

# Correlation Between Stress Level With the Incidence of Acne Vulgaris in Faculty of Medicine Students of the Swadaya Gunung Jati University

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**Abstract**—Acne vulgaris is a chronic inflammation disease of pilosebaceous glands with a polymorphic clinical picture of the skin consisting of comedones, pustules, nodules and scar tissue. One of the factors that cause acne vulgaris is stress. This study aims to determine whether there is a correlation between stress levels and acne vulgaris in FK UGJ students. This study is an analytic observational with a cross sectional approach using consecutive sampling technique. The sample consists of 121 respondents whose stress levels were assessed using a questionnaire and acne vulgaris condition was evaluated using both a questionnaire and clinical examination. Data analysis was performed using univariate analysis for frequency distribution and bivariate analysis using the chi-square test. The study found that 62% of respondents experienced acne vulgaris, with a predominance of females (65.1%) and aged 22 years (44%). The majority of respondents did not experience stress (43%), with a majority of females (37.2%) and aged 22 years (37.7%). Among those who did not experience stress, 57.7% had acne vulgaris. Based on the results of the analysis, the p-value was 0.360 ( $p\text{-value} > 0.050$ ). There is no significant correlation between stress levels and the incidence of acne vulgaris in students of the Faculty of Medicine, Universitas Swadaya Gunung Jati.

Keywords— *acne vulgaris*; *stress*

## I. INTRODUCTION

Acne vulgaris is a chronic inflammation of the pilosebaceous glands with a clinical presentation of polymorphic skin lesions consisting of comedones, pustules, nodules, and scars, both hypertrophic and hypotrophic. Most people experience acne at some point in their lives, with 20% developing severe acne, which can cause permanent scarring. Acne vulgaris is concerning as it is associated with depression and anxiety, which can impact a person's personality. Acne vulgaris can occur in adolescents, adults, and even older individuals [1],[2].

According to the Global Burden of Disease (GBD) study, acne vulgaris affects 85% of young adults aged 12–25 years. A study in Germany found that 64% of people aged 20-29 and 43% of people aged 30-39 suffer from acne vulgaris. A study in the United States recorded a 69% incidence of acne vulgaris in 15-18-year-olds [1].

Research conducted in Asia shows a high prevalence of acne vulgaris. In China, specifically in Zhou Hai District, Guangdong Province, the prevalence of acne vulgaris in teenagers is 53.5%. The prevalence of acne vulgaris in Indonesia ranges from 85% to 100%. Acne vulgaris is the most common condition among teenagers. The prevalence of acne vulgaris in Indonesian teenagers is quite high, ranging from 47% to 90% during adolescence. The highest prevalence is seen in women aged 14-17 years, ranging from 83% to 85%, and in men aged 16-19 years, ranging from 95% to 100%.

Additionally, it is found that 4.71% of acne vulgaris cases are caused by hormonal imbalances [3].

Various factors contribute to the development of acne vulgaris, such as bacterial infections (*Propionibacterium acne*), psychological factors, seasons, stress, genetics, diet, sebum production, cosmetics, endocrine factors, and other chemicals.

Stress is one of the factors that can cause acne vulgaris in college students. Stress has a significant effect on individuals, impacting their attitudes, behavior, and interpersonal relationships. Stress can result from a combination of factors such as living environment, physical and emotional status, lifestyle, and financial status. Nowadays, stress-related diseases are increasing day by day, especially among medical students who may experience higher stress levels due to the academic workload [2]

The study conducted by Komang Saputra et.al (2020) examined the relationship between stress and the onset of acne vulgaris in students of the Faculty of Medicine at Udayana University, Doctor of Medicine Education Program, Class of 2017. The research found that 28 students (35.4%) suffered from acne vulgaris, while 51 students (64.6%) did not. 60 students (75.9%) experienced stress, while 19 students (24.1%) did not. After performing statistical tests on acne vulgaris and stress using the chi-square test, a p-value of 0.02 (<0.05) was obtained, indicating a significant relationship between stress and acne vulgaris in the students of the Faculty of Medicine at Udayana University, Doctor of Medicine Education Program, Class of 2017 [2]

Based on this, the researchers are interested in investigating the correlation between stress levels and acne vulgaris in students. This study aims to determine whether there is a correlation between stress levels and acne vulgaris in FK UGJ students.

## II. METHOD

This is an analytical observational study with a cross-sectional design conducted at the Faculty of Medicine, Universitas Swadaya Gunung Jati. The sampling technique used was consecutive sampling with 121 respondents.

Stress levels were assessed using a questionnaire (Depression Anxiety Stress Scale (DASS)) and acne vulgaris condition was evaluated using both a questionnaire and clinical examination. The inclusion criteria for this study were students enrolled in the 2018 batch of FK UGJ, who were willing to participate in the study and sign consent forms, and complete the questionnaire. The exclusion criteria were students with other facial skin diseases such as psoriasis, diagnosed by a general practitioner, and those who had taken oral antibiotics or isotretinoin in the last month. Statistical analysis was conducted using the Chi-square test to determine whether there was a correlation between stress levels and acne vulgaris.

## III. RESULTS AND DISCUSSION

### Univariate Analysis

The majority of respondents were 22 years old (69 people, 57%), most respondents were female (86 people, 71%), most had acne vulgaris (75 people, 62%), and most did not experience stress (52 people, 43%).

### Bivariate Analysis

The relationship between stress levels and the occurrence of acne vulgaris was examined.

TABLE I. THE RELATIONSHIP BETWEEN STRESS LEVELS AND THE INCIDENCE OF ACNE VULGARIS.

Stress Level	Acne Vulgaris	No Acne Vulgaris	Total	p-value
No stress	30 (57.7%)	22 (42.3%)	52	0.360
Mild stress	3 (50%)	3 (50%)	6	
Moderate stress	12 (75%)	4 (25%)	16	
Severe stress	9 (50%)	9 (50%)	18	
Very severe stress	21 (72.4%)	8 (27.6%)	29	
Total	75 (62%)	46 (38%)	121	

Based on the table above, among the 52 respondents with no stress, 30 (57.7%) had acne vulgaris, while 22 (42.3%) did not. Among the 6 respondents with mild stress, 3 (50%) had acne vulgaris. Among the 16 respondents with moderate stress, 12 (75%) had acne vulgaris, and among the 18 respondents with severe stress, 9 (50%) had acne vulgaris. Among the 29 respondents with very severe stress, 21 (72.4%) had acne vulgaris.

### Acne Vulgaris

Among the 121 respondents, 75 (62%) had acne vulgaris, while 46 (38%) did not. The majority of those with acne vulgaris were female (56 respondents, 65.1%). This finding is consistent with a study by Sari (2016), which found that 69.7% of females had acne vulgaris. The higher incidence of acne vulgaris in females is linked to hormonal changes during puberty. Female puberty starts earlier than males, which may contribute to higher rates of acne[4],[5]

The study was conducted among respondents aged 20-24 years, as this age range is associated with a higher incidence of acne vulgaris. A study by Lynn (2016) showed the highest incidence of acne vulgaris in individuals aged 18-25 years. The peak of acne vulgaris incidence at age 22 in this study may also be related to poor sleep quality, which affects hormonal regulation and potentially triggers acne vulgaris[4],[5].

### Stress Levels

Stress was categorized into five levels: no stress, mild stress, moderate stress, severe stress, and very severe stress.

Based on the study, 43% of respondents did not experience stress.

Age is associated with stress tolerance, as individuals tend to become better at managing stress with age. In late adolescence, individuals undergo emotional, cognitive, and social changes, which help them manage stress [7].

#### The Correlation Between Stress Levels and Acne Vulgaris

The main aim of this study was to determine whether there was a correlation between stress levels and the occurrence of acne vulgaris. The results of the Chi-square test yielded a p-value of 0.360 ( $p > 0.05$ ), indicating no significant correlation between stress levels and the occurrence of acne vulgaris. This result is consistent with research by Nuraini and Ramona (2017), which found no significant correlation between stress and acne vulgaris in female students at Assalaam Surakarta [8].

The results of this study are inconsistent with the existing theory that there is a relationship between stress levels and the occurrence of acne vulgaris, where stress stimulates the hypothalamus to produce Corticotropin Releasing Hormone (CRH), which is secreted by the hypothalamus into the hypothalamo-hypophyseal portal system, thus stimulating the anterior pituitary to trigger an increase in the level of Adrenocorticotrophic Hormone (ACTH). This increase in ACTH will trigger an increase in androgen hormones, which play an important role in the emergence of acne vulgaris [9].

The researcher assumes that several factors besides stress, including hormonal changes, diet, and cosmetics, may influence the development of acne vulgaris.

#### IV. CONCLUSIONS

This study, conducted on students of FK UGJ in 2022, found that 75 respondents (62%) had acne vulgaris, and 46

respondents (38%) did not. Of the 121 respondents, 52 (43%) did not experience stress, while the others reported varying levels of stress. There was no significant correlation between stress levels and the occurrence of acne vulgaris among FK UGJ students.

#### REFERENCES

- [1] Sesanti RT, Pramuningtyas R. Hubungan Tingkat Stres Dan Pemakaian Bb Cream Dengan Kejadian Akne Vulgaris Pada Mahasiswi Fakultas Kedokteran Universitas Muhammadiyah Surakarta Tahun 2021. *JIMKI J Ilm Mhs Kedokt Indones*. 2021;9:1–7.
- [2] Yadnya K, Wiraguna A, Karna NPR, Sudarsa P sanjiwani. Hubungan stres terhadap timbulnya akne vulgaris pada mahasiswa fakultas kedokteran universitas udayana program studi pendidikan dokter angkatan 2017. *J Med Udayana*. 2020;9(12).
- [3] Silvia E, Febriyani A, Nando R, Riza A. Hubungan Antara Kualitas Tidur Dengan Acne Vulgaris Pada Mahasiswa Fakultas Kedokteran Umum Universitas Malahayati Angkatan 2019. *J Med Malahayati*. 2020;4.
- [4] Sari R. Hubungan Diet Tinggi Lemak Dan Stres Dengan Kejadian Akne Vulgaris Pada Mahasiswa Angkatan 2012-2015 Fakultas Kedokteran Universitas Lampung. 2016.
- [5] Aghaei S, Mazharinia N, Jafari P, Abbasfard Z. The Persian version of the Cardiff Acne Disability Index. *Saudi Med J*. 2006.
- [6] Lynn D, Umari T, Dunnick C, Dellavalle R. The epidemiology of acne vulgaris in late adolescence. *Adolesc Health Med Ther*. 2016.
- [7] Manarisip C, Kepel B, Rompas S. Hubungan Stres Dengan Kejadian Acne Vulgaris Pada Mahasiswa Semester V (Lima) Program Studi Ilmu Keperawatan Fakultas Kedokteran Universitas Sam Ratulangi Manado. *ejournal Keperawatan (e-Kep)*. 2015;3:1–6.
- [8] Nuraini I. Hubungan Tingkat Stres Dengan Grading Akne Vulgaris Pada Siswi Asrama Assalaam Surakarta. 2017.
- [9] Fadilah AA. Stres Psikologis Terhadap Timbulnya Akne Vulgaris. *J Ilm Kesehat Sandi Husada*. 2021;10.