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## Research Article

### CORRELATIONAL STUDY ON PERCEIVED STRESS AND ACNE SEVERITY IN YOUNG ADULTS: A PILOT STUDY

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#### ABSTRACT

Skin has close association with the mind, and the skin responds in direct proportion to the emotional stimuli. Mukha Dushika (Acne vulgaris) is widely considered as a chronic disease primarily affecting the adolescent group of individuals with a prevalence rate of about 85%. Recent advances in the field of medicine, throws light over the fact that the psychological stressors play an important role in the pathophysiology of skin disorders. A pilot study was carried out among the Ayurveda medical students to assess the relationship between their stress levels and acne severity during their exam period. Investigator's Global Assessment (IGA) Scale for Acne Severity and Perceived Stress Scale (PSS) were made use of for the same. Statistical evaluation was done with Spearman's Ranked Correlation to find out the relationship between stress and acne. Out of 30 samples, 6 samples with mild acne had moderate stress, 1 sample had mild stress and 13 samples had moderate stress, 10 samples of severe acne, was reported with moderate and severe stress in 4 and 6 samples respectively. The study proved a positive correlation that, exposure to stress triggered acne production.

**Keywords:** Mukha dushika, Acne vulgaris, stress

#### INTRODUCTION

Skin reflects what we feel inside. Emotional disturbances may often manifest as skin diseases<sup>1</sup>. Several studies prove the inter relationship between psychological disturbances and cutaneous manifestations. Acne vulgaris is a very common disease in young adults and they are more prone to psychological stressors. It is a key cosmetic issue in young adults, as this age group is more inclined to external beauty and has more exposure to stress. Acne is a multifactorial disease affecting the pilosebaceous follicle characterized by comedones, papules, pustules, nodules, cysts and scars<sup>2</sup>. Symptomatology sequel of Acne vulgaris has close interrelation to the disease Mukha dushika explained in Ayurveda classics<sup>3</sup>. Acne vulgaris is one among the alarming dermatological condition affecting over 90% of males and 80% of females in all ethnic groups. A study was conducted to establish the involvement of mind in the pathogenesis of Mukha dushika.

#### MATERIALS AND METHODS

The study was conducted in the 3<sup>rd</sup> year classrooms on samples with an average age of 21 to 24 years, at Sri Dharmasthala Manjunatheshwara College of Ayurveda attached to the Hospital, during their exam period (psychological stressor) from February to March 2018. 30 volunteer student samples were chosen for the study. Samples with all grades of acne severity were included in the study. They were initially assessed for acne severity with Investigator's Global Assessment (IGA) Scale for Acne Severity. It is a scale used for direct assessment of the samples by the investigator themselves. Then the same samples

were given self-assessment questionnaire of Perceived Stress Scale (PSS). PSS is a 10 item Questionnaire which helps to assess the stress levels of an individual during a period of one month. The collected data was analyzed manually. Then statistical analysis was done with Spearman's Ranked Correlation with the total scores of IGA Scale for Acne Severity and PSS respectively. The study was carried out as per the Declaration of Helsinki guidelines. The study is registered on CTRI with Reference No. REF/2018/08/021012.

#### RESULTS

Using IGA Scale for Acne Severity, it was found that among 30 samples, 14 students had moderate acne, 10 students had severe acne and 6 students had mild acne. An increase in stress severity is correlated with an increase in acne severity as mentioned in Table no.1. Spearman's Rank Order Correlation was run to determine the relationship between the stress and acne levels on 30 students. There was a significant correlation between the total scores of IGA Scale for Acne Severity and PSS with Spearman's Correlation Coefficient,  $r=0.585$  and  $p$  value = 0.01. A positive correlation between stress and acne was established with the present study.

#### DISCUSSION

Mukha dushika is one among the Kshudra vikara (minor diseases) occurring as papules resembling the thorns of shalmali (*Salmalia malabarica*), appearing on the face caused due to vitiated vata (humour which governs all movements of mind and body), kapha (humour responsible for stability and

unctuousness) and rakta dhatu (blood) vitiation<sup>3</sup>. It is one among those diseases which has minimal causes and symptoms<sup>4</sup>. The skin and mind are under the control of vata dosha. Vyana vata (a type of vata dosha, which is responsible for all types of bodily functions) controls and stimulates the functions of mind and also enhances tactile stimulation<sup>5</sup>. In this particular study, the samples were assessed during their exam period which is a stressful event. The perceived stress is correlated as manasika vikara (psychological stressors) like krodha (anger), shoka (worry), bhaya (fear), harsha (excitement) and kama (desire), which are corresponded with possible exam stressors and vitiated dosha as mentioned in Table no.3. This causes vata dominant pitta kapha dosha vitiation leading to impairment of

jataragni (digestive fire) resulting in deprivation in nourishment of consecutive dhatus (tissues). The skin gets nourished through these dhatus. But due to improper nourishment of the dhatus, it results in manifestation of various skin conditions<sup>6</sup>.

During a stress response, the paraventricular nucleus of hypothalamus gets stimulated for the release of corticotropin releasing hormone. It then acts on the pituitary gland to induce the release of adrenocorticotrophic hormone. This in turn causes adrenal cortex to release cortisol. Higher cortisol level prompts the sebaceous glands on the skin to produce sebum. Excessive accumulation of sebum leads to production of acne<sup>7</sup>.

**Table 1: IGA Scale for Acne Severity \* Total PSS\*\*Score Cross tabulation**

		Count			Total
		Total PSS Score			
		Mild	Moderate	Severe	
IGA Scale for Acne Severity	Mild	0	6	0	6
	Moderate	1	13	0	14
	Severe	0	4	6	10
Total		1	23	6	30

\*IGA- Investigator's Global Assessment Scale, \*\*PSS- Perceived Stress Scale

**Table 2: Correlation between Total PSS Score and IGA Scale for Acne Severity**

Spearman's rho	IGA Scale for Acne Severity	IGA Scale for Acne Severity		Total PSS Score
		Correlation Coefficient		
		1.000		.585**
		Sig. (2-tailed)		.001
		N	30	30
	Total PSS Score	Correlation Coefficient	.585**	1.000
		Sig. (2-tailed)	.001	
		N	30	30

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table 3: Psychological stressors during exam period and the respective dosha involved**

Stressors ( <i>manasika vikara</i> )	Correlation	Dosha involved
Krodha(anger)	Frustration over the limited time period for exam preparation, anger due to not being able to reach the target.	Vata, pitta
Shoka (depressed)	Feeling down and worried lack of confidence to appear for the exam.	Pitta, vata
Bhaya (fear)	Fear of not being able to cover the portions on time, fear of failure.	Vata, pitta
Harsha(happy)	Excitement and over confidence before appearing for the exam.	Kapha
Kama(desire)	Excessive desire and dreaming of getting higher marks.	Vata, Pitta

## CONCLUSION

Psychological stress acts as a prime as well as precipitating cause for acne. The total stress levels were taken into consideration in this study. The students who were more stressed were exhibited with moderate or severe acne and the students who scored less in PSS showed less score in IGA Scale for Acne Severity. Hence, the present study establishes a positive correlation between stress and acne severity. A further inquisitive look through into each psychological stressor gives forth a better understanding on the relationship between acne and stress.

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