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The Relationship Between Anxiety Level with the Onset of Acne Vulgaris in Medical Faculty of Universitas Sumatera Utara 2016 – 2018

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Abstract. Acne vulgaris (AV) is a chronic inflammation of the follicle pilosebaceous induced by *Propionibacterium acnes*. Anxious circumstances increase the androgen hormones. This increases the production of sebum and the proliferation then activates *Propionibacterium acnes*, resulting in AV. To find out the relationship between levels of anxiety and the onset of AV to the Faculty of Medicine, Universitas Sumatera Utara (FK USU) 2016 – 2018 conducted observational research with cross sectional design. This research samples as many as 66 students of FK USU Group 2016 – 2018 and using stratified random sampling method. The result of anxiety level of FK USU students indicates that there are mild anxiety (92.4%) moderate anxiety (6.1%) and severe anxiety (1.5%). The AV event of FK USU students indicates that there are mild acne (51.5%) moderate acne (40.9%) severe acne (6.1%) and normal results (1.5%). With the chi square test there is a significant link between the level of anxiety and the onset of the vulgaris ($p = 0.026$). There is a significant relationship between the levels of anxiety with the onset of AV on student of FK USU 2016-2018.

Keyword: anxiety; acne vulgaris; students

Abstrak. *Akne vulgaris (AV) adalah peradangan menahun folikel pilosebasea yang disebabkan oleh Propionibacterium acnes. Keadaan cemas meningkatkan hormon androgen. Hal ini meningkatkan produksi sebum dan proliferasi kemudian mengaktivasi Propionibacterium acnes, sehingga terjadi AV. Untuk mengetahui hubungan antara tingkat kecemasan dengan timbulnya AV pada mahasiswa Fakultas Kedokteran Universitas Sumatera Utara (FK USU) angkatan 2016 – 2018 dilakukan penelitian observasional dengan desain cross sectional. Sampel penelitian ini sebanyak 66 mahasiswa FK USU angkatan 2016 – 2018 dan menggunakan metode stratified random sampling. Hasil tingkat kecemasan mahasiswa FK USU menunjukkan bahwa terdapat kecemasan ringan (92,4%) kecemasan sedang (6,1%) dan kecemasan berat (1,5%). Kejadian AV pada mahasiswa FK USU menunjukkan bahwa terdapat akne ringan (51,5%) akne sedang (40,9%) akne berat (6,1%) dan hasil normal (1,5%). Dengan uji chi square didapatkan hubungan signifikan antara tingkat kecemasan dengan timbulnya akne vulgaris (p = 0,026). Terdapat hubungan yang signifikan antara tingkat kecemasan dengan timbulnya AV pada mahasiswa FK USU angkatan 2016-2018.*

Kata Kunci: kecemasan; akne vulgaris; mahasiswa

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1. Introduction

Acne Vulgaris disease (AV) is a chronic inflammation of the pilosebaceous follicles which is accompanied by a blockage of the keratin of the gland duct, characterized by the presence of clinical manifestations resulting in the form of blackheads, papules, pustules, as well as cysts [1][2][3]. The Indonesian Cosmetic dermatology research Data shows that there are 60% of AV sufferers in 2006, 80% in 2007 and 90% in 2009 especially in adolescent age [4]. The prevalence of AV in adolescence is quite high (47-90%). The highest prevalence in women (83-85%) Aged 16-17 years and in men (95-100%) At the age of 16-17 years [5].

One factor that contributes to the occurrence of AV is increased secretion of sebum. Sebum itself is produced by the sebaceous glands. The secretion of sebum is increased due to the high secretion of androgen hormones [6][7][8].

The synthesis of androgen hormones can be increased by HPA (Hypothalamic Pituitary Adrenal Axis) One of the consequences of anxiety. The anxious state stimulates HPA thereby boosting the androgen hormone, converting the androgen testosterone into dihydrotestosterone. It enhances sebum production and proliferation and differentiation of sebocytes activating *Propionibacterium acnes* causing inflammation and occurring AV [9][10][11].

Anxiety is a state of worry about something bad that will happen soon. Things that are concerned for example health, school relationships, exams and environmental conditions. Anxiety is a signal that identifies someone about a threatening danger and allows one to take action to address the threat [12][13][14].

Students are one example of an easy-to-worry community. Medical students are a group of students who have high environmental stressors, especially for new students. In the learning process, students are faced with obstacles, among them are difficulties in finding literature, lack of interest in students in learning as well as lack of understanding the material read [14][15].

Anxiety can affect the results that students will get especially anxiety-moderate to panic. The higher the level of anxiety the more the individual needs to cope with the anxiety that occurs. If individuals are unable to cope with the constructive anxiety, it can be the cause of pathological behavior [16][17][18].

In Indonesia, the prevalence of anxiety disorders according to the results of Basic Health Research (RISKESDAS) in 2018 showed that at 6.1% for the age of 15 years and over residents in Indonesia experienced anxiety and depression [19].

Research on the relationship of anxiety levels with the onset of AV has been done in the medical faculty of Hasanuddin University. In the study there were results of the relationship between levels of anxiety with the onset of AV [11]. Therefore, researchers are interested in conducting research on the events of AV in particular to find out if there is a relationship between the student anxiety level of the Faculty of Medicine of Universitas Sumatera Utara to AV.

2.   Materials and Methods

2.1.   Place and Year Work

The present study was carried out from September – November 2019. This study was conducted by providing questionnaires to students of the Faculty of Medicine Universitas Sumatera Utara, 2016 – 2018 who are willing to be respondents to assess the level of anxiety and with the diagnosis results from supervisor to assess the degree of acne vulgaris.

2.2.   Ethics Statement

The research was approved by The Health Research Ethical Committee of Faculty of Medicine Universitas Sumatera Utara. Written informed consent was obtained prior to the investigation.

2.3.   Subjects

The population in this study is students of the Faculty of Medicine Universitas Sumatera Utara 2016, 2017 and 2018. The measuring instrument used in this study is the BAI (Beck Anxiety Inventory) questionnaire. This research sample is calculated with the 1-population hypothesis test formula. The amount of sample needed with a precision degree of 90% in my research was 66 students. With student details 2016 232/752 x 66 = 22 students, students 2017 as many as 256/752 x 66 = 22 Students, and students 2018 as much as 264/752 x 66 = 22 students. The sampling techniques in this study used a stratified random sampling way. In stratified random sampling, all populations that are willing and meet the selection criteria are included in the study until the required number of subjects are met. This stratified random sampling is a type of probability sampling.

2.4.   Statistical Analysis

The values of the data on clinical characteristics of the subject groups were expressed in percentages. Univariate analysis is done to know the distribution, frequency and percentage, of characteristic variables of respondents include free and bound variables to be researched i.e. levels of anxiety and acne vulgaris.

3.   Results

The characteristics frequency of respondents research are summarized in **Table 1**. In this study, the largest group is the female group 37.9%. The largest group at the age of 20 is 37.9% and the student groups of the year entered 2016, 2017, 2018 are the same 33.3% for each semester.

Table 1 Characteristic frequency of respondents research

Variable	Category	N	(%)
Gender	Male	25	37.9
	Female	41	62.1
Age	18	5	7.6
	19	19	28.8
	20	25	37.9
	21	14	21.2
	22	2	3.0
	23	1	1.5
Force	2016	22	33.3
	2017	22	33.3
	2018	22	33.3

The distribution of anxiety level and degree of severity of acne vulgaris frequency are summarized in **Table 2.** In this study, Anxiety levels of students with mild anxiety have the greatest percentage of 34.8%, anxiety levels of students with moderate anxiety 31.8%, and anxiety levels of students with severe anxiety 33.3%. Degree of severity of acne vulgaris students with the category of mild acne have the greatest percentage 36.4%, degree of severity of the acne vulgaris students with the category of moderate acne 28.8%, degree of severity of acne vulgaris students with the category of severe acne 21.2%, and the category did not have acne 13.6%.

Table 2 Distribution of anxiety level and degree of severity of acne vulgaris frequency

Variable	Category	N	(%)
Anxiety level	Mild anxiety	23	34.8
	Moderate anxiety	21	31.9
	Severe anxiety	22	33.3
Degree of acne vulgaris	Mild acne	24	36.4
	Moderate acne	19	28.8
	Severe acne	14	21.2
	Not acne	9	13.6

The anxiety level relationships with acne vulgaris are summarized in **Table 3.** In this study, students who have mild anxiety levels is 34.8%. Among them, students who do not suffer from acne 4.5%, students who suffer from mild acne 21.2%, students who suffer from moderate acne 7.6%, and students who suffer from severe acne 1.5%. Students who have moderate anxiety levels is 31.9%. Among them, students who do not suffer 3.0%, students who suffer from mild acne 4.5%, students who suffer from moderate acne 13.6%, and students who suffer from severe acne 10.6%. Students who have a severe anxiety level is 33.3%. Among them, students who do not suffer 6.1%, students who suffer from mild acne 10.7%, students who suffer from moderate acne 7.6%, and students who suffer from severe acne of 9.1%.

Table 3 Anxiety level relationships with acne vulgaris

Anxiety Level	Degree of severity of acne vulgaris										p-value
	Not acne		Mild acne		Moderate acne		Severe acne		Total		
	F	%	F	%	F	%	F	%	F	%	
Mild Anxiety	3	4.5	14	21.2	5	7.6	1	1.5	23	34.8	
Moderate anxiety	2	3.0	3	4.5	9	13.6	7	10.6	21	31.9	0.026
Severe anxiety	4	6.1	7	10.7	5	7.6	6	9.1	22	33.3	
Total	9	13.6	24	36.4	19	28.8	14	21.2	66	100	

4. Discussion

Based on the results The study showed that the students anxiety levels are at most with mild anxiety categories. This is in accordance with the research of Sampelan et al (2017) about the relationship of onset of acne vulgaris with the level of anxiety in teenagers in SMP N 1 Likupang Timur which shows the level of anxiety of SMP N 1 Likupang Timur most in the category of mild anxiety 27 students. While the level of anxiety in the category of moderate 8 students and severe anxiety 7 students. However, the study was not in accordance with the research of Qudsiyah (2016) on the relationship degree of severity of acne vulgaris with the level of anxiety on students at SMAN 2 Sukoharjo who demonstrated the level of anxiety of students at the SMAN 2 Sukoharjo most in the category of moderate anxiety 22 students. While the level of anxiety in the category of mild 13 students and severe anxiety 1 student.

Anxiety is an exaggerated state of tension and is characterized by feelings of worry, erratic, or fear [20]. Anxiety has both positive and negative impacts. Positive impacts occur if anxiety arises at a mild to moderate level and gives the power to do things to help individuals build up their defenses so that the perceived anxiety can diminish. While the negative impact occurs if anxiety arises at a high level and causes physical symptoms that can negatively impact learning outcomes [21][22].

In table 2 It can be seen that the degree of severity of the student's acne vulgaris is most with the category of mild acne. This is in accordance with the study of Sampelan et al (2017) about the relationship of onset of acne vulgaris with an anxiety level in teenagers in SMP N 1 Likupang Timur which shows the severity of the degree of vulgaris acne in teenagers in SMP N 1 Likupang Timur most in the category of mild acne 26 students. While the degree of severity of the acne in the category of moderate 8 students and severe acne of 8 students. But the study was not in accordance with the research of Alpajri (2016) about the relationship of stress levels with the severity of acne vulgaris on student boarding in SMAIT Nur Hidayah Kartasura which shows the degree of severity of acne vulgaris on students in SMAIT Nur Hidayah Kartasura most in the category of severe acne 23 students. While the degree of severity of the acne in the category of mild 16 students and moderate acne 11 students.

The acne vulgaris is one of the skin diseases that is a problem for teenagers and young adults, in general the incidence of this disease occurs at around the age of 14-17 years in women and 16-19 years in men [23].

The pathogenesis of acne vulgaris is associated with several factors such as increased sebum production, bacterial infection of *Propionibacterium acnes*, genetic, dietary factors, cosmetics, endocrine, and psychological stress such as anxiety can stimulate HPA (Hypothalamic Pituitary Adrenal Axis) so that an increase in androgen hormones occur. The increased androgen hormone converts the androgen testosterone into dihydrotestosterone then increases in sebum production and proliferation as well as the differentiation of sebocytes that activate *Propionibacterium acnes* so that colonization occurs *Propionibacterium acnes*. It causes inflammation resulting in acne vulgaris [2][8][10][11].

From table 3 the chi square test was obtained a p value = 0.026. The value of $p < 0.05$ defines that the research work hypothesis is acceptable, namely there is a significant relationship between levels of anxiety with the onset of vulgaris in Medical Faculty of Universitas Sumatera Utara 2016-2018. This is in accordance with the research of Sampelan et al (2017) about the relationship of occurrence of acne vulgaris with the level of anxiety in teenagers in junior high school N 1 Likupang Timur that there is a significant relationship between the onset of acne vulgaris with the level of anxiety in teenagers in SMP N 1 Likupang Timur, by conducting the chi Square test obtained 0.000 ($p < 0.05$). It is also in accordance with the research of Winardi (2017) about the relationship of anxiety level with the onset of acne vulgaris in the education student of Hasanuddin University of the generation 2014-2017 obtained a significant relationship between the level of anxiety relationship with the onset of vulgaris in the education student of Hasanuddin University, with the test chi Square obtained p value of 0.00 ($p < 0.05$).

Similar research conducted by Qudsiyah (2016) on the relationship of the severity of acne vulgaris with anxiety level in students at SMAN 2 Sukoharjo which indicates there is a significant relationship between the degree of severity of acne vulgaris with the level of anxiety, with Kendall test obtained the value p = 0.000 ($p < 0.05$) with the correlation obtained value R = 0.726.

5. Conclusion

Based on the results of the research that has been done, it can be concluded that there is a relationship between levels of anxiety with the onset of acne vulgaris in Medical Faculty of Universitas Sumatera Utara 2016 – 2018 (p = 0.026). Degree of severity of acne vulgaris College of Medicine Faculty Universitas Sumatera Utara 2016-2018 with category not acne 9 students, with a category of mild acne 24 students, with the category of moderate acne 19 students , and with a category of severe acne 14 students. The level of anxiety on students of the Faculty of Medicine Universitas Sumatera Utara 2016-2018 with a mild anxiety 23 students, with a moderate anxiety 21 students, and with severe anxiety 22 students.

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