

## Prevalence and Characteristics of Psoriasis Vulgaris Patients Receiving Phototherapy at Dermatology and Venereology Clinic of Bali Mandara General Hospital for The Period Of January 2018 -December 2022

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**Abstract— Introduction:** Psoriasis vulgaris is the most common type of psoriasis, comprising 90% of psoriasis cases. Psoriasis occurs worldwide. Published data on the prevalence of psoriasis varies between various countries. A previous report suggested that the prevalence of psoriasis is increasing. The treatments for psoriasis are available in the form of topical and systemic agents. When considering treatment regimen, the severity of the disease should be assessed. Patients with mild psoriasis can be treated with targeted phototherapy or excimer light. However, whole-body phototherapy is indicated for extensive psoriasis. **Methods:** This study aims to describe the prevalence and characteristics of psoriasis vulgaris patients undergoing phototherapy in the Dermatology and Venereology Clinic of Bali Mandara General Hospital. This was a descriptive retrospective study using data from medical records. The study subjects were psoriasis vulgaris patients hospitalized in the Dermatology and Venereology Clinic of Bali Mandara General Hospital from January 2018 to December 2022. **Results:** The number of psoriasis vulgaris patients visits were 261, 238 patients of which underwent phototherapy. Based on gender, there were 141 males (59.2%) and 97 females (40.7%). Based on the age group, most patients were between 51 and 60 years old (11.7%). The predilections of lesions in psoriasis vulgaris patients undergoing phototherapy were upper extremity (20%) and trunk (16.8%). Another treatment administered in addition to phototherapy alone was the combination of phototherapy and oral antihistamine in 76 patients (31.9%). **Conclusions:** This study showed that the prevalence of psoriasis vulgaris patients in the Dermatology and Venereology Clinic of Bali Mandara General Hospital from 2018 – 2022 was dominated by male patients with peak prevalence in the fifth decade of life. The most common predilection of psoriasis vulgaris lesion was the upper extremity. The most common treatment regimen, in addition to phototherapy alone, was the combination of phototherapy and oral antihistamine..

**Keyword:** psoriasis, psoriasis vulgaris, phototherapy

### 1. Introduction

Psoriasis vulgaris is the most prevalent variety of psoriasis, accounting for around 90% of all cases. It is characterized by reddish, scaly plaques that are symmetrically distributed and localized on the scalp, lower back, abdomen, hips, and vaginal region. Genetic factors play an important role in the development of psoriasis, and environmental factors can exacerbate psoriasis.[1,3]

The specific etiology of psoriasis is unknown at this time, however a number of external and

endogenous stimuli generate an innate immune response, which activates keratinocytes and immune cells and results in hyperproliferation of keratinocytes. Their interactions also continuously release large amounts of inflammatory cytokines from skin lesions and immune cells. 4 The condition of psoriasis is categorized as an immunological disorder mediated by interleukin (IL)-17 overproduction of interferon (IFN)- $\gamma$  and tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ). ) was also detected in psoriatic skin lesions. The three-way balance is fluid and reversible, and it can also become disharmonious in disease or with medication. [5]

Psoriasis affects people all over the world; published data on the disease's prevalence in various nations vary, but there is evidence to suggest that it is becoming increasingly frequent. While some research indicate a greater frequency in women, other investigations have shown conflicting findings. 6 75% of cases begin before the age of 46, with an average start age of 30 years. Studies on the incidence or prevalence of psoriasis in children are scarce, and there are differences between the nearly total absence of psoriasis in adolescents and children. [2]

Psoriasis in Asia has been reported to be lower, in particular, the prevalence of psoriasis is only 0.19% in Taiwan, 0.34% in Japan, 0.3% in China, and South Korea is around 0.45%. Several studies in Asian populations have reported a higher proportion of males. In Japan, the incidence in males is double that in females. [7] In countries as diverse as India, the prevalence of psoriasis can vary from region to region, a higher prevalence in males has been reported with a peak age at onset in the third and fourth decades.<sup>8</sup> Since there are presently 200 million people living in Indonesia, this indicates that 2 to 6 million individuals worldwide suffer from psoriasis. In Indonesia alone, psoriasis affects 1-3% of the population of the country. [9]

Psoriasis medications are available both topically and systemically, when choosing a treatment regimen it is important to assess the severity of the disease and adjust based on the patient's own perception of the disease. 1 In patients with mild psoriasis, treatment options include topical corticosteroids, vitamin D analogues, calcineurin inhibitors, keratolytics, and phototherapy targeted or excimer light. While whole body phototherapy is used to treat psoriasis more broadly. Patients usually undergo phototherapy twice a week and begin to see significant improvement after about two months.[3].

## 2. Method

This study aims to determine the prevalence and characteristics of Psoriasis Vulgaris patients receiving phototherapy at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital. This study is retrospective in nature with data obtained from patient medical records kept at the Bali Mandara Hospital Medical Records Installation, Denpasar. The research subjects were all Psoriasis Vulgaris patients receiving phototherapy at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital from January 2018 to December 2022.

Sampling in this study will be carried out in total sampling, with the criteria that the subjects who will be included in this study suffer from Psoriasis Vulgaris who are receiving phototherapy treatment. Patient characteristics were obtained based on medical records, characteristics based on

patient data to be taken, namely patient gender and patient age. Characteristics based on psoriasis and phototherapy, namely; location of the skin experiencing Psoriasis Vulgaris, phototherapy sessions, combination therapy other than phototherapy and secondary diagnoses other than Psoriasis Vulgaris.

Patients having a diagnosis of psoriasis vulgaris who were listed in the medical records of Bali Mandara Hospital met the inclusion criteria, while data from incomplete medical records met the exclusion criteria.

In this study, descriptive data analysis was carried out using Microsoft Office Excel 2021. The research results are presented in the form of tables and narratives. In this study, data was presented based on grouping patient characteristics

**3. Result**

Data was obtained to determine the characteristics of Psoriasis Vulgaris patients at the Dermatology& Venereology Polyclinic at Bali Mandara Hospital for the period January 2018 - December 2022. The total number of patient visits with cases of Psoriasis Vulgaris was 261 people. During this period the number of visits per year was obtained, in 2018 there were 102 people (39.08%), and there was a decrease in the number of new patient visits, namely in 2019 there were 56 people (21.45%), in 2020 there were 39 people (14.94 %), in 2021 there will be 40 people (15.32%) and in 2022 there will be 24 people (9.19%).

Of the 261 Psoriasis Vulgaris patients who visited the Dermatology& Venereology Polyclinic at Bali Mandara Hospital, 238 patients receiving phototherapy. The characteristics of patients receiving phototherapy based on gender were 141 males (59.24%), 97 females (40.75%). The most age group was found in the age range of 51-60 years (27.73%). Most of the locations of Psoriasis Vulgaris lesions that were subjected to phototherapy were found in the upper extremity area of 48 people (20.16%) and body areas accompanied by the upper extremity in 40 people (16.8%).

Phototherapy sessions in patients were divided based on the range of 1-10 times of therapy, 11-30 times, 31-50 times of therapy, 50-100 times of therapy, and more than 100 times of therapy. Most phototherapy sessions were obtained from 1-10 treatments, namely 105 people (44.11%). Other therapies obtained in patients other than phototherapy were a combination of phototherapy and oral therapy (antihistamines) in 62 patients (26.05%) and a combination of phototherapy and topical steroids in 38 patients (15.56%)/ Vitiligo, allergic contact dermatitis, generalized pustular psoriasis, and lichen simplex chronicus were all discovered as secondary diagnoses in addition to psoriasis vulgaris in one person each

*Table 1. Number of Psoriasis Vulgaris Patients at the First Visit at the Dermatology& Venereology Polyclinic of Bali Mandara Hospital from 2018 - 2022*

<i>Year</i>	<i>Proportion N (261)</i>	<i>%</i>
2018	102	39,08

2019	56	21,45
2020	39	14,94
2021	40	15,32
2022	24	9,19

*Table 2. Characteristics Based on the Demographics of Psoriasis Vulgaris Patients Receiving Phototherapy at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital*

Characteristic	Proportion N (238)	%
Gender		
Male	141	59,24
Female	97	40,75
Age		
1 - 10 years	6	2,52
11 - 20 years	15	6,3
21 - 30 years	32	13,44
31 - 40 years	39	16,38
41 - 50 years	53	22,26
51 – 60 years	66	27,73
>60 years	27	11,34

*Table 3. Characteristics Based on Lesion Location of Psoriasis Vulgaris Patients Receiving Phototherapy at Dermatology & Venereology Polyclinic of Bali Mandara Hospital*

Location of The Lesion (n =238)	Proportion N (238)	%
Scalp	8	3,36
Body	25	10,5
Scalp & Body	14	5,88
Upper Extremity	48	20,16
Lower Extremity	30	12,6
Body & Upper Extremity	40	16,8
Body & Lower Extremity	21	8,82
Upper & Lower Extremity	33	13,86
Body, Upper & Lower Extremity	9	3,78
Generalized	10	4,2

*Table 4. Characteristics Based on Phototherapy Sessions of Psoriasis Vulgaris Patients at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital*

The Sesion of Therapy (n =238)	Proportion N (238)	%
1 – 10 times	105	44,11
11 – 30 times	48	20,16

31 – 50 times	23	9,66
51 – 100 times	20	8,4
> 100 times	39	16,38

Table 5. Characteristics Based on Combination Therapy of Psoriasis Vulgaris Patients Receiving Phototherapy at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital

Therapy (n =238)	Proportion N (238)	%
Phototherapy	60	25,21
Phototherapy & Oral (Anthistamine)	62	26,05
Phototherapy & Topical (Corticosteroid)	38	15,96
Phototherapy & Topical Moisturizer	19	7,98
Phototherapy, Oral Antihistamine & Topical Steroid	59	24,78

Table 6. Secondary Diagnosis in Psoriasis Vulgaris Patients Receiving Phototherapy at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital

Therapy (n =238)	Proportion N (238)	%
Allergic Contact Dermatitis	1	0,42
Generalized Pustular Psoriasis	1	0,42
Lichen Simplex Chronicus	1	0,42
Vitiligo	1	0,42

#### 4. Discussion

In this study, it was discovered that there was a decrease in the number of cases of psoriasis vulgaris visiting the Dermatology & Venereology Polyclinic at the Bali Mandara Hospital between 2018 and 2022. A total of 261 patients were obtained; in 2018, 102 patients visited (39.08%), in 2019, 56 patients visited (21.45%), in 2020, 39 patients visited (14.94%), in 2021, 40 patients visited (15.32%), and in 2022, only 24 (Table 1). There has been an increase in the number of first visit cases of psoriasis patients from 2016 to 2020, in contrast to the findings of research on the prevalence of other psoriasis patients, such as that conducted by Alverina et al., at the West Nusa Tenggara Provincial Hospital. [10]

Among the 261 total visits of Psoriasis Vulgaris patients, 238 patients underwent phototherapy.

Most cases were in male patients (59.24%) (Table 2). This research is in line with research conducted by Segar, et al. who conducted research at Sanglah General Hospital in Denpasar on 142 samples, the cases were more in men by 63.4%. [11] Men had more severe psoriasis than women, according to a research by Hagg et al., utilizing the Psoriasis Area and Severity Index (PASI) score and the Dermatology Index of Disease Severity based on the national registry for the systemic treatment of psoriasis in Sweden. Most of the other European registries for the treatment of systemic psoriasis show a greater predominance of men: Denmark 66%, Germany 60%, Italy 67%, Netherlands 68%, and Spain 63%. [14]

Female sex hormones, especially estrogen affect the disease manifestations and severity of psoriasis, an increase in the ratio of estrogen to progesterone is also correlated with psoriasis improvement. Sex hormones, influencing cytokine imbalance in psoriasis patients. Low estrogen levels are associated with a predominant Th1 cell immune response and proinflammatory cytokines, whereas high estrogen levels upregulate Th2 cell-dependent cytokine regulation. Thus, estrogen is a negative regulator of tumor necrosis factor (TNF), which plays an important role in the pathogenesis of psoriasis. [15]

In this study, the most common age of patients was found in the age range of 51–60 years (Table 2). Most psoriasis patients are diagnosed before the age of 30 years, but there is a second spike between the ages of 50 and 60 years. [16] The prevalence and incidence of psoriasis is lower in children than in adults. [17] Psoriasis can be categorized into two types, one in patients with psoriasis early onset or Type I occurring before the age of 40 and others with late onset or Type II occurring psoriasis after the age of 40 years. [18]

The most common location of Psoriasis Vulgaris lesions is in the upper extremity area, then in the body area accompanied by appearing in the upper extremity area (Table 3). While the results of research by Prakoeswa, et al. at Dr. Soetomo Hospital, the lesions mainly occurred around the lower extremities, back, and chest, followed by the upper extremities. [13] The most affected skin areas were the elbows, knees, sacral area and scalp. The current study found that most cases of the whole body were affected while very few of them were reported with scalp involvement.[18]

A total of 105 people (44.11%) received 1-10 phototherapy sessions (Table 4), most of the patients received phototherapy 2 times a week or 2-3 times a month. Based on research by Prameswari et al., most of the psoriasis patients who underwent phototherapy managed to achieve clinical improvement within 40-60 sessions of therapy. However, it was also discovered in patients who had 20 and 40 phototherapy sessions that the number of therapy sessions did not affect the degree of clinical improvement. [20]

In this study, apart from receiving phototherapy, most patients also received combination therapy in the form of oral antihistamines, namely Cetirizine, topical corticosteroids, namely Betamethasone 0.1% and Desoximetasone 0.25%, other combination therapy with topical moisturizers, namely oleum olivarium (Table 5). According to a study conducted by Alviariza at SanjiwaniGianyar Hospital, the most frequently administered regimen was a combination of topical

corticosteroids and oral antihistamines, found in 45.28% of patients.[21]

The most common agents used to manage mild to moderate psoriasis are topical therapies. First-line therapy uses emollients to prevent dryness. Topical corticosteroids have anti-inflammatory properties, antiproliferative functions, immunosuppressive qualities, and vasoconstrictor effects that make them safe and highly effective for treating localized psoriasis. [22]

Selective T cell depletion, especially in the epidermis, is the mechanism of action of phototherapy. Apoptosis, together with a switch from Th.1 to Th.2 responses in skin lesions, is the mechanism of depletion. The wavelength of UVB radiation is between 290 and 320 nm. The minimal erythema dosage is 50% to 75% of the first therapeutic UVB exposure. There are 2 to 5 sessions of phototherapy every week. Peak UVB erythema emerges within 24 hours after exposure; with subsequent treatments, increments may be made with the goal of maintaining low visible erythema as a clinical sign of optimum dosage.<sup>12</sup> Treatment frequency can be reduced to twice per week to maintain efficacy and can be reduced further, depending on the patient's response. Adverse effects include erythema, pruritus, burning, photoaging, and photocarcinogenesis. Combination with systemic retinoids may increase efficacy and reduce the carcinogenic potential of narrow-band UV-B radiation. [3]

The anatomical localization of the lesion also affects the therapeutic response to NB-UVB, with plaques on the legs being significantly resistant to treatment than those on the trunk, thighs, and upper arms. It was discovered that lesions on the legs had a greater globular dermoscopic vascular pattern. The relationship between foot localisation and the therapeutic resistance of psoriatic plaques to NB-UVB may be the result of increased inflammatory activity brought on by increased hydrostatic pressure. Increased vascular permeability brought on by higher hydrostatic pressure allows fibrinogen to flow into the pericapillary tissues, leading to the creation of fibrin cuffs surrounding the dermal capillaries that support the tissues. cell damage, hypoxia, and the release of inflammatory mediators. [19]

This study has several of limitations since certain data as the severity of psoriasis vulgaris, side effects, and success rates following phototherapy—is not recorded in medical records.

## **5. Conclusion**

There were 238 cases of Psoriasis Vulgaris receiving phototherapy, according to a retrospective descriptive analysis of patients at the Dermatology & Venereology Polyclinic of Bali Mandara Hospital between January 2018 and December 2022. In this study, the prevalence of Psoriasis Vulgaris decreased. According to this study, men were more likely to develop Psoriasis vulgaris, and those between the ages of 51 and 60 were the most prevalent. Lesions from Psoriasis vulgaris most frequently affect the upper extremities . The most widely used therapeutic regimen other than phototherapy alone is a combination of phototherapy and oral antihistamines.

### Conflict of Interest

There is no conflict of interest regarding the publication of this article.

### Research Ethics

This study received ethical approval from the Ethics Committee of the Bali Mandara Regional General Hospital (039/EA/KEPK.RSBM.DISKES/2022).

### Funding

There was no funding from any party in this research.

### Author Contributions

All authors contributed to this study.

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