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## A prospective study on clinical nail changes in papulosquamous disorder

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### Abstract

**Introduction:** Erythroderma is an inflammatory skin disease that causes redness and scaling on more than 90 percent of the body's skin. Primary erythroderma, as opposed to secondary erythroderma, which arises on top of preexisting dermatoses, develops in otherwise healthy skin as a result of a systemic infection or a reaction to a medicine.

**Materials and Methods:** In order to better understand the progression of papulosquamous disease, a descriptive study of nail alterations was done at the outpatient clinic of the Department of Dermatology, Venereology & Leprosy, Sri Venkateshwaraa Medical College Hospital & Research Centre, Pondicherry, throughout the period of May 2018 to April 2019. The ethics committee did not object.

**Results:** A total of 80 participants were enrolled in the study; 60 were males and 20 were girls. The number of men to women was 1.22 to 1. Patients between the ages of 31 and 45 made up the largest age group, while those beyond the age of 60 made up the smallest. Patients between the ages of 31 and 45 comprised the majority of male patients. The female patient population was heavily concentrated between the ages of 46 and 60.

**Conclusion:** However, despite all of these merits, nail modifications are rarely explored in the scientific literature. The clinical significance of nail changes in papulosquamous illnesses has been established beyond this study conducted.

**Keywords:** Clinical nail, alterations, papulosquamous disease

### Introduction

The same way that the face is an indicator of one's mental state, the nail is an indicator of one's overall health. The hardest known epithelial structure in mammalian biology is found in the nail, which is a descendant of the epidermis. Nails not only add a beautiful aesthetic touch to the hands and feet, but they also help give protection, a tactile feeling, and a means of social communication. Hippocrates, a Greek physician who lived in the fifth century B.C., identified clubbing as an important indicator of a wide range of systemic symptoms [1, 2].

Since then, a wide variety of disorders have been linked to the discovery of several nail findings. From this point forward, a comprehensive dermatological checkup should always include a thorough inspection of the patient's nails. In addition, a variety of nail abnormalities can sometimes be the first sign of the disease before any of the other symptoms manifest themselves. The most significant factor in nail diseases is papulosquamous disorder, which accounts for ten percent of all dermatological conditions [3, 4].

Nails begin to form on the fingers between the eighth and ninth weeks of pregnancy. Invagination occurs in the primitive epidermis, leading to the creation of a continuous groove that becomes the nail field. Matrix primordia are finger-based cell clusters that develop from the nail fold's proximal end. Just a millimeter or so away from the phalanx, these cells cease to proliferate [5, 6]. The epithelium of the proximal nail fold, as well as the distal and intermediate matrix epithelium, will receive additional support from this site. Nail discoloration, for example, might become a major issue for a patient if they are self-conscious about their appearance [7, 8]. When abnormal nails are the first and only evidence of a disease and all other symptoms are absent, a clinical diagnosis must be made immediately. The researchers set out to better understand how papulosquamous disease manifests itself in patients by analyzing the distinct ways in which their fingernails alter over

time. Aiming to learn more about how often and how severely nails are affected by various papulosquamous diseases. The correlations between nail changes and the various papulosquamous diseases were analysed independently.

**Materials and Methods**

In order to better understand the progression of papulosquamous disease, a descriptive study of nail alterations was done at the outpatient clinic of the Department of Dermatology, Venereology & Leprosy, Sri Venkateshwaraa Medical College Hospital & Research Centre, Pondicherry, throughout the period of May 2018 to April 2019. The ethics committee did not object.

**Inclusion Criteria:**

- Individuals suffering from papulosquamous illnesses
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**Exclusion Criteria**

- Females who are expecting or nursing.
- Patients who refused to consent to the trial.
- Patients have also been excluded.
- Subungual hyperkeratosis and severe onycholysis can be brought on by acrylic nails.

**Results**

A total of 80 participants were enrolled in the study; 60 were males and 20 were girls. The number of men to women was 1.22 to 1. Patients between the ages of 31 and 45 made up the largest age group, while those beyond the age of 60 made up the smallest. Patients between the ages of 31 and 45 comprised the majority of male patients. The female patient population was heavily concentrated between the ages of 46 and 60.

**Table 1:** The Age Distribution of Papulosquamous Disorder

Age	Male	Female	Total
< 12	10	5	15
13-30	12	03	15
31-45	19	05	24
46-60	15	04	19
> 60	04	03	07
Total	60	20	80

The most prevalent papulosquamous condition was psoriasis, whereas lichen planus, pityriasis rosea, and PRP were close seconds. The papulosquamous disorders psoriasis and lichen planus were the most common in both sexes. PRP was more popular among guys, while pityriasis rosea was more popular among females. In males, parapsoriasis was the rarest papulosquamous illness, whereas in females, lichen striatus, parapsoriasis, and PLC were the least prevalent.

**Table 2:** Cases of papular squamous cell disorders

Diagnosis	Patients
Psoriasis	37
Lichen planus	13
Pityriasis rosea	10
Pityriasis rubra pilaris	05
Lichen niditus	05
Pityriasis lichenoides	04
Lichen striatus	01
Parapsoriasis	05

Only 40 of the 64 patients with papulosquamous illnesses lacked any nail changes. Sixty-four patients, including 55 men and 29 women, had their nails altered. There were 1.20 males for every female present. The majority of patients diagnosed with nail anomalies were adults 31–45 years of age, both male and female. Psoriasis was associated with the most impacted nails on average, followed by Pityriasis rubra pilaris and lichen planus, and then by psoriatic arthritis, psoriatic dermatitis, and lichen simplex chronicus. The big toenail is the first nail to be affected by papulosquamous before the thumb nail. The average period for nail alteration to begin following a skin lesion was 4.2 years for people with psoriasis and 2 months for those with pityriasis rosea. Most patients with papulosquamous disorders had pitting in their nails, followed by subungual hyperkeratosis, Beau's line, and nail plate thickening (23% each). The least common form of nail change was pterygium. Most cases of nail abnormalities such pitting, Beau's line, and onychomadesis were seen on the index and middle fingers. In the lower limbs, nail problems such subungual hyperkeratosis and nail plate thickening were more common.

**Table 3:** Changes in the length and shape of the nails on the hands and feet, and how often they occur

Nail change	Upper limb	Lower limb	Total
Pitting	39	15	44
Onychomadesis	8	10	08
Subungual Hyperkeratosis	4	24	18
Thickening of Nail plate	6	18	06
Beau's line	9	15	04

**Table 4:** KOH mount

Koh mount	Patients
Positive	19
Negative	59

Six patients who had nail alterations tested positive for onychomycosis using a KOH mount. 14 cases of papulosquamous diseases had systemic hypertension, 10 had diabetes, 20 had a history of atopy, and 3 were HIV reactive.

**Table 5:** Disorders that occur together

Co-morbidities	Patients	%
Diabetes	11	9.3%
SHT	15	12.3%
HIV	04	3.6%
ATOPY	22	19.2%

**Discussion**

Eighty cases of papulosquamous illnesses were recruited after the inclusion and exclusion criteria were used. Forty-seven of these instances were caused by psoriasis, the most prevalent papulosquamous disorder. Most papulosquamous diseases fall within the umbrella of psoriasis [9]. Twenty-four men and twenty-three women made up the total population of 29. Consistent with the results of a study by Sun Jae *et al.* and Kaur *et al.*, the male-to-female ratio was exactly 1:1. This finding is consistent with that of a study by Sharma and Sepaha, who found that the prevalence of psoriasis in India increased between the ages of 20 and 50, when patients were at their most vulnerable to the effects of stress and pressure. For the most part, psoriasis patients fell

into the age range of 31 to 45<sup>[10, 11]</sup>.

Psoriasis patients in our study were uniformly more likely to have nail changes. Among the papulosquamous diseases, this was one of the ones we investigated. Studies have shown that 80-90% of people with psoriasis will experience nail involvement at some point in their lives. This number is considerably higher than the 78% obtained in the study by SS *et al.* Fifty percent of psoriasis patients have nail involvement<sup>[12, 13]</sup>, however this number increases to eighty to ninety percent when considering the whole population.

Our findings contradict those of Ghosal *et al.* and Jiaravuthisan MM *et al.*, who reported that only 32 and 24 percent of cases, respectively, of fingernails and toenails, respectively, were affected. Nail lesions often appear 4.2 years after skin lesions in patients with persistent plaque psoriasis. The average lifespan was 9 years in the study by Velden *et al.* and 11.5 years in the study by Klaassen *et al.* Pitting was more common in finger nails and subungual hyperkeratosis was more common in toe nails<sup>[14-18]</sup>, which is consistent with the findings of the studies by Solomon J *et al.* 45 and Atikmoni Ghosal *et al.*, in which these alterations were identified in 65% and 33% of cases, respectively.

While Brazzelli *et al.* reported that the fourth fingernail was the most affected in both hands, our study found that the thumb and index finger on the right hand were the most often damaged digits. Most infected toenails are located at the base of the big toe on the right foot. Our findings are consistent with those of Owen (1972) and Markouch *et al.*, who observed that the right index fingernail is the most commonly damaged nail. In line with prior studies, this result (2009). Based on their research, the authors concluded that the most common kind of nail involvement was a modification to a single fingernail, with the thumb nail being the nail most usually affected. Nail longitudinal ridging and splitting were shown to be the most common manifestations of lichen striatus by Tosti *et al.* and Ahmer, 2014<sup>[19-24]</sup>. Atopy was present in each of these patients, which is consistent with the results of our own examination.

### Conclusion

Symptoms of papulosquamous illness include, but are not limited to, nail alterations. The seriousness of the illness correlates strongly with the extent to which it is involved. Each subtype of papulosquamous penumbra disease has its own distinctive pattern of involvement. Twenty fingernails may be inspected quickly and easily, making this a valuable diagnostic tool. However, despite all of these merits, nail modifications are rarely explored in the scientific literature. The clinical significance of nail changes in papulosquamous illnesses has been established beyond a shadow of a doubt, thanks to this study conducted in a medical college hospital.

### Funding source

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### Conflict of interest

None

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