SKIN

IN-DEPTH REVIEW

Contrasting Between Atopic Dermatitis and Psoriasis in The Quality of Life Impact and The Prevalence of Psychiatric Disorders: A Review

Mimi Chung, BA[1], Marwa Hakimi, MD[1], Samuel Yeroushalmi, BS[1], Erin Bartholomew, BA[1], John Koo, MD[1]

[1]Department of Dermatology, University of California, San Francisco, San Francisco, CA

ABSTRACT

As chronic inflammatory skin conditions, psoriasis and atopic dermatitis have both been associated with significant psychosocial comorbidities. However, the similarities and differences between the two in the manifestation of psychologic/psychiatric sequalae have not been reviewed. We reviewed the current literature comparing these two skin conditions and determined that there are potentially notable differences in psychiatric impact between psoriasis and atopic dermatitis patients. For example, patients with atopic dermatitis appears to have more issues with attention deficit hyperactive disorder (ADHD) and conduct disorder while psoriasis is associated more with suicidal acts. We propose that these may stem from the different ages of onset, which subsequently influences how the psychological impact manifests within the individual.

INTRODUCTION

Atopic dermatitis (AD) and psoriasis (PSO), as two of the most common inflammatory skin conditions, share many similarities including their chronic and relapsing nature. However, the differences between their impacts on quality of life measures is less researched, despite suggestions of differences between these two conditions. This article reviews what is known about the differences in the negative impact to people's lives between AD and PSO and tries to ascertain why some of these differences exist when they are both chronic inflammatory skin disorders.

In the past 20 years, there have been tremendous advances made in the therapeutic options for PSO, demonstrating significant improvements in both physical measures of disease activity and patient reported outcomes. As novel AD treatment options similarly begin to expand, the clinician should have an understanding of how these new modalities may also affect patients' quality of life. Though both conditions have serious impacts on quality of life, we aimed to determine if there were notable differences in psychological burdens and outcomes between patients with PSO and those with AD.

METHODS

A literature search was conducted on Medline for articles comparing the psychological outcomes of atopic dermatitis and psoriasis. Keywords included "psychological comorbidities psoriasis atopic dermatitis," "psychiatry psoriasis atopic dermatitis", and "psoriasis atopic dermatitis

mental health." Only English articles were considered. Cross-sectional, retrospective, and prospective clinical trials and meta-analyses published from January 2000 to January 2022 were considered for the review.

RESULTS

For this review, 115 studies were initially screened. After title and abstract screening, 21 full texts were assessed for eligibility. Five articles were included in this review. The flowchart of studies is included in Figure 1.

There are very few studies which compare AD and PSO directly in the medical literature. A summary of the included studies can be viewed on Table 1. One such study comparing the prevalence of psychiatric disorders "head-to-head" was a study from Korea. In this cross-sectional study, Ahn *et al* compared 42,641 patients with AD and 139,486 patients with other skin conditions, including 5,323 PSO patients of all ages. Significant differences in the odds of developing different psychological outcomes were reported. The odds ratio (OR) for AD patients to develop attentional deficit disorder (ADHD) was significantly greater than non-AD patient controls (OR 1.25, 95% confidence interval [CI] 1.06 - 1.48, $p < 0.01$), as was the OR for conduct disorder (2.74, 95% CI 1.30 - 5.78, $p < 0.01$). PSO patients did not have significantly increased odds of either ADHD (OR 0.97, 95% CI 0.64 - 1.49, $p = 0.9023$) or conduct disorder (OR 3.30, 95%CI 0.91 - 11.99, $p = 0.0696$). In contrast, PSO patients were found to have significantly greater odds of anxiety and depression (OR of 1.16 [95% CI: 1.03-1.30] and 1.38 [95% CI: 1.23-1.56], respectively) as well as sleep disorders (OR 1.29 [95% CI: 1.14-1.47]). One limitation of this finding was that, though the study had balanced age distribution when comparing patients with AD and patients with other skin conditions, the demographics were not shown for the psoriasis group specifically.[1] Moreover, the AD population in this study clearly included a pediatric age group (younger than adolescents). However, it is not stated whether the PSO comparator group in this study also included the younger pediatric population or not. Therefore, the demographics of the AD group and the psoriasis groups in this Korean study might have been significantly different in terms of age groups included.

Other studies that were not "head-to-head" comparisons resulted in outcomes that were different than these findings, though differences between the two conditions remain. A meta-analysis on depression outcomes in PSO and AD patients found that both AD and PSO patients had increased risk of suicidal *ideation* compared to controls (including studies that used general population or other medical conditions as controls). In 10 studies on suicidal ideation in PSO, suicidal

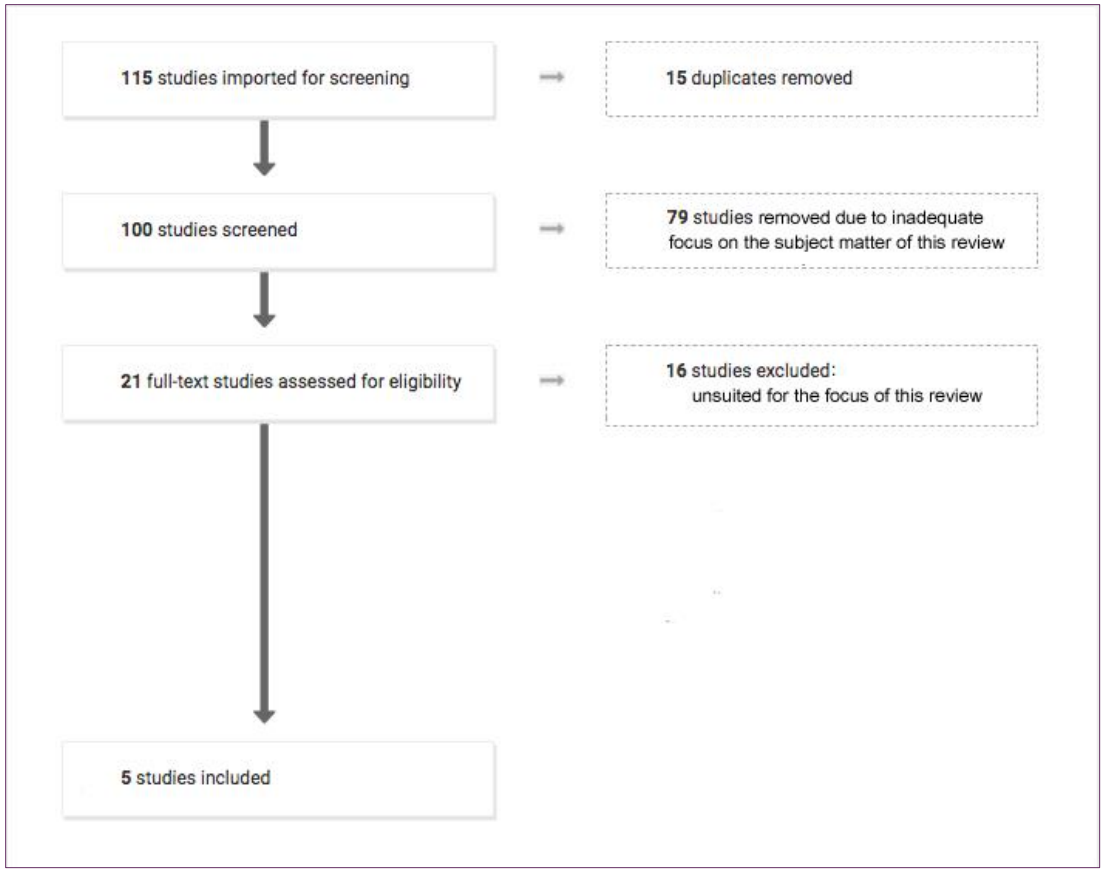

Figure 1. Summary diagram of studies screened

Table 1. Summary of the studies included in review

Source	Design	Study Population	Outcome Summary
Ahn *et al* 2019	Cross-sectional cohort study n = 42,641 (AD) n = 5,323 (PSO)	Patients with AD or patients with nonatopic eczema, urticaria, or PSO	AD patients had increased odds of ADHD (1.25, 95%CI 1.06-1.48, p< 0.0091), while PSO patients did not (OR 0.97, 95%CI 0.94-1.64, p = 0.9023). AD patients also had increased odds of conduct disorder (2.74, 95%CI 1.30-5.78, p = 0.0084) compared to PSO patients (3.30, 95%CI 0.91 - 11.99, p = 0.0696). The OR for anxiety in PSO patients was significant (1.03, 95%CI 1.03-1.30, p = 0.019), unlike AD patients (0.96, 95%CI 0.89-1.03, p =0.2056). Similar results were seen for depression, with PSO patients having an OR of 1.38 (1.23-1.56) compared to AD patients (OR 0.96, 95%CI 0.89-1.04, p = 0.3401). PSO had higher OR of sleep disorders (1.29, 95%CI 1.14-1.47, p < 0.0001), while AD patients did not (OR 0.93, 0.86-1.02, p = 0.1134). ORs for autism spectrum disorder, suicidal ideation, and schizophrenia were not significant for PSO or AD patients.

Pompili *et al* 2021	Meta-analysis of 35 studies, which examined PSO and AD. 27 studies on suicidal ideation and 19 studies on suicidal acts were included. Some studies evaluated suicidal ideation and suicidal acts.	Patients with AD or PSO compared with healthy controls or other dermatological/general medical disorders	Suicidal ideation for PSO had a risk-ratio of 1.60 compared to controls. Suicidal ideation for AD had a risk-ratio of 1.84 compared to controls. Suicidal ideation was significantly greater in PSO compared to controls (OR 1.97, 95%CI 1.26-3.08, p = 0.003) and AD compared to controls (OR 2.62, 95%CI 1.32-5.19, p = 0.006), but not PSO compared to AD (1.47, 95%CI 0.91 - 2.35, p = 0.52). Suicidal acts for PSO had a risk-ratio of 2.51 compared to controls, while the risk-ratio for AD was 2.81. Suicidal acts were significantly greater in PSO compared to controls (OR 1.42, 95%CI 1.05-1.92, p = 0.02) but for not AD patients compared to controls (OR 1.53, 0.96-2.45, p = 0.08). Though suicidal acts were higher in PSO patients than AD patients, no OR difference was found between PSO and AD patients due to the confidence interval crossing 1 (OR 1.47, 95%CI 0.91-2.35, p = 0.11).
Magin *et al* 2008	Cross sectional study n = 108 (dermatological disease; n = 27 [PSO], n = 17 [AD]) n = 96 (control)	Patients with PSO, AD, or acne compared to healthy controls	Patients with dermatologic disorders had significantly greater ratings of Fenigstein Public Self-consciousness (13.7, 95%CI 12.9-14.5) than controls (12.2, 95%CI 11.3–13.1), p = 0.015. Patients with dermatologic disorders were also found to have worse Eysenck neuroticism scores (5.1, 95%CI 4.7-5.5) compared to controls (4.5, 95%CI 4.0–5.0), p = 0.044. No difference was found among various skin diseases.

Leibovici *et al* 2010	Cross sectional study n = 37 (PSO) n = 31 (AD) n = 31 (controls)	Patients with AD or PSO compared with healthy controls	PASI for PSO patients and SCORAD scores for AD patients showed moderate disease for all patients. Pruritis was higher on average in AD patients (4.42 on itch VAS) than PSO patients (2.57), p = 0.013. However, there was no significant difference in measurements of the itch-scratch cycle between AD and PSO patients (mean 21.5 and 19.6, respectively) as measured by the Adjustment to Chronic Skin Diseases Questionnaire. PSO patients had worse well-being scores (mean 51.1), worse psychological distress (61.4), and worse overall outcomes (157.7) on the Mental Health Inventory compared to AD patients (well-being mean 53.3, distress 55.7, total 165.5), p < 0.05. Social anxiety was significantly worse in PSO patients (33.8) than AD patients (26.6), with greater impact on quality of life (13.1 and 10.3, respectively), p < 0.05. No differences were found in helplessness or anxious-depressive mood.
Schut *et al* 2022	Cross sectional study n = 5487 (n = 1383 (PSO), n = 345 (AD)) n = 2754 (controls)	Patients with dermatological disorders	The odds ratio of having body dysmorphic disorder was increased for both AD (odds 8.97, 95%CI 6.08-13.25) and PSO patients (odds 7.63, 95%CI 5.64-10.33) compared to controls. Significant values for the odds ratio remained after controlling for sex, age, income, stress, comorbidities, and BMI.

Abbreviations: AD, atopic dermatitis; PSO, psoriasis; ADHD, attention deficit personality disorder; OR, odds ratio; PASI, Psoriasis Area and Severity Index; SCORAD, SCORing Atopic Dermatitis; CI, confidence interval; VAS, visual analogue scale

ideation was found to have an odds ratio of 1.97 (95%CI, 1.26 - 3.08; p = 0.003) compared to controls, while AD patients had an odds ratio of 2.62 from 16 studies (95%CI, 1.32 - 5.19, p = 0.006). However, only PSO was found to be significantly associated with suicidal *acts*, with an OR of 1.42 (95%CI 1.05 - 1.92) compared to controls (p = 0.02). AD patients, in contrast, had nonsignificant odds of suicidal acts compared to controls (OR 1.53, 95%CI 0.96 - 2.45, p = 0.08). When comparing the AD and PSO studies together, the risk of suicidal ideation and acts were greater for PSO, though not significant. This nuance in measures of suicidality remained despite controlling for the type of control used in the clinical trial, study size, or year of study. Of note, 22 of the 27 studies regarding suicidal ideation and 11 of 19 studies on suicidal acts were conducted on adults only, with few including adolescents and children.[2]

In a comparative study on dermatologic disease burden conducted in Australia, PSO and AD patients were found to have higher levels of public self-consciousness and neuroticism than controls, though no differences were seen between the two disease states. Interestingly, this cohort did not show an increase in depression, anxiety, or introversion between PSO and AD patients compared to the healthy controls. This study demonstrates that, beyond psychiatric outcomes such as suicidality, these chronic skin conditions can influence even psychological characteristics like neuroticism and self-consciousness.[3]

A case-control series conducted in Israel examined psychological outcomes of PSO and AD patients using a variety of mental health questionnaires. On physical measurement of disease, both groups had approximately similar severity of disease – moderate for both disorders based on the SCORing Atopic Dermatitis (SCORAD) or the psoriasis area and severity index (PASI) – though AD patients had worse pruritus. However, PSO patients showed consistently worse scores on the psychological distress scales. Compared to controls, PSO patients had statistically worse depression, anxiety, and behavioral-emotional control (as measured by the Mental Health Inventory); well-being; and mental health total scores (all $p < 0.05$). These results were not seen in AD patients, who did not show significant differences from controls. Moreover, PSO patients reported more social anxiety/avoidance with a greater impact on quality of life than AD patients ($p < 0.05$). Interestingly, despite the worse pruritus in AD patients, itch-scratch cycle results were the same for both disease groups.[4]

A study conducted in Europe on body dysmorphia in adults with various skin conditions included 1383 PSO patients and 244 AD patients. Compared to controls, body dysmorphia was found to have greater odds to occur in PSO patients (OR = 7.65) and AD patients (OR = 8.08), even after adjusting for sex, age, income, stress, medical comorbidities, and BMI. When comparing between various dermatologic patients, the risk of body dysmorphia was significantly related to younger age, female gender, and higher self-rated stress and stigmatization. PSO and AD were not directly compared in this study, but a clear increase in body dysmorphia symptoms occurred in both group.[5]

DISCUSSION

In this paper, going beyond the quality of life measures such as dermatology quality of life index (DLQI), the authors have reviewed available medical literature regarding the prevalence of psychiatric disorders

contrasting between AD and PSO. Though studies examining direct comparisons of these two diseases are sparse, potential differences in their presentation have been suggested in psychiatric comorbidities as well as negative psychosocial impact. For example, it has been noted in “head-to-head” comparison studies that AD patients tend to have more problems with ADHD and conduct disorder, while PSO patients tend to have more problems with suicidal acts, anxiety, and, in some studies, sleep disorders. The authors interpreted that the average age of onset for these conditions my contribute to these notable differences.

As seen in Figure 2, AD prominently affects children, even though there are others who have adult onset of this disease. In contrast, PSO primarily affects adults in their early adulthood and late adulthood. The typical AD patient may be initiated to the disorder differently than PSO patients with new onset PSO – as a child, AD patients are less likely to have their self-identity and self-esteem fully established when AD first occurs. In contrast, PSO patients generally are in their late adolescence or middle adulthood, with consequently better-established self-identity, body image, and self-esteem. Applying principles of developmental psychology, early AD patients are likely to be in the sensorimotor or preoperational cognitive stage, during which they must directly interact with the environment to understand their surroundings and have yet to develop abstract thought. PSO patients, however, are likely to be in formal operative operation state, able to apply theoretical concepts and develop personal analysis of their situation. This suggests that many AD patients, especially the pediatric age group, may not be able to articulate such concepts as depression or suicidal ideation; it takes maturity, including emotional understanding as well as linguistic sophistication, to report that one is depressed, anxious, or suicidal. Patients who are pre-operational, such as the pediatric age group, tend to express depression as conduct disorder due to an inability to verbally express their complex emotional state, while adults can more readily articulate their psychological state. Lastly, adults may be physically more able to carry out suicidal acts compared to underage pediatric populations.

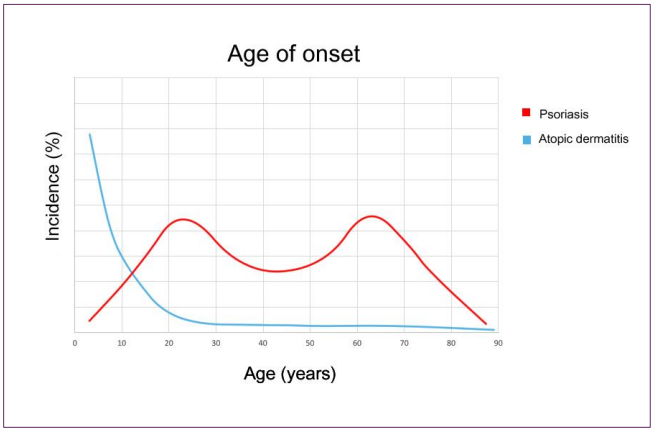

Figure 2. Age of onset of psoriasis and atopic dermatitis. The above illustration is a general representation of the age of onset of psoriasis versus atopic dermatitis and does not represent exact datapoints.

CONCLUSION

Therefore, some of the differences may be strongly reflective of the age of onset of the typical patient population. This difference in the negative impact of AD compared to PSO may not be limited to the negative impact on the patients themselves; it may also spill over into family dynamics. It has been noted that AD affects parents of patients significantly – parents have been found to be more anxious and stressed, and tend to be more overprotective with atopic dermatitis children.[6,7]

Presumably, the parenting differences can similarly lead to relationship stressors among

siblings, though less literature has examined the negative effect of AD on the sibling relationship. Lastly, the caretaker burden for pediatric AD patients can be notably greater in a manner different from PSO patients, the vast majority of whom are in adolescence and adulthood. These differences noted in the negative psychological impact between AD and PSO may be relevant to dermatology providers in order to optimize the care of these patients.

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Corresponding Author:
Mimi Chung
Department of Dermatology
University of California, San Francisco
515 Spruce Street
San Francisco, CA 94118
Email: Mimi.Chung@ucsf.edu

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