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A prospective case-control study of vitamin D, uric acid, and C-reactive protein in patients with psoriasis at a tertiary care hospital in Bihar.

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Abstract

Background:

Psoriasis, a persistent, severe skin disorder mediated by the immune system, affects two to three percent of individuals globally and is becoming recognized as a systemic disease. Emerging evidence suggests that vitamin D deficiency, hyperuricemia, and elevated C-reactive protein (CRP) may contribute to its pathogenesis and associated comorbidities. Despite India's high prevalence of vitamin D deficiency, studies exploring the interplay of these biomarkers in psoriasis are limited.

Methodology

A prospective case-control study was conducted in IGIMS, Patna, from February 2020 to October 2021. Out of the 150 participants, 75 had chronic plaque psoriasis, and the remaining 75 were healthy controls who were assigned by sex and age. Serum 25-hydroxyvitamin D [25(OH)D], uric acid, along with CRP, were measured by chemiluminescent microparticle immunoassay, uricase–peroxidase enzymatic method, and latex-enhanced turbidimetric immunoassay, respectively. The statistical analyses included the t-test, the chi-square test, and Pearson's correlation; a p-value of less than 0.05 was taken to be significant.

Results

Psoriasis patients showed markedly reduced serum vitamin D levels compared to healthy controls. In contrast, the patient group's levels of uric acid and C-reactive protein (CRP) were noticeably higher. All individuals with psoriasis were vitamin D-deficient, and nearly half had elevated CRP levels. Vitamin D demonstrated a strong inverse relationship with CRP and a moderate negative association with uric acid, while CRP positively correlated with uric acid.

Conclusion

Vitamin D deficiency is significantly linked to psoriasis, systemic inflammation, and hyperuricemia, reflecting its systemic nature rather than a skin-limited disorder.

Recommendation

Routine screening of vitamin D, CRP, and uric acid levels should be integrated into psoriasis management, particularly in regions with endemic vitamin D deficiency. Vitamin D supplementation and metabolic risk monitoring may improve clinical outcomes and reduce long-term comorbidities. Further longitudinal and interventional studies are warranted to establish causality and therapeutic benefits.

Keywords: *Psoriasis; Vitamin D; Uric Acid; C-reactive Protein; Systemic Inflammation; Bihar.*
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Background of the study

A chronic inflammatory skin condition that is immune-mediated, psoriasis affects roughly 2-3% of people worldwide [1]. Angiogenesis, keratinocyte hyperproliferation, and dysregulated immunological responses are its hallmarks; pro-inflammatory cytokines like TNF-α, IL-17, and IL-23 are important players in these processes [2]. Psoriasis is now understood to be a systemic disorder that includes links to cardiovascular disease, metabolic syndrome, and other inflammatory comorbidities, despite its primary manifestation as scaly, erythematous plaques on the skin [3]. Psoriasis is a significant burden in India, where its prevalence varies depending on environmental, lifestyle, and hereditary variables. This emphasizes the necessity to investigate underlying biochemical indicators in various populations [4].

Beyond its traditional function in bone metabolism and calcium balance, vitamin D is a powerful immunomodulator that affects both innate and adaptive immunity. The biologically active form, calcitriol, regulates keratinocyte differentiation, inhibits pro-inflammatory cytokine release, and promotes regulatory T-cell activity [5]. Low serum 25-hydroxyvitamin D [25(OH)D] levels have been consistently reported in patients with psoriasis, and deficiency has been correlated with increased disease severity [6,7]. Furthermore, genetic variations in the vitamin D receptor may alter individual susceptibility and response to therapy [8]. Given India's high prevalence of vitamin D deficiency despite abundant sunlight exposure, studying its role in psoriasis within this setting becomes particularly relevant [9].

In addition to vitamin D, other biochemical markers may contribute to the systemic inflammatory profile of psoriasis. Hyperuricemia is frequently observed in psoriatic patients, likely due to accelerated epidermal turnover and purine metabolism, leading to elevated serum uric acid levels [10]. High uric acid has been linked with oxidative stress, endothelial dysfunction, and increased risk of cardiovascular complications [11]. Similarly, C-reactive protein (CRP) is an established acute-phase reactant that reflects systemic inflammation and correlates with both disease severity and cardiovascular comorbidity in psoriasis [12,13]. Elevated CRP levels serve not only as a marker of inflammatory burden but also as a predictor of long-term morbidity [14]. Despite these associations, there is still limited research addressing the interrelationship between vitamin D, uric acid, and CRP in psoriasis. Therefore, this study's goal was to evaluate these biomarkers in psoriatic patients relative to healthy controls and look into any potential correlations between them.

Methodology

Study Design

This was a prospective case-control study conducted to compare serum vitamin D, uric acid, and CRP levels between psoriasis patients and healthy individuals.

Study Setting

The research was carried out in the Department of Skin and Venereal Diseases, Indira Gandhi Institute of Medical Sciences (IGIMS), Patna, Bihar—a tertiary referral center serving patients across Bihar and neighboring states.

Study Population and Sample Size

A total of 150 participants (75 psoriasis patients and 75 healthy controls) aged 18–65 years were included. The sample size was determined based on previous regional studies assessing vitamin D levels in psoriasis and the available patient load during the study period.

Sampling Procedure

Participants were selected through consecutive sampling from outpatient clinics. Controls were age- and sex-matched individuals without psoriasis or systemic inflammatory disease.

Bias Control

Potential sources of bias were minimized by matching cases and controls for age and sex, excluding participants on vitamin D supplements or medications affecting uric acid, and blinding laboratory personnel to group allocation.

Data Collection and Laboratory Analysis

Venous blood samples (5 mL) were drawn after overnight fasting. Vitamin D was analyzed using CMIA, uric acid by the uricase–peroxidase method, and CRP by latex-enhanced turbidimetric immunoassay. Quality controls and calibration were performed per manufacturer standards.

Participant Flow

Out of 165 individuals screened, 10 declined participation and 5 were excluded (due to systemic illness or medication interference). A total of 150 participants (75 cases, 75 controls) completed the study.

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Data Analysis

Data were analyzed using SPSS version 20. Continuous variables were expressed as mean ± SD. Group comparisons were performed with t-tests, and associations were assessed using Pearson's correlation. Statistical significance was set at $p < 0.05$.

Results

Out of 165 individuals screened, 10 declined participation and 5 were excluded (due to systemic illness or medication interference). A total of 150 participants (75 cases, 75 controls) completed the study. The average age of the disease group was 41.72 ± 12.96 years, whereas the control group's median age was 42.03 ± 13.61 years. ($p = 0.888$) (Figure 1) There was no statistically significant difference between the groups. The demographic characteristics of the controls and cases were comparable, with 41.3% of participants in the control group being female and 58.6% of participants being male (Figure 2) (Table 1).

Table 1 shows the demographic characteristics

Variable	Psoriasis (n = 75)	Controls (n = 75)	p-value
Age (years), mean ± SD	41.72 ± 12.96	42.03 ± 13.61	0.888
Male, n (%)	44 (58.6)	44 (58.6)	1.000
Female, n (%)	31 (41.3)	31 (41.3)	1.000

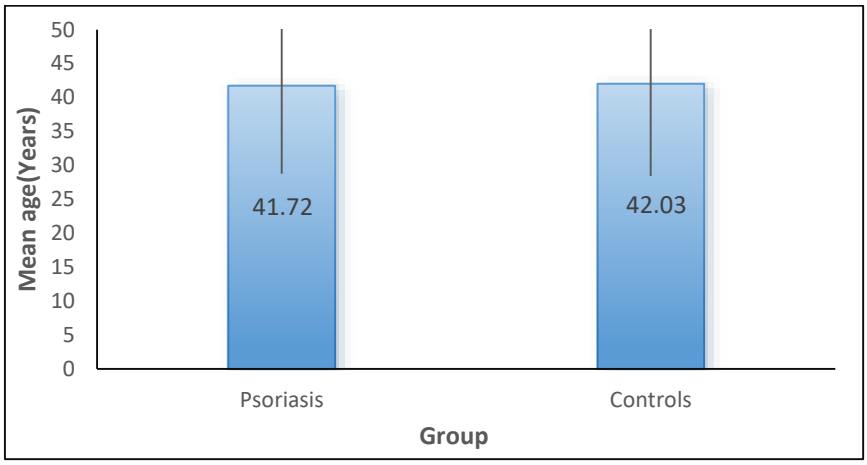

Figure 1. Mean age with standard deviation for Psoriasis patients and Controls.

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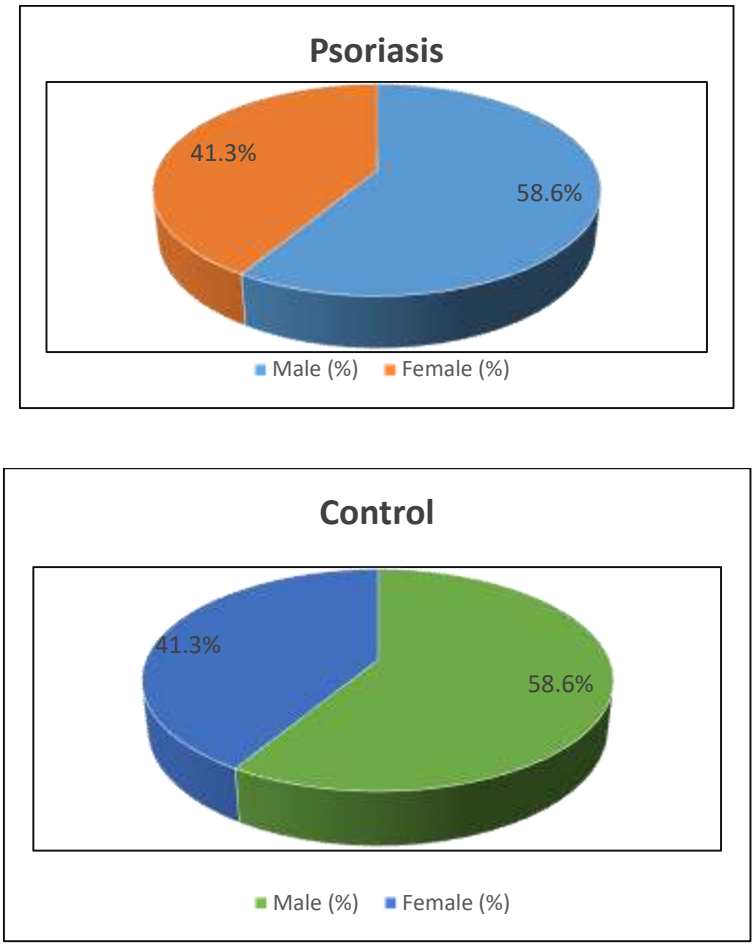

Figure 2. Sex distribution by group. The pie chart shows the percentage of males and females in the Psoriasis and Control cohorts.

Biochemical parameters

Serum vitamin D levels in psoriasis patients were substantially lower (13.10 ± 3.74 ng/mL) than in controls (31.46 ± 7.73 ng/mL; $p < 0.001$). However, patients had significantly higher levels of inflammatory and metabolic markers. Cases had mean CRP levels of 6.83 ± 3.36 mg/L versus 1.84 ± 1.56 mg/L in controls ($p < 0.001$), and uric acid levels were 5.64 ± 1.06 mg/dL in cases versus 4.75 ± 1.32 mg/dL in controls ($p < 0.001$) (Figure 3). The comparison of the two groups' biochemical parameters is summed up in Table 2.

Table 2. Biochemical parameters in cases and controls

Parameter	Cases (n=75) (Mean ± SD)	Controls (n=75) (Mean ± SD)	p-value
Vitamin D (ng/mL)	13.10 ± 3.74	31.46 ± 7.73	<0.001
CRP (mg/L)	6.83 ± 3.36	1.84 ± 1.56	<0.001
Uric acid (mg/dL)	5.64 ± 1.06	4.75 ± 1.32	<0.001

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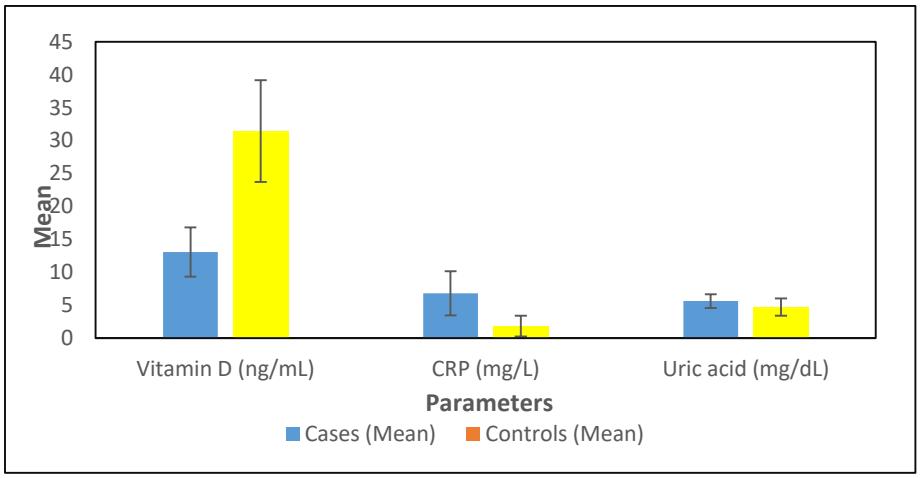

Figure 3. Comparison of biochemical parameters between cases and controls.

When participants were classified according to standard cut-offs, all psoriasis patients (100%) were found to have vitamin D deficiency (≤20 ng/mL), whereas the majority of controls had either sufficient (61.3%) or insufficient (33.3%) levels. Similarly, CRP was elevated (≥6 mg/L) in 50.7% of cases, while none of the controls demonstrated such elevation. These differences were highly significant ($p < 0.001$), emphasizing that both vitamin D deficiency and systemic inflammation are characteristic features of psoriasis (Figure 4). Vitamin D and CRP were further categorized using standard cut-offs (Table 3).

Table 3. Distribution of Vitamin D and CRP categories

Biomarker	Category	Cases (n=75)	Controls (n=75)	p-value
Vitamin D	Deficient (≤20 ng/mL)	75 (100%)	4 (5.3%)	<0.001
	Insufficient (21–29 ng/mL)	0	25 (33.3%)	
	Optimal (≥30 ng/mL)	0	46 (61.3%)	
CRP	< 6.0 mg/L	37 (49.3%)	75 (100%)	<0.001
	≥ 6.0 mg/L	38 (50.7%)	0	

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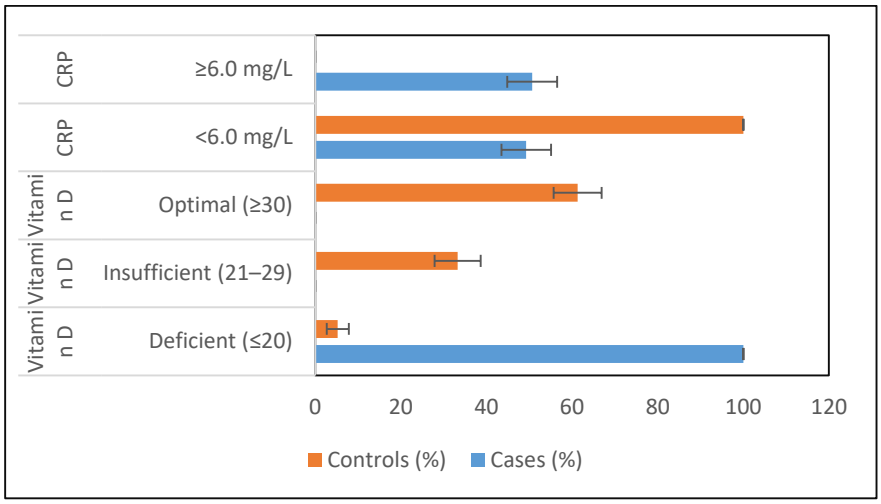

Figure 4. Category composition of CRP and Vitamin D among Cases and Controls

Correlation between vitamin D, CRP, and uric acid in psoriasis cases

Additional information on the interactions between these biomarkers was obtained using correlation analysis. There was a significant negative connection between serum vitamin D and CRP ($r = -0.691$, $p < 0.001$), suggesting that patients with lower vitamin D levels had more severe systemic inflammation. Additionally, there was a moderately negative association between vitamin D and uric acid ($r = -0.327$, $p < 0.001$), indicating a link between metabolic imbalance and nutritional inadequacy. On the other hand, there was a significant relationship between CRP and uric acid ($r = +0.343$, $p < 0.001$), indicating that purine turnover is elevated in conjunction with inflammatory activity. Table 4 summarizes the correlation study between the three biomarkers.

Table 4. Correlation of biochemical markers in psoriasis cases (n=75)

Correlation pair	Pearson r	p-value
Vitamin D vs CRP	**−0.691**	<0.001
Vitamin D vs Uric Acid	**−0.327**	<0.001
CRP vs Uric acid	**+0.343**	<0.001

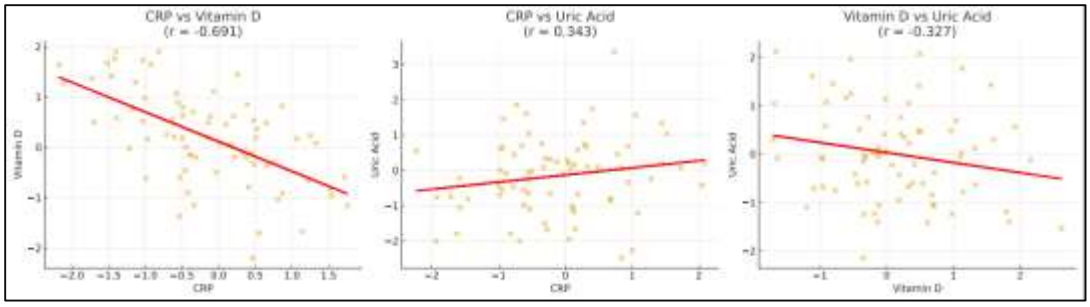

Figure 5. Scatter plots showing correlations between serum biomarkers in psoriasis patients (n = 75)

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Discussion

The current study examined the blood levels of C-reactive protein (CRP), uric acid, and vitamin D in patients with chronic plaque psoriasis in a tertiary care setting in Bihar, compared to a control group who had been matched for age and sex. According to the findings, all psoriatic patients had significantly higher levels of uric acid and CRP, as well as a noticeable vitamin D deficit. Although the study was conducted in a single tertiary hospital in Bihar, the patterns of vitamin D deficiency, systemic inflammation, and metabolic dysregulation observed are consistent with global psoriasis trends. Therefore, the findings may be generalizable to populations in other developing regions with comparable environmental conditions, dietary habits, and sunlight exposure. These results support the notion that psoriasis is a systemic inflammatory illness with associated metabolic abnormalities in addition to being a cutaneous condition.

Vitamin D deficiency was present in all psoriatic group participants (mean 13.10 ± 3.74 ng/mL), which is in line with other earlier research that reported low 25(OH)D levels in psoriasis [6,7]. Vitamin D's immunomodulatory function is supported by the study's strong inverse relationship between vitamin D and CRP ($r = -0.691$, $p < 0.001$), as its absence may cause chronic inflammation by dysregulating T-cell function and permitting the unchecked production of pro-inflammatory cytokines, particularly TNF-α, IL-17, and IL-23 [15]. Even with enough solar exposure, vitamin D deficiency is nevertheless frequent in India because of cultural clothing norms, a lack of outdoor activity, and an inadequate diet [9]. This may assist in explaining the widespread insufficiency in the contemporary population and emphasizes the necessity of routine vitamin D screening and supplementation as an adjunct to psoriasis treatment.

Psoriatic patients had a substantially higher mean CRP (mean 6.83 ± 3.36 mg/L), a sensitive indicator of systemic inflammation, than controls (1.84 ± 1.56 mg/L; $p < 0.001$). Prior research has linked elevated CRP to psoriasis comorbidities, cardiovascular disease risk, and other disease severity [16–18]. Even in the absence of overt psoriatic arthritis or severe cutaneous involvement, psoriasis exerts a systemic inflammatory load, as evidenced by the fact that 50.7% of psoriatic patients in the current study had CRP levels ≥6 mg/L, while none of the controls showed such an increase. Further evidence that metabolic and inflammatory pathways may converge to increase cardiovascular and metabolic risk in these individuals comes from the positive association between CRP and uric acid ($r = +0.343$, $p < 0.001$).

It is becoming more widely acknowledged that hyperuricemia is a comorbidity of psoriasis, mainly due to enhanced purine metabolism brought on by rapid epidermal turnover [19,20]. In our investigation, psoriatic patients had considerably higher mean serum uric acid levels (5.64 ± 1.06 mg/dL) than controls (4.75 ± 1.32 mg/dL; $p < 0.001$). Gout, endothelial dysfunction, and oxidative stress have all been connected to elevated uric acid, and these conditions may exacerbate systemic inflammation. A possible interaction where dietary deficit may predispose to metabolic dysregulation, presumably via common inflammatory pathways, is indicated by the moderately negative association between vitamin D and uric acid ($r = -0.327$, $p < 0.001$).

The study's conclusions have significant clinical ramifications. First, systematic evaluation of vitamin D status should be taken into consideration in clinical practice, particularly in Indian populations where deficiency is common, given the universal vitamin D shortage seen in psoriatic patients. Second, even in the absence of conventional risk factors, higher CRP and uric acid values highlight the necessity of thorough metabolic and cardiovascular risk screening in psoriatic patients. Third, the associations found indicate that, in addition to improving skin lesions, vitamin D deficiency-correcting therapies may also modify systemic inflammation and metabolic imbalance, which may lower the long-term risk of comorbidities.

Future research should focus on longitudinal studies with larger sample sizes to validate these findings and evaluate the effect of vitamin D supplementation and uric acid-lowering therapy on both cutaneous and systemic outcomes in psoriasis. Randomized controlled trials may help establish whether correction of these biochemical abnormalities translates to improved disease control and reduction in cardiovascular risk.

Conclusion

In comparison to healthy controls, this study reveals a noteworthy biochemical profile in individuals with chronic plaque psoriasis, which is marked by severe vitamin D deficiency, elevated C-reactive protein, and raised uric acid levels. Since vitamin D and CRP have a strong inverse relationship, vitamin D deficiency may increase the inflammatory load associated with psoriasis, while

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hyperuricemia seems to worsen systemic metabolic stress. These results support the idea that psoriasis is a systemic inflammatory illness rather than a skin-specific ailment. Comprehensive care of psoriasis should take into account routine screening for uric acid levels, inflammatory markers, and vitamin D status, especially in Indian populations where vitamin D insufficiency is widespread. To ascertain if addressing these anomalies will enhance illness outcomes and lower long-term cardiovascular and metabolic risks, more longitudinal, interventional research is necessary.

Recommendation

Regular screening of vitamin D, uric acid, and CRP is advised in psoriasis patients to manage systemic inflammation and prevent complications.

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We thank the Department of Dermatology, IGIMS, Patna, and all study participants for their support.

List of Abbreviations:

1. **CRP** – C-reactive protein
2. **25(OH)D** – 25-hydroxyvitamin D
3. **SD** – Standard deviation
4. **PASI** – Psoriasis Area and Severity Index
5. **BMI** – Body mass index

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Conflict of interest

No conflict of interest declared.

Author Contributions

- **Conceptualization & Supervision:** Rekha Kumari
- **Study Design & Methodology:** Rajeev Kumar, Parmanand Raju
- **Data Collection & Laboratory Work:** Rajeev Kumar, Parmanand Raju
- **Statistical Analysis:** Pawan Pratap Singh
- **Manuscript Drafting & Editing:** Rajesh Sinha, Rekha Kumari

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References

1. Boehncke WH, Schön MP. Psoriasis. Lancet. 2015;386(9997):983-94. https://doi.org/10.1016/S0140-6736(14)61909-7
2. Lowes MA, Suárez-Fariñas M, Krueger JG. Immunology of psoriasis. Annu Rev Immunol. 2014;32:227-55. https://doi.org/10.1146/annurev-immunol-032713-120225
3. Takeshita J, Grewal S, Langan SM, et al. Psoriasis and comorbid diseases. J Am Acad Dermatol. 2017;76(3):377-90. https://doi.org/10.1016/j.jaad.2016.07.064
4. Dogra S, Yadav S. Psoriasis in India: prevalence and pattern. Indian J Dermatol Venereol Leprol. 2010;76(6):595-601. https://doi.org/10.4103/0378-6323.72443
5. Prietl B, Treiber G, Pieber TR, Amrein K. Vitamin D and immune function. Nutrients. 2013;5(7):2502-21. https://doi.org/10.3390/nu5072502
6. Gisondi P, Rossini M, Di Cesare A, et al. Vitamin D status in chronic plaque psoriasis: a case-control study. Br J Dermatol. 2012;166(3):505-10. https://doi.org/10.1111/j.1365-2133.2011.10699.x
7. Orgaz-Molina J, Buendía-Eisman A, Arrabal-Polo MA, et al. Deficiency of serum 25-hydroxyvitamin

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D in psoriatic patients: a case-control study. J Am Acad Dermatol. 2012;67(5):931-8. https://doi.org/10.1016/j.jaad.2012.01.040
8. Ni C, Yang P, Li Q. Association of psoriatic severity with serum vitamin D3 levels and vitamin D receptor gene polymorphism: an observational study. Medicine (Baltimore). 2020;99(14):e19581.
9. Aparna P, Muthathal S, Nongkynrih B, Gupta SK. Vitamin D deficiency in India. J Family Med Prim Care. 2018;7(2):324-30. https://doi.org/10.4103/jfmpc.jfmpc_78_18
10. Chi CC, Wang SH, Chen YF, et al. Serum uric acid and risk of psoriasis: a systematic review and meta-analysis. J Dermatol Sci. 2015;79(1):55-60.
11. Upala S, Jaruvongvanich V, Wijarnpreecha K. High serum uric acid levels are associated with increased risk of psoriasis: a systematic review and meta-analysis. J Dermatol Treat. 2016;27(5):488-92.
12. Armstrong AW, Harskamp CT, Armstrong EJ. Psoriasis and major adverse cardiovascular events: a systematic review and meta-analysis. J Am Heart Assoc. 2013;2(2):e000062. https://doi.org/10.1161/JAHA.113.000062
13. Gisondi P, Del Giglio M, Girolomoni G. Plasma C-reactive protein concentrations in patients with chronic plaque psoriasis. Br J Dermatol. 2007;156(6):1164-9.
14. Coto-Segura P, Buendía-Eisman A, Ruiz-Carrascosa JC, et al. C-reactive protein levels in psoriatic patients: relation with severity and clinical outcomes. Actas Dermosifiliogr. 2014;105(7):673-80.
15. Baeke F, Takiishi T, Korf H, Gysemans C, Mathieu C. Vitamin D: modulator of the immune system. Curr Opin Pharmacol. 2010;10(4):482-96. https://doi.org/10.1016/j.coph.2010.04.001
16. Coimbra S, Oliveira H, Reis F, Belo L, Rocha S, Quintanilha A, et al. C-reactive protein and leucocyte activation in psoriasis vulgaris according to severity and therapy. J Eur Acad Dermatol Venereol. 2010;24(7):789-96. https://doi.org/10.1111/j.1468-3083.2009.03527.x
17. Mehta NN, Yu Y, Pinnelas R, Krishnamoorthy P, Shin DB, Troxel AB, et al. Attributable risk estimate of severe psoriasis on major cardiovascular events. Am J Med. 2011;124(8):775.e1-6. https://doi.org/10.1016/j.amjmed.2011.03.028
18. Rocha-Pereira P, Santos-Silva A, Rebelo I, Figueiredo A, Quintanilha A, Teixeira F. Dislipidemia and oxidative stress in mild and in severe psoriasis as a risk for cardiovascular disease. Clin Chim Acta. 2001;303(1-2):33-9. https://doi.org/10.1016/S0009-8981(00)00358-2
19. Gisondi P, Targher G, Cazzaniga S, Chiarelli S, Girolomoni G. Uric acid levels in patients with chronic plaque psoriasis. J Am Acad Dermatol. 2014;70(6):1278-82. https://doi.org/10.1016/j.jaad.2013.09.005
20. Kanbay M, Yilmaz MI, Sonmez A, Solak Y, Saglam M, Cakir E, et al. Serum uric acid independently predicts cardiovascular events in advanced nephropathy. Am J Nephrol. 2012;36(4):324-31. https://doi.org/10.1159/000342390

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