Impact of challenging-to-treat areas on quality of life and mental health among plaque psoriasis patients from Sabah, Malaysia

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ABSTRACT

Introduction: Patients with psoriasis with involvement of challenging-to-treat-areas often have higher disease burden. We studied the impact of the challenging-to-treat areas namely scalp, face, nail, palms, soles and genitalia on the quality of life and mental health of psoriatic patients.

Materials and Methods: We conducted a cross-sectional study involving 120 patients aged 18 years and above with plaque psoriasis. Those with challenging-to-treat-areas were compared to those without.

Results: The prevalence of challenging-to-treat-areas were scalp (35.8%), face (26.7%), nails (38.3%), palms (6.7%), soles (5.0%) and genitalia (15.0%). Psoriasis Area and Severity Index (PASI) was higher in patients with challenging-to-treat areas, with a median of 4.55 (IQR: 3.00, 7.80) compared to 1.80 (IQR: 0.60, 2.85) in those without ($p < 0.001$). Patients with these areas demonstrated a significantly higher Disease Life Quality Index (DLQI) scores compared to those without (mean ± SD: 5.13 ± 6.17 vs 11.02 ± 7.19; $p < 0.001$). Overall the prevalence of depression, anxiety and stress, scored using Depression, Anxiety and Stress Scale-21 Item (DASS-21), were 19.2%, 28.3% and 14.2% respectively with two thirds of patients had challenging-to-treat areas. Significantly more patients with challenging-to-treat-areas suffered from moderate to extremely severe depression (8.4% vs 5.0%, $p = 0.034$) and anxiety (33.4% vs 16.7%, $p = 0.001$). Patients with challenging-to-treat areas had higher mean itch Numeric Rating Scale (NRS) (4.28 ± 2.90) compared to those without (1.45 ± 1.58) ($p < 0.001$).

Conclusion: Patients with psoriasis with challenging-to-treat-areas reported greater impairment in quality of life and higher risk of depression and anxiety.

KEYWORDS:
Challenging-to-treat, psoriasis, DLQI, mental health, itch NRS

INTRODUCTION

Psoriasis is a chronic, immune-mediated inflammatory disease that is associated with social stigmatization, physical discomfort and psychosocial burdens, that significantly reduce patients' quality of life (QOL) and mental health status.[1-5] The involvement of challenging-to-treat areas such as scalp, face, nails, palms, soles and genitalia have been noted to cause much distress and affecting patients' QOL though often small in size, can cause substantial distress and significantly affect QOL.

Patients with scalp psoriasis are usually concern of the high visibility and persistent itch.[2,4-6] Due to visibility, small area of involvement the face can affect one's emotional well-being and confidence. Nail psoriasis can be painful, resulting in decreased work productivity.[2,5,7] Palmoplantar disease can be itchy and painful thus causing functional impairment.[2,8] Other than these, genital involvement which is frequently overlooked during clinical assessments, can cause itch, burning and embarrassment which interfere with patients' daily lives and sexual relationships.[9]

Standard measurements of disease severity such as body surface area (BSA) involvement or plaque severity may not effectively capture the psychological distress caused by the involvement of these areas, when even small areas have significant impact.[1,2,4] These areas are also challenging-to-treat with topical therapy alone and may require systemic treatments, which aren't always effective.[2,4,5] Furthermore, patients often seek quick relief, presenting challenges for physicians in managing unrealistic expectations.[5]

Currently, there is no consensus on the best treatment for these areas,[2,4,5] with existing studies mainly focusing on Western demographics and QOL, while mental health risks remain underexplored. In Eastern contexts like Malaysia, psoriasis impacts may vary due to differences in disease awareness, societal perceptions, and treatment access. Understanding socio-demographics, clinical characteristics, disease activity, and mental health is essential for developing effective treatment strategies.[2,4,5]

This study aims primarily to assess the impact of challenging-to-treat areas on QOL and mental health in plaque psoriasis patients at Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia. It will additionally explore socio-demographic and clinical characteristics, and evaluate the relationship between disease involvement and itch, QOL, depression, anxiety, and stress.

This article was accepted: 08 July 2025
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MATERIALS AND METHODS

Study Type and Design

This is a cross-sectional, descriptive study conducted on plaque psoriasis patients at the Dermatology Clinic, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia, involving 120 patients from 1st September 2023 to 31st March 2024. Inclusion criteria were patients aged 18 or older with plaque psoriasis. Exclusion criteria included patients under 18, those with other types of psoriasis; e.g., guttate, erythrodermic, pustular psoriasis, and those with severe concurrent medical or dermatological conditions; e.g., active malignancy, dementia, or systemic diseases like SLE or dermatomyositis.

Approval from the Medical Research and Ethics Committee (MREC) of the Ministry of Health (MOH) Malaysia was obtained prior to initiation of the study. The study was conducted in compliance with ethical principles outlines in the Declaration of Helsinki and Malaysian Good Clinical Practice guidelines.

Informed consent was obtained from all subjects. Data were collected on the case report form. These included demographics, medical history, clinical assessments using Psoriasis Area and Severity Index (PASI), Physician Global Assessment (PGA) for the scalp, face, palms, soles and genitalia and for the nail, the Nail Psoriasis Severity Index (NAPSI) scoring, and treatment received for the past 6 months.

The PASI assessment is done by dividing the body into four regions; legs (40%); trunk (30%); arms (20%); and head (10%). Each region's surface area is measured as a percentage and scored from 0 to 6 (0=1%; 1=<10%; 2=10-29%; 3=30-49%; 4= 50-69%; 5=70-89%; 6=90-100%). Severity is evaluated using three parameters: erythema (E), infiltration (I) and desquamation (D). These are evaluated on a scale of 0 to 4, from none to 'very severe' (None=0; Some=1; Moderate=2; Severe=3; Very Severe =4). Each region's severity scores are added, multiplied by the area score, and then by the percentage of skin in that region; Head: (I + E + D) x A x 0.1 = Total head; Arms: (I + E + D) x A x 0.2 = Total arms; Body: (I + E + D) x A x 0.3 = Total body; Legs: (I + E + D) x A x 0.4 = Total legs. The PASI score ranges from 0 to 72, with higher scores indicating more severe disease. Interpretation can be categorised into < 8 is mild, 8 to 12 is moderate and >12 is severe.[10]

The PGA scoring evaluates three components namely erythema, induration, and scaling. The components are assessed separately for all psoriatic lesions and scored on a scale from 0 to 4. The severity scores are summed, and the average score is calculated, then rounded to the nearest integer to determine the final PGA score. The final PGA score ranges 0 to 4, where 0 represents "Clear," 1 indicates "Almost Clear," 2 corresponds to "Mild," 3 denotes "Moderate," and 4 represents "Severe".[11]

The NAPSI score assesses the severity of nail involvement. Imaginary horizontal and longitudinal lines are used to divide the nail into four quadrants. Each nail is given a score for nail bed psoriasis (0-4) and nail matrix psoriasis (0-4) depending on specific features of nail psoriasis in that quadrant. Nail matrix psoriasis is evaluated by presence of any pitting, leukonychia, red spots in the lunula or/ and crumbling in each quadrant and will be scored with: 0 for none, 1 if any or all features are present in 1 quadrant of the nail, 2 if present in 2 quadrants of the nail, 3 if present in 3 quadrants of the nail, and 4 if present in 4 quadrants of the nail. Nail bed psoriasis is evaluated by presence of any onycholysis, splinter haemorrhages, subungual hyperkeratosis and "oil drop" (salmon patch dyschromia) and will be scored with: 0 for none, 1 for 1 quadrant involvement of any or all the features mentioned, 2 for 2 quadrants, 3 for 3 quadrants, and 4 for 4 quadrants. Each nail receives a matrix score and a nail bed score, the sum of both scores is the score for that nail (0-8, e.g.: nail matrix score of 2 and nail bed score of 1 give a total score of 3) and the total NAPSI score ranges 0-160 as this study includes the scoring of both the fingernails and toenails.[12,13]

The patients then complete a set of questionnaires survey including the scorings of Itch Numeric Rating Scale (NRS), Dermatology Life Quality Index (DLQI) and Depression, Anxiety and Stress Scale-21 Item (DASS-21).The questionnaires were available in English and Bahasa Malaysia.

The Itch NRS is a single-item, patient-reported outcome (PRO) designed questionnaire to assess itch severity. Patients rate their itch severity in the past 24 hours on an 11-point scale with 0 representing 'no itch' and 10 representing 'the worst itch imaginable'. It is interpreted as: NRS 0 means no pruritus; NRS < 3 is mild pruritus; NRS ≥ 3 - < 7 is moderate pruritus; NRS ≥ 7 < 9 is severe pruritus and NRS ≥ 9 is very severe pruritus.[14]

The DLQI is a self-administered questionnaire which measures the health-related QOL of adults with skin diseases. It consists of 10 questions on the impact of skin diseases on various aspects of life over the past week. Scores range from 0 to 3 per question, with interpretations as follows: 0 – 1, no effect at all on patient's life; 2–5, small effect on patient's life; 6–10, moderate effect on patient's life; 11–20, very large effect on patient's life; and 21 – 30, extremely large effect on patient's life.[15-18]

The DASS-21 is a set of three self-report scales assessing depression, anxiety, and stress, each with 7 items. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest or involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale assesses difficulty relaxing, nervous arousal, and being easily upset or agitated, irritable or over-reactive and impatient. Scores are summed up for each category then multiplied by 2 to calculate the final score. Scores are interpreted as in Table I.[19-22]

Statistical Analysis

The data were analysed using SPSS version 26.0. Continuous variables were assessed for distribution using skewness, kurtosis, and histograms, and presented as mean ± standard

deviation (normal distribution) or median with interquartile range (IQR) (non-normal distribution). Categorical variables were presented as frequency and percentage.

Differences between plaque psoriasis patients with and without challenging-to-treat areas were analysed using Independent Sample t-test, Mann Whitney U test, Pearson chi-squared test, and Fisher Exact test. Spearman correlation was used to explore the relationship between severity of lesions, itch, QOL and mental health of the patients, due to the ordinal nature and /or skewed distribution of the variables. The relationships were further tested using Fisher Exact test using the categorize form of the variables. All tests were two sided and statistical significance was defined as $p < 0.05$.

RESULTS

Demographic characteristics of the patients

Table II illustrates the demographic characteristics of the patients. A total of 120 patients were recruited with a mean age of 46 years old (SD = 15.55). The mean duration of psoriasis was 11.68 years (SD: 10.85), with 67 patients (55.8%) being diagnosed within the past year.

Those with challenging-to-treat areas were younger, with a mean age of 44.02 years (SD = 14.09), though the difference was not statistically significant (p=0.091). The gender distribution was fairly balanced with 52.5% females and 47.5% males with no significant differences between the two groups. The sample consisted of native Sabahans (80.9%), followed by Chinese (14.2%), Malay (4.2%) and Indians (0.8%).

The mean BMI was 28.64 kg/m² (SD = 5.79) with a higher prevalence of overweight or obesity among patients with challenging-to-treat areas (78.0%). These patients also had higher mean BMI (29.80 kg/m², SD = 6.28) compared to those without (27.49 kg/m², SD = 5.04), although a small difference, it was statistically significant (p=0.030). Other comorbidities included hypertension (35.8%), dyslipidaemia (30.8%), diabetes (15.8%), chronic kidney disease (7.5%), cardiac disease (4.2%), chronic liver disease (0.8). There were 11 patients (9.2%) reported to be alcoholic, 19 (15.8%) smoke and 7 (5.8%) vape.

Clinical characteristics of the patients

Table III highlights the clinical characteristics of the patients, comparing those with and without challenging-to-treat areas. The PASI score was significantly higher in patients with challenging-to-treat areas, with a median of 4.55 (IQR: 3.00, 7.80) compared to 1.80 (IQR: 0.60, 2.85) in those without ($p < 0.001$). This is further reflected in the PASI category, where a higher proportion of patients with challenging-to-treat areas had severe psoriasis (16.7%) compared to those without (1.7%) (p=0.001).

The challenging-to-treat areas included scalp (35.8%), face (26.7%), nail (38.3%), palm (6.7%), soles (5.0%) and genitalia (15.0%), with severity ranging from clear to moderate. For patients with nail involvement, the median NAPSI score was 17.5 (IQR: 1.5, 37.25).

In terms of treatment, topical therapy was used by majority of the patients (98.3%), while 61 patients (50.8%) received systemic therapy and 4 patients (3.3%) underwent phototherapy.

The mean itch NRS score was significantly higher for patients with challenging-to-treat areas (4.28 ± 2.90) compared to those without (1.45 ± 1.58) ($p < 0.001$). This difference was also evident in the itch NRS category, where 23.3% of patients with challenging-to-treat areas reported severe or very severe itch compared to none in the group without ($p < 0.001$).

The DLQI score was worse in patients with challenging-to-treat areas, with a higher mean score of 11.02 ± 7.19 compared to 5.13 ± 6.17 in the group without ($p < 0.001$). A higher percentage of patients with challenging-to-treat areas reported moderate to extremely large effects on their QOL (78.3%) compared to the group without (36.7%) ($p < 0.001$).

Overall, 19.2%, 28.3% and 14.2% of the patients reported depression, anxiety and stress respectively. Two thirds of them had involvement of challenging-to-treat areas. Comparing to those without, significantly more patients with challenging-to-treat areas had higher DASS-21 score indicating moderate to extremely depression (5.0% vs 8.4% p=0.034) and moderate to extremely severe anxiety (16.7% vs 33.4%, p = 0.001).

Relationship between severity of challenging-to-treat areas with quality of life, itch and mental health

Table IV shows the relationship between severity of lesions at challenging-to-treat areas with quality of life, mental health and itch.

The scalp severity was significantly positively correlated with DLQI scores (coefficient: 0.487; $p < 0.001$) and a positive correlation was observed between scalp severity with DASS-21 total scores (coefficient: 0.302; p= 0.001), DASS-21 depression scores (coefficient: 0.268; p= 0.003) and DASS-21 stress scores (coefficient: 0.362; $p < 0.001$).

A significant positive correlation was observed between face severity and DLQI scores (coefficient: 0.344; p< 0.001) as well as DASS-21 stress scores (coefficient: 0.184; p=0.044).

In terms of palm and sole severity, only DLQI scores showed a significant positive correlation, with palm severity (coefficient: 0.253; p = 0.005) and sole severity (coefficient: 0.250; p= 0.006).

A significant positive correlation was observed between genitalia severity with DLQI scores (coefficient: 0.341; p< 0.001), DASS-21 total scores (coefficient: 0.254; p=0.005), DASS-21 depression scores (coefficient: 0.240; p=0.008) and DASS-21 stress scores (coefficient 0.320; $p < 0.001$).

Furthermore, a significant positive correlation was observed between NAPSI scores and DLQI scores (coefficient: 0.367; p<0.001), DASS-21 total scores (coefficient: 0.253; p=0.005), DASS-21 depression scores (coefficient: 0.249; p=0.006) and DASS-21 stress scores (coefficient: 0.256; p = 0.005).

Table I: Score interpretation of DASS-21

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Table II: Demographic characteristics of the patients

Variables		Overall	Without challenging-to-treat area	With challenging-With to-treat area	P value
Age in years, mean ± SD		46.42 ± 15.55	48.82 ± 16.66	44.02 ± 14.09	0.091[a]
Gender, n (%)	Female	63 (52.5)	31 (51.7)	32 (53.3)	0.855[b]
	Male	57 (47.5)	29 (48.3)	28 (46.7)	
Race, n (%)	Malay	5 (4.2)	0 (0.0)	5 (8.3)	0.532[c]
	Chinese	17 (14.2)	10 (16.7)	7 (11.7)	
	Indian	1 (0.8)	1 (1.7)	0 (0.0)	
	Kadazan	24 (20.0)	13 (21.7)	11 (18.3)	
	Dusun	23 (19.2)	11 (18.3)	12 (20.0)	
	Bajau	13 (10.8)	7 (11.7)	6 (10.0)	
	Rungus	9 (7.5)	5 (8.3)	4 (6.7)	
	Sabahan Brunei	8 (6.7)	4 (6.7)	4 (6.7)	
	Other Sabah ethnicities	20 (16.7)	9 (15.0)	11 (18.3)	
Employment status, n (%)	Unemployed / Retired	44 (36.7)	25 (41.7)	19 (31.7)	0.256[b]
	Employed	76 (63.3)	35 (58.3)	41 (68.3)	
Educational level, n (%)	No formal schooling	3 (2.5)	1 (1.7)	2 (3.3)	0.170[c]
	Primary	13 (10.8)	7 (11.9)	6 (10.0)	
	Secondary	49 (40.8)	19 (32.2)	30 (50.0)	
	Tertiary	54 (45.0)	32 (54.2)	22 (36.7)	
Household income, n (%)	<RM3490 (low)	65 (54.2)	30 (50.0)	35 (58.3)	0.617[b]
	RM3490-RM8199 (medium)	43 (35.8)	24 (40.0)	19 (31.7)	
	≥RM8200 (high)	12 (10.0)	6 (10.0)	6 (10.0)	
Marital status, n (%)	Not married	32 (26.7)	16 (27.1)	16 (27.1)	>0.950[b]
	Married	86 (71.7)	43 (72.9)	43 (72.9)	
BMI in kg/m^2, mean ± SD		28.64 ± 5.79	27.49 ± 5.04	29.80 ± 6.28	0.030[a]
Overweight / Obese, n (%)	No	34 (28.3)	21 (35.6)	13 (22.0)	0.104[b]
	Yes	84 (70.0)	38 (64.4)	46 (78.0)	
Duration of psoriasis, mean ± SD		11.68 ± 10.85	12.99 ± 11.86	10.37 ± 9.66	0.187[a]
Duration from onset to diagnosis of disease within a year, n (%)	No	52 (43.3)	26 (43.3)	26 (43.3)	>0.950[b]
	Yes	68 (56.7)	34 (56.7)	34 (56.7)	
Comorbidities, n (%)	Hypertension	43 (35.8)	20 (33.3)	23 (61.7)	0.568[b]
	Diabetes Mellitus	19 (15.8)	7 (11.7)	12 (20.0)	0.211[b]
	Dyslipidaemia	37 (30.8)	18 (30.0)	19 (31.7)	>0.950[b]
	Chronic kidney disease	9 (7.5)	5 (8.3)	4 (6.7)	>0.950[c]
	Cardiac disease	5 (4.2)	4 (6.7)	1 (1.7)	0.364[c]
	Chronic liver disease	1 (0.8)	1 (1.7)	0 (0.0)	>0.950[c]
Alcohol intake, n (%)	No	109 (90.8)	54 (90.0)	55 (91.7)	0.752[b]
	Yes	11 (9.2)	6 (10.0)	5 (8.3)	
Smoking, n (%)	No	101 (84.2)	51 (85.0)	50 (83.3)	0.803[b]
	Yes	19 (15.8)	9 (15.0)	10 (16.7)	
Vaping, n (%)	No	113 (94.2)	58 (96.7)	55 (91.7)	
	Yes	7 (5.8)	2 (3.3)	5 (8.3)	0.439[c]

[a]Independent sample t test; [b]Pearson chi-squared test; [c]Fisher Exact test

The itch severity was found to be correlated with all the QOL and mental health measures. A positive correlation was observed between itch NRS and DLQI (Coefficient: 0.547; $p < 0.001$), DASS-21 total scores (coefficient: 0.366; $p < 0.001$), DASS-21 depression scores (coefficient: 0.313; $p < 0.001$), DASS-21 anxiety scores (coefficient: 0.223; p=0.014) and DASS-21 stress scores (coefficient: 0.376; $p < 0.001$).

Association between severity of challenging-to-treat areas with quality of life

A significant association was observed between the DLQI category with scalp severity (p< 0.001), face severity (p= 0.001), and genitalia severity (p= 0.008) (Table V).

Table III: Clinical characteristics, Itch NRS, DLQI and DASS-21 scores

Variables		Overall	Without challenging-to-treat area	With challenging-to-treat area	p value
PASI score, median (IQR)		2.95 (0.90, 5.55)	1.80 (0.60, 2.85)	4.55 (3.00, 7.80)	<0.001[b]
PASI category, n (%)	Mild	106 (88.3)	59 (98.3)	47 (78.3)	0.001[d]
	Moderate	3 (2.5)	0 (0.0)	3 (5.0)	
	Severe	11 (9.2)	1 (1.7)	10 (16.7)	
Psoriatic arthritis, n (%)	No	101 (84.2)	49 (81.7)	52 (86.7)	0.453c
	Yes	19 (15.8)	11 (18.3)	8 (13.3)	
Involvement of challenging-to- treat area, n (%)	Scalp	43 (35.8)	NA	43 (71.7)	NA
	Face	32 (26.7)		32 (53.3)	
	Nail	46 (38.3)		46 (76.7)	
	Palm	8 (6.7)		8 (13.3)	
	Sole	6 (5.0)		6 (10.0)	
	Genitalia	18 (15.0)		18 (30.0)	
Scalp severity, n (%)	Clear	77 (64.2)	NA	17 (28.3)	NA
	Almost clear	28 (23.3)		28 (46.7)	
	Mild	14 (11.7)		14 (23.3)	
	Moderate	1 (0.8)		1 (1.7)	
Face severity, n (%)	Clear	88 (73.3)	NA	28 (46.7)	NA
	Almost clear	25 (20.8)		25 (41.7)	
	Mild	7 (5.8)		7 (11.7)	
Palm severity, n (%)	Clear	112 (93.3)	NA	52 (86.7)	NA
	Almost clear	6 (5.0)		6 (10.0)	
	Mild	2 (1.7)		2 (3.3)	
Soles severity, n (%)	Clear	114 (95.0)	NA	54 (90.0)	NA
	Almost clear	4 (3.3)		4 (6.7)	
	Mild	2 (1.7)		2 (3.3)	
Genitalia severity, n (%)	Clear	102 (85.0)	NA	42 (70.0)	NA
	Almost clear	15 (12.5)		15 (25.0)	
	Mild	3 (2.5)		3 (5.0)	
NAPSI, median (IQR)		0.00 (0.00, 17.75)		17.50 (1.50, 37.25)	
Topical therapy, n (%)	No	2 (1.7)	2 (3.3)	0 (0.0)	0.496[d]
	Yes	118 (98.3)	58 (96.7)	60 (100.0)	
Phototherapy, n (%)	No	116 (96.7)	57 (95.0)	59 (98.3)	0.619[d]
	Yes	4 (3.3)	3 (5.0)	1 (1.7)	
Systemic therapy, n (%)	No	59 (49.2)	27 (45.0)	32 (53.3)	0.361c
	Yes	61 (50.8)	33 (55.0)	28 (46.7)	
Itch NRS, mean ± SD		2.87 ± 2.73	1.45 ± 1.58	4.28 ± 2.90	<0.001[a]
Itch NRS category, n (%)	None	33 (27.5)	22 (36.7)	11 (18.3)	<0.001[c]
	Mild	43 (35.8)	29 (48.3)	14 (23.3)	
	Moderate	27 (22.5)	9 (15.0)	18 (30.0)	
	Severe	14 (11.7)	0 (0.0)	14 (23.3)	
	Very severe	3 (2.5)	0 (0.0)	3 (5.0)	
DLQI, mean ± SD		8.07 ± 7.30	5.13 ± 6.17	11.02 ± 7.19	<0.001a
DLQI category, n (%)	No effect	28 (23.3)	22 (36.7)	6 (10.0)	<0.001c
	Small effect	25 (20.8)	18 (30.0)	7 (11.7)	
	Moderate effect	28 (23.3)	9 (15.0)	19 (31.7)	
	Very large effect	28 (23.3)	8 (13.3)	20 (33.3)	
	Extremely large effect	11 (9.2)	3 (5.0)	8 (13.3)	
DASS-21 total score, median (IQR)		12 (2, 28)	21 (6, 36)	32 (18, 42)	<0.001[b]
DASS-21 depression, median (IQR)		2 (0, 8)	0 (0, 4)	4 (0, 10)	0.001[b]
DASS-21 depression category, n (%)	Normal	97 (80.8)	54 (90.0)	43 (71.7)	0.034[d]
	Mild	15 (12.5)	3 (5.0)	12 (20.0)	
	Moderate	6 (5.0)	3 (5.0)	3 (5.0)	
	Severe	1 (0.8)	0 (0.0)	1 (1.7)	
	Extremely severe	1 (0.8)	0 (0.0)	1 (1.7)	
DASS-21 anxiety, median (IQR)		4 (0, 10)	3 (0, 6)	4 (2, 10)	0.023[b]
DASS-21 anxiety category, n (%)	Normal	86 (71.7)	50 (83.3)	36 (60.0)	0.001d
	Mild	4 (3.3)	0 (0.0)	4 (6.7)	
	Moderate	21 (17.5)	6 (10.0)	15 (25.0)	
	Severe	5 (4.2)	4 (6.7)	1 (1.7)	
	Extremely severe	4 (3.3)	0 (0.0)	4 (6.7)	
DASS-21 stress, median (IQR)		6 (0, 12)	2 (0, 6)	8 (4, 14)	<0.001[b]
DASS-21 stress category, n (%)	Normal	103 (85.8)	55 (91.7)	48 (80.0)	0.215[d]
	Mild	10 (8.3)	4 (6.7)	6 (10.0)	
	Moderate	3 (2.5)	0 (0.0)	3 (5.0)	
	Severe	4 (3.3)	1 (1.7)	3 (5.0)	

[a]Independent sample t test; [b]Mann Whitney U test; [c]Pearson chi-squared test; [d]Fisher Exact test

Table IV: Relationship between severity of lesions at challenging-to-treat areas with quality of life, mental health and itch

		DLQI	DASS-21 TOTAL	DASS-21 DEPRESSION	DASS-21 ANXIETY	DASS-21 STRESS
Severity of lesions at challenging-to-treat areas						
Scalp	Correlation Coefficient	0.487	0.302	0.268	0.144	0.362
	p value	<0.001	0.001	0.003	0.116	<0.001
Face	Correlation Coefficient	0.344	0.129	0.121	0.032	0.184
	p value	<0.001	0.160	0.189	0.732	0.044
Palms	Correlation Coefficient	0.253	0.070	0.122	-0.041	0.096
	p value	0.005	0.449	0.184	0.657	0.295
Soles	Correlation Coefficient	0.250	0.073	0.168	-0.014	0.063
	p value	0.006	0.429	0.068	0.881	0.498
Genitalia	Correlation Coefficient	0.341	0.254	0.240	0.081	0.320
	p value	<0.001	0.005	0.008	0.377	<0.001
NAPSI	Correlation Coefficient	0.367	0.253	0.249	0.162	0.256
	p value	<0.001	0.005	0.006	0.077	0.005
Itch severity						
Itch NRS	Correlation Coefficient	0.547	0.366	0.313	0.223	0.376
	p value	<0.001	<0.001	<0.001	0.014	<0.001

Spearman correlation

Table V: Association between the severity of challenging-to-treat areas with quality of life

	DLQI category, n (%)					p value
	No effect	Small effect	Moderate effect	Very large effect	Extremely large effect	
Scalp						
Clear	24 (85.7)	23 (92.0)	15 (53.6)	11 (39.3)	4 (36.4)	<0.001
Almost clear	4 (14.3)	2 (8.0)	11 (39.3)	5 (17.9)	6 (54.5)	
Mild	0 (0.0)	0 (0.0)	2 (7.1)	11 (39.3)	1 (9.1)	
Moderate	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.6)	0 (0.0)	
Severe	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	
Face*						
Clear	25 (89.3)	23 (92.0)	18 (64.3)	16 (57.1)	6 (54.5)	0.001
Almost clear	3 (10.7)	2 (8.0)	9 (32.1)	6 (21.4)	5 (45.5)	
Mild	0 (0.0)	0 (0.0)	1 (3.6)	6 (21.4)	0 (0.0)	
Palm*						
Clear	28 (100.0)	25 (100.0)	26 (92.9)	23 (82.1)	10 (90.9)	0.105
Almost clear	0 (0.0)	0 (0.0)	1 (3.6)	4 (14.3)	1 (9.1)	
Mild	0 (0.0)	0 (0.0)	1 (3.6)	1 (3.6)	0 (0.0)	
Sole*						
Clear	28 (100.0)	25 (100.0)	27 (96.4)	24 (85.7)	10 (90.9)	0.082
Almost clear	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.7)	1 (9.1)	
Mild	0 (0.0)	0 (0.0)	1 (3.6)	1 (3.6)	0 (0.0)	
Genitalia*						
Clear	28 (100.0)	23 (92.0)	24 (85.7)	19 (67.9)	8 (72.7)	0.008
Almost clear	0 (0.0)	2 (8.0)	4 (14.3)	6 (21.4)	3 (27.3)	
Mild	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.7)	0 (0.0)	

Fisher Exact test

DISCUSSION

Demographic characteristics of the patients

In this cross-sectional study, psoriasis patients with challenging-to-treat areas were generally younger and exhibited a slight female preponderance, a trend consistent with findings from a Danish study by Egeberg et al. (1). However, in the Danish study, men had a higher prevalence of genital and nail involvement.[1] The younger age group in our study may contribute to a longer duration of psoriasis, increasing the potential for disease progression over time.

It is noteworthy that the population in our study comprises various Asian backgrounds, particularly the diverse ethnic groups of Sabah, including indigenous communities. In these settings, cultural stigma continues to pose a significant barrier to seeking mental health support. Mental illness is often viewed as shame or personal weakness, particularly in traditional communities where spiritual or moral explanations are sometimes preferred over medical understanding. This stigma is especially strong within certain ethnic or rural populations, where mental health discussions are often suppressed or avoided entirely. A well-structured, multi-channel approach combining written materials and telecommunications would ensure better treatment outcome.[23]

The majority of the affected population were married and came from lower-income, working-class background, as classified by the Malaysian household income standards.[24] Patients may face limitations related to finances, work commitments, time availability for medical consultations,

and access to transportation. Low socioeconomic status is often associated with limited access to healthcare resources, which can affect treatment options and adherence, ultimately influencing disease management. Besides that, the involvement of challenging-to-treat areas brings discomfort and inconvenience, which can negatively impact the patients' physical and mental well-being, as seen in the Danish study and others.[4,25,26]

A notable finding in this study was the high prevalence of overweight and obesity, particularly among those with challenging-to-treat areas. This reinforces the established association between obesity and psoriasis severity. In addition, obesity itself can affect ones' self-confidence and many studies had shown its association with depression and anxiety.[27] Consequently, leading to higher treatment demands.[27,28]

Other comorbidities observed included hypertension (35.8%), dyslipidaemia (30.8%), diabetes mellitus (15.8%), and cardiovascular disease (4.2%). These findings were comparable to the study by Duffin et al.[2] It is important to note that these will all increase the financial burden to patients and our healthcare system.[29] A holistic approach that includes diet, lifestyle modifications and management of comorbidities alongside dermatological therapies should be adopted when managing psoriasis patients.

Clinical characteristics of the patients

The most common challenging-to-treat areas were the scalp (35.8%), followed by the face (26.7%), nails (38.3%), genitalia (15.0%), palms (6.7%), and soles (5.0%). A Danish study reported similar findings, with scalp (43%) and face (29.9%) involvement being most common, although fewer patients had palms and soles involvement in our study.[1] Despite ethnic differences, studies like the Danish Skin Cohort and Corrona Psoriasis Registry highlight the scalp, face, and nails as the most affected areas in psoriasis patients, indicating these areas are consistently a major concern across populations.[1,2]

As all of our patients were receiving topical therapy and more than half were undergoing systemic therapy or phototherapy, the severity of lesions in challenging-to-treat areas were mostly mild to almost clear. Despite this, many patients still experienced significant impairment in QOL, along with depression, anxiety, and stress. The median NAPSI score for patients with challenging-to-area involvement was 17.5 (IQR: 1.5, 37.25), less than half of the total score. This suggests that while nail involvement is common, it doesn't always correlate with severe clinical symptoms, yet it can still significantly impact patients' lives, underlining the need for personalized treatment approaches.[7]

As the severity of challenging-to-treat areas increases, involvement of the scalp, face, nails, and genitalia has a profound impact on patients. These areas significantly compromise QOL and psychosocial well-being.[1,9,30] Scalp and face involvement is particularly visible and difficult to conceal, especially as the disease worsens. Nail psoriasis, is not only obvious but can be painful, thus further exacerbating functional impairment and psychosocial distress.[2,5-7] Genital involvement is especially sensitive, affecting sexual health and relationships, as discomfort and embarrassment can occur during intimacy.[9] A study by Pettey et al. reported higher impairment physically and socially in those with palmoplantar psoriasis as they are sensitive functional areas.[8] The correlations between lesion severity in these areas with QOL and mental health necessitates the need for an integrated approach addressing these.[1,2,25]

Most patients had mild median PASI scores, likely due to ongoing treatment. However, challenging-to-treat areas like the scalp still significantly impacted QOL and mental health, as shown by Egeberg et al., which found higher DLQI and itch NRS scores in patients with these areas, even without severe BSA involvement.[1] A systematic review by Stewart et al. reported nail psoriasis patients experienced QOL impairment despite having lower PASI scores than those without,[1,7,8] Our findings align with these studies, as more QOL impairment is seen in those with challenging-to-treat areas despite most of them had mild PASI scores.

However, patients with challenging-to-treat areas had higher PASI scores than those without, suggesting these areas are linked to more severe disease.[30]

The mean itch NRS score was higher in patients with challenging-to-treat areas, many experienced moderate to severe itch despite treatment. As disease severity increased, so did itch intensity, along with greater impairment in QOL and mental health. Interestingly, a third of patients without challenging-to-treat areas reported no itching. Since itch affects QOL, personalized treatment addressing this is crucial.[1,7-9]

Patients with challenging-to-treat areas had significantly higher DASS scores, indicating greater psychological distress. This emphasizes that psoriasis impacts both physical and mental health, underscoring the need for integrated dermatological and psychological care.[31]

LIMITATIONS

This study has limitations like, details on treatment given, also potential recall bias on scoring of DASS-21 and hence underreporting of sensitive areas such as genital area involvement when not thoroughly examined due to patient's refusal. Future prospective study on the impact of treatment modalities on the quality of life and mental health of psoriasis patients with challenging-to-treat areas will be useful in improving patients' care.

CONCLUSION

In summary, this study highlights the multifaceted nature of clinical presentation of psoriasis, its associated comorbidities and its impact on QOL and mental health. The significant differences in DLQI and DASS-21 scores between patients with and without challenging-to-treat areas underscore the need for holistic and personalized treatment approaches that encompass both dermatological and psychological care.

Therefore, it is critical for clinicians to address the challenging-to-treat areas along with overall disease severity, QOL and mental health of the patients. Future research should explore these relationships to better inform clinical practice and improve patients' outcomes.

ETHICAL CONSIDERATIONS

Approval from the Medical Research and Ethics Committee (MREC) of the Ministry of Health (MOH) Malaysia was obtained prior to initiation of the study (NMRR ID-24-01764-IDK). The study was conducted in compliance with ethical principles outlines in the Declaration of Helsinki and Malaysian Good Clinical Practice guidelines.

CONSENT TO PARTICIPATE

Informed consent was obtained from all patients before participation in the study.

CONSENT FOR PUBLICATION

Informed consent was obtained from all patients before participation in the study.

DECLARATION OF CONFLICTING INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

FUNDING STATEMENT

No funding was received for conducting this study.

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