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Relationship Between Sleep Quality and Incidence of Acne Vulgaris in Students of the Faculty of Medicine, Baiturrahmah University Batch of 2020

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ABSTRACT

Acne Vulgaris (AV) is a chronic skin condition caused by blockage or inflammation of the hair follicles and sebaceous glands known as pilosebaceous units. The cause of AV is not known with certainty but AV is a multifactorial disease because many factors influence the onset of acne vulgaris, namely sebum, hormones, stress, genetics, diet, and cosmetics. Poor sleep quality is also a factor influencing the onset of AV and is thought to lead to increased androgen hormone activity. Androgen hormones can trigger polysebaceous glands to produce excessive sebum on the face which then results in the emergence of AV, so that AV occurs more easily on skin that tends to be oily than dry or normal skin. The purpose of this study was to determine the relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University Batch 2020. The type of research used was an analytical observational study with a case control study design. The population in this study were students of the Faculty of Medicine, Baiturrahmah University Batch 2020. The sampling technique of this study used a purposive sampling technique. The samples obtained were 88 people who had done the inclusion and exclusion criteria. The results showed that the gender of the most respondents was female, namely 64 respondents (72.7%), the sleep quality of the most respondents was poor, namely 67 respondents (76.1%), the incidence of acne vulgaris based on gender was mostly female (36.4%). , and the relationship between sleep quality and the incidence of acne vulgaris was more common in students with poor sleep quality (38.6%). The conclusion of this study, there is no relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University batch 2020.

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INTRODUCTION

Acne vulgaris (AV) is a chronic skin condition caused by blockage or inflammation of the hair follicles and sebaceous glands known as pilosebaceous units (Shoib, S., Kaur, G., Yusuf, K., & Yusuf, N, 2022). Colonization of the bacteria *Propionibacterium acnes* often occurs on the face, neck, chest, and back. Acne is considered a chronic disease because of its prolonged course, pattern of recurrence, recurrence and manifestations such as acute outbreaks or slow onset. In addition, acne impacts the sufferer's quality of life leading to profound negative psychological and social effects (Tuchayi et al, 2015).

The cause of AV is not known with certainty but AV is a multifactorial disease because many factors influence the onset of acne vulgaris, namely sebum, hormones, stress, genetics, diet, and cosmetics. Sebum is produced by the sebaceous glands. High androgen hormone secretion causes an increase in sebum secretion. The hormone melatonin can suppress the synthesis of androgen hormones. The hormone melatonin functions to induce sleep and improve sleep quality (Harlim, 2020). The hormone melatonin is one of the most powerful synchronizers of the human circadian rhythm and it is used in clinics to adjust circadian rhythms in cases such as delayed sleep onset disorder and jet lag (Amaral, F. G. D., & Cipolla-Neto, 2018).

Poor sleep quality is also a factor that affects the onset of AV. Poor sleep quality is thought to lead to increased androgen hormone activity. Androgen hormones can trigger the polysebaceous glands to produce excessive sebum on the face which then results in the emergence of AV, so that AV occurs more easily on skin that tends to be oily than dry or normal skin. causes an increase in inflammatory factors, decreased immunity and increased stress levels

Sleep is the most important part of human daily routine. Sleep needs are linked to better physical health, cognitive abilities, and psychological well-being. On the other hand, poor sleep quality or irregular sleep patterns can lead to possible impaired cognitive and psychological function and worsening physical health (Crivello, A., Barsocchi, P., Girolami, M., & Palumbo, F, 2019). Sleep quality is an individual's satisfaction with his sleep, so that a person does not show a state of fatigue, lethargy, passive, and easily restless (Dumgair, D., Pandelege, H. E., & Kapantow, M. G, 2021). The purpose of this study was to determine the relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

RESEARCH METHOD

This study is an analytical observational study with a case control study design, by comparing the sleep quality of respondents who have acne vulgaris as a case group and the sleep quality of respondents who do not have acne vulgaris as a control group, to find out whether there is a relationship between sleep quality and the incidence of acne vulgaris. The target population in this study were students of the Faculty of Medicine, Baiturrahmah University. Sampling was selected based on the population that met the criteria or according to the inclusion criteria. The total sample of cases and controls was 88 people.

The tool used in this research is to use a questionnaire that has been tested for validity and reliability before. This acne vulgaris questionnaire has been used previously in research by Thyra (2018), where the questionnaire has been tested for validity and reliability.

This study uses the Pittsburgh Sleep Quality Index (PSQI) questionnaire, the PSQI questionnaire is an instrument used to measure sleep quality. The PSQI was developed with the aim of measuring and distinguishing individuals with good sleep quality and poor sleep quality. In the research that will be conducted, the researcher will use the PSQI questionnaire which has been translated into Indonesian by previous researchers and has been validated.¹¹ Included are photos of respondents with AV, with side view, front view according to PERDOSKI consensus.

RESULTS AND DISCUSSIONS

The Incidence of Acne Vulgaris by Gender

The results showed that the frequency distribution of acne vulgaris based on gender in students of the Faculty of Medicine, Baiturrahmah University Batch 2020 can be described as follows:

Table 1. Frequency distribution of acne vulgaris by gender in students of the Faculty of Medicine, Baiturrahmah University Batch 2020

Incidence of Acne Vulgaris	Gender				Amount	
	Male		Female		f	%
	f	%	f	%		
No	12	13,6	32	36,4	44	50,0
Yes	12	13,6	32	36,4	44	50,0
Total					88	100

Based on table 1, it can be concluded that of the 44 respondents who suffered from AV, the incidence of acne vulgaris was more common in women, namely 32 people (36.4%) compared to 12 people (13.6%).

Sleep Quality by Gender

The results showed that the distribution of the frequency of sleep quality based on gender in students of the Faculty of Medicine, Baiturrahmah University Batch 2020 can be described as follows:

Table 2. Frequency Distribution of Sleep Quality by Gender in Students of the Faculty of Medicine, Baiturrahmah University Batch 2020

Sleep Quality	Gender				Amount	
	Male		Female		f	%
	f	%	F	%		
Good	6	6,8	15	17	21	23,9
Bad	18	20,5	49	55,7	67	76,1
Total	24	27,3	64	72,7	88	100

Based on table 2, it can be concluded that students with poor sleep quality are more female, namely 49 people (55.7%) than male sex as many as 18 people (20.5%) in students of the Faculty of Medicine, Baiturrahmah University Class of 2020. .

Relationship Between Sleep Quality and Incidence of Acne Vulgaris

The results of the study found that the relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University Batch 2020 can be described as follows:

Table 3. Relationship between sleep quality and incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University, Class of 2020

Sleep Quality	Incidence of Acne Vulgaris				Amount		P value
	No		Yes		f	%	
	f	%	f	%			
Good	11	12,5	10	11,4	21	23,9	1,000
Bad	33	37,5	34	38,6	67	76,1	
Total	44	50,0	44	50,0	88	100	

Based on table 3, it can be concluded that students with poor sleep quality experienced more acne vulgaris, namely 34 people (38.6%) and in good sleep quality more did not experience acne

vulgaris, namely 11 people (12.5%). Based on 44 respondents who suffered from AV, the incidence of acne vulgaris was more common in students with poor sleep quality, namely 34 people (38.6%) compared to 10 people with good sleep quality (11.4%). The results of statistical tests using the chi square test obtained a value of $p = 1,000$ ($p > 0.05$), which means that there is no relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University batch 2020.

Frequency Distribution of Acne Vulgaris in Students of the Faculty of Medicine, Baiturrahmah University Batch 2020 Based on Gender.

Based on the research, the results obtained from 44 students, who had acne vulgaris, the highest gender was female, namely 32 people (36.4%) and 12 people (13.6%) for boys. This shows that women experience acne vulgaris more in students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

The results of this study are in line with Maria JB's research (2020) on Preclinical Students of the Faculty of Medicine, University of Nusa Cendana, the results of respondents who have acne vulgaris are women (78.6%), and also Fitri A's research (2021) shows that the most results are women. (92.5%) (Seran, M. J. B., Lidia, K., & Telussa, A. S, 2020).

The results of this study are in line with the research of Amalia W (2015) which shows that respondents who have acne vulgaris are more common in the female sex (86.1%). This is due to the activity of the sebum glands that occurs 2 years earlier in girls or around the age of 10 years while in boys it starts at the age of 12 years.

Based on research from the Cosmetics Division of the URJ Skin and Sex Health RSUD dr. Soetomo Surabaya, AV incidents mostly attack women. This is because in women the possibility of AV often occurs, especially if it is associated with the menstrual cycle

Based on research by Angie RS et al (2020) it was found that menstruation can be a triggering factor for acne vulgaris. Research between the relationship between acne vulgaris and the menstrual cycle found that non-inflammatory and inflammatory lesions in acne vulgaris patients increased in the pre-menstrual phase and then decreased after the menstrual phase.

Another study states that there is an increase in androgen and estrogen levels during the follicular and periovulatory phases which causes an increase in sebum production, resulting in high lipid levels and subsequently an increase in skin microflora. Therefore, exacerbations of premenstrual acne can be explained by low levels of progesterone in the later stages of the menstrual cycle (Raghunath, R. S., Venables, Z. C., & Millington, G. W. M, 2015)

Another study states that hormones affect acne, it was found that there was a decrease in sebum excretion before menstruation. It is mentioned that pre-menstrual skin edema can impede the free flow of sebum to the surface. Therefore, sebum increases and acne develops. William and Cunliffe stated that the opening of the pilosebaceous glands was smallest on days 15 to 20 of the 28 day menstrual cycle, then increased on day 21 to day 26, and decreased again on 2 days before menstruation. The average patient experiences acne worsening on day 22.

Frequency Distribution of Sleep Quality Profiles by Gender in Students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

Based on the research, the results obtained from 88 students, both male and female respondents experienced poor sleep quality. When compared based on each gender, for male respondents the frequency of good sleep quality was 6 (6.8%) and 18 people (20.5%) had poor sleep quality. Meanwhile for female respondents, the frequency of good sleep quality is 15 people (17.1%) and bad sleep quality is 49 people (55.6%). From the explanation above, it can be concluded that more women experience poor sleep quality in students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

The results of this study are in line with previous research conducted by Maria JB (2020) on Preclinical students of the Faculty of Medicine, University of Nusa Cendana, it was found that the gender experiencing poor sleep quality was 55 women (78.6%).

The results of this study are in line with previous research conducted by Alajlan (2017), it was found that poor sleep quality was more common in the female sex (61%). This is because more women experience stress, while stress can affect sleep quality

Based on Sofia Latifah's (2015) research, increased stress indirectly affects the incidence of increased sebaceous gland secretion through increased androgen hormones, increased stress then stimulates the hypothalamus causing an increase in androgen hormones. Androgens play a role in increasing the activity of the sebaceous glands and keratinocytes to produce sebum. This stressful situation causes the patient to mechanically manipulate acne, then damage to the follicle wall and new inflammatory lesions occur. In this situation, the stress condition is prone to getting acne vulgaris further increased (Sofia, L., & Evi, K, 2015).

Another study states that sebum production plays an important role in the onset of acne vulgaris in adolescents. Psychological stress can worsen acne vulgaris, some studies say that psychological stress can change skin function and immunity and skin barrier function. In female respondents, there is a positive correlation between acne vulgaris and sebum levels under high and low stress conditions. Under high stress conditions, there was a positive correlation between the severity of acne vulgaris and the sebum level on the forehead for 1 hour. In women with low stress levels, there is a positive correlation between the severity of acne vulgaris and the level of sebum on both foreheads for 1 hour (Yosipovitch et al, 2007).

Based on research Moh. Basri (2021) stated that the neuropeptide corticotrophin-releasing hormone plays an important role in the skin's response to stress and affects the sebaceous glands in synthesizing sebaceous lipids.

Based on research by Komang SY et al (2020) physiological stress causes the activation of the HPA axis which then results in an increase in ACTH concentrations. High levels of the hormone ACTH make androgen hormones increase and increase sebum production and also stimulate keratinocytes. The increase in sebum and keratinocytes then triggers the appearance of acne vulgaris

Both male and female sexes can experience poor sleep quality. Poor sleep quality has a higher prevalence in female subjects, this is associated with stress factors. In addition, lifestyle and sociodemographic factors only affect sleep quality in male subjects (Fatima, Y., Doi, S. A., Najman, J. M., & Al Mamun, A, 2016).

Relationship between sleep quality and incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

Based on the research, the results obtained from 88 students, the most sleep quality was poor, namely 67 people (76.1%) and good sleep quality as many as 21 people (23.9%), so it can be concluded that the number of students who experienced poor sleep quality was more than students who experienced good sleep quality in students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

Based on the results of research from 44 respondents, it was found that 38.6% of respondents with poor sleep quality experienced acne vulgaris. Students with good sleep quality who experienced the incidence of acne vulgaris were 11.4%. The results of statistical tests using the chi square test obtained a value of $p = 1,000$ ($p > 0.05$), which means that there is no relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University batch 2020.

The results of this study are in line with research conducted by Yessi CA (2017), the results obtained value ($p > 0.05$) so that it can be concluded that there is no relationship between sleep quality and acne vulgaris in level IV students of the Faculty of Medicine, Islamic University of Bandung,

and also research Maria JB (2020) stated that there was no relationship between sleep quality and acne vulgaris with ($p>0.05$) (Ayudianti, P., & Indramaya, D. M., 2014).

It is proven that there is no relationship between sleep quality and the incidence of acne vulgaris, this can be due to several other factors that affect the incidence of AV apart from sleep quality factors. Acne vulgaris is a multifactorial disease, both external (exogenous) and internal (endogenous) (Kabau, S., & Riyanto, P., 2012). Sleep is thought to contribute to AV development, associated with the stress response system. Poor sleep quality can affect immune function and is associated with skin regeneration. However, from this study, it was found that there was no relationship between sleep quality and the incidence of AV. This can happen because of the many other predisposing factors that play a role in the emergence of AV such as genetics, hormones, cosmetics, stress, diet, and infection (Agustin, Y. C., Hikmawati, D., & Nuripah, G., 2017).

CONCLUSION

Based on the results of the study, it can be concluded that there is no relationship between sleep quality and the incidence of acne vulgaris in students of the Faculty of Medicine, Baiturrahmah University Batch 2020.

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