

Impact of Adult Psoriasis on Caregiver's Quality of Life: Role of Caregiver Sex and Patient Special Area Involvement

Chalermkwan Apinuntham MD, Chayada Chaiyabutr MD,
Narumol Silpa-archa MD, Chanisada Wongpraparut MD,
Kanokvalai Kulthanan MD, Leena Chularojanamontri MD.

Department of Dermatology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand.

ABSTRACT:

Background: Psoriasis has an impact on both the patient's life and on family members, particularly those who serve as primary caregivers. To study the impact of psoriasis on the quality of life (QoL) of caregivers using the Family Dermatology Life Quality Index (FDLQI) and exploring factors associated with it.

Materials and methods: Adult patients with psoriasis were matched 1:1 with a caregiver or family member—defined as the primary person who regularly cares for the patient, lives in the same household, and is actively involved in daily care. Demographic data and FDLQI scores were collected.

Results: Fifty-two patients with psoriasis and 52 caregivers/family members were enrolled. Most of the patients were cared for by a first-degree relative (57.7%) or a spouse (34.6%), followed by other relatives (3.8%) and cohabitants (3.8%). Psoriasis had the greatest impact on caregiver QoL in the areas of time spent caring for the patient's skin (1.6 ± 1.1 points), extra housework (1.4 ± 1.2 points), and household expenditure (1.2 ± 1.0 points). However, there were no significant differences between female and male caregivers in any of the items of the FDLQI. The FDLQI score was significantly associated with patients' QoL ($r=0.59$, $p < 0.01$) and the Psoriasis Area and Severity Index score ($r=0.50$, $p < 0.01$), and body surface area involvement ($r=0.47$, $p < 0.01$). Furthermore, caregivers of patients with psoriasis that affects the scalp ($p=0.001$), face ($p=0.005$), nails ($p<0.001$) and intertriginous area ($p=0.032$) had significantly higher median FDLQI scores compared to those without psoriasis in these areas.

Conclusion: This study found that the severity of disease, the QoL of patients, and the psoriasis affecting special areas all significantly impact the QoL of caregivers. However, no significant differences were observed based on caregiver sex. Understanding these impacts is important to achieve the best outcome for patients with psoriasis.

Key words: Family Dermatology Life Quality Index, psoriasis, quality of life, gender, special area involvement

Introduction

Psoriasis is a common chronic inflammatory skin condition that is caused by genetic and environmental factors, resulting in immune dysregulation¹. A systematic review shows that its prevalence in adults ranged from 0.5% to 11.4%². Chronic plaque psoriasis, the most common form of the disease, presents as well-demarcated erythematous, scaly plaques that can appear on any part of the body, especially the scalp, elbows, buttocks, and lower extremities. Due to its chronic nature and highly visible manifestations, psoriasis significantly impacts the QoL of affected individuals. Numerous studies have reported adverse effects on patients' QoL³⁻⁶. However, the burden of psoriasis impacts not only the patient's life, but also the lives of family members, particularly those who serve as primary caregivers.

The burden of skin disease can be divided into three dimensions: 'now', 'long term', and 'family'⁷. While the first two dimensions focus on the patient, the third relates to a burden on the partner, family members, and caregivers. The European Academy of Dermatology and Venereology task force recommends a thorough evaluation of the impacts on QoL of caregivers or family members⁸. The Family Dermatology Life Quality Index (FDLQI) is a non-disease-specific dermatological questionnaire that has been developed and validated in English language for an evaluation of health-related QoL of family members of individuals with skin disease in 2007^{9,10}. Over time, the FDLQI has been translated and validated for use in different cultural and linguistic contexts, including Thai¹¹.

This study aimed to investigate the impacts of psoriasis on a caregiver or family member who serves as the primary person who regularly cares for the patient, lives in the same household, and is actively involved in daily care, using the Thai-validated FDLQI to explore the factors associated with it.

Materials and Methods

This study was approved by the Siriraj Institutional Review Board (COI 676/2566). Adult patients (aged ≥ 18 years) with a diagnosis of psoriasis for at least one year with moderate to severe disease - defined as body surface area (BSA) involvement of at least 5% - who attended the outpatient Dermatology Clinic at Siriraj Hospital were included. These patients were matched 1:1 with a caregiver or family member - defined as the primary person who regularly cares for the patient, lives in the same household, and is actively involved in daily care. Individuals were excluded if they were (i) unable to understand Thai language, (ii) were psychiatric patients, or (iii) unwilling to participate in the study.

Demographic data, disease severity, psoriasis in special areas, and health-related QoL were collected from patients with psoriasis. Special areas include the scalp, face, hands and feet, nails, intertriginous areas, and genitalia. All areas were examined by direct inspection, except the intertriginous area and genitalia, which patients were asked to assess and report themselves. Disease severity was obtained using the Psoriasis Area and Severity Index (PASI) and body surface area (BSA) involvement, while QoL was measured using the validated Thai Dermatology Life Quality Index (DLQI)¹². Demographic data and the FDLQI score were collected from family members who served as primary caregivers.

The DLQI comprises 10 items, which cover six domains of daily life and well-being over one-week period. Six domains include symptoms and feeling (2 items), daily activities (2 items), leisure activities (1 item), work and school (1 item), personal relationships (2 items), and treatment (2 items). Each question is scored from 0 to 3: 0 = no effect at all, 1 = a little effect, 2 = a lot of effect, and 3 = very much effect. The total score is from 0 to 30. A higher score indicates a greater impact of the dermatological condition on the patient's QoL.

The FDLQI includes 10 items which cover emotional and psychological well-being, social and family life, and practical daily living. The questions, total score, and interpretation of the FDLQI are similar to those of the DLQI, but they reflect the family member's perspective.

Descriptive statistics were calculated using the mean, standard deviation (SD), median, interquartile range (IQR), minimum, and maximum values. Quantitative variables were analyzed test for normality using Shapiro-Wilk test. The Pearson correlation coefficient was used for normally distributed data, and the Spearman rank correlation coefficient was used for non-normally distributed data. The correlation coefficient was defined as follows; <0.20 = very weak, $0.20-0.39$ = weak, $0.40-0.59$ = moderate, $0.60-0.79$ = strong, and >0.80 = very strong⁹.

The Mann-Whitney U-test was used to compare two variables of non-normally distributed data to identify factors associated with FDLQI. A p-value of ≤ 0.05 was considered statistically significant. All statistical analyses were performed using IBM SPSS Statistics, Version 29 (IBM Corp., Armonk, NY).

Results

A total of 104 participants including 52 pairs of psoriasis patients and their caregivers or family members, were included in the study. Of 52 patients, 38 patients (73.1%) had chronic plaque psoriasis, while 11 (21.2%), 2 (3.8%), and 1 (1.9%) patients had erythroderma, generalized pustular psoriasis, and guttate psoriasis, respectively. Scalp, face, hands and feet, nails, intertriginous area, and genital areas were reported in 82.7%, 51.9%, 59.6%, 76.9%, 46.2%, and 21.2% of patients, respectively.

The mean age of patients was 53.4 ± 20.0 years old, with 24 females and 28 males while the mean age of caregivers or family members was 45.9 ± 13.8 years old, with 37 females and 15 males (Table 1). Of the 52 patients studied,

the majority were cared for by a first-degree relative (30 patients, 57.7%). Other caregivers/family members included a spouse (18 patients, 34.6%), a cousin (2 patients, 3.8%), and a cohabitant (2 patients, 3.8%). Nearly 50% of patients with psoriasis and 80% of caregivers or family members were still employed, including those working freelance. The median PASI score, BSA, and DLQI scores for patients were 6.7, 7.5, and 7, respectively.

Almost all patients (88.5%) received reimbursement from the government for the treatment of their psoriasis while the remaining patients either paid out-of-pocket ($n=5$) or used private health insurance ($n=1$). Half of the caregivers or family members reported that there were no expenses associated with caring for patients with psoriasis, while 38.5% incurred costs of up to 5000 baht/month and 11.5% paid more than 5000 baht/month. The greatest impact was observed in the area of amount of time spent caring for the patient (1.6 ± 1.1), followed by extra-housework because of psoriasis (1.4 ± 1.2) and an increase in the caregiver's routine household expenditure (1.2 ± 1.0) (Table 2, Figure 1). The mean total FDLQI score was 9.3 ± 7.1 , indicating a moderate effect on the QoL for caregivers/family members. The scores were not significantly different between male and female caregivers. Nevertheless, in an analysis of spousal caregivers ($n=18$), the total FDLQI score was 11.4 ± 7.5 . This analysis also revealed that male caregivers (1.1 ± 0.8) were more significantly impacted by the reactions of other people than female caregivers (0.3 ± 0.5) ($p = 0.04$). No other FDLQI items showed a significant difference between male and female spousal caregivers.

The disease severity and patients' QoL were moderately correlated with the FDLQI score (Table 3). Analysis of factors influencing the FDLQI score identified four significant special sites including scalp, face, nails, and

intertriginous area. Caregivers or family members of these patients reported significantly higher median FDLQI scores compared to those

without psoriasis in these specific locations. (Table 4)

Table 1 Clinical characteristics of patients with psoriasis and their caregivers or family members

Demographic data	Patients			Caregivers / Family members (n=52)
	Total (n=52)	Females (n=24)	Males (n=28)	
Age (years), mean $\pm$ SD	53.4 $\pm$ 20.0	50.5 $\pm$ 21.0	55.9 $\pm$ 19.2	45.9 $\pm$ 13.8
Status, n (%)				
- Single	12 (23.1)	5 (41.7)	7 (58.3)	16 (30.8)
- Married	32 (61.5)	13 (40.6)	19 (59.4)	33 (63.5)
- Divorced	8 (15.4)	6 (75)	2 (25)	3 (5.8)
Monthly income (baht), n (%)				
- 0-10,000	20 (38.5)	10 (50)	10 (50)	23 (44.2)
- 10,000-50,000	29 (55.8)	12 (41.4)	17 (62.5)	24 (46.2)
- > 50,000	3 (5.8)	2 (66.7)	1 (33.3)	5 (9.6)
Educational levels, n (%)				
- Primary school	16 (30.8)	8 (50)	8 (50)	7 (13.5)
- Secondary school	8 (15.4)	3 (37.5)	5 (62.5)	10 (19.2)
- Vocational certificate	11 (21.2)	4 (36.4)	7 (63.6)	11 (21.2)
- Bachelor degree	13 (25)	7 (53.8)	6 (46.2)	18 (34.6)
- Master degree or higher	3 (5.8)	2 (66.7)	1 (33.3)	6 (11.5)
Occupations, n (%)				
- Still working (employee/freelance)	25 (48.1)	10 (41.7)	15 (53.6)	40 (76.9)
- Retirement	24 (46.2)	13 (54.2)	11 (45.8)	11 (21.2)
- Student	3 (5.8)	1 (33.3)	2 (66.7)	1 (1.9)
Managing basic ADL, n (%)				
- Independence	44 (84.6)	20 (45.5)	24 (54.5)	N/A
- Partially dependence	8 (15.4)	4 (50)	4 (50)	N/A
Common comorbidities, n (%)				
- Hypertension	30 (57.7)	12 (40)	18 (60)	N/A
- Dyslipidemia	27 (51.9)	14 (51.9)	13 (48.1)	N/A
- Psoriatic arthritis	20 (38.5)	11 (55)	9 (45)	N/A
- Diabetes mellitus	15 (28.8)	7 (46.7)	8 (53.3)	N/A
PASI, median (range)	6.7 (3.4 – 12)	7.2 (3.1 – 15.3)	6.1 (3.5 – 10.2)	N/A
BSA, median (range)	7.5 (5 – 30)	7.5 (5 – 20)	8.5 (5 – 40)	N/A
DLQI, median (range)	7 (2 – 13.8)	6.5 (1.5 – 14.3)	8 (2 – 13.8)	N/A

Abbreviations: SD; standard deviation, ADL; activities of daily living, PASI; Psoriasis Area and Severity Index, BSA; body surface area, DLQI; Dermatology Life Quality Index, FDLQI; Family Life Dermatology Quality Index, N/A; data not available,

Table 2 Impact of psoriasis on individual items of the Family Dermatology Life Quality index (FDLQI) questionnaire

FDLQI items (each item score ranges 0-3)	Total (n=52)	Females (n=37)	Males (n=15)	p-values
	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
1. Caregivers' emotional distress e.g. worry, depression, embarrassment, frustration	1.0 $\pm$ 1.1	1.2 $\pm$ 1.1	0.5 $\pm$ 0.9	0.15
2. Caregivers' physical well-being e.g. tiredness, exhaustion, contribution to poor health, sleep/rest disturbance	0.8 $\pm$ 0.9	0.9 $\pm$ 1.0	0.5 $\pm$ 0.7	0.18
3. Caregivers' personal relationships with partner or other people	0.6 $\pm$ 0.9	0.6 $\pm$ 0.9	0.6 $\pm$ 1.0	0.72
4. Caregivers' problems with other people's reactions due to relative/partner's psoriasis e.g. bullying, staring	0.5 $\pm$ 0.9	0.6 $\pm$ 0.9	0.2 $\pm$ 0.4	0.11
5. Caregivers' social life e.g. going out, visiting or inviting people, attending social gatherings	0.8 $\pm$ 1.0	0.9 $\pm$ 1.0	0.6 $\pm$ 1.1	0.22
6. Impact on caregivers' recreation/leisure activities e.g. holidays, personal hobbies, gym, sports, swimming, watching TV	0.6 $\pm$ 0.8	0.8 $\pm$ 0.9	0.3 $\pm$ 0.5	0.14
7. Impact on time spent by the caregiver on looking after the patient e.g. putting on creams, giving medicines, looking after their skin	1.6 $\pm$ 1.1	1.6 $\pm$ 1.0	1.8 $\pm$ 1.2	0.45
8. Extra housework because of psoriasis e.g. cleaning, vacuuming, washing, cooking	1.4 $\pm$ 1.2	1.4 $\pm$ 1.1	1.5 $\pm$ 1.2	0.93
9. Impact on caregivers' job/study e.g. need to take time off, not able to work, decrease in the number of hours worked, having problems with people at work	0.7 $\pm$ 0.9	0.8 $\pm$ 0.9	0.4 $\pm$ 0.7	0.14
10. Increase caregivers' routine household expenditure e.g. travel costs, buying special products, creams, cosmetics	1.2 $\pm$ 1.0	1.3 $\pm$ 1.0	1.1 $\pm$ 1.1	0.40
Total score	9.3 $\pm$ 7.1	10.1 $\pm$ 7.4	7.5 $\pm$ 6.4	0.28

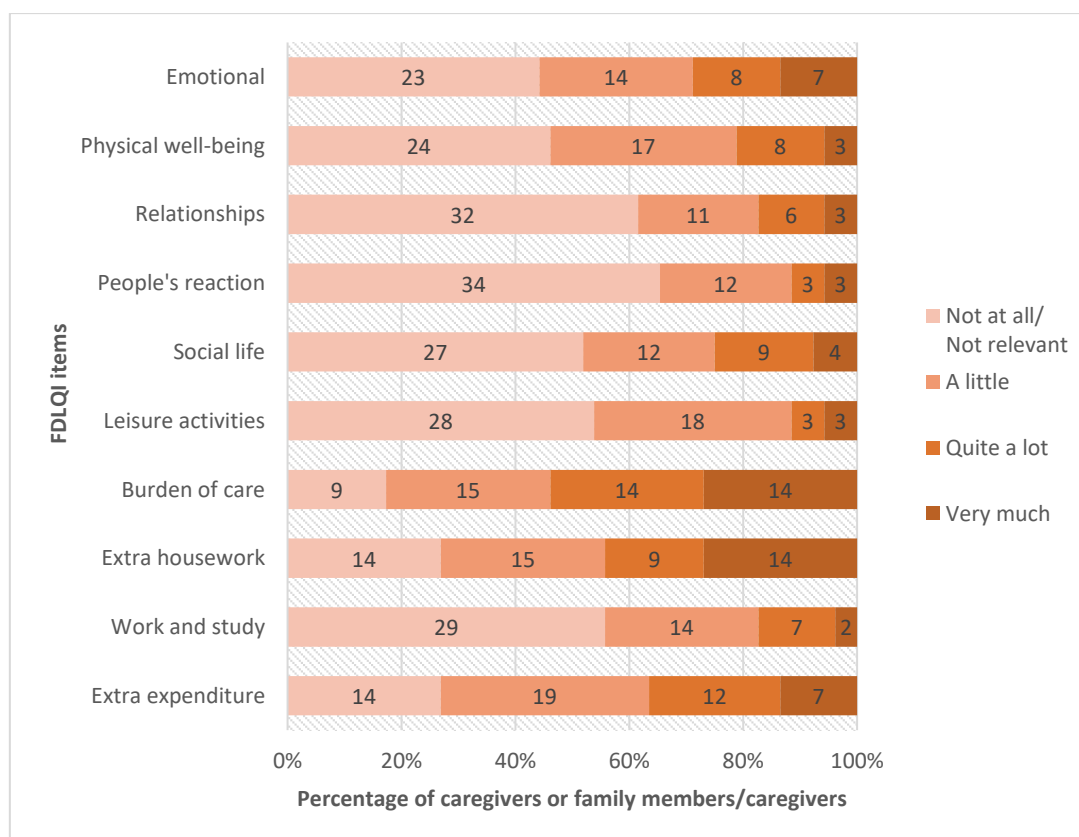


Figure 1 Frequency of caregivers or family members who responded on each item of the Family Dermatology Life Quality Index (FDLQI)

Table 3 Correlation between the Family Dermatology Life Quality Index (FDLQI) of caregivers or family members and variables of interest

	Values	FDLQI	
		Correlation coefficient (<i>r</i>)	p-values
FDLQI, median (IQR)	8 (3 – 15)	-	-
Age of patients, year (mean $\pm$ SD)	53.4 $\pm$ 20.0	<i>r</i> = -0.20	0.17
Age of caregivers, year (mean $\pm$ SD)	45.9 $\pm$ 13.8	<i>r</i> = -0.07	0.65
PASI, median (IQR)	6.7 (3.4 – 12)	<i>r</i> = 0.50	< 0.01*
BSA, median (IQR)	7.5 (5 – 30)	<i>r</i> = 0.47	< 0.01*
DLQI, median (IQR)	7 (2 – 13.8)	<i>r</i> = 0.59	< 0.01*
Time spent between caregivers and patients (years), median (IQR)	7 (3 – 20)	<i>r</i> = -0.14	0.35
Time spent between caregivers and patients (hours per day), median (IQR)	10 (4.5 – 24)	<i>r</i> = 0.03	0.87

*Indicates statistical significance

Abbreviations: IQR; interquartile range, PASI; Psoriasis Area and Severity Index, BSA; body surface area, DLQI; Dermatology Life Quality Index

Table 4 Impact of special area involvement on the Family Dermatology Life Quality Index (FDLQI)

	Total FDLQI score of caregivers or family members		
	Special area involvements		p-values [†]
	Yes	No	
Scalp			0.001*
- Median (Interquartile range)	10 (5, 16)	2 (1, 4)	
- Mean (min, max)	10.6 (1, 28)	3.1 (0, 13)	
Face			0.005*
- Median (Interquartile range)	13 (5, 17)	5 (2, 10)	
- Mean (min, max)	12.0 (1, 28)	6.4 (0, 20)	
Hands and feet			0.137
- Median (Interquartile range)	10 (4, 16)	6 (2, 12)	
- Mean (min, max)	10.5 (1, 28)	7.6 (0, 22)	
Nails			<0.001*
- Median (Interquartile range)	10.5 (4.3, 16)	2.5 (1, 5.8)	
- Mean (min, max)	11.1 (1, 28)	3.5 (0, 10)	
Intertriginous area			0.032*
- Median (Interquartile range)	10.5 (5, 16)	5.5 (2, 12.5)	
- Mean (min, max)	11.6 (2, 28)	7.4 (0, 20)	
Genitalia			0.138
- Median (Interquartile range)	12 (5, 16)	7 (2.5, 13.5)	
- Mean (min, max)	12.3 (2, 28)	8.5 (0, 20)	

*Indicates statistical significance

[†] Statistical test presented as Mann-Whitney U test

Table 5 Previously published studies that specifically assessed the Family Dermatology Life Quality Index (FDLQI) in adult patients with psoriasis

Authors	Tadros et al. ¹³	Martinez-Garcia et al. ¹⁴	Nahidi et al. ¹⁵	Demma et al. ¹⁶	Wu et al. ¹⁷	Our study
Published year	2010	2014	2020	2021	2024	-
Countries	Greece	Spain	Iran	Italy	China	Thailand
Number of participants	80	49	40	41	245	52
- 1 st degree relative	80					30
- Cohabitants		49		Not mentioned		4
- Spouse			40		245	18
Total FDLQI score (0-30)	N/A	8.82	12.20 ± 5.63	N/A	6 (2-11)	9.3 ± 7.1
The FDLQI was significantly correlated with						
- PASI	Yes (<i>r</i> = 0.28)	Yes (<i>r</i> = 0.31)	Yes (<i>r</i> = 0.56)	No (<i>r</i> = 0.15)	Yes	Yes (<i>r</i> = 0.50)
- BSA	N/A	Yes	N/A	N/A	Yes	Yes (<i>r</i> = 0.47)
- DLQI	Yes (<i>r</i> = 0.51)	Yes (<i>r</i> = 0.55)	N/A	No (<i>r</i> = 0.11)	Yes (<i>r</i> = 0.31)	Yes (<i>r</i> = 0.59)
- Special area involvement	N/A	Yes - genital - scalp	N/A	N/A	Yes - nails	Yes - scalp - face - nails

Abbreviations: BSA; body surface area, DLQI; Dermatology Life Quality Index, PASI; Psoriasis Area and Severity Index, N/A; data not available

Discussion

In 2007, Basra & Finlay proposed “Greater Patient” concept to draw attention to the skin diseases on the relatives, partners and/or caregivers of the affected patients¹⁸. They interviewed 51 family members or partners of the patients with skin diseases. It was shown that almost all family members of patients (98%) experienced emotional distress, followed by caregiver burden (54%)¹⁸. This concept is increasingly recognized, and several dermatology-specific instruments have been developed to assess this impact⁸. Psoriasis Family Index (PFI)¹⁹⁻²¹ and FamilyPso²² are specific to psoriasis, while the FDLQI can be used for any skin disease. The PFI and FamilyPso consist of 14 questions; however, PFI places a lesser emphasis on the emotional

aspects of living with an affected family member than FamilyPso⁸. Only the FDLQI has been translated and validated in Thai.

Several studies using the FDLQI to assess the burden of psoriasis on family members have clearly demonstrated its negative effect. A study by Zychowska et al., which investigated the impact of childhood psoriasis on caregivers or family members, found that routine household expenditure and time spent caring for the child’s skin had a greater impact than emotional distress on caregivers or family members²³, similar to our findings in adult psoriasis. These results differ from those previously reported in other studies, when data were collected from family members of patients with various skin diseases¹⁸, pemphigus²⁴, and vitiligo²⁵. Different skin diseases have varying impacts on

caregivers or family members. For example, other skin diseases, such as urticaria, alopecia areata, basal cell carcinoma, and congenital hemangioma, where patients do not primarily depend on topical medications, may have different effects. In contrast, psoriasis often leads to additional housework for caregivers due to the patient's skin condition, which can further increase the caregiving burden.

Zychowska et al. also investigated whether gender played a role in the QoL of caregivers in another study, which found that mothers had more impaired QoL than fathers²⁶. Mothers scored higher than fathers on items related to parental time spent on childcare and additional housework. However, in our study, the impact of adult psoriasis on the QoL between male and female caregivers did not differ significantly. However, our sub-analysis found that male caregivers were more significantly impacted by the reactions of other people than female caregivers. This suggests that the social stigma and external perceptions surrounding the patient's condition may place a greater burden on male spouses. A study by Wu et al.¹⁷ found that many spouses of patients with psoriasis held irrational beliefs that their own family and friends looked down on them. This indicates they were experiencing expected and internalized stigma. Both our study and the one by Wu et al. support the idea that promoting adaptive coping strategies can significantly help spouses manage the burdens associated with psoriasis.

Table 5 presents previously published studies that specifically assessed the FDLQI in adult patients with psoriasis¹³⁻¹⁷. Consistent with the findings of Martinez-Garcia's and Wu, our study found that FDLQI scores were significantly correlated with the DLQI, PASI, and BSA scores of patients¹⁴. Our study also supports the findings of other studies that the caregivers' QoL is more strongly influenced by the patients' QoL (DLQI) than by disease severity (PASI and BSA)^{13,14,20,27}. To our

knowledge, limited data exist on whether psoriasis affecting specific areas impacts on the QoL of caregivers or family members. Martinez-Garcia et al. reported a higher FDLQI score for patients with scalp or genital involvement compared to family members of patients with psoriasis affecting other areas. Our study found significantly higher FDLQI scores for patients with scalp, facial, nails, and intertriginous involvement compared to those without psoriasis in these areas. These also highlight the importance of addressing unmet treatment needs in specific areas of psoriasis.

The generalizability of our findings is limited by the single-center design and small sample size. Furthermore, the study included only patients with moderate to severe psoriasis (BSA > 5%) who required a caregiver, which may limit generalizability of the findings to individuals with mild disease who are able to care for themselves. The specific instruments for psoriasis such as the PFI and FamilyPso were not used in this study. Longitudinal studies that track changes in family QoL over time may provide better insights than cross-sectional studies.

In conclusion, this study emphasizes the impact of adult psoriasis on the QoL of caregivers or family members. Disease severity, QoL of patients, and psoriasis affecting special areas all significantly impact the QoL of caregivers or family members. This dimension should also be considered as part of a holistic approach to achieving the best outcome for patients with psoriasis.

Acknowledgement

The authors are deeply grateful to the patients, and caregivers or family members who devoted their time and shared their information. The authors also thank Suthipol Udompunturak for his consultation on statistical analysis, and Dr. Teerapat Paringkarn, Dr. Thrit Hutachoke, Dr. Teerapat Wannawittayapa, and Dr.

Thanakorn Woramongkol for their support in the data collection process.

References

1. Armstrong AW, Read C. Pathophysiology, Clinical Presentation, and Treatment of Psoriasis: A Review. *JAMA* 2020;323:1945-60.
2. Michalek IM, Loring B, John SM. A systematic review of worldwide epidemiology of psoriasis. *J Eur Acad Dermatol Venereol* 2017;31:205-12.
3. Rapp SR, Feldman SR, Exum ML, Fleischer AB, Jr, Reboussin DM. Psoriasis causes as much disability as other major medical diseases. *J Am Acad Dermatol* 1999;41:401-7.
4. Aleid AM, Almutairi G, Alrizqi R, et al. The Impact of Statins on Disease Severity and Quality of Life in Patients with Psoriasis: A Systematic Review and Meta-Analysis. *Healthcare (Basel)* 2024;1:1526.
5. Ghezzi G, Costanzo A, Borroni RG. Health-Related Quality of Life in Psoriasis: Literature Review. *J Clin Med* 2024;13:4623.
6. Cipolla S, Catapano P, Bonamico AF, et al. Factors Associated with Anxiety, Depression, and Quality of Life in Patients with Psoriasis: A Cross-Sectional Study. *Brain Sci* 2024;14:865.
7. Finlay AY. The three dimensions of skin disease burden: 'now', 'long term' and 'family'. *Br J Dermatol* 2013;169:963-4.
8. Sampogna F, Finlay AY, Salek SS, Chernyshov P, et al. Measuring the impact of dermatological conditions on family and caregivers: a review of dermatology-specific instruments. *J Eur Acad Dermatol Venereol* 2017;31:1429-39.
9. Basra MK, Edmunds O, Salek MS, Finlay AY. Measurement of family impact of skin disease: further validation of the Family Dermatology Life Quality Index (FDLQI). *J Eur Acad Dermatol Venereol* 2008;22:813-21.
10. Basra MK, Sue-Ho R, Finlay AY. The Family Dermatology Life Quality Index: measuring the secondary impact of skin disease. *Br J Dermatol* 2007;156:528-38.
11. Kulthanan K, Tuchinda P, Rujitharanawong C, Panjapakkul W, Chularojanamontri L. Validity And Reliability of The Thai Version of The Family Dermatology Life Quality Index. *Siriraj Med J* 2023;369-76.
12. Kulthanan K, Jiamton S, Wanitphakdeedecha R. The validity and reliability of the Dermatology Life Quality Index (DLQI) in Thais. *Thai J Dermatol* 2004;20:113-23.
13. Tadros A, Vergou T, Stratigos AJ, et al. Psoriasis: is it the tip of the iceberg for the quality of life of patients and their families? *J Eur Acad Dermatol Venereol* 2011;25:1282-7.
14. Martínez-García E, Arias-Santiago S, Valenzuela-Salas I, Garrido-Colmenero C, García-Mellado V, Buendía-Eisman A. Quality of life in persons living with psoriasis patients. *J Am Acad Dermatol* 2014;71:302-7.
15. Yalda Nahidi M, Bitar Kiafar M, Zohre Sadeghinejad M, Lida Jarahi M, Tahmineh Mallakifard M. Quality of life of psoriasis patients and their partners in Mashhad, Iran. *Iranian Journal of Dermatology*. 2022;25.
16. Demma A, Suitner C, Ferruzza E, Nicolini C, Donini M. The indirect effect of a focus group for psoriatic patients on their caregivers. *Res Psychother* 2021;24:486.
17. Wu M, Yu Y, Huang D, et al. The Family Dermatology Life Quality Index of Spouses of Patients With Psoriasis: A Cross-Sectional Study. *Ann Dermatol* 2024;36:322-5.
18. Basra MK, Finlay AY. The family impact of skin diseases: the Greater Patient concept. *Br J Dermatol* 2007;156:929-37.
19. Boza JC, Basra MK, Vanin RC, Carvalho RR, Weber MB, Cestari TF. Translation into Brazilian Portuguese and validation of the psoriasis family index. *An Bras Dermatol* 2013;88:484-4.
20. Eghlileb AM, Basra MK, Finlay AY. The psoriasis family index: preliminary results of validation of a quality of life instrument for family members of patients with psoriasis. *Dermatology* 2009;219:63-70.
21. Basra MK, Zammit AM, Kamudoni P, Eghlileb AM, Finlay AY, Salek MS. PFI-14(c): A Rasch Analysis Refinement of the Psoriasis Family Index. *Dermatology* 2015;231:15-23.
22. Mrowietz U, Hartmann A, Weissmann W, Zschocke I. FamilyPso - a new questionnaire to assess the impact of psoriasis on partners and family of patients. *J Eur Acad Dermatol Venereol* 2017;31:127-34.
23. Żychowska M, Reich A, Maj J, Jankowska-Konsur A, Szepietowski JC. Impact of Childhood Psoriasis on Caregivers' Quality of Life, Measured with Family Dermatology Life Quality Index. *Acta Derm Venereol* 2020;100:adv00244.

24. Ghodsi SZ, Asadi A, Ghandi N, et al. Family impact of pemphigus disease in an Iranian population using the Family Dermatology Life Quality Index. *Int J Womens Dermatol* 2020;6:409-13.
25. Agarwal S, Jain C, Shaafie HI, Khalid A, Singh A. Impact on quality of life of family members of vitiligo patients in North India: A cross-sectional study using family dermatology life quality index. *Indian J Dermatol Venereol Leprol* 2021;87:869-72.
26. Żychowska M, Reich A, Maj J, Jankowska-Konsur A, Szepietowski JC. Comparison of the impact of childhood psoriasis on mothers' and fathers' quality of life - does gender of a caregiver play a role? *J Eur Acad Dermatol Venereol* 2021;35:685-92.
27. Eghlileb AM, Davies EE, Finlay AY. Psoriasis has a major secondary impact on the lives of family members and partners. *Br J Dermatol* 2007;156:1245-50.