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Change Only in Food Habits Can Effectively Help in Treating Chronic Skin Diseases- A Group Study

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ABSTRACT

Background: Chronic inflammatory dermatoses, such as psoriasis, lichen planus, and atopic eczema, significantly impair quality of life and often require long-term pharmacological therapy. Emerging evidence suggests that dietary modifications play a role in modulating inflammation and improving dermatologic outcomes.

Methods: This prospective interventional group study included 60 adult patients diagnosed with psoriasis (n=22), atopic dermatitis (n=20), or lichen planus (n=18). Participants followed a structured anti-inflammatory diet for 16 weeks, eliminating dairy, refined sugars, processed foods, gluten, and red meat, while emphasising whole plant-based foods, hydration, and omega-3–rich ingredients. No concurrent topical or systemic medications were permitted. Disease severity was assessed using the Psoriasis Area and Severity Index (PASI), Total Clinical Score (TCS), Visual Analogue Scale (VAS) for pruritus, and Dermatology Life Quality Index (DLQI), recorded at baseline and 16 weeks. Dietary adherence and adverse events were also monitored.

Results: Significant reductions in disease severity were observed across all groups. Mean PASI score in psoriasis patients declined from 9.1±2.8 to 3.2±1.7; TCS scores in eczema and lichen planus improved similarly. VAS pruritus scores and DLQI scores showed marked reductions ($p<0.001$). Good dietary compliance (≥80%) was achieved in 70% of participants. No serious adverse events were reported.

Conclusion: Exclusive dietary modification led to significant clinical improvement and enhanced quality of life in patients with chronic inflammatory skin conditions. These findings highlight the potential of non-pharmacologic, nutrition-based strategies as adjunct or standalone therapies in dermatology.

Key-words: Chronic skin disease, Chronic inflammatory dermatoses, diet, Quality of life, Non-pharmacologic treatment

INTRODUCTION

Chronic inflammatory dermatoses, including psoriasis, endogenous eczema, and lichen planus, impose significant physical discomfort and psychosocial burden, often persisting despite conventional therapy [1].

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While standard treatments—such as topical corticosteroids, systemic immunomodulators, and biologics—provide relief, they may carry adverse effects and incomplete long-term efficacy [2,3]. Consequently, there is growing interest in non-pharmacologic strategies that target underlying inflammatory mechanisms with fewer side effects.

Diet and lifestyle, as modifiable environmental factors, play a recognised role in systemic inflammation and the function of the skin barrier. Several observational and interventional studies have highlighted the impact of dietary patterns on outcomes of chronic skin diseases. A randomized controlled trial reported that a gluten-free

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diet reduced severity scores in patients with psoriasis, notably in those with serologic markers of gluten sensitivity [4]. Similarly, adherence to a Mediterranean-style, anti-inflammatory diet was associated with lower PASI scores in a cohort of adults with psoriasis [5].

Dietary modifications have also shown promise in atopic and endogenous eczema. In one interventional study, the elimination of dairy and ultra-processed foods led to a decrease in eczema severity and pruritus over 12 weeks [6]. Nutrient intake, including omega-3 fatty acids and antioxidants, has been observed to influence inflammatory markers and epidermal barrier integrity, supporting a mechanistic justification for dietary intervention [7,8].

Emerging data suggest that lichen planus may also benefit from dietary adjustments. A pilot study found that patients who adopted a low-glycemic, high-plant diet exhibited significant reductions in clinical scoring for oral and cutaneous lichen planus after eight weeks [9]. This suggests that common dietary pathways may influence various chronic dermatoses by modulating inflammation and oxidative stress.

Despite growing interest, few group-based interventional studies have evaluated whether dietary change alone, without adjunctive pharmacotherapy, can produce meaningful clinical improvement across multiple dermatological conditions. Participants in most studies continued standard care, making it difficult to isolate the diet's direct impact.

This study investigates the hypothesis that structured dietary modifications alone—emphasising the elimination of processed foods, refined sugars, dairy, and gluten, and increasing intake of anti-inflammatory whole foods—can significantly improve clinical severity and quality of life in patients with psoriasis, atopic dermatitis, or lichen planus over 16 weeks.

By focusing exclusively on changes in food habits and utilising validated outcome measures (PASI, Total Clinical Score, VAS for pruritus, DLQI), this study aims to determine whether nutrition-based interventions can serve as effective monotherapy for chronic skin disease.

MATERIALS AND METHODS

Study Design and Participants- This prospective, interventional, group-based study was conducted over 16 weeks at a tertiary care dermatology centre. A total of 60 participants diagnosed with chronic dermatological conditions, including psoriasis, atopic dermatitis (also known as chronic eczema), and lichen planus, were enrolled after obtaining written informed consent. All patients were aged between 18 and 60 years and had persistent dermatologic symptoms for at least six months before enrollment.

Inclusion and Exclusion Criteria- The inclusion criteria were patients with histologically or clinically confirmed diagnoses of chronic inflammatory skin disorders and a willingness to follow dietary recommendations exclusively, without concurrent pharmacological or topical treatments. Exclusion criteria included patients currently undergoing immunosuppressive therapy, systemic corticosteroids, biologics, or those with underlying endocrine or autoimmune comorbidities that could affect skin health (e.g., diabetes mellitus, thyroid dysfunction).

Dietary Intervention- Participants were educated and placed on a structured dietary regimen that emphasised anti-inflammatory food habits. The prescribed plan involved eliminating processed foods, refined sugars, dairy products, red meat, and gluten. Emphasis was placed on plant-based whole foods, seasonal fruits and vegetables, omega-3–rich foods (e.g., flaxseeds, walnuts), and increased hydration. Caffeinated beverages and alcohol were restricted. Participants received weekly dietary counseling from a certified clinical nutritionist to ensure compliance and track adherence.

Monitoring and Compliance- Diet adherence was monitored through weekly telephonic follow-ups and food diaries maintained by each participant. Compliance was categorized as good (≥80%), moderate (50–79%), or poor (<50%). Patients were instructed to avoid all external skin medications, including topical steroids and moisturizers, throughout the study duration.

Outcome Measures- The primary outcome was clinical improvement in skin lesion severity, as assessed by dermatologists using standardized scoring tools appropriate to the diagnosis: Psoriasis Area and Severity Index (PASI) for psoriasis, Total Clinical Score (TCS) for eczema and lichen planus, and Visual Analogue Scale (VAS) for pruritus. The Dermatology Life Quality Index

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(DLQI) was used to assess quality of life. Assessments were conducted at baseline, 8 weeks, and 16 weeks.

Statistical Analysis- Data were compiled and analyzed using SPSS version 26.0. Continuous variables were expressed as means±standard deviations, and categorical data as percentages. Paired t-tests were applied to compare pre- and post-intervention scores depending on the normality of distribution. A $p<0.05$ was considered statistically significant.

RESULTS

The study included a total of 60 participants diagnosed with chronic dermatological conditions. The mean age of the study population was in the mid-thirties, with a slight male predominance. The average disease duration exceeded one year, and the distribution of clinical diagnoses included psoriasis, endogenous eczema, and lichen planus in roughly comparable proportions (Table 1).

Table 1: Baseline Characteristics of Study Participants

Variable	Value	Percentage / SD
Number of Participants	60	1
Mean Age (years)	36.4	±10.2
Gender (Male/Female)	34 / 26	56.7% / 43.3%
Mean Disease Duration (months)	14.8	±6.1
Diagnosed Skin Conditions		
– Psoriasis	22	36.70
– Chronic Eczema (Endogenous)	20	33.30
– Lichen Planus	18	30

Dietary compliance over the 16 weeks was satisfactory in the majority of participants. Seventy percent of patients demonstrated good adherence to the prescribed food modifications, with only a minority reporting poor compliance (Table 2).

Table 2: Dietary Compliance Over 16 Weeks

Compliance Level	Number of Participants	Percentage (%)
Good (≥80%)	42	70
Moderate (50–79%)	12	20
Poor (<50%)	6	10

A significant reduction in disease severity was observed across all three diagnostic categories throughout the study. In participants with psoriasis, the PASI scores showed a marked decline by the end of the intervention period. Similarly, both eczema and lichen planus groups demonstrated substantial improvement in clinical severity, as reflected in the Total Clinical Score (TCS) metrics. Furthermore, the intensity of pruritus, assessed by the Visual Analogue Scale (VAS), also declined significantly, indicating symptomatic relief (Table 3).

Table 3: Change in Disease Severity Scores (Baseline to 16 Weeks)

Outcome Measure	Baseline Score Mean±SD)	16 Weeks Score (Mean±SD)	p-value
PASI (Psoriasis, n=22)	9.1±2.8	3.2±1.7	<0.001
TCS (Eczema, n=20)	11.4±3.1	4.5±2.2	<0.001
TCS (LP, n=18)	10.9±3.3	5.1±2.1	<0.001
VAS for Pruritus	6.9±1.9	2.4±1.3	<0.001

The quality of life, as measured by the Dermatology Life Quality Index (DLQI), improved significantly over the intervention period. There was a statistically significant reduction in DLQI scores from baseline to 16 weeks, reflecting a favorable psychosocial and functional impact of dietary modification alone (Table 4).

Table 4: Change in Dermatology Life Quality Index (DLQI)

Time Point	Mean DLQI±SD	p-value
Baseline	12.8±3.5	-
At 16 Weeks	5.3±2.6	<0.001

DISCUSSION

This study demonstrates that exclusive dietary modification, without the aid of pharmacological therapy, can significantly improve clinical disease severity and quality of life in patients with chronic dermatological conditions, including psoriasis, atopic eczema, and lichen planus. The findings suggest that adopting an anti-inflammatory, plant-rich dietary pattern may serve as an effective standalone intervention in managing skin inflammation and pruritus.

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The observed improvements in PASI, TCS, VAS, and DLQI scores are consistent with prior evidence supporting the role of diet in the management of cutaneous inflammatory disorders. Barrea et al. found that adherence to a Mediterranean diet—characterized by high intake of fruits, vegetables, nuts, and whole grains—was inversely associated with psoriasis severity, likely due to its anti-inflammatory and antioxidant properties [5]. Similarly, a trial conducted by Ismail AMA *et al.* reported that patients with psoriasis who followed a hypocaloric, anti-inflammatory diet showed a marked reduction in PASI scores, suggesting that diet can modulate systemic inflammatory responses [10].

Patients with eczema have also been shown to benefit from eliminating common allergens and pro-inflammatory foods from their diet. Kim *et al.* observed that a six-week elimination diet resulted in significant symptom relief for patients with chronic atopic dermatitis, particularly when dairy, refined sugars, and food additives were excluded [11]. In our study, patients with endogenous eczema demonstrated clinically significant TCS improvement, even without topical therapies, reinforcing the therapeutic potential of food-based interventions.

The reduction in pruritus across all diagnostic groups, as measured by the VAS, may be attributed to suppression of mast cell activation and inflammatory cytokine release—a hypothesis supported by findings from Galli *et al*., who linked dietary omega-3 fatty acids with reduced histamine-mediated inflammation [12]. Additionally, the enhancement in DLQI scores in this study indicates not only clinical remission but also a meaningful impact on patients' daily functioning and psychosocial well-being.

Interestingly, dietary change also appeared effective in patients with lichen planus—a condition traditionally managed with immunosuppressants. Although data in this area remain limited, a pilot study by Carrozzo *et al.* reported symptom reduction in oral lichen planus following the adoption of a low-glycemic index diet, hypothesising that decreased insulin-like growth factor signalling may influence epithelial proliferation and inflammation [13]. Our results further support this potential therapeutic avenue.

A noteworthy strength of our study is the exclusive use of diet as an intervention, without concurrent use of topical or systemic drugs. This design eliminates confounding from pharmacotherapy and isolates the effect of food habit modification. Moreover, the high adherence rate (70% with good compliance) underscores the feasibility of sustained dietary intervention when structured guidance and motivation are provided.

However, limitations include the lack of a control group and the absence of objective inflammatory markers (e.g., IL-6, TNF-α) to correlate clinical improvement with biological changes. Additionally, the open-label design may introduce reporting bias. Future randomised controlled trials with biomarker analysis and long-term follow-up are necessary to validate these findings and elucidate the mechanistic pathways.

CONCLUSIONS

This study provides preliminary evidence that focused dietary changes, emphasising the elimination of inflammatory triggers and the promotion of plant-based whole foods, may offer a safe, cost-effective, and non-pharmacological strategy to manage chronic inflammatory skin diseases. The clinical and quality-of-life improvements observed support the integration of nutritional counselling into routine dermatological practice.

CONTRIBUTION OF AUTHORS

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