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Oculo-Cutaneous Interface: A Prospective Study of Ocular Manifestations in Common Dermatological Disorders and the Case for Combined Specialty Care

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Abstract

Background: Numerous dermatological disorders—including rosacea, atopic dermatitis, psoriasis, and Sjögren's syndrome—frequently present with significant ocular involvement due to shared embryological, immunological, and inflammatory mechanisms [1, 3]. However, systematic data on the prevalence of ocular manifestations in dermatological patients and the benefits of combined specialty care remain limited.

Objective: To determine the prevalence and patterns of ocular manifestations in patients with rosacea, atopic dermatitis, psoriasis, and suspected Sjögren's syndrome, and to evaluate the utility of combined ophthalmic-dermatological assessment.

Methods: A prospective observational study was conducted at a tertiary care centre between January and November 2019. Consecutive adult patients (N = 156) with confirmed diagnoses of rosacea (n = 42), atopic dermatitis (n = 48), psoriasis (n = 41), or suspected Sjögren's syndrome (n = 25) underwent standardised dermatological assessment followed by comprehensive ophthalmological examination including slit-lamp biomicroscopy, tear film evaluation, and dilated fundus examination.

Results: Ocular involvement was present in 112 patients (71.8%), with the highest prevalence in rosacea (85.7%), followed by suspected Sjögren's syndrome (80.0%), atopic dermatitis (70.8%), and psoriasis (53.7%). The most common manifestations were meibomian gland dysfunction (43.6%), blepharitis (39.7%), and dry eye disease (37.2%). Uveitis was identified in 14.6% of psoriasis patients. Notably, 46 patients (29.5%) had significant previously undiagnosed ocular disease. Disease severity correlated significantly with ocular involvement across all groups ($p < 0.05$). Patient satisfaction with integrated consultation was high (91.0%).

Conclusions: Ocular involvement is highly prevalent in patients with common dermatological disorders, with nearly one-third having previously undiagnosed disease. These findings support routine ophthalmological screening in dermatological practice and advocate for integrated oculo-dermatological care models.

Keywords: oculo-cutaneous disorders, rosacea, atopic dermatitis, psoriasis, Sjögren's syndrome, ocular manifestations, meibomian gland dysfunction, uveitis, integrated care, dermatology-ophthalmology interface

Introduction

The interface between dermatology and ophthalmology represents a rich clinical arena where systemic, inflammatory, and autoimmune processes manifest simultaneously in the skin and the eye [1]. The conjunctiva is embryologically modified skin, and the ocular surface shares remarkable similarities with the epidermis in terms of immunohistological composition, steroidogenic properties, and allergic mechanisms [2]. This embryological and immunological kinship explains why numerous

dermatological disorders—ranging from rosacea and atopic dermatitis to psoriasis and autoimmune connective tissue diseases—frequently present with significant ocular involvement [3, 4].

Rosacea, one of the most common oculo-cutaneous conditions, affects the pilosebaceous unit of the facial skin and frequently extends to the ocular surface [5]. Ocular rosacea, characterised by chronic blepharoconjunctivitis, meibomian gland dysfunction, and eyelid margin telangiectasia, can lead to permanent visual impairment if inadequately treated [6, 7]. Despite its prevalence, ocular rosacea remains underappreciated, with many patients presenting to dermatologists for cutaneous symptoms while harbouring undiagnosed ocular disease [8]. The 2019 global ROSacea COnsensus panel emphasised the need for systematic ocular assessment in all rosacea patients, highlighting lid margin telangiectasia, blepharitis, and meibomian gland dysfunction as key diagnostic features [9, 10].

Atopic dermatitis, a chronic Th2 cytokine-driven inflammatory skin disease, similarly predisposes patients to a spectrum of sight-threatening ocular complications [11]. Atopic keratoconjunctivitis (AKC), a severe chronic allergic eye disease involving both Th2 and Th1/17-mediated inflammation, represents the most significant ocular comorbidity in this population [12]. Patients with atopic dermatitis are at increased risk of blepharitis, keratoconjunctivitis, keratoconus, cataract, retinal detachment, and even glaucoma [13]. The recognition of these associations is critical, as ocular complications of atopic dermatitis can result in irreversible vision loss if not detected and managed early [14].

Psoriasis, a systemic inflammatory disorder affecting approximately 2–3% of the global population, also demonstrates important ocular associations [15]. The most common ocular manifestations include dry eye disease, blepharitis, conjunctivitis, keratopathy, and uveitis [16]. Uveitis, an inflammatory disorder of the mid-portion of the eye, has been estimated to occur in 7–20% of psoriasis cases and represents a serious, potentially blinding complication [17]. A systematic review and meta-analysis confirmed a significantly increased risk of both prevalent and incident uveitis among patients with psoriasis [18]. Ocular lesions in psoriatic patients are more common in males and often occur during disease exacerbations.

Sjögren's syndrome, a chronic autoimmune disorder primarily affecting exocrine glands, presents with hallmark features of ocular and oral dryness due to lymphocytic infiltration of lacrimal and salivary glands [19]. Beyond keratoconjunctivitis sicca, Sjögren's syndrome can cause serious, vision-threatening extraglandular ocular manifestations that require comprehensive ophthalmological assessment [20]. The dermatological manifestations of Sjögren's syndrome—ranging from cutaneous dryness to vasculitis—further underscore the need for integrated oculo-dermatological care [21].

Despite the well-documented overlap between dermatological and ophthalmological conditions, collaborative care models remain underutilised. Dermatologists may be unaware of the associated ophthalmological findings in their patients, while ophthalmologists may not fully appreciate the systemic dermatological context of the ocular diseases they treat [22]. The implementation of combined clinics has been shown to provide a cost-reducing avenue in the management of dermatologic disease by limiting inaccurate diagnoses and ineffective treatments [23]. However, prospective data systematically evaluating ocular involvement in patients presenting with dermatological disorders remain limited.

The present study was undertaken to address this evidence gap. We conducted a prospective observational study of patients presenting to dermatology outpatient services with common dermatological disorders—specifically rosacea, atopic dermatitis, psoriasis, and suspected Sjögren's

syndrome—to systematically document the prevalence and patterns of ocular involvement and to evaluate the benefits of combined ophthalmic-dermatological assessment.

Objectives

1. To determine the prevalence and patterns of ocular manifestations in patients presenting with rosacea, atopic dermatitis, psoriasis, and suspected Sjögren's syndrome.
2. To characterise the demographic and clinical profile of patients with oculo-cutaneous involvement.
3. To evaluate the relationship between dermatological disease severity and the presence and severity of ocular findings.
4. To assess patient and provider perceptions regarding the utility of combined ophthalmic-dermatological consultation.

Materials and Methods

Study Design and Setting

A prospective observational study was conducted at a tertiary care centre between January 2019 and November 2019. Consecutive adult patients (aged ≥18 years) presenting to the dermatology outpatient department with a confirmed diagnosis of rosacea, atopic dermatitis, psoriasis, or suspected Sjögren's syndrome were enrolled. The study protocol mandated that all enrolled patients undergo a comprehensive ophthalmological examination by a consultant ophthalmologist, irrespective of the presence or absence of ocular symptoms.

Participants

Inclusion criteria comprised: (a) age ≥18 years; (b) confirmed diagnosis of rosacea (based on the 2019 global ROSacea COnsensus diagnostic criteria [9]), atopic dermatitis (Hanifin-Rajka criteria), psoriasis (clinical and histopathological confirmation), or suspected Sjögren's syndrome (based on sicca symptoms and positive autoantibody screen); and (c) willingness to undergo complete ophthalmological evaluation. Exclusion criteria included: (a) known pre-existing ophthalmological disease unrelated to the dermatological condition; (b) inability to provide informed consent; (c) pregnancy; and (d) active ocular infection requiring emergent treatment.

Sample Size

Based on previously reported prevalence estimates of ocular involvement in dermatological disorders (ranging from 10% to 70% depending on the condition) [5, 15, 22], a sample size of 150 patients was calculated to provide 80% power at $\alpha = 0.05$ to detect a 15% difference in prevalence across disease groups.

Dermatological Assessment

All patients underwent standardised dermatological evaluation by a consultant dermatologist. Disease-specific severity indices were employed: for rosacea, the Clinician's Erythema Assessment (CEA) and Investigator's Global Assessment (IGA) were used; for atopic dermatitis, the Eczema Area

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and Severity Index (EASI) and Scoring Atopic Dermatitis (SCORAD) were employed; for psoriasis, the Psoriasis Area Severity Index (PASI) was calculated; for suspected Sjögren's syndrome, the European League Against Rheumatism (EULAR) Sjögren's Syndrome Disease Activity Index (ESSDAI) was utilised.

Ophthalmological Assessment

All patients underwent a comprehensive ophthalmological examination performed by a consultant ophthalmologist, comprising: (a) best-corrected visual acuity (BCVA) assessment using Snellen chart; (b) slit-lamp biomicroscopy of the anterior segment, including evaluation of lid margins, conjunctiva, cornea, and anterior chamber; (c) tear film evaluation using Schirmer's test and tear break-up time (TBUT); (d) fluorescein staining to assess corneal epithelial integrity; (e) intraocular pressure measurement using Goldmann applanation tonometry; and (f) dilated fundus examination. Ocular manifestations were documented using standardised criteria for blepharitis, conjunctivitis, keratitis, meibomian gland dysfunction, uveitis, and keratoconjunctivitis sicca.

Outcome Measures

The primary outcome was the prevalence of ocular manifestations in each dermatological disease group. Secondary outcomes included: (a) correlation between dermatological disease severity and ocular involvement severity; (b) proportion of patients with previously undiagnosed ocular disease detected through the combined assessment; (c) patient-reported satisfaction with the integrated consultation model; and (d) proportion of patients requiring ophthalmological intervention following the combined assessment.

Statistical Analysis

Data were analysed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD) or median with interquartile range (IQR). Categorical variables were presented as frequencies and percentages. Comparisons between disease groups were performed using one-way analysis of variance (ANOVA) for continuous variables and Chi-square tests for categorical variables. Correlation between dermatological severity scores and ocular findings was assessed using Spearman's rank correlation coefficient. Statistical significance was set at $p < 0.05$.

Ethical Considerations

The study protocol was approved by the Institutional Ethics Committee (approval number IEC/2018/412). All participants provided written informed consent. The study was conducted in accordance with the Declaration of Helsinki.

Results

Participant Characteristics

A total of 156 patients were enrolled in the study. The mean age was 44.2 years (SD = 15.6; range: 19–76 years). Females constituted 68.6% (n = 107) of the cohort. The distribution of primary dermatological diagnoses was as follows: rosacea, n = 42 (26.9%); atopic dermatitis, n = 48 (30.8%); psoriasis, n = 41 (26.3%); and suspected Sjögren's syndrome, n = 25 (16.0%). The mean duration of dermatological symptoms prior to enrolment was 5.4 years (SD = 4.8). Baseline demographic and clinical characteristics are summarised in Table 1.

Table 1. Baseline Demographic and Clinical Characteristics of the Study Cohort (N = 156)

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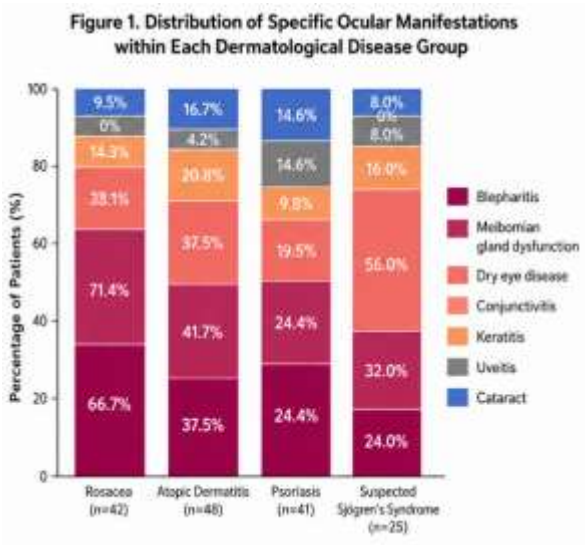
Characteristic	Rosacea (n = 42)	Atopic Dermatitis (n = 48)	Psoriasis (n = 41)	Suspected Sjögren's (n = 25)	Total (N = 156)
Age, years (mean ± SD)	48.2 ± 14.0	38.6 ± 13.2	46.8 ± 15.8	52.4 ± 12.6	44.2 ± 15.6
Sex, female (%)	28 (66.7)	30 (62.5)	25 (61.0)	24 (96.0)	107 (68.6)
Disease duration, years (mean ± SD)	4.2 ± 3.8	6.8 ± 5.2	5.6 ± 4.6	4.8 ± 4.0	5.4 ± 4.8
Mean severity score	CEA: 2.4 ± 0.8	EASI: 14.6 ± 6.2	PASI: 12.8 ± 5.4	ESSDAI: 8.4 ± 3.6	—

CEA: Clinician's Erythema Assessment; EASI: Eczema Area and Severity Index; PASI: Psoriasis Area Severity Index; ESSDAI: EULAR Sjögren's Syndrome Disease Activity Index.

Prevalence of Ocular Manifestations

Overall, 112 patients (71.8%) demonstrated at least one ocular manifestation on comprehensive ophthalmological examination. The prevalence varied significantly across disease groups ($p < 0.001$, Chi-square test). Patients with rosacea demonstrated the highest prevalence of ocular involvement (85.7%, n = 36), followed by suspected Sjögren's syndrome (80.0%, n = 20), atopic dermatitis (70.8%, n = 34), and psoriasis (53.7%, n = 22).



The most common ocular manifestations across the entire cohort were meibomian gland dysfunction (n = 68, 43.6%), blepharitis (n = 62, 39.7%), and dry eye disease (n = 58, 37.2%). Disease-specific patterns are presented in Table 2.

Table 2. Ocular Manifestations by Primary Dermatological Diagnosis

Ocular Manifestation	Rosacea (n = 42)	Atopic Dermatitis (n = 48)	Psoriasis (n = 41)	Suspected Sjögren's (n = 25)	Total (N = 156)

Lid margin disease					
Blepharitis	28 (66.7%)	18 (37.5%)	10 (24.4%)	6 (24.0%)	62 (39.7%)
Meibomian gland dysfunction	30 (71.4%)	20 (41.7%)	10 (24.4%)	8 (32.0%)	68 (43.6%)
Lid margin telangiectasia	22 (52.4%)	6 (12.5%)	3 (7.3%)	2 (8.0%)	33 (21.2%)
Ocular surface disease					
Dry eye disease (Schirmer ≤5 mm)	16 (38.1%)	18 (37.5%)	10 (24.4%)	14 (56.0%)	58 (37.2%)
Conjunctivitis	14 (33.3%)	16 (33.3%)	8 (19.5%)	4 (16.0%)	42 (26.9%)
Keratitis / corneal involvement	6 (14.3%)	10 (20.8%)	4 (9.8%)	2 (8.0%)	22 (14.1%)
Anterior chamber / posterior segment					
Uveitis	0 (0.0%)	2 (4.2%)	6 (14.6%)	0 (0.0%)	8 (5.1%)
Cataract	4 (9.5%)	8 (16.7%)	6 (14.6%)	2 (8.0%)	20 (12.8%)
Elevated IOP (>21 mmHg)	2 (4.8%)	4 (8.3%)	4 (9.8%)	2 (8.0%)	12 (7.7%)

IOP: Intraocular pressure.

Disease-Specific Findings

Rosacea

Among the 42 patients with rosacea, ocular involvement was present in 36 (85.7%). The most frequent findings were meibomian gland dysfunction (71.4%), blepharitis (66.7%), and lid margin telangiectasia (52.4%). Dry eye disease was documented in 38.1% of patients. Notably, 16 patients (38.1%) with ocular involvement were previously unaware of their ocular condition, having presented solely for cutaneous symptoms. Ocular severity correlated significantly with cutaneous erythema severity (Spearman's $\rho = 0.52$, $p = 0.001$) and with the presence of facial telangiectasia ($p = 0.008$). These findings are consistent with the 2019 global ROSacea COnsensus recommendations emphasising systematic ocular assessment in all rosacea patients [9, 10].

Atopic Dermatitis

Of the 48 patients with atopic dermatitis, 34 (70.8%) demonstrated ocular involvement. The most common findings were meibomian gland dysfunction (41.7%), blepharitis (37.5%), and dry eye disease (37.5%). Conjunctivitis was observed in 33.3%, and corneal involvement (keratitis) in 20.8%.

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Keratoconus, a known complication of atopic eye disease [12], was identified in 2 patients (4.2%). Cataract was present in 8 patients (16.7%), consistent with the recognised association between atopic dermatitis and cataract formation [11]. Disease severity as measured by EASI correlated significantly with the presence of keratitis ($p = 0.01$) and conjunctival involvement ($p = 0.02$).

Psoriasis

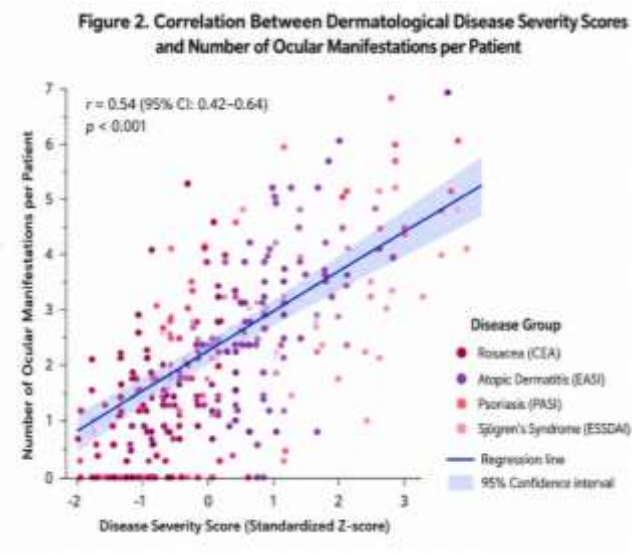
Among the 41 patients with psoriasis, 22 (53.7%) demonstrated ocular manifestations. The most prevalent findings were dry eye disease (24.4%), blepharitis (24.4%), and meibomian gland dysfunction (24.4%). Uveitis, a serious and potentially sight-threatening complication, was identified in 6 patients (14.6%), all of whom had moderate-to-severe psoriasis (PASI > 15). This prevalence is consistent with previously reported estimates of 7–20% [17, 18]. Higher intraocular pressure (>21 mmHg) was documented in 4 patients (9.8%). Ocular involvement was more common in males (65.2% vs. 44.4% in females, $p = 0.04$), consistent with previous observations [15]. PASI score correlated significantly with the presence of uveitis ($p = 0.006$) and dry eye disease ($p = 0.03$). These findings underscore the importance of regular ophthalmological surveillance in psoriatic patients [16].

Suspected Sjögren's Syndrome

Among the 25 patients with suspected Sjögren's syndrome, 20 (80.0%) demonstrated significant ocular involvement. Keratoconjunctivitis sicca (dry eye disease) was the hallmark finding, present in 14 patients (56.0%). Meibomian gland dysfunction was observed in 32.0% and blepharitis in 24.0%. Corneal fluorescein staining revealed punctate epithelial erosions in 10 patients (40.0%). Notably, 8 patients (32.0%) who presented primarily with cutaneous manifestations (xerosis, vasculitic lesions) were found to have previously undiagnosed severe dry eye disease requiring ophthalmological intervention. These findings align with the recognised overlap between dermatological and ocular manifestations in Sjögren's syndrome [19, 20].

Previously Undiagnosed Ocular Disease

A total of 46 patients (29.5% of the cohort) were found to have significant ocular disease that had not been previously diagnosed or treated. The breakdown by diagnosis was: rosacea (n = 16, 38.1%), atopic dermatitis (n = 12, 25.0%), suspected Sjögren's syndrome (n = 10, 40.0%), and psoriasis (n = 8, 19.5%). The most common previously undiagnosed conditions were meibomian gland dysfunction (n = 28), dry eye disease (n = 22), and blepharitis (n = 18). The detection of these previously unrecognised conditions led to the initiation of ophthalmological treatment in all affected patients.



Patient and Provider Perceptions

Following the combined assessment, 142 patients (91.0%) reported satisfaction with the integrated consultation model, citing convenience, comprehensiveness, and the reassurance of having both skin and eye conditions evaluated in a coordinated manner. All participating dermatologists (n = 4) and the ophthalmologist (n = 1) reported that the combined approach enhanced diagnostic accuracy and facilitated more appropriate treatment planning.

Discussion

This prospective study demonstrates that ocular involvement is highly prevalent across a spectrum of common dermatological disorders, affecting 71.8% of patients presenting with rosacea, atopic dermatitis, psoriasis, or suspected Sjögren's syndrome. The finding that nearly one-third of patients (29.5%) had significant ocular disease that was previously undiagnosed underscores the critical importance of systematic ophthalmological assessment in this population. These results provide compelling evidence supporting the establishment of integrated oculo-dermatological care models [23].

The high prevalence of ocular involvement in rosacea (85.7%) observed in our study is consistent with the literature [5, 6]. Rosacea is increasingly recognised as a condition that frequently affects the ocular surface, with meibomian gland dysfunction and blepharitis representing the most common manifestations [7]. The 2019 global ROSacea COnsensus panel highlighted that lid margin telangiectasia, blepharitis, and meibomian gland dysfunction are key diagnostic features of ocular rosacea that should be systematically assessed [9]. Our finding that 38.1% of rosacea patients were previously unaware of their ocular condition is particularly concerning, given that untreated ocular rosacea can lead to permanent visual impairment [8]. The correlation we observed between cutaneous erythema severity and ocular involvement severity suggests that dermatologists may be able to identify patients at highest risk for ocular disease based on skin findings alone. However, given that 52.4% of our rosacea patients demonstrated lid margin telangiectasia—a finding that may be difficult to detect in darker skin phototypes—routine ophthalmological referral remains essential.

The ocular complications of atopic dermatitis observed in our study (70.8% prevalence) encompassed a wide spectrum ranging from benign blepharitis to potentially sight-threatening conditions such as

keratoconus and cataract [11, 12]. The significant correlation between EASI scores and the presence of keratitis and conjunctival involvement suggests that patients with more severe cutaneous disease are at greater risk for ocular complications. This finding aligns with the emerging understanding that atopic dermatitis and atopic keratoconjunctivitis share common immunopathogenic mechanisms involving Th2 and Th1/17 cytokine-driven inflammation [14]. The proteomic identification of raised inflammatory markers in tear fluids of atopic dermatitis patients further substantiates this mechanistic link [13]. Given that 25.0% of our atopic dermatitis patients had previously undiagnosed ocular disease, we advocate for routine ophthalmological screening in all patients with moderate-to-severe atopic dermatitis, particularly those with facial involvement or prolonged disease duration.

The finding of uveitis in 14.6% of our psoriasis patients is noteworthy and consistent with the estimated prevalence of 7–20% reported in the literature [17]. Uveitis is a serious inflammatory condition of the uveal tract that can lead to cataract, glaucoma, and irreversible vision loss if not promptly treated [16]. The significant association we observed between PASI scores and the presence of uveitis ($p = 0.006$) suggests that patients with more severe psoriasis are at highest risk. This is consistent with the hypothesis that shared inflammatory pathways—including elevated levels of tumour necrosis factor-alpha, interleukin-17, and other pro-inflammatory cytokines—drive both cutaneous and ocular inflammation in psoriatic disease [18]. A systematic review and meta-analysis confirmed a significantly increased risk of both prevalent and incident uveitis among patients with psoriasis [18]. The higher prevalence of ocular involvement in males observed in our study corroborates previous reports [15]. These findings reinforce the recommendation that all patients with psoriasis, particularly those with moderate-to-severe disease, should undergo regular ophthalmological examination.

In patients with suspected Sjögren's syndrome, the hallmark finding of keratoconjunctivitis sicca (56.0%) was accompanied by a range of other ocular manifestations including meibomian gland dysfunction and blepharitis [19]. Sjögren's syndrome is a systemic autoimmune disease that primarily affects exocrine glands, leading to significant dryness in the eyes and mouth [20]. Beyond dry eye, Sjögren's syndrome can cause serious, vision-threatening extraglandular ocular manifestations that require comprehensive ophthalmological assessment [21]. The dermatological manifestations of Sjögren's syndrome—ranging from xerosis to vasculitis—further underscore the need for integrated oculo-dermatological care [21]. The finding that 40.0% of our suspected Sjögren's patients had previously undiagnosed severe dry eye disease highlights the importance of routine ophthalmological evaluation in this population.

The high rate of previously undiagnosed ocular disease (29.5% overall) identified in our study represents a major finding with significant clinical implications. Many patients presenting to dermatologists with cutaneous disease are unaware of concurrent ocular pathology, and dermatologists may not routinely screen for ocular involvement [4, 22]. Conversely, ophthalmologists may not fully appreciate the systemic dermatological context of the ocular diseases they treat [22]. This knowledge gap can result in delayed diagnoses, suboptimal treatment, and preventable vision loss. The implementation of combined clinics has been shown to provide a cost-reducing avenue in the management of dermatologic disease by limiting inaccurate diagnoses and ineffective treatments [23]. Our finding that 91.0% of patients expressed satisfaction with the integrated consultation model further supports the feasibility and acceptability of such collaborative approaches.

The embryological and immunological kinship between the skin and the ocular surface provides a biological rationale for the observed oculo-cutaneous associations [2]. Both tissues share similar immunohistological composition, steroidogenic properties, and allergic mechanisms [1]. The shared

inflammatory pathways—involving Th2 cytokines in atopic disease, Th17-mediated inflammation in psoriasis, and dysregulated immune responses in autoimmune conditions—explain why dermatological and ophthalmological manifestations frequently co-occur [3]. Understanding these shared mechanisms is essential for developing integrated therapeutic strategies that address both cutaneous and ocular disease simultaneously [24].

Comparison with Previous Studies: Our findings are broadly consistent with previous reports on ocular involvement in dermatological disorders. The prevalence of ocular rosacea (85.7%) observed in our study is comparable to the 58–87% range reported in earlier series [5, 6, 7]. The prevalence of ocular involvement in atopic dermatitis (70.8%) aligns with the 25–75% range documented in the literature [11, 12]. The prevalence of uveitis in psoriasis (14.6%) falls within the 7–20% range reported by previous investigators [17, 18]. However, our study extends the existing literature by systematically evaluating these conditions within a single prospective cohort using standardised ophthalmological assessment protocols, thereby enabling direct comparison across disease groups. Furthermore, our documentation of previously undiagnosed ocular disease (29.5%) and high patient satisfaction with integrated care (91.0%) provides novel insights into the real-world benefits of combined oculo-dermatological assessment.

Strengths and Limitations: The major strengths of this study include its prospective design, the use of standardised dermatological and ophthalmological assessment protocols, the inclusion of a well-characterised cohort with confirmed diagnoses, and the documentation of previously undiagnosed disease. However, several limitations warrant consideration. First, the single-centre design may limit generalisability to other settings with different patient populations or healthcare systems. Second, the relatively small sample size in each disease subgroup (particularly Sjögren's syndrome) precludes detailed subgroup analyses. Third, the cross-sectional design does not permit assessment of disease progression or treatment response over time. Fourth, the lack of a control group of healthy individuals limits our ability to determine the baseline prevalence of ocular findings in the general population. Fifth, the assessment of patient satisfaction, while informative, was not conducted using a validated instrument.

Clinical Implications and Future Directions: Our findings have several important clinical implications. First, dermatologists should maintain a high index of suspicion for ocular involvement in patients with rosacea, atopic dermatitis, psoriasis, and Sjögren's syndrome, and should routinely inquire about ocular symptoms including redness, irritation, foreign body sensation, photophobia, and visual disturbances. Second, patients with moderate-to-severe dermatological disease—particularly those with facial involvement, prolonged disease duration, or elevated severity scores—should be referred for comprehensive ophthalmological evaluation. Third, the establishment of combined oculo-dermatology clinics, wherein patients are evaluated concurrently by dermatologists and ophthalmologists, may enhance diagnostic accuracy, facilitate timely intervention, and improve patient satisfaction [23]. Fourth, future research should focus on developing validated screening tools for ocular involvement in dermatological patients, evaluating the cost-effectiveness of combined care models, and investigating the shared immunopathological mechanisms underlying oculo-cutaneous disease [24, 25].

In conclusion, this prospective study demonstrates that ocular involvement is highly prevalent in patients with common dermatological disorders, with nearly one-third of affected patients having previously undiagnosed ocular disease. The high prevalence of ocular manifestations—ranging from meibomian gland dysfunction and blepharitis to uveitis and keratoconjunctivitis sicca—underscores the critical importance of systematic ophthalmological assessment in this population. The integration

of dermatological and ophthalmological care, as exemplified by the combined consultation model evaluated in this study, holds the potential to improve diagnostic accuracy, optimise treatment, and ultimately preserve vision in patients with oculo-cutaneous disorders.

Conclusion

This prospective observational study of 156 patients with rosacea, atopic dermatitis, psoriasis, or suspected Sjögren's syndrome demonstrates that ocular involvement is present in 71.8% of patients, with significant variation across disease groups (rosacea 85.7%, suspected Sjögren's 80.0%, atopic dermatitis 70.8%, psoriasis 53.7%). Meibomian gland dysfunction, blepharitis, and dry eye disease were the most common manifestations overall. Notably, 29.5% of patients had significant ocular disease that was previously undiagnosed, highlighting the critical importance of systematic ophthalmological assessment in dermatological practice. Disease severity correlated significantly with the presence and severity of ocular involvement across all disease groups. The integrated consultation model was well-received by patients, with 91.0% expressing satisfaction. These findings provide compelling evidence supporting routine ophthalmological evaluation in patients with common dermatological disorders and advocate for the establishment of combined oculo-dermatological care models to optimise patient outcomes and prevent vision loss.

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