

# Nail Abnormalities in Thai Psoriasis Patients with Disease Severity and Impact on Quality of Life

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## ABSTRACT

**Background:** Nail abnormalities are common in psoriasis. The relationship between nail abnormalities and disease severity or impact on quality of life has scarcely been reported.

**Objectives:** The aims of this study were to find the proportion and types of nail abnormalities among Thai psoriasis patients and to assess the association between nail abnormalities, disease severity and the quality of life.

**Methods:** A retrospective medical record review of 1,027 psoriasis patients who attended the dermatology clinic from February 2005 to May 2008 was performed. Demographic data, type of nail abnormalities and severity of psoriasis as well as the dermatology life quality index (DLQI) were recorded.

**Results:** Nail abnormalities in Thai psoriasis patients were diagnosed in 63.4% of them. The most common type was onycholysis (45.9%) followed by nail pittings (42.8%). Nail abnormalities were significantly associated with higher psoriasis area severity index (PASI) with adjusted odds ratio of 2.45 (95% CI 1.86-3.23,  $p < 0.001$ ) and associated with DLQI with adjusted odds ratio of 1.61 (95% CI 1.00-2.58,  $p = 0.05$ ).

**Conclusion:** Nail abnormalities in psoriasis are common and associated with disease severity and quality of life of patients.

**Keywords:** Psoriasis, nail abnormalities, quality of life

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## INTRODUCTION

Psoriasis is a chronic skin disease that affects approximately 1-3% of the world population. Pathogenesis is involved with genetics, immunity and environment factors.<sup>1-5</sup> The clinical presentations range from mild to severe forms. Up to half of the patients with psoriasis have concurrent nail psoriasis.<sup>4-8</sup> Common nail manifestations in psoriasis include pitting nail, onycholysis, nail plate abnormalities, nail bed discolorations or splinter hemorrhages.<sup>1,2,4,7,9-12</sup> Pitting and onycholysis were the two most common changes.<sup>1,4,6</sup> Psoriatic nails cause significant distress on the quality of life of patients. De Jong and colleagues reported that 93.3% of those with psoriatic changes of nail considered it a significant cosmetic handicap, 58.9% found that it interfered with their

daily activities and 51.8% described pain as a symptom.<sup>13</sup> Moreover, psoriatic arthritis is involved statistically more often among patients with nail changes.<sup>9,10,13</sup> Some studies have shown that psoriatic nails were related with disease severity, older age or long-standing course of disease.<sup>4</sup> To date, there has been no report on epidemiologic data of psoriatic nails in Thailand. The aims of this study were to study the proportion and types of nail abnormalities among Thai psoriasis patients and to assess the association between nail abnormalities and disease severity and the quality of life.

## MATERIALS AND METHODS

This study was approved by the Ethical Committee on Research Involving Human Subjects of Siriraj Hospital, Mahidol University, Thailand. We retrospectively reviewed case record forms of 1,027 psoriasis patients, who attended the dermatology clinic of the Department of Dermatology, Siriraj Hospital between February 2005 and May 2008. The following data were collected: demographic data (age, sex, occupation), type of psoriasis,

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characteristics of nail involvements, psoriasis area and severity index (PASI) and Dermatology Life Quality Index (DLQI). In our study, PASI score was a tool used to measure the severity and extent of psoriasis by evaluating intensity of redness, thickness and scaliness on each body region (range of scores: 0 to 72 scores, and more than 10 defined moderate to severe psoriasis).

The Dermatology Life Quality Index was developed in 1994 by Finlay and Khan for measuring the patient's quality of life as it was affected from skin conditions. Dr. A.Y. Finlay gave permission to Dr. Kulthanan to use the Thai version of the DLQI questionnaire. Overall, 317 patients completed the Thai version of the DLQI questionnaire. The questionnaire contains 10 questions that cover disabilities in work, leisure, daily activities, personal relationships and treatments, with each referring to the past 7 days.<sup>15</sup> Each question has 5 possible answers: not relevant (not applicable), not at all, a little, a lot, or very much, with the corresponding scores of 0,0,1,2 and 3, respectively. The DLQI total score was calculated by adding scores of all 10 questions, with the minimum score of 0 and the maximum score of 30. The higher of the scores indicates the greater impairment of the quality of life.

### Statistical analyses

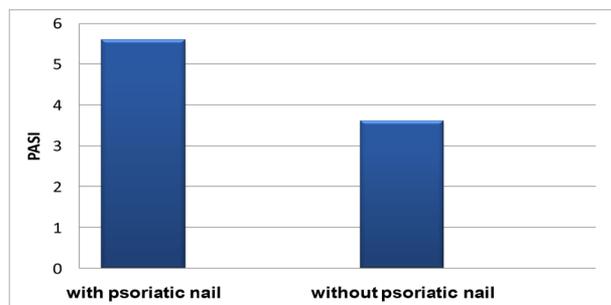
Descriptive analysis (e.g. mean, median, minimum, maximum, frequency and percentages) were used to describe the demographic data, types of nail changes, types of psoriasis, DLQI and PASI score. Pearson Chi-square test, t-test and multiple logistic regressions were used to analyze the association of categorical data. All statistical analyses were performed using SPSS 18.0 for Windows software (SPSS Incorporated, Chicago, IL 60606). A p-value < 0.05 was considered statistically significant.

## RESULTS

Of 1,027 patients who were diagnosed with psoriasis, 748 (72.8%) were female and 279 (27.2%) were male. The mean (SD) age was 43.9 years (14.6) with a range of

**TABLE 1.** Demographic data of patients with nail changes.

Characteristic	Number (%)
<b>Gender</b>	
Male	166 (25.5)
Female	485 (74.5)
<b>Types of nail change</b>	
Onycholysis	471 (45.9)
Pitting	439 (42.8)
Onychodystrophy	207 (20.2)
Subungual hyperkeratosis	133 (13.0)
Oil drop sign	80 (7.8)
<b>Types of lesions</b>	
Chronic plaque	377 (83.2)
Guttate	54 (11.9)
Erythroderma	9 (1.9)
Palmoplantar	7 (1.6)
Pustular	5 (1.1)
Flexural (inverse)	1 (0.2)



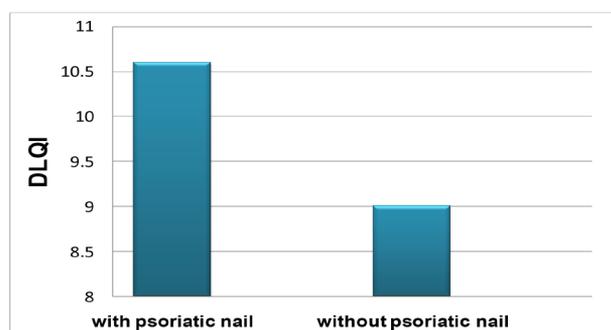
**Fig 1.** Median psoriasis severity as measured with the Psoriasis Area and Severity Index (PASI) in patients with and without nail changes.

18 - 89 years. There was no significant difference in the mean age between sexes. From physical examination, 651 (63.4%) of 1,027 cases had nail abnormalities. The most common types of nail abnormalities were onycholysis (45.9%) followed by pitting nails (42.8%). Among psoriasis patients who had nail changes, 83% and 12% had chronic plaque type and guttate psoriasis respectively (Table 1).

The median PASI among those who had psoriatic nails and those without psoriatic nails were statistically significantly different at 5.9 (3.1, 13.7) vs. 3.6 (1.6, 6.5) respectively (Ranksum test,  $p < 0.0001$ ) (Fig 1).

Among 317 patients who had completed the DLQI questionnaire (233 females and 84 males), the average overall DLQI score among patients with and without nail abnormalities was 10.6 and 9.0, respectively, and the difference was statistically significant ( $p = 0.0496$ , t-test) (Fig 2). However, the significant difference was only found in female ( $p = 0.02$ ) and not in male ( $p = 0.6$ ) (Table 2). In DLQI, the domains that had high scores were symptoms of disease and problems with the treatment, while the lowest DLQI score was sexual activity. Overall, women were more affected in all these domains compared with men (Table 3).

From multiple logistic regression, those who had nail abnormalities were associated with higher PASI with adjusted odds ratio of 2.45 (95% CI 1.86-3.23;  $p < 0.001$ ) and were associated with higher DLQI with adjusted odds ratio of 1.61 (95% CI 1.00-2.58,  $p = 0.05$ ) (Table 2).



**Fig 2.** Mean quality of life as measured with the Dermatology life quality index (DLQI) in psoriatic patients with and without nail changes.

**TABLE 2.** DLQI of patients with and without nail changes.

Characteristic	Nail changes (n=196) mean ± SD (n)	No nail changes (n=116) mean ± SD (n)	p-value	All patients (n =317) mean ± SD (n)
<b>DLQI</b>				
Male	9.6 ± 6.4	9.4 ± 6.3	0.6	
Female	11.0 ± 7.3	8.8 ± 6.3	0.02	
Total			0.049	10.0 ± 6.8

**TABLE 3.** The DLQI scores of each question and nail changes (N=317).

Question	Nail changes mean ± SD (n)	No nail changes mean ± SD (n)	p-value
Itching			0.191
0	17(10.1)	23(11.0)	
1	53(31.6)	71(33.8)	
2	46(27.4)	71(33.8)	
3	52(31.0)	45(21.4)	
Embarrassment			0.115
0	26(15.5)	49(23.7)	
1	46(27.4)	53(25.6)	
2	46(27.4)	40(19.3)	
3	50(29.8)	65(31.4)	
Shopping problems			0.415
0	67(41.1)	88(43.6)	
1	41(25.2)	44(21.8)	
2	28(17.2)	45(22.3)	
3	27(16.6)	25(12.4)	
Cloth choice			0.075
0	61(37.0)	77(37.4)	
1	29(17.6)	57(27.7)	
2	35(21.2)	37(18.0)	
3	40(24.2)	35(17.0)	
Social activities			0.531
0	52(31.7)	74(36.1)	
1	37(22.6)	52(25.4)	
2	42(25.6)	41(20.0)	
3	33(20.1)	38(18.5)	
Sport			0.813
0	71(49.0)	94(51.9)	
1	26(17.9)	36(19.9)	
2	25(17.2)	27(14.9)	
3	23(15.9)	24(13.3)	
Work and study			0.712
0	84(61.3)	117(67.6)	
1	23(16.8)	25(14.5)	
2	14(10.2)	15(8.7)	
3	16(11.7)	16(9.2)	
Interpersonal problem			0.236
0	94(57.3)	115(55.6)	
1	42(25.6)	57(27.5)	
2	13(7.9)	25(12.1)	
3	15(9.1)	10(4.8)	
Sexual difficulties			0.893
0	85(65.4)	109(68.6)	
1	21(16.2)	21(13.2)	
2	14(10.8)	18(11.3)	
3	10(7.7)	11(6.9)	
Treatment			0.028
0	59(35.5)	83(41.5)	
1	46(27.7)	66(33.0)	
2	26(15.7)	31(15.5)	
3	35(21.1)	20(10.0)	

**Abbreviations:** DLQI: dermatology life quality index, Each question has 4 alternative answers: “not at all”, “a little”, “a lot”, or “very much”, with scores of 0, 1, 2 and 3, respectively.<sup>15,33</sup>

**TABLE 4.** Studies of nail abnormalities in patients with psoriasis.

Characteristic	de Jong EM, et al <sup>13</sup>	Salomon J, et al <sup>10</sup>	Brazzelli V, et al <sup>35</sup>	Our study
Country study	Netherland	Poland	Italy	Thailand
Number of subject	1,728	106	178	1,027
% of nail abnormalities	79.2	78.3	76.9	63.4
Common nail abnormalities	Pitting, onycholysis	Subungual hyperkeratosis, pitting	Onycholysis	Onycholysis, pitting
Nail abnormalities associated with disease severity	Not done	Not done	Yes	Yes
Nail abnormalities associated with QOL*	Yes	Not done	Not done	Yes

\*QOL: quality of life

## DISCUSSION

This study demonstrated from a large group of psoriasis patients in Thailand that nail involvement in psoria-

sis is very common. Characteristics of nail abnormalities in our study were similar to other studies. Onycholysis is the most common followed by nail pitting. A study from Poland however, showed the most common nail change

was subungual hyperkeratosis and onycholysis was less common.<sup>10</sup> Most of our patients had chronic plaque-type psoriasis, as reported in other studies.<sup>16,17</sup> Our data also showed that nail changes were more often seen in plaque-type psoriasis and this has never been defined in previous studies. Table 4 demonstrates our findings compared to other studies.

We found that patients with nail psoriasis had more severe disease (higher PASI) as described in other studies.<sup>19,20</sup> Nail involvement may be considered as an indicator of more severe disease. The physician should pay attention during clinical examination especially to the nails so that psoriasis patients with nail involvement will be promptly identified.

There were a number of studies which demonstrated the association between the quality of life and severity of psoriasis, although such data from psoriasis nail was still limited. In contrast to the studies from Chile and Germany, men were more affected by items related to appearance and socialization.<sup>20,21</sup> However, there have also been studies that showed no gender differences.<sup>22</sup>

Nail psoriasis has a tremendous impact on patients' work and social life. From multiple logistic regression, only female patients significantly demonstrated distress on quality of life from nail psoriasis ( $p=0.02$ ) (Table 2). This might be explained through the cosmetic issue, which is usually more a concern among women than men. To be specific, the question number nine concerning about sexual difficulties had the lowest average DLQI score. It is probably explained from Asian cultures that people usually are embarrassed when talking about sexual problems. In question number ten, concerning problems from disease and treatment, this indicated a significant difference between patients with and without nail changes (Table 3). These data demonstrated that this issue disturbed the quality of life of patients.

Limitations of this study were retrospective review and differences in PASI assessment between each physician.

In summary, we demonstrated that nail abnormalities in psoriasis are common and associated with disease severity and quality of life. Treatment for psoriasis nails remains a problem and is not usually effective. Future studies on effective novel treatment for psoriasis nail may improve the quality of life of psoriasis patients.

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