

# Clinical Features, Epidemiology and Treatment Approaches of Psoriasis; Systematic Review

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**Abstract:** Psoriasis is a chronic systemic inflammatory disease with a frequency of 2-3% in Europeans, and approximately 8% in specific Nordic countries. Plaque psoriasis (psoriasis vulgaris) is the most common type of psoriasis accounting for 90% of all cases, and roughly 70-80% of all patients are considered to have mild psoriasis that can be managed with topical treatment alone. This systematic review study aimed to discuss the clinical features, incidents, and treatment approaches for psoriasis worldwide, through review the literature and including most important studies that concerning psoriasis from the aspects which are mentioned previously. Comprehensive searches of Medline, Embase, Cinahl and The Cochrane Library were conducted and last updated on December 2016, restricted to articles published in English. systematic literature search was conducted according to a predefined protocol for randomized, placebo-controlled or reviews studies and Prior guidelines on psoriasis were also evaluated that were discussing the 3 aspects of our study which are, Clinical features, Epidemiology, and Treatment of psoriasis. Topical treatments are appropriate for patients who are candidates for localized therapy however might not be useful as monotherapy for many patients who are prospects for systemic and/or phototherapy, where standard systemic treatments, including methotrexate, CyA, narrowband (NB) and broadband UVB, PUVA, oral retinoids, and the newer biologic agents are recommended.

**Keywords:** Psoriasis, patients, systematic review, Topical treatments, UVB, PUVA, oral retinoids,

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## 1. INTRODUCTION

Psoriasis is a chronic systemic inflammatory disease with a frequency of 2-3% in Europeans, and approximately 8% in specific Nordic countries <sup>(1)</sup>. Plaque psoriasis (psoriasis vulgaris) is the most common type of psoriasis accounting for 90% of all cases, and roughly 70-80% of all patients are considered to have mild psoriasis that can be managed with topical treatment alone <sup>(2,3)</sup>. Inning accordance with the United States National Institute of Health, 2.7% population of the world suffers from this disease. In Asia, near about 1% of the population is affected with psoriasis. It might affect numerous parts of the body or all parts of the skin. Typically seen on the skin of the trunk, elbows, knees, scalps, in the finger nails and toe nails. Psoriasis might be intensified by infection, injury, inflammation (cuts, burns, rashes or insect bites) and in those patients who currently have autoimmune conditions such as rheumatoid arthritis <sup>(4,5,6,7,8)</sup>. It's not life threatening disease but It can have a profound impact on physical, mental and social wellbeing <sup>(5,6)</sup>.

The disease is characterized by either widespread or localized thick raised silvery-white scaling plaques, and typical extracutaneous symptoms include nail psoriasis and psoriatic arthritis <sup>(7)</sup>. In recent years however, engaging evidence have actually revealed that patients with psoriasis, in particular in the moderate-to-severe form, have actually increased threat of a range of other comorbidities consisting of CVD, and of CV death <sup>(8,9,10,11)</sup>. Diabetes, dyslipidaemia, and high blood pressure mellitus (DM) frequently occur in patients with psoriasis, and there is a high frequency of obesity, smoking, and alcohol intake among these patients <sup>(12,13)</sup>. Also, patients with psoriasis have substantially increased risk of depression, and the presence of psoriasis is strongly associated with reduced quality of life <sup>(14,15)</sup>.

This systematic review study aimed to discuss the clinical features, incidents, and treatment approaches for psoriasis worldwide, through review the literature and including most important studies that concerning psoriasis from the aspects which are mentioned previously.

## 2. METHODOLOGY

We performed a systematic review study according to the (PRSRMS) guidelines Search strategy:

Comprehensive searches of Medline, Embase, Cinahl and The Cochrane Library were conducted and last updated on December 2016, restricted to articles published in English.

systematic literature search was conducted according to a predefined protocol for randomized, placebo-controlled or reviews studies and Prior guidelines on psoriasis were also evaluated that were discussing the 3 aspects of our study which are, Clinical features, Epidemiology, and Treatment of psoriasis. Abstracts were screened, and articles that appeared to meet the inclusion criteria were assessed further. Studies were excluded if they were not published as full reports, due to high risk of bias. Reference lists of relevant articles were scrutinized to identify additional reports. Through our search we used following Mesh terms: Psoriasis, AND Palmoplantar pustulosis, AND Psoriatic nail disease, Combined with Treatment, OR Epidemiology, OR clinical features, OR Pathogenesis, OR Prevalence.

## 3. RESULTS AND DISCUSSION

### PATHOGENESIS AND CLINICAL FEATURES OF PSORIASIS:

The inflammatory response in psoriasis is promoted by T assistant (Th)1 and Th17 cells, and pro-inflammatory arbitrators such as interleukin (IL)-6, IL-12, IL-17, Tumour, il-22, and il-23 necrosis factor- $\alpha$  (TNF) play a crucial function in the pathogenesis of psoriasis<sup>(16)</sup>. Interestingly, research study in neuroinflammation associated with diseases of the CNS has in recent years progressively also focused on the function of the abovementioned cytokines, especially IL-17 and TNF (Figure1)<sup>(17,18)</sup>. Psoriasis and anxiety share striking resemblances in their inflammatory pathways<sup>(19)</sup>. IL-6, IL-12, and TNF all have been discovered in increased circulating levels in patients with depression, and anxiety is also believed to be an independent threat element for the advancement of psoriasis<sup>(20,21,22)</sup>.

Psoriasis is one of the most typical immune-mediated diseases, and although significant advances have actually been made, a number of locations in the understanding of the pathogenesis of psoriasis stay unsolved<sup>(3)</sup>. It is perplexing that more serious psoriatic arthritis frequently occurs in patients with lesser degrees of skin participation<sup>(23)</sup>. It is reputable that psoriasis is the result of a complicated interplay between genetics, environmental triggers, and the immune system<sup>(24)</sup>. Although lots of genes are involved, psoriasis is highly related to the major histocompatibility complex human leukocyte antigen (HLA), class I, Cw6, and roughly 60% of patients with psoriasis display HLACw0602 which has actually been identified as the significant threat gene on psoriasis vulnerability locus 1, and shown to increase the danger of psoriasis approximately 20-fold<sup>(25)</sup>.

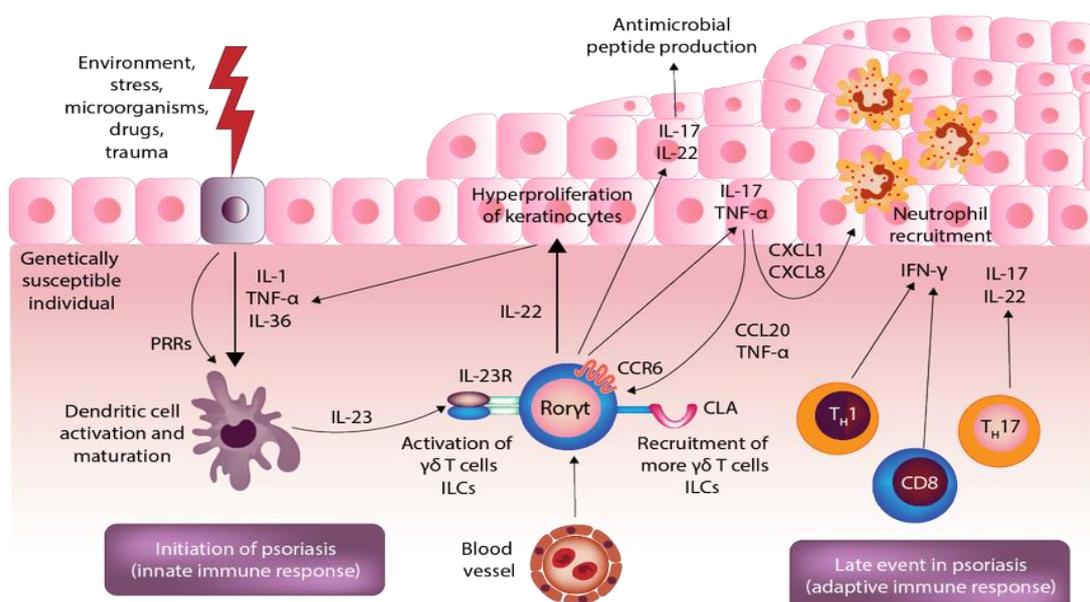


Figure 1: The Role of the Immune System of the Skin in The Pathogenesis of Psoriasis<sup>(17)</sup>

We have actually recognized one big study by Langley et al,<sup>(8)</sup> which overviewed the medical features of Psoriasis which stated that it is a papulosquamous disease with variable morphology, course, intensity, and circulation. Papulosquamous diseases are characterised by scaling papules (raised sores, 1 cm in size) and plaques (raised sores, 1 cm in diameter)<sup>(8)</sup>. Other papulosquamous diseases that might be thought about in the differential diagnosis consist of tinea infections, pityriasis rosea, and lichen planus. The lesions of psoriasis stand out from these other entities and are classically very well circumscribed, circular, red papules or plaques with a grey or silvery-white, dry scale. In addition, the lesions are normally dispersed symmetrically on the scalp, elbows, knees, lumbosacral location, and in the body folds (**Figure 2**)<sup>(8)</sup>. Psoriasis may likewise establish at the site of injury or injury, known as Koebner's phenomenon. If psoriasis is unchecked or progressive, it can result in a generalised exfoliative erythroderma. Nail involvement might exist, particularly if psoriatic arthritis (PsA) is present. Occasionally psoriasis might include the oral mucosa or the tongue. When the tongue is involved, the dorsal surface may have sharply circumscribed gyrate red spots with a white-yellow border. The patches might spread out and develop, changing on a daily basis, can assume unique annular patterns and may look like a map, for this reason the term geographical tongue<sup>(8)</sup>.



**Figure 2: Symmetrical distribution of psoriatic lesions on the back and elbows<sup>(8)</sup>.**

## EPIDEMIOLOGY OF PSORIASIS:

### Prevalence of psoriasis in children,

Four studies<sup>(26,27,28,29)</sup> reported the occurrence of psoriasis in children (specified as those aged 0-18 years) in Europe or Asia. In general, the frequency of psoriasis in kids depended on 0.71% in Europe<sup>(26)</sup> and nearly absent in Asia<sup>(27,28)</sup>. One exception was a study of 13 to 14 year-old kids in Italy that discovered a life time prevalence of skin doctor detected psoriasis of 2.15% (95% confidence interval (CI): 1.59-2.61)<sup>(29)</sup>. A German study, based on an insurance database and restricted to those aged under 18 years, reported a low general prevalence of psoriasis in children (0.71% (95% CI: 0.68-0.74)) and an increasing occurrence with age (0.37% for 0- 9 years and 1.01% for 10-- 18 years)<sup>(26)</sup>. Not surprisingly, studies based upon life time prevalence normally yielded higher prevalence rates than those based on point prevalence.

### Prevalence of psoriasis in adults,

Studies of the frequency of psoriasis in adults yielded higher prevalence rates than research studies in kids. Nevertheless, there appeared to be little consistency within or between countries. In Europe, the United Kingdom had one of the most affordable and most constant estimates, probably due to the exact same method (primary-care database). Here, frequency of psoriasis in adults was approximated as 1.30% (95% CI: 1.21-1.39)<sup>(30)</sup>, 2.60% (95% CI: 2.47- 2.78)<sup>(31)</sup>, and 2.20% (95% CI: 2.19- 2.21)<sup>(32)</sup>, respectively. A study from Croatia in the late 1980s reported a psoriasis occurrence (1.21% (95% CI: 0.95- 1.47)) just like that of the United Kingdom<sup>(33)</sup>. Other countries, in North-East and South Europe, reported higher values than the United Kingdom, specifically of 3.73% (95% CI: 3.13- 4.32) in Denmark<sup>(34)</sup>, 4.82% (95% CI: 4.47-5.17)<sup>(35)</sup> and 8.50% (95% CI: 8.03-8.97) in Norway<sup>(38)</sup>, 3.10% (95% CI: 2.54- 3.66) in Italy<sup>(36)</sup>, and 5.20%

(95% CI: 4.68-- 5.72) in France<sup>(37)</sup>. Estimates of occurrence of psoriasis in Australia varied from 2.30% (95% CI: 1.39-3.21) to 6.6% (95% CI: 5.4-7.9) (39,40), whereas rates in United States varied from 2.2% (95% CI: 2.0-2.4) to 3.15% (95% CI: 2.60-3.70)<sup>(41,42)</sup> and were similar to those from United Kingdom. Exceptions were two studies in the United States, one gathering information on African Americans and the other research study from two medical insurance coverage databases, which reported a prevalence of 1.3% (95% CI: 0.7-1.8)<sup>(43)</sup> and 0.91% (95% CI: 0.90-0.92) and 1.06% (95% CI: 1.05- 1.07), respectively<sup>(44)</sup>.

## TREATMENT APPROCHES FOR PSORIASIS:

### A) Topical therapies for the treatment of plaque psoriasis:

Corticosteroids, vitamin D3 and its analogues, calcineurin inhibitors, retinoids, tar, dithranol and keratolytic representatives such as salicylic acid and urea are all used,<sup>(45)</sup> and be available in a large selection of solutions, mixes and potencies. Choice of treatment is tailored to the needs of the patient and consists of factor to consider of the nature of the psoriasis (type, site, level) and useful elements such as cosmetic acceptability and time available for application. How these factors, along with patients' state of mind, beliefs and perceptions about psoriasis, might effect on treatment adherence is likewise pertinent<sup>(45, 46)</sup>.

tolerability and safety of the readily available topical agents in order to create a management strategy that provides the very best possibility of attaining an acceptable result. The aim of this analysis is for that reason twofold: (i) to summarize the evidence on topical treatments in chronic plaque psoriasis (stratified for trunk and limbs, and scalp) to permit contrast of their efficacy, tolerability and safety; and (ii) to synthesize data on efficacy to notify initial costeffectiveness modelling<sup>(46)</sup>.

In two consisted of research studies very potent steroids were the most efficient treatment and vitamin D analogues and coal-tar shampoo were the least effective total, with coal-tar hair shampoo showing comparable reaction rates to placebo. This impact estimate was based on just one research study for coal tar<sup>69</sup> and might be undependable, but the lack of proof for effectiveness is important to keep in mind given that coal-tar shampoo is commonly recommended in medical care<sup>(47,48)</sup>.

Topical treatments are appropriate for patients who are candidates for localized therapy however might not be useful as monotherapy for many patients who are prospects for systemic and/or phototherapy<sup>(49)</sup>, where standard systemic treatments, including methotrexate, CyA, narrowband (NB) and broadband UVB, PUVA, oral retinoids, and the newer biologic agents are recommended<sup>(49)</sup>.

### B) Phototherapy in Psoriasis:

In the 1950s, Dr. John Ingram developed a treatment program utilizing ultraviolet B (UVB) radiation in conjunction with coal tar and anthralin paste<sup>(50)</sup>. In the 1970s, broadband UVB was discovered to be efficient in clearing moderate kinds of psoriasis when given up doses<sup>(51)</sup>, while ultraviolet A (UVA) irradiation in mix with either oral<sup>(52,53)</sup> or topical application<sup>(54)</sup> of psoralen, was discovered to be reliable in dealing with psoriasis. In the 1980s, a more defined wavelength of UVB was found by scientists to be especially efficient in dealing with psoriasis-- and was consequently described as narrowband UVB (nbUVB)<sup>(55)</sup>.

Phototherapy is now one of the most common treatment options for psoriasis with nbUVB and psoralen ultraviolet A (PUVA) as the most widely used applications<sup>(56,57)</sup>. Clinical research studies have actually likewise shown the effectiveness of phototherapy as one of the most effective treatment options, specifically for patients with prevalent disease who have moderate to extreme psoriasis<sup>(58)</sup>.

UV-induced immunosuppression of skin Langerhans cells (LCs) was explained in numerous research studies to assist describe the restorative results of phototherapy. In one research study, researchers discovered a decrease in LCs in non-lesional epidermal tissue in five psoriasis patients who were exposed to nbUVB<sup>(59)</sup>. Similarly, decreased LC density was observed in healthy human skin after direct exposure to either UV solar simulated radiation, UVA radiation alone, or UVA + UVB<sup>(61)</sup>. Decreased density of LCs in lesional epidermis was likewise observed in response to natural sun direct exposure<sup>(60)</sup>. These findings were verified by scientists who discovered considerable reductions in LCs in the skin, and considerable increases in LCs in the draining pipes lymph nodes, in mice irradiated with chronic solar simulated radiation<sup>(62)</sup>. In vitro research studies demonstrated that low-dose UVB irradiation of healthy human skin led to decreased dendritic cell expression of B7 co-stimulatory signals, which generally bind to CD28 and CTLA-4 on T lymphocytes<sup>(63)</sup>.

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