

# Correlation between Stress and Dermatology Life Quality Index in Psoriasis Vulgaris Patients

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Abstract : Psoriasis vulgaris is a chronic inflammatory disease of the skin comprising chronic relapse. This condition has frequently caused discomfort, social stigma, psychological disorders such as depression, anxiety, and stress affecting psoriasis vulgaris patients' quality of life. This cross-sectional study aimed to identify relationship between stress and quality of life in psoriasis vulgaris patients. Study sample included 42 psoriasis vulgaris patients ranging from 16 to 65 years old during October-December 2017 period, fulfilling inclusion and exclusion criteria. Stress was measured using Depression, Anxiety and Stress Scale-21 items (DASS-21) scoring system, while quality of life was measured using Dermatology Life Quality Index (DLQI) scoring system. Data was analyzed using SPSS 20 with Spearman's Rho correlation test. The result showed most of psoriasis vulgaris patients were male (69.05%), Balinese ethnic group (83.33%), senior high school graduate (47.62%) and private sector employee (52.38%). Mean age of psoriasis patients was  $45.93 \pm 11.07$  years old with first onset ranging from 1 to 30 years and mean onset was  $8.26 \pm 7.6$  years. Stress measurement using DASS-21 found stress range between 0-42 and mean range was  $10.81 \pm 10.00$ . Quality of life measurement using DLQI found score range between 0-23 and mean range was  $10.74 \pm 6.44$ . This study found stress as risk factor of increased DLQI in psoriasis patients (PR 6.80, CI 95%; 0.96-48.33;  $p < 0.05$ ) and increased stress score had positive correlation with DLQI ( $r = 0.53$ ;  $p < 0.05$ ). According to quality of life variable measurement, stress was found to have positive correlation with symptoms and feelings ( $r = 0.41$ ;  $p < 0.05$ ) and daily activities ( $r = 0.38$ ;  $p < 0.05$ ).

## 1 INTRODUCTION

Psoriasis is a chronic inflammatory disease of the skin comprising chronic relapse. Psoriasis prevalence has been reported variably between 0.1%-3% in various population, with highest prevalence reported in Denmark (2.9%), and low prevalence was reported in Asia (0.4%) (Gudjonsson, 2012). Psoriasis is characterized by presence of skin disorders such as erythematous plaque covered by multiple layers of thick white scales. Psoriasis vulgaris may cause psychological disorders such as shyness, anxiety, depression, stress, and social stigma reducing patients' quality of life (Gudjonsson, 2012), (Sharma, 2011), (Bhosle, 2006), (Basavaraj, 2011), (Nasren, 2008). Psoriasis affects patients' quality of life which may cause significant pressure on daily basis and patients' psychological morbidity (Basavaraj, 2011).

Stress is an individual condition caused by environmental interaction considered as demand and threat for the well-being of an individual. The cause of stress is not only physical factors but also emotional factors (Kenari, 2014). There are several methods to measure stress, one of which is Depression, Anxiety and Stress Scale (DASS). At first, DASS scoring consisted of 42 questions, but Lovibond and Lovibond (1995) created shorter version composing 21 questions (DASS-21). DASS-21 technique has been used frequently by psychologists or clinicians because of its validity and good reliability (Oei, 2013).

Quality of life defined as the ability to perform daily activities according to an individual's age and role in the community. Quality of life measurement of patients with skin disorder can be done using Dermatology Life Quality Index (DLQI), a valid, simple, and practical questionnaire (Bhosle, 2006).

Numerous studies had reported the relation between psoriasis vulgaris severity and patients' quality of life, but only few studies managed to identify relation between stress and patients' quality of life along with other variables of psoriasis vulgaris patients' quality of life. This study aimed to identify the relation between stress and quality of life in psoriasis vulgaris patients.

## 2 METHODS AND RESULTS

This study used cross-sectional design with sample number of 42 persons. Samples were recruited from psoriasis patients visiting dermatology and venereology clinic in Sanglah General Hospital, fulfilling inclusion and exclusion criteria, during October-December 2017 period. Psoriasis vulgaris diagnosis was confirmed by anamnesis and physical examination, and for doubtful cases, histopathology examination was performed.

Stress level was measured using DASS-21 consisting 21 questions and each question comprising 7 questions to measure depression, anxiety, and stress. In DASS-21, stress scale was sensitive to chronic non-specific arousal. Each question was scored from 0 to 3 and final score was obtained from total score multiplied by two. Total score ranged from 0 to 42. Stress measurement were classified into normal (score 0 – 10), mild (score 11- 18), moderate (score 19 – 26), severe (score 27 – 34), and extremely severe (score 35 – 42).

Quality of life measurement using DLQI consisting 10 questions related to quality of life variables including: symptoms and feelings, daily activities, leisure, work or school, personal relationships and treatment filled by patients. DLQI score was attained by adding 4 point to each variable scoring from 0 to 3. Total score ranged from 0 to 30.

Highest score indicated great influence to patients' quality of life (Bhosle, 2006). Data was processed using SPSS 20 software. Descriptive analysis was performed to identify subjects' characteristics. Data normality test was performed using Kolmogorov-Smirnov. Correlation between stress and DLQI as well correlation between stress and each quality of life variable were analyzed using Spearman's Rho test. Statistical analysis was considered significant when  $p < 0.05$ .

Psoriasis patients involved in this study were 42 persons, including 29 males (69.05%) and 13 females (30.95%), Balinese ethnic group (83.33%), senior high school graduate (47.62%) and private sector employee (52.38%). Mean age of psoriasis patients

was  $45.93 \pm 11.07$  years old with first onset ranging from 1 to 30 years and mean onset was  $8.26 \pm 7.6$  years. Family history of psoriasis was found in 4 patients (9.52%) with stress as the most common triggering factor found in 31 patients (73.81%). Stress measurement using DASS-21 found stress range between 0-42 and mean range was  $10.81 \pm 10.00$ . Quality of life measurement using DLQI found score range between 0-23 and mean range was  $10.74 \pm 6.44$  (Table 1).

This study identified stress as risk factor of decreased quality of life in psoriasis patients (PR 6.80, CI 95%; 0.96-48.33;  $p < 0.05$ ). Increased stress score had positive correlation with decreased patients' quality of life ( $r = 0.53$ ;  $p < 0.05$ ) shown in Figure 1. According to quality of life variable measurement, stress was found to have positive correlation with symptoms and feelings ( $r = 0.41$ ;  $p < 0.05$ ) and daily activities ( $r = 0.38$ ;  $p < 0.05$ ) (Table 2).

Table 1. Characteristic of the subject

No	Characteristic	Total (n)	Percentage (%)
1.	Age (mean $\pm$ DS)	45.9 $\pm$ 11.1	
	16-25 years old	1	2.38
	26-35 years old	7	16.67
	36-45 years old	11	26.19
	46-55 years old	16	38.09
	56-65 years old	7	16.67
2.	Sex		
	Male	29	69.05
	Female	13	30.95
3.	Ethnic group		
	Balinese	35	83.33
	Javanese	6	14.29
	Kunangnese	1	2.38
4.	Education		
	Unschoolled	3	7.14
	Elementary school graduate	6	14.29
	Junior high school graduate	5	11.90
	Senior high school	20	47.62
	Diploma	3	7.14
	Bachelor degree	5	11.90
5.	Occupation		
	Unemployed	14	33.33
	Public sector employee	6	14.29
	Private sector employee	22	52.38
6.	Family history of psoriasis		
	Yes	4	9.52
	No	38	90.47
7.	First onset of psoriasis (mean $\pm$ DS)	6.5 $\pm$ 7.6	
	1-5 years	20	47.62
	6-10 years	12	28.57
	11-15 years	4	9.52
	>15 years	5	11.90
8.	Triggering factor for psoriasis lesion		
	Infection	15	35.71
	Physical trauma/ fatigue	10	23.81
	Drug	4	9.52
	Emotional stress	31	73.81
9.	Mean stress score (mean $\pm$ SD)	10.81 $\pm$ 10.00	
10.	Mean DLQI score (mean $\pm$ SD)	10.74 $\pm$ 6.44	

Table 2. Correlation between stress and each quality of life variable

No	Quality of life variable	Spearman r	p-value
1.	Symptoms and feelings	0.41	0.02*
2.	Daily activities	0.38	0.03*
3.	Leisure	0.29	0.11
4.	Work and school	0.25	0.20
5.	Personal relationships	0.29	0.12
6.	Treatment	-0.19	.041

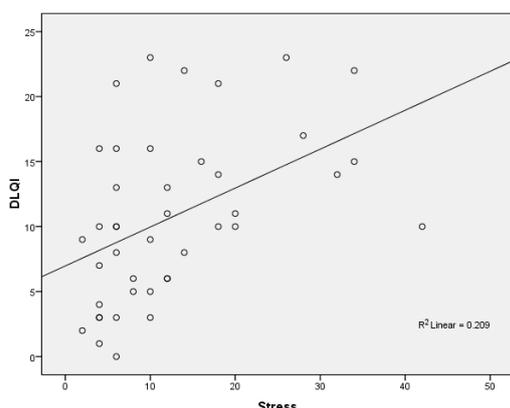


Figure. 1. Scattered plot graphic of correlation between stress and D

### 3 DISCUSSION

In this study, mean age of psoriasis patients was  $45.93 \pm 11.07$  years old. This result was consistent with previous study in India (2014) stating mean age of psoriasis patients was  $49.45 \pm 14.8$  years old, as well similar study in Croatia (2013) with mean age of  $49.9 \pm 14.8$  years old. Psoriasis can affect individuals of all ages although it tends to occur in adults rather than children and its incidence decreases in elderly. Several previous studies showed increased psoriasis incidence with age. Psoriasis incidence increases over the age of 39 years old and it is predicted to decline during elderly (Parisi, 2013).

This study found majority of psoriasis patients were males comprising as many as 29 persons (69.05%). This result was consistent with studies in Taiwan (2013) and China (2013) obtaining psoriasis vulgaris events were more common in male than in female patients with a ratio of 2:1 (Tseng, 2013), (Wu, 2013). Generally, it was known that psoriasis number of events was almost the same both in male and female patients. There has been no evidence showing phenotype difference of psoriasis vulgaris in both sexes (Griffiths, 2010).

Genetics was alleged to play role in pathogenesis of psoriasis vulgaris. From this study, family history of psoriasis was found in 4 patients (9.52%). This result was consistent with Shobaili, et al study identifying family history of psoriasis in 8.4% patients (Alshobaili, 2010).

In this study, stress was found to be a triggering factor for psoriasis lesion in 31 patients (73.81%). Stress is one of triggering factors for exacerbation of psoriasis lesion and approximately 40-80% psoriasis vulgaris exacerbation is caused by stress. Severe

psoriasis vulgaris condition may cause stress, meanwhile stress is able to worsen psoriasis symptoms (Basavaraj, 2011). Stress can aggravate psoriasis vulgaris condition and prolong healing time of the disease. Stress effect on psoriasis vulgaris exacerbation is possibly mediated by immunology effect involving hypothalamus-pituitary-adrenal (HPA) axis and increase in reactivation of sympathetic adrenomedullar (SAM) leading to activation of mast cells which cause neurogenic inflammation (Basavaraj, 2011), (Cohen, 2007), (Coimbra, 2014). Psychological stress causes phenotypic changes in circulating lymphocyte and considered as important trigger for T-helper1 cell-polarized inflammatory in psoriasis (Basavaraj, 2011).

Measurement of mean stress score was  $10.81 \pm 10.00$  and mean DLQI score was  $10.74 \pm 6.44$ . Stress score had moderate correlation with DLQI,  $r=0.53$ ;  $p<0.05$  which showed that higher DLQI score indicated higher patients' stress level measured by DASS-21. In this study, positive correlation between stress and quality of life variables such as symptoms and feelings ( $r=0.41$ ;  $p<0.05$ ) and daily activities ( $r=0.38$ ;  $p<0.05$ ) were identified. Those results showed that higher stress level had greater effect on both symptoms and feelings and daily activities variables in psoriasis vulgaris patients.

### 4 CONCLUSION

Stress affected quality of life in psoriasis patients. This study found higher stress level had greater effect on patients' quality of life, particularly in symptoms and feelings, and daily activities variables. According to the results of this study, it is concluded that screening for stress as triggering factor of psoriasis vulgaris is essential, thus prompt treatment for stress can be performed which eventually leads to increased quality of life in psoriasis vulgaris patients.

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