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The prevalence between stress and acne vulgaris among medical students at Universitas Udayana in the 2019 period

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ABSTRACT

Background: Acne vulgaris is a common disease in medical students. One of the causes of acne vulgaris is stress. Acne vulgaris can affect the quality of life associated with one's self-confidence. But often, this disease is ignored and not treated properly. This study aims to know if acne vulgaris occurs in students at the Faculty of Medicine, Universitas Udayana, Bali, Indonesia, related to the stress that affects acne vulgaris.

Methods: This research is a descriptive cross-sectional study. Data is collected using a data retrieval form. The inclusion criteria in this study were: 1) Participants selected must be from English class from semester 7 and aged 20 or above; 2) Participants can be from both genders; and 3) Participants that join the study willingly. Besides, the exclusion criteria were respondents who did not approve as a research sample and did not fill out informed consent. Data were analyzed using SPSS version 17 for Windows.

Results: About 62 of 93 study participants were diagnosed with acne vulgaris in students at the Faculty of Medicine, Universitas Udayana. There were 31 of 62 study participants who were diagnosed with acne vulgaris due to stress. Women had more acne vulgaris than men and the number of students that had acne vulgaris the most are at the age of 21. The most common type of lesion is comedonal with a mild classification level. Most of the subject's cause of acne due to stress is before block exam. Most of the participants feel embarrassed due to acne. About 24.2% of the subjects had a habit of scratching/squeezing acne vulgaris.

Conclusion: Most of the subjects diagnosed with acne were female and age 21 years old. Besides, comedones were the predominant type of lesion, followed by a mild degree of acne severity.

Keywords: Acne, Acne Vulgaris, Acne Severity, Acne Grading, Stress.
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INTRODUCTION

Acne vulgaris is a typical issue of the pilosebaceous unit seen principally in teenagers.[1] Acne is characterized by clogged pores or whiteheads, pimples, oily skin, and scarring. It influences areas of the skin with a generally high number of oil glands, including the face, upper chest, and back.[2] The subsequent appearance can prompt uneasiness, decreased confidence and, in outrageous cases, depression or suicide.[3]

In 2015, skin inflammation was assessed to impact 633 million people globally, making it the eighth most common sickness worldwide. Skin break out regularly occurs in pre-adulthood and impact a normal 80–90% of teenagers in the Western world.[4] Adolescents and adults may similarly be impacted when adolescence. Notwithstanding that skin break out ends up being less standard in adulthood, it suffers in about part of impacted people into their twenties and thirties, and a more diminutive get-together continues encountering issues into their forties.[5]

Genetics is the main cause of skin break out in 80% of cases.[5] The function of eating routine and cigarette smoking is unclear, and neither cleanliness nor exposure to sunlight appears to affect. In the two sexual orientations, hormones called androgen show up to be a part of the essential segment by causing the over-the-top creation of sebum.[6] Another normal factor is the extraordinary advancement of the bacterium *Cutibacterium acne*, which is commonly present on the skin.[7] Stress has long been related to acne; however, research recommends that, up to this point, science has underestimated the effect it has on skin break-out severity.[8] The body produces hormones, for example, cortisol and adrenal androgen, nerve proteins such as endorphins, insulin and inflammatory cytokines like small proteins that trigger irritation which causes the behavior of the sebaceous organs and can produce acne during stress.[8] A mostly are questionnaire-

based, recommend that acne patients associate their condition with stress somewhere in the range of 50% and 80% of them consenting to statements that stress aggravates skin inflammation. Stress can likewise make a few people pick at their blemishes which can spread bacteria and cause more irritation.[8]

Many treatment choices for skin break out are accessible, including way of life changes, prescriptions, and medical procedures. Eating less carbohydrates, for example, sugar may help. Medications applied legitimately to the affected skin, for example, azelaic acid, benzoyl peroxide, and salicylic acid are regularly utilized.[9] Antibiotics and retinoids are accessible in a structure where they may be applied to the skin and taken by mouth to treat skin irritation. A few types of birth prevention pills help against skin break out in ladies. Isotretinoin pills are normally kept for serious skin inflammation because of more prominent potential side effects.[9] Based on those mentioned above, this study aims to determine the prevalence of stress and acne vulgaris among medical students at Universitas Udayana in the 2019 period.

METHODS

This study is a descriptive observational study using a cross-sectional approach to determine the total number of cases in Semester 7 who are studying in the Medical Faculty, Universitas Udayana, Denpasar, Bali. The target population of this study is students from the Medical Faculty of Universitas Udayana who are currently pursuing their studies in English class, semester 7, by simple random sampling technique. The inclusion criteria in this study were: 1) Participants selected must be from English class from semester 7 and aged 20 or above; 2) Participants can be from both genders; and 3) Participants that join the study willingly. Besides, the exclusion criteria were respondents who did not approve as a research sample and did not fill out informed consent.

Acne vulgaris in this study is an inflammation of the pilosebaceous gland that is characterized by open or closed blackheads and inflammatory lesions in the form of papules, pustules, nodules, and cysts. Acne vulgaris is most commonly found on the face but can also occur on the back and chest. Severity classification is defined based on the number of lesions found at the location of acne vulgaris and the type of lesions formed. This classification is divided into mild, moderate and severe. Based on the acne severity scale, mild acne will be from 0-1, moderate acne will be from 2-3, and severe acne will be from 4-5. In this research, the participants will diagnose their acne severity because they have knowledge about acne vulgaris as they are all 4th-year medical students.

Stress is one of the components which impacts a few dermatological problems. Stress can build the creation of androgen hormones from the adrenal organs and increment sebum creation. Therefore, stress can cause acne vulgaris. Questions regarding stress related to acne will be asked in the questionnaire to know if stress affects acne for the research participants.

Students will be approached and will be given a clarification about this examination. Students who have the measures will be approached to partake in this research. By willing, the respondent fills out an informed consent sheet, and after that, the respondent will fill out an information assortment structure given by the researcher that contains inquiries regarding the information required.

The data obtained will be processed to analyze the proportion of research variables. Processing will be carried out using a computer device, namely using the SPSS version 17 for Windows. The data obtained will be processed manually, analyzed descriptively, and presented in tables, diagrams or graphs accompanied by an explanation to determine the relationship between stress and acne among students at the Faculty of Medicine at Universitas Udayana.

RESULTS

The total subjects in this study were 93 subjects consisting of 32 male subjects and 61 female subjects. This research was participated by students with age 20-25 years old from the Faculty of Medicine at Universitas Udayana. They consisted of 1 subject at the age of 20, 66 subjects at the age of 21, 17 subjects at the age of 22, 7 subjects at the age of 23, 1 subject at the age of 24, and 1 subject at the age of 25. There were 0 male subject and 1 female subject at the age of 20, 27 male subjects and 39 female subjects at the age of 21, 4 male subjects and 13 female subjects at the age of 22, 1 male subject and 6 female subjects at the age of 23, 0 male subject and 1 female subject at the age of 24, and

Table 1. Subject Description Based on Gender and Age

Gender	Age (N=93)						Total
	20 (N=1)	21 (N=66)	22 (N=17)	23 (N=7)	24 (N=1)	25 (N=1)	
Male	0	27	4	1	0	0	32
Female	1	39	13	6	1	1	61

Table 2. Subject description based on gender and age to the diagnosis

Variable	Diagnosis (N=93)		Total
	Acne (N=62)	No Acne (N=31)	
Gender			
Male	24	8	32
Female	38	23	61
Age			
20	0	1	1
21	47	19	66
22	10	7	17
23	3	4	7
24	1	0	1
25	1	0	1

Table 3. Baseline characteristic of respondents based on the type of lesion, acne severity, feeling unhappy/depressed.

Variables	Frequency (N=62)	Percentage (%)
Type of Lesion		
Comedones	30	48.4
Papules	14	22.6
Pustules	17	27.4
Nodules	1	1.6
Cyst	0	0.0
Acne Severity		
Mild	44	71.0
Moderate	17	27.4
Severe	1	1.6
Unhappy/Depressed		
Yes	25	40.3
No	37	59.7
Lack of Confidence		
Yes	28	45.2
No	34	54.8
Feeling Unattractive		
Extremely	5	8.1
A good bit	29	46.8
Not at all	28	45.2
Concerned/Worried in Public		
Extremely	6	9.7
A good bit	28	45.2
Not at all	28	45.2
Feeling Embarrassed		
Extremely	6	9.7
A good bit	30	48.4
Not at all	26	41.9
Habit of Scratching/Squeezing		
Yes	15	24.2
No	47	75.8

0 male subject and 1 female subject at the age of 25 (Table 1).

Based on the calculation, from a total of 93 subjects, there were 62 subjects who were diagnosed with acne vulgaris and 31 subjects who were declared not suffering from acne vulgaris. A total of 38 female subjects and 24 male subjects were diagnosed with acne vulgaris (Table 2).

The results of the data tabulation stated that of the 66 research subjects, 47 subjects were diagnosed with acne vulgaris at the age of 21. The number of subjects diagnosed with acne vulgaris at the age of 20 is 0, at the age of 22 is 10, at the age of 23 is 3, at the age of 24 is 1 and at the age of 25 is 1 (Table 2).

In all of the subjects diagnosed with acne vulgaris, there were 48.4% subjects with comedones, 22.6% subjects with papules, 27.4% subjects with pustules, and 1.6% subjects with nodules. There was no subject with cyst found (Table 3).

Based on the tabulation results, from the 62 subjects diagnosed with acne vulgaris, 44 subjects were diagnosed with mild severity of acne vulgaris, 17 subjects with moderate severity of acne vulgaris and 1 subject who had severe severity of acne vulgaris (Table 3).

Of the 62 subjects diagnosed with acne vulgaris, 25 subjects felt unhappy/depressed due to acne, and 37 subjects were not feeling unhappy/depressed due to acne (Table 3). Besides, based on the tabulation results, from the 62 subjects diagnosed with acne vulgaris, 28 subjects felt a lack of confidence due to acne, and 34 subjects were not feeling a lack of confidence due to acne (Table 3).

Based on the unattractive feeling, 5 subjects were feeling extremely unattractive due to acne, 29 subjects were feeling unattractive due to acne in a good bit, and 28 subjects were not at all feeling unattractive due to acne (Table 3).

6 subjects were feeling extremely concerned/worried to be in public due to acne, 28 subjects were feeling concerned/worried to be in public due to acne in a good bit, and 28 subjects were not at all feeling concerned/worried to be in public due to acne as depicted in Table 3.

Based on the embarrassing feeling, 26 subjects felt extremely embarrassed due to acne, 30 subjects were feeling embarrassed due to acne in a good bit, and 6 subjects were not feeling embarrassed due to acne (Table 3).

From a total of 62 subjects diagnosed with acne vulgaris, 24.2% had the habit of scratching/squeezing acne vulgaris. In comparison, the subjects who did not habit of scratching/squeezing acne vulgaris were 75.8% (Table 3).

Based on the calculation, from 62 subjects, 31 subjects are experiencing acne due to stress and 31 subjects were declared not experiencing acne due to stress. A total of 20 female subjects and 11 male subjects were experiencing acne due to stress (Table 4).

The results of the data tabulation stated that of the 47 research subjects, 21 subjects were experiencing acne due to stress at the age of 21. This number is more than the other ages, 20, 22, 23, 24, and 25 years old. The number of subjects experiencing acne due to stress at the age of 20 is 0, at the age of 22 is 8, at the age of 23 is 2, at the age of 24 is 0, and at the age of 25 is 0 (Table 4).

In all of the subjects who experienced acne due to stress, 54.8% of subjects experience acne breakout before the block exam, 35.5% of subjects had acne breakout due to too much homework/assignment, and 9.7% of subjects experience acne breakout due to poor sleep schedule. There was no subject with relationship/family problems as the cause of acne breakout found (Table 5).

DISCUSSION

Based on the data obtained from 93 subjects, 66.7% of subjects were diagnosed with acne vulgaris. A total of 61.3% female subjects and 38.7% male subjects were diagnosed with acne vulgaris, where we can also conclude that female students suffer more acne vulgaris than male. This is similar to the research conducted by Ayudianti P and Indramaya DM, where

Table 4. Subject Description Based on Gender and Acne due to Stress

Variable	Acne due to Stress (N=62)		Total
	Stress (N=31)	Non-Stress (N=31)	
Gender			
Male	11	13	24
Female	20	18	38
Age			
20	0	0	0
21	21	26	47
22	8	2	10
23	2	1	3
24	0	1	1
25	0	1	1

Table 5. Subject Description Based on Causes of Acne Breakout due to Stress

Cause of Acne Breakout	Frequency (N=31)	Percentage (%)
Before the block exam	17	54.8
Too much homework/assignment	11	35.5
Poor sleep schedule	3	9.7
Relationship/family problem	0	0.0

they were found that the prevalence of acne vulgaris was mostly experienced by women.[10] From all the ages of students that participate in this study, the diagnosis of acne vulgaris was mostly found in students at the age of 21, which was 75.8% of subjects.[10]

The type of lesion that was mostly found in this study was comedonal. Comedones are the initial stage of blocking pores that trigger acne vulgaris.[11] The classification of the severity of acne vulgaris consists of mild, moderate and severe. This number is based on the number of comedones, papules, pustules, nodules and cyst on the subject's face.[11] In this study, all the subjects had already learned during a lecture about acne vulgaris and diagnosed acne severity by themselves. The classification most found was mild of all subjects diagnosed with acne vulgaris. This is similar to the research conducted by Okoro E et al., which stated that the most common classification of acne vulgaris is mild.[12] About 27.4% subjects had moderate acne vulgaris and a 1.6% subject who had severe acne vulgaris.[12]

From all the ages of students who participated in this study, the diagnosis of acne vulgaris due to stress was mostly found in students at the age of 21, 67.7% of subjects. As for the causes of acne vulgaris due to stress, there were 54.8% of subjects experience acne breakout before the block exam, 35.5% of subjects had acne breakout due to too much homework/assignment, and 9.7% subjects experience acne breakout due to poor sleep schedule. This proves that stress does affect acne vulgaris and in a study conducted by Zari S and Alrahmani D where they stated that stress positively correlates with acne vulgaris.[13]

As for the subject description based on acne and self-esteem, 40.3% of subjects felt unhappy/depressed due to acne, and 45.2% of subjects were feeling a lack of confidence due to acne. There were 9.7% of subjects who were feeling extremely embarrassed due to acne, and 48.4% of subjects were feeling embarrassed due to acne in a good bit. In a study conducted by Kodra V et al., he stated that acne exhibit lower self-esteem than their peers without acne and multiple studies indicate a correlation between acne and diminished quality of life, depression and anxiety.[14]

In this study, 24.2% of the subjects had the habit of scratching/squeezing acne vulgaris. Research conducted by Tjekyan RMS has stated that the habit of scratching or squeezing the acne vulgaris lesions can increase the condition of the acne vulgaris lesions.[15] Besides that, scratching/squeezing acne vulgaris is also a sign of stress.[15] However, several indicators could also contribute to this habit such as allergy, dermatitis, and secondary infection of acne vulgaris where it confuse the recent findings as a limitation of study.

CONCLUSION

The prevalence of acne vulgaris found in students from the Faculty of Medicine at Universitas Udayana was 66.7%. Acne vulgaris found in male subjects is 38.7% of all male subjects and in female subjects, there were 61.3% of all female subjects. From all the ages of students that participate in this study, the diagnosis of acne vulgaris was mostly found in students at the age of 21, which was 75.8% of subjects. The prevalence of acne vulgaris due to stress found in students from the Faculty of Medicine at Universitas Udayana was 50% subjects of all acne subjects.

CONFLICT OF INTEREST

There is no competing interest regarding the manuscript.

ETHICS CONSIDERATION

Ethics approval has been obtained from the Ethics Committee, Faculty of Medicine, Universitas Udayana, Bali, Indonesia, prior to the study being conducted.

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AUTHOR CONTRIBUTION

All authors equally contribute to the study from the conceptual framework, data acquisition, data analysis until reporting the study results through publication.

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