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The correlation between patient satisfaction treatment of narrowband ultraviolet B phototherapy and the improvement of psoriasis severity index



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ABSTRACT

Background: Psoriasis is a chronic inflammatory disease of the skin affecting patients of all ages, both males and females. Currently, the psoriasis area and severity index (PASI) method is the gold standard in assessing the severity of psoriasis. Phototherapy narrowband ultraviolet B (NBUVB) is one of the modalities of psoriasis therapy which is relatively safe and effective for repairing psoriasis lesions. Patient satisfaction with phototherapy, which can be assessed using a questionnaire, serves to determine the patient's motivation in carrying out routine therapy.

Objective: This study was designed to determine the correlation between the level of NBUVB phototherapy satisfaction with PASI improvement.

Method: The study subjects were 22 plaque-type psoriasis vulgaris patients who underwent NBUVB phototherapy from May 2018 to October 2018 in the dermatovenereology outpatient clinic of Dr. Moewardi Hospital Surakarta. Subjects filled in the Treatment Satisfaction Questionnaire for Medication (TSQM) included questions about satisfaction with NBUVB phototherapy, and PASI scores were measured before and after NBUVB phototherapy.

Results: The data were analyzed with the Pearson correlation test with a significance value of $p < 0.05$. There are significant differences between PASI before and after giving 24 times phototherapy with a value of $p < 0.05$.

Conclusion: There was a significant correlation between the degree of PASI improvement and the global patient satisfaction with NBUVB phototherapy.

Keywords: Narrowband ultraviolet B, patient satisfaction, phototherapy, psoriasis severity index.

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INTRODUCTION

Psoriasis is a chronic inflammatory skin disease characterized by increased growth of keratin and abnormal functioning of the immune system, especially T cells.¹ The classic symptom of psoriasis is the presence of erythematous plaques covered by thick silvery scales in several areas of the body, including the scalp.² Psoriasis affects about 1% to 3% of the general population in the world, with the prevalence in Asia is around 0.5%.^{2,3} National data on the prevalence of psoriasis in Indonesia is varied among referral centers and is not known exactly. In Dr. Cipto Mangunkusumo hospital Jakarta, the

incidence of psoriasis reached 2.6% from 1997 to 2001.⁴ While in Dr. Moewardi hospital Surakarta the prevalence was reported to be 4.5% from 2012 to 2016. Chronic conditions of psoriasis also lead to impairment in the quality of life and work productivity.³

The treatment modalities of psoriasis depend on the patients' measurable severity of illness. To assess the severity of psoriasis can use several methods, including Psoriasis Area and Severity Index (PASI), Salford Psoriasis Index (SPI), Self-Administered PASI (SA-PASI), and National Psoriasis Foundation (NPF) Score. The Psoriasis Area and Severity Index (PASI) is nowadays

considered to be the gold standard for evaluating the activity of the disease. This method is measured from the degree of redness, the thickness of the lesion scales formed, and the extent of the area of the body affected.⁵ Phototherapy using Narrowband Ultraviolet B (NBUVB) is the treatment of choice, especially for psoriasis unresponsive to topical agents. The mechanism of NBUVB phototherapy works directly on DNA by inhibiting the abnormal proliferation of keratinocytes. Phototherapy also plays a role in the immunosuppressive mechanism in the pathophysiology of psoriasis.⁶

Patient satisfaction with medication can be defined as the patient's evaluation

of the process of taking the medication, its short-term effects, and the longer-term outcomes associated with it.⁷ One of the instruments used to assess patient satisfaction in phototherapy during psoriasis treatment is TSQM which assesses patient's acceptance, efficacy, adverse event, and global satisfaction of the therapy given. Hence we conducted this study to determine the relations between the level of satisfaction of NBUBV phototherapy and improvement in the severity of psoriasis vulgaris.

METHODS

A cross-sectional study was performed on 22 patients diagnosed with chronic plaque-type psoriasis that affected part or all areas of the body and underwent phototherapy from May to October 2018 in the dermatovenereology outpatient clinic of Dr. Moewardi Hospital Surakarta with ages ranging from 18 to 81 years. The subjects were free from topical and systemic therapies for 4 and 6 weeks, respectively. Patients with other systemic diseases, a history of photosensitive drug use, and immunosuppression were excluded from this study. The severity of psoriasis was measured by the PASI training calculator (www.pasitraining.com) before and after the study period. The subjects carried out phototherapy twice a week (a total of 24 sessions) during the study period using NBUBV Waldmann phototherapy with a wavelength of 311 nm. The initial dose of NBUBV phototherapy was determined based on Fitzpatrick's skin type with a 10% dose increase per session and observed the erythema reaction that occurred. Each subject completed a Treatment Satisfaction Questionnaire for Medication (TSQM). Questionnaires were assessed based on answers to several questions containing patient satisfaction over the four dimensions of satisfaction, including therapeutic effectiveness, side effects, convenience, and global satisfaction. The score for each question ranges from 1 to 100. The phototherapy before and after effectiveness was analyzed statistically by using paired t-test with $P < 0,05$ was considered significant. In comparison, the correlation between the degree of PASI improvement and the level of patient satisfaction with NBUBV phototherapy

used the Pearson correlation test with a significance value of $p < 0.05$.

RESULTS

The age group of 46-55 was the most affected by psoriasis. The majority of subjects were college graduates (45.45%). Most subjects' occupation was laborers (27.27%), and 72.72% of subjects had been suffering from psoriasis for 1 to 5 years (see **Table 1**).

Our data analysis showed that there was a significant difference between the severity (PASI) before and after giving 24 times phototherapy with a value of $p < 0.05$ (see **Table 2**). Likewise, the correlation between PASI improvement and the patient's global satisfaction showed significant results ($p < 0.05$). No significant correlation was obtained between the level of PASI improvement and other dimensions of patient satisfaction, such as the effectiveness of phototherapy, side effects, and convenience of phototherapy ($p > 0.05$). The correlation between PASI and the results of the patient questionnaire about the level of satisfaction with phototherapy can be seen in **Table 3**.

DISCUSSION

Psoriasis can occur in every sociodemographic characteristic, without specificity at certain levels of age, education, and occupation.⁸ The treatment modalities are based on disease severity, the efficacy of the drug, patient response, and preference. Phototherapy is a relatively safe and very effective treatment modality.⁹ In this study, there is a significant difference between PASI before and after 24 times of phototherapy (2 times per week). The mechanism of phototherapy in decreasing PASI score is by inducing apoptosis of keratinocytes and T cells in the epidermis and dermis, triggering Langerhans cell migration out of the epidermis and reducing mast cell degranulation, and affecting the expression of several cytokines such as IL-12, IL-18, IL -23 and IL-17. The pathogenesis of psoriasis involves an imbalance between Th 17 cells and regulator T cells. NBUBV phototherapy will reduce Th 17 cells and increase T regulator cells.¹⁰

One validated questionnaire widely used to assess satisfaction with psoriasis therapy is TSQM. Some researchers

Table 1. Sociodemographic characteristics of psoriasis vulgaris patients

Characteristics	Frequency (n=22)	Percent (%)	
Age	<25 y.o	2	9.09
	25-35 y.o	0	0
	36-45 y.o	5	22.72
	46-55 y.o	7	31.81
	56-65 y.o	5	22.72
	>65 y.o	3	13.63
Education	Illiterate	0	0
	Elementary	0	0
	Junior	5	22.72
	Senior	7	31.81
	College	10	45.45
Occupation	Unemployment	5	22.72
	Farmer	1	4.54
	Labor	6	27.27
	Student	2	9.09
	Civil servant	1	4.54
	Entrepreneur	4	2.17
	Employee	2	27.27
	Teacher	1	4.54
PASI before therapy	Mild	7	31.81
	Moderate	8	36.36
	Severe	7	31.81

Table 2. Comparison of PASI values before and after phototherapy

Evaluation (n=22)	Before Phototherapy	After Phototherapy	P-value
PASI			<0.05*
Mean	10.43	7.93	
Standard deviation	4.88	3.92	

Table 3. The correlation between degrees of PASI improvement and patient satisfaction level

Characteristics	Effectiveness	Side effects	Convenience	Global satisfaction
Patient satisfaction				
Interquartile range	44.44 – 83.33	62.55 – 100	55.56 – 83.33	29.17 – 93.05
Median	63.89	81.28	69.45	61.11
PASI improvement				
P value	0.097	0.269	0.077	0.008*

have used TSQM to measure the level of satisfaction with the treatment of chronic diseases, especially psoriasis. This satisfaction can be used to assess patient adherence to the therapy provided, as well as the patient's motivation in carrying out a long-term therapy process. The motivation of patients to carry out therapy is very important, especially for chronic skin diseases, one of which is psoriasis. If a patient is motivated and adheres to a given therapy plan, the effectiveness of therapy will be achieved.⁷ Our study revealed that there are different results on the correlation between the improvement of PASI and each dimension of patient satisfaction. The correlation between the level of PASI improvement and patient satisfaction with the effectiveness of phototherapy, side effects, and the convenience of phototherapy did not show a significant relationship ($p > 0.05$), while the relation between PASI improvement and global satisfaction levels was significant ($p < 0.05$). The findings of this study are similar to those of Duffin et al. in the United States in 2013 regarding the level of patient satisfaction with the treatment of plaque-type psoriasis. Duffin reported a significant correlation between PASI improvement and global satisfaction levels.¹¹ Although there are different results on several dimensions of patient satisfaction, generally, the subjects in this study were satisfied with the choice of NBUVB phototherapy. According to a study conducted by Atkinson et al., the dimensions of global patient satisfaction are the most influential compared to other dimensions, especially in assessing

whether patients will continue the therapy program or discontinue.¹² The satisfaction felt by patients will affect the level of compliance and regularity of patients following the therapy program so that the improvement of psoriasis severity is obtained.

CONCLUSION

There was an improvement in psoriasis severity in the subjects who were given 24 sessions of phototherapy. This improvement in the degree of psoriasis has a significant correlation with the level of global patient satisfaction as measured by using the TSQM questionnaire. Patients who are satisfied with the modality of phototherapy given tend to be motivated to adhere to the therapy program, as well as take a phototherapy program regularly. The regularity of patients following a therapy program will cause improvement in the severity of psoriasis.

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CONFLICT OF INTEREST

None declared.

AUTHORS CONTRIBUTIONS

Each author contributed from literature review, research implementation, data analysis, manuscript preparation to publication.

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