaş aralığındaki 150 hasta üzerinde yapıldı. Tanımlayıcı ve kesitsel tipte yapılan bu çalışmada 18 sorudan oluşan bir anket uygulandı.

Bulgular: Katılımcıların yaş ortalaması 37,07±15,95 idi ve bu katılımcıların %56,7'(n=85)ini kadınlar oluşturmaktaydı. 45 yaş üzeri hastalarda takviye ürün(vitamin, mineral, bitkisel destek) kullanımının diğer yaşlara göre anlamlı daha az olduğu görüldü. Kronik hastalık ve D vitamini düzeyleri arasındaki ilişkide anlamlı bir fark bulunamadı. Ayrıca, takviye ürün kullanmayanların D vitamini düzeylerindeki eksikliğin, kullananlara göre 1,4 kat daha fazla olduğu görüldü.

Sonuç: Vitamin takviyesi ile ilgili yeni araştırmalar ortaya çıkmaya devam etmektedir ve gün geçtikçe daha önemli bir konu haline gelmektedir. Özellikle hem dermatologlar hem de aile hekimleri tarafından sıkça reçete edilen ve gerektiği durumlarda kullanılması önerilen D vitamini takviyesinin hem bizim çalışmamızda hem de daha farklı ve geniş çaplı çalışmalarda önemli olduğu gözlenmiştir.

Anahtar kelimeler: D vitamini takviyesi, cilt hastalıkları, aile hekimliği

Corresponding Author: Bahar ÜRÜN ÜNAL
Address: Selcuk University, Faculty of Medicine, Department of Family Medicine, Konya, Turkey
E-mail: urunbahar@gmail.com

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INTRODUCTION

Vitamins and minerals, both in topical and oral forms, play an important role in the treatment of many dermatological problems. The recent introduction of vitamin D analogs for diseases such as psoriasis and keratinization disorders has led to significant advances in clinical practice (1). This shows that vitamins will be more important in skin diseases in the future. Vitamins are increasingly used therapeutically and prophylactically in the treatment of skin diseases. The fact that vitamins are safe, acceptable and cost-effective enables them to be used as special additives in creams (2).

Vitamin D is important for bone structure and the health of the skin on it. It is synthesized in the skin and is involved in the function of keratinocytes and regulation of calcium and phosphate metabolism. The main cause of vitamin D deficiency is inadequate dietary intake. Decreased endogenous synthesis and insufficient sun exposure in the elderly may also lead to deficiency. Vitamin D synthesis in the epidermis is reduced in diseases that cause epidermis damage and in generalized keratinization disorders. The daily dose requirement is 200 IU from birth to 50 years of age, 400 IU between 51 and 70 years of age, and 600 IU at 71 years of age and above. In the past, vitamin D was marketed as a combined cream to accelerate wound healing in topical creams. The vitamin D analog calcipotriol has been approved by the FDA for use in treatment. Vitamin D appears to be a major factor in the expression of cathelicidin, the substance responsible for the red facial appearance of rosacea. Oral vitamin D supplementation is thought to be protective against skin aging process and skin cancer development (3).

Vitamins, especially vitamin D, are closely related to skin diseases due to their immunomodulatory and anti-inflammatory effects. In the name of preventive medicine, it is of great importance in clinical practice to prevent these diseases as much as possible and to determine the relationship between vitamin use levels and the treatment accordingly. In this study, it was aimed to evaluate the effect of vitamin supplementation on different dermatologic diseases with blood vitamin levels of patients with skin diseases.

MATERIAL AND METHOD

This descriptive and cross-sectional study was conducted on 150 patients aged 15-79 years who applied to the Skin and Venereal Diseases Outpatient Clinic and agreed to participate in the study. After the decision numbered 2023/347 of the Local Ethics Committee dated 18.07.2023, all individuals were informed about the study and a signed informed consent document was obtained from the people participating in the study, and the questionnaire was applied with face-to-face interview technique. The questionnaire form consists of 18 questions that determine the sociodemographic characteristics of the patients, their current diagnoses and reasons for application, if any, how long they have had complaints that will cause the application, whether they have used supplementary vitamins in the last 1 year, if so, how long they have been used, whether the use of supplementary vitamins has a positive effect on the current reason for application and skin disease according to the patients' discourse, and their supplementary vitamin use status. In addition, blood vitamin D test results in the last 1 month, which were available in the hospital system and routinely obtained during outpatient clinic visits of patients, were also evaluated. No extra tests were requested from the patients for the study. Vitamin D levels were based on the levels of vitamin D available in the system requested from the patients during routine controls. Most of the guidelines consider vitamin D levels above 20 ng/ml (50 nmol/L) as adequate, levels between 10 and 20 ng/ml (25-50 nmol/L) as insufficient, and levels below 10 ng/ml (25 nmol/L) as deficiency(4). Therefore, vitamin D levels below 20 ng/ml were considered low.

Statistical Analysis

All data were evaluated using SPSS (Statistical Package for Social Sciences) for Windows 22.0 statistical package program and necessary statistical methods. In statistical analyses, descriptive data were expressed as numbers and percentages. Descriptive statistical methods such as number, arithmetic mean and ratio were used in the evaluation of the data. In comparative analyses, the data were evaluated with the chi-square test. The significance level for comparison tests was taken as $p<0.05$.

RESULTS

The mean age of the participants was 37.07±15.95 years (min:15 years median:33 years max:79 years) and 56.7% (n=85) of these participants were women. The mean age of men was 35.01 years and the mean age of women was 26.45 years. In addition, 42.2% (n=63) of the participants were in the 26-45 age range. Regarding the educational level of the participants in the study, 48.6% (n=73) were university and above. Sociodemographic characteristics of the patients are given in **Table 1**. The comparison of supplement use and knowledge about skin diseases is given in **Table 2**. **Table 3** shows the comparison of vitamin levels according to sociodemographic data. **Table 4** shows the comparison of supplement use status according to sociodemographic data. Patients over 45 years of age were less likely to use supplements compared to other ages and this was found to be statistically significant (p=0.015).There was no statistically significant difference in the relationship between chronic disease and vitamin levels. There was no statistically significant difference between genders in terms of the reason for admission. In addition, vitamin levels were found to be 1.4 times more deficient in those who did not use supplements than in those who did, but there was no statistically significant difference between the two groups. The duration of taking supplements (vitamins, etc.) was mostly between 1 week and 1 month with 39.3%. Among the prescribed drugs, vitamin D was prescribed the most with 64.3%.

Table 1. Information on Sociodemographic Characteristics of Patients

	n	%
Gender		
Male	65	43.3
Female	85	56.7
Age		
Under 25 years old	33	28.6
26-45 years	63	42.2
45 years and older	44	29.2
Education Level		
Primary school and below	18	12.0
Middle and High School	59	39.4
University and above	73	48.6
Profession		
Not working	65	43.4
Public servant	56	37.3
Private sector	29	19.3
Presence of Chronic Disease		
Yes	52	34.7
No	98	65.3
Medication Used		
Yes	84	56.0
No	66	44.0
Prescripted medicine		
Vitamin D	36	64.2
Vitamin B12	16	28.5
Others*	4	7.3
Duration of medication use		
Less than 1 week	7	12.5
1 week to 1 month	22	39.3
1 month to 6 months	23	41.1
Longer than 6 months	4	7.1

*Vitamin C and Zinc

Table 2. Supplement Use Status and Knowledge of Skin Diseases

	n	%
Reason for Application		
Itching	51	34,0
Acne	27	18,0
Wounds on the skin	67	44,7
Hair loss	5	3,3
Skin Problem Duration		
Less than 1 month	31	20,7
1-6 months	36	24,0
More than 6 months	83	55,3
Vitamin D Levels		
Inadequate	91	60,7
Adequate	59	39,3
Were Vitamins Prescribed by a Doctor?		
Yes	55	36,0
No	95	64,0
Supplement use status		
Yes	88	58,7
No	62	41,3
Supplement Product Contents		
Vitamin*	66	79,0
Mineral**	9	10,8
Herbal Support	13	10,2
Do you think there is a relationship between taking vitamin supplements and skin disease?		
Yes	76	50,6
No	74	49,4

*Vitamin D and vitamin B12, **Zinc and Iron etc.

Table 3. Vitamin levels according to sociodemographic data

	Inadequate		Adequate		p value
	n	%	n	%	
Gender					0.412
Male	37	40.7	28	47.5	
Female	54	59.3	31	52.5	
Age					0.504
Under 25 years old	30	33.0	17	28.8	
26-45 years	30	33.0	25	42.4	
45 years and older	31	34.0	17	28.8	
Education Level					0.791
Primary school and below	12	13.2	9	15.3	
Middle and high school	21	23.1	11	18.6	
University and above	58	63.7	39	66.1	
Profession					0.070
Not working	46	50.5	19	32.2	
Public servant	31	34.1	25	42.4	
Private sector	14	15.4	15	25.4	
Skin problem duration					0.055
Less than 1 month	13	14.3	18	30.5	
1-6 months	23	25.3	13	22	
More than 6 months	55	60.4	28	47.5	
Reason for application					0.171
Itching	31	34.1	20	33.9	
Acne	19	20.9	8	13.6	
Wounds on the skin	36	39.6	31	52.5	
Hair loss	5	5.4	0	0	
Presence of chronic disease					0.492
Yes	34	37.4	18	30.5	
No	57	62.6	41	69.5	
Medication used					0.521
Yes	23	26.0	15	24	
No	66	74.0	46	76	
Supplement use status					0.083
Yes	59	64.8	29	49.2	
No	32	35.2	30	50.8	
Supplement product contents					0.314
Vitamin*	42	71.2	24	82.8	
Mineral**	8	13.6	1	3.4	
Herbal Support	9	15.2	4	13.8	
Use of supplements with doctor's advice					0.093
Using	35	59.3	23	79.3	
Not using	24	40.7	6	20.7	
If not used with doctor's advice, whose advice?					0.395
Friend	10	43.5	5	71.4	
Relative	4	17.4	0	0	
Family	3	13.0	0	0	
Pharmacist	6	26.1	2	28.6	
Thinking there is a relationship between supplement use and skin disease					0.333
Yes	49	53.8	27	45.8	
No	42	46.2	32	54.2	
Do you think your skin problems have improved after supplement use? (For Supplement Users)					0.760
Yes	31	50.8	13	44.8	
No	30	49.2	16	55.2	

*Vitamin D and vitamin B12, **Zinc and Iron etc.

Table 4. Supplement use according to sociodemographic data

Use of supplements	Yes		No		P value
	n	%	n	%	
Gender					0.167
Male	34	38.6	31	50	
Female	54	61.4	31	50	
Age					0.015
Under 25 years old	31	35.2	16	25.8	
26-45 Years	37	42	18	29	
45 Years and older	20	22.8	28	45.2	
Presence of chronic disease					0.86
Yes	30	34.1	22	35.5	
No	58	65.9	40	64.5	
Medication used					0.658
Yes	20	24.9	18	27.4	
No	67	76.1	45	72.6	
Education level					0.228
Primary school and below	9	10.2	12	19.4	
Middle and high school	18	26.5	14	22.6	
University and above	61	69.3	36	58.1	
Profession					0.344
Not working	36	41	29	46.8	
Public servant	37	42	19	30.6	
Private sector	15	17	14	22.6	
Skin problem duration					0.945
Less than 1 month	19	21.6	12	19.4	
1-6 months	21	23.9	15	24.2	
More than 6 months	48	54.5	35	56.2	
Reason for application					0.144
Itching	28	31.8	23	37.1	
Acne	21	23.9	6	9.7	
Wounds on the skin	37	42.0	30	48.4	
Hair loss	2	2.3	3	4.8	

DISCUSSION

Decreased vitamin D levels in patients with seborrheic dermatitis and earlier development of seborrheic dermatitis in patients with severe vitamin D deficiency suggest that low vitamin D levels are associated with seborrheic dermatitis. In a study by Akbaş (5) et al. vitamin D levels were found to be low in patients with seborrheic dermatitis. Vitamin D serum concentrations should be kept at normal levels in patients with atopic dermatitis, psoriasis, vitiligo, polymorphous light eruption, mycosis fungoides, alopecia areata, systemic lupus erythematosus and melanoma (6). Because vitamin D levels play an important role in the pathogenesis of these diseases. In a study conducted by Zuhal (7) and coworkers among 40 individuals, it was found that vitamin D levels were low in the Turkish population, but the mean values were lower in patients with onychomycosis. In our study, vitamin D levels were found to be low in patients presenting with skin wounds (dermatitis, rash, etc.), although there was no statistical significance. In a study conducted by Lim (8) and colleagues on 160 people, it was shown that vitamin D deficiency was more common in patients with acne, that this was inversely correlated with disease severity, and that vitamin D deficiency played a potential role in the pathogenesis of acne. Today, there is a need for more studies like this, especially in the use of cosmetic products. In our study, vitamin D levels were deficient in more than 50% of patients presenting with acne, but statistical significance was not found. Therefore, it is clear that there is a need for studies on acne with a larger population and a larger time period.

The findings and results of many studies support that the urticaria population, especially adult chronic urticaria patients, may be at increased risk associated with low serum vitamin D levels. In a meta-analysis of 17 studies by Yaija Li (9) et al., vitamin D supplementation decreased both the severity of urticaria and improved quality of life. In our study, vitamin D levels were found to be low in more than 50% of patients presenting with pruritus (urticaria, etc.).

In a study by Morimoto S (10) and colleagues, an 83-year-old male patient with osteoporosis and long-standing psoriasis was given 1µg/day active Vitamin D3 to treat osteoporosis, and while the treatment was continuing, there was an unexpected regression in the skin lesions of the patient who did not receive any treatment for psoriasis. Thus, the use of vitamin D in the treatment of psoriasis was discovered by chance and entered clinical practice. Vitamin D plays an important role in dermatologic diseases as in almost all diseases. In the dermatologic patient group, 25OHD3 deficiency can be commonly seen especially in inflammatory skin diseases. Among infectious skin diseases, dermatophytoses are most commonly associated with vitamin D deficiency. Hair diseases such as hair loss are also diseases that may be associated with vitamin D deficiency. According to a retrospective evaluation by Çifci (11) et al. on 548 patients, vitamin D affects many skin diseases. Vitamin D levels should be evaluated in dermatologic patients. Considering the relationship between vitamin D and various dermatologic diseases, the present findings suggest that vitamin D deficiency may be an important problem that may lead to serious consequences.

In a study conducted by Öğüş (12) et al. on 4168 patients, it was found that there was a significant difference between vitamin D levels when patients were compared according to gender, age and months. In a study conducted by Türe (13) et al. on 4153 pediatric patients, it was concluded that vitamin D levels varied depending on gender and age. In our study, no significant difference was found between vitamin D levels according to age and gender. The main reason for this may be that the study was conducted in a shorter period of time and in a narrower population of 150 patients.

The reason for the statistically significant lower use of supplements in patients over 45 years of age compared to other ages in our study may be that the supplements used until this age were used with high expectations and were probably not effective enough to meet this expectation for patients due to different factors (such as misuse, intervening infections). It is clear that more data and studies are needed to clarify this situation.

Several dermatologic conditions including vitiligo, aphthous stomatitis, atopic dermatitis and acne have been related to cobalamin excess or deficiency. Pathological conditions where patients have cobalamin excess, such as chronic myelogenous leukaemia and hyperoesinophilic syndrome, can manifest cutaneously. Hyperoesinophilic syndrome may present with eczema erythroderma, lichenification, recurrent urticaria, angioedema and mucosal ulcers. Deficiency in vitamin B12 can manifest as hyperpigmentation, notably in flexural areas, palms, soles and inside the oral cavity. There can also be hair and nail changes, as well as oral changes including glossitis, recurrent ulcers, dysgeusia and stomatitis. Cobalamin deficiency can also be seen in patients with malabsorption, pernicious anaemia, patients with an ileocecal resection and patients receiving protracted therapy with proton-pump inhibitor medications. A 2015 review of vitamin B12 explored the manifestations of vitamin B12 excess, deficiency and the mucocutaneous complications of therapy (14).

Limitations of the Study

For this study, only vitamin D levels could be accessed from the system. These findings and results should be evaluated together with many other parameters. Another limitation is the small number of volunteer patients who participated in our study.

CONCLUSION

New research on vitamin supplementation continues to emerge and is becoming an increasingly important topic. In particular, vitamin D supplementation, which is frequently prescribed by both dermatologists and family physicians and recommended for use when necessary, has been observed to be important both in our study and in different and large-scale studies. The use of vitamin supplements for the prevention and treatment of dermatologic problems needs to be further developed. Larger, multicenter and long-term clinical studies are needed to obtain more efficient results in the use of vitamin supplements, which have become more important with the development of technology and the increase in dermatological problems, and perhaps to prevent dermatological diseases in the future.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was approved by Selcuk University Local Ethics Committee (Date: 18.07.2023, Decision no: 2023/347).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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