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Correlation Between Sleep Quality and Acne Vulgaris Incidents Among Medical Students in Surabaya

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ABSTRACT

Introduction: The symptoms of acne vulgaris, a chronic inflammatory condition of the sebaceous glands, include comedones, papules, pustules, and nodules. Eighty to one hundred percent of people have acne vulgaris. Adolescent boys aged 16-19 and females aged 14-17 had the highest incidence. It is projected that sleeping late at night would enhance the activity of androgenic hormones, which regulate the mechanism of sebum production in the skin. This will make the skin greasier, making it more prone to acne than normal, dry skin. Reviewing the association between acne vulgaris incidence and sleep quality among 17-23-year-old students at Wijaya Kusuma University's Faculty of Medicine in Surabaya was the aim of the Study.
Methods: Data from 196 respondents were gathered for this study using a cross-sectional survey method. All sample is a females. When analyzing data, SPSS Statistics is used to process the Chi-Square Test.
Results: The study's findings indicate that 83 respondents (58,5%) had mild acne vulgaris, 52 respondents (36,6%) had moderate acne vulgaris, and 7 respondents (4,9%) had severe acne vulgaris. Of the respondents, the majority (116 respondents, 81,7%) did not have enough sleep or had poor quality of sleep. While 26 respondents (18,3%) had a good quality of sleep. The Chi-Square test findings indicated a correlation between the incidence of acne vulgaris and sleep quality, with a value of 0.04<0.05.
Conclusion: The strain of studying and a full lecture schedule can make it difficult to manage their time effectively, leading to a lack of sleep patterns and quality. Hormones are impacted, and a contributing element is an unclean face.

Keywords: Acne vulgaris; Medicine; Sleep; Students; Quality

INTRODUCTION

Acne vulgaris, a skin ailment, affects approximately 80-100% of people. Adolescent boys aged 16 to 19 and females aged 14 to 17 had the highest incidence. 60% of Indonesians with acne vulgaris in 2006, 80% in 2007, and 90% in 2009, according to the Global Burden of Disease research, continue to use cosmetics. In Indonesia, the incidence peaks between the ages of 15 and 18 (80-85%) and 12% in those over 25 [1]. Comedones, papules, pustules, and nodules are all signs of acne vulgaris, a chronic inflammatory illness of the sebaceous glands (oil glands). Commonly occurring in adolescence, acne vulgaris symptoms peak between the ages of 15 and 18 and start to lessen as a person ages[2]. One of the most prevalent inflammatory chronic skin conditions, acne typically strikes teenagers and persists into adulthood. Women are most frequently impacted, with an average presentation age of 24. Acne affects 85% of people in the US between the ages of 12 and 24[3].

Adolescence is characterised by changes in bodily structure, emotions, and psychology, according to[4]. Those who are in the period between childhood and puberty are considered adolescents, according to the World Health Organisation. Teenagers should not be older than 10 to 19 years old, but new studies indicate that this age limit may rise to 24. Although acne can develop at any age or time, adolescent acne requires special care. The reason for this is that acne arises when someone begins to focus on their appearance and wants confidence in their relationships. The term "puberty" refers to the process of charging the reproductive organs at this age, which includes both physical and psychological changes related to hormones, including the glands involved in the mechanism of acne. Acne is also largely caused by androgen hormones, which enlarge sebaceous glands, promote the synthesis of oily substances by sebaceous oil glands in the skin, and promote keratinocyte's ability to generate epithelial cells. Age, gender, genetics, and climate are other variables that may indirectly exacerbate the pathophysiology of acne[2].

Like food and air, which are beneficial to the body, sleep is something that the body requires. Collagen regenerates during sleep from 11.00 PM to 6.00 AM. The body's output of stress hormones rises from 11.00 PM to 2.00 AM, then falls and rises again at 8.00 AM. Sleep deprivation can lead to increased inflammatory variables, including stress, insulin resistance, and weakened immunological function. It's projected that late-night sleep will raise the activity of androgenic hormones. Androgenic hormones mostly regulate the method by which the skin produces sebum. Compared to normal or dry skin, excessive oil production makes the skin more greasy, which increases the likelihood of acne.

According to studies, stressors can also raise the likelihood of developing acne vulgaris, particularly in students at Udayana University's Faculty of Medicine[5]. This can lead to poor circumstances and stress because of the heavy study load, the demands of lectures, poor scheduling, and poor quality, quantity, and sleep patterns. Given the high prevalence of acne vulgaris in teenagers.[2] The author is eager to learn more about the correlation between acne vulgaris incidence and sleep quality among students at the Medicine Faculty in Surabaya.

METHOD

This study employs a cross-sectional study design with clinical ethics clearance issued from the Ethical Commission, Faculty of Medicine at Wijaya Kusuma University in Surabaya, with number 5/SLE/FK/UWKS/2023. This study also collects data from adolescents at the Wijaya Kusuma University Faculty of Medicine in Surabaya who are between the ages of 17 and 23. To gauge the quality of sleep over the past two weeks, a questionnaire was utilized as the research tool. The dependent variable, acne vulgaris, is measured using an observation approach that focuses on the emergence of acne vulgaris, particularly in the facial area. Dermatologic criteria were determined by taking photographs of the facial area where acne vulgaris grows. The sample criteria included number one, all female, number two not under dermatological treatment, number three not consuming excessively sweet or salty foods, number four not under stress. A total of 196 students who would be sample members were then selected according to these criteria. Active students ages 17 to 23 met the inclusion requirements. Willing to participate and not take midsemester or endsemester exams. Student who have difficulties from acne vulgaris or other facial skin conditions and were not receiving medical treatment for their facial skin were excluded[3].

Classifying sleep quality, the category takes into account the time of sleep, including whether it is taken at night. Sleeping at night before 11.00 PM is good. Sleeping at night is not recommended after 11.00 PM. A dermatologist has clinically and objectively diagnosed acne vulgaris, which is characterized by persistent infection of the sebaceous glands (oil glands) and presents as nodules, papules, pustules, and blackheads. Mild category if there are lesions total <30, inflammatory lesions 15, or blackheads <20. The moderate category is 20-100 blackheads, 15-50 inflammatory lesions, or 30-

125 lesions overall. The severe category, more than five cysts, more than 100 blackheads overall, more than fifty inflammatory lesions, or more than 125 lesions[6].

SPSS Statistics version 29.0.0.0 was the computer program used to analyze the data for this investigation. The chi-square test is the statistical test that will be used next. The purpose of this test is to ascertain how two variables, were independent variable, sleep quality, and the dependent variable, acne vulgaris, are related to one another.

RESULT

Features of Respondents Include Sleep Quality and Acne Vulgaris Type

Table 1. Respondent Distribution Based on Acne Vulgaris Type

Acne Vulgaris	Percent (%)
Mild	58,5 (83)
Moderate	36,6 (52)
Severe	4,9 (7)
Total	100,0 (142)

The majority of respondents (82, or 58.5%) have mild acne vulgaris, followed by those with moderate acne vulgaris (52, or 36.6%) and those with severe acne vulgaris (7, or 4.9%), as can be seen in Table 1. With 116 respondents (81.7%) reporting bad sleep quality and 26 respondents (18.3%) reporting good sleep quality, Table 2 shows that the majority of the respondents experience poor sleep quality.

Table 2. Respondent Distribution Based on Sleep Quality

Sleep Quality	Percent (%)
Good	18,3 (26)
Poor	81,7 (116)
Total	100,0 (142)

Evaluation of Study Findings

The 142 respondents are explained in the above table. There were 17 respondents (12.0%) who had mild acne vulgaris and good sleep quality, and 66 respondents (46.5%) who had mild acne vulgaris and poor sleep quality. Seven respondents (4.9%) had moderate acne vulgaris and decent sleep, while forty-five respondents (31.7%) had moderate acne vulgaris and poor sleep. Two respondents (1.4%) had severe acne vulgaris and decent sleep, while five respondents (3.5%) had severe acne vulgaris and bad sleep.

Table 3. The Association between Sleep Quality and Acne Vulgaris Incidence in Medical Students in Surabaya

Variables	Categories	Good Sleep Quality		Poor Sleep Quality		p-value
		N	%	N	%	
Acne Vulgaris	Mild	17	12.0%	66	46.5%	
	Moderate	7	4.9%	45	31.7%	0.04
	Severe	2	1.4%	5	3.5%	

According to the following table, the chi-square value is 0.04, which is lower than 0.05, indicating that there is a correlation between the incidence of acne vulgaris and sleep quality among 17 to 23-year-old students Faculty of Medicine in Surabaya.

DISCUSSION

According to the study's findings, a greater proportion of students between the ages of 17 and 23 had mild (58.5%) to moderate (36.6 %) acne vulgaris than severe (4.9%)[7]. Supports the findings of this study by stating that acne vulgaris is most commonly diagnosed in adolescents aged 15-18, beginning with prepuberty and puberty (12 to 15 years old), and nearly always affecting all adolescents aged 13 to 19, with the peak severity occurring between the ages of 17 and 21. According to[5]. of the participants in the study, 33 respondents, or 53.2%, had acne vulgaris between the ages of 16 and 25, 21% between the ages of 26 and 35, 14.5% between the ages of 36 and over, and 11.3% under the age of 15. Acne vulgaris affects 53.2% more people between the ages of 16 and 25.[1] Changes in androgen hormones cause the oil-producing glands to create abnormal amounts of sebum, which in turn causes inflammation and an increase in the activity of skin bacteria[8].

The study's findings suggest that respondent's sleep quality scores revealed more poor sleep quality than good sleep quality. Specifically, 116 respondents (81.7%) and 26 respondents (18.3%) reported having good sleep quality. Similarly, according to[9]. 38 respondents (24.2%) had good sleep quality, and 119 respondents (75.8%) had poor sleep quality. If a person has no trouble sleeping, their sleep quality is considered good, according to[10]. Adolescents, particularly students, frequently suffer from sleep deprivation, which can have several negative consequences. Including worse learning and health issues. Sleep deprivation will affect one's capacity to focus, make judgments, and engage in daily tasks.

Based on the study's findings, 36 respondents (34.0%) reported having acne vulgaris, which is the prevalence among students. The findings of the Malahayati University study[9]. which included 112 samples (71.3%), are greater than these values. The disparity in the statistics may be due to variations in the causes of acne vulgaris, including age at puberty, cosmetic use, stress, and unhealthy lifestyles[11]. According to research conducted by students at Sam Ratulangi University's faculty of medicine in Manado, sleep patterns did not significantly correlate with the prevalence of acne vulgaris [12]. This study supports those findings. There is a correlation between the occurrence of acne vulgaris and sleep quality in students. Of the 29 respondents (76.3%) who reported having good sleep, the majority did not have acne vulgaris, according to the chi-square test results, which showed 0.04, where $p<0.05$. Numerous respondents experienced sleep difficulties, including waking up early in the morning, waking up to use the restroom, or feeling cold at night, according to the report. Reducing the production of androgen hormones can enhance the quality of sleep. The Hypothalamic Pituitary Adrenal (HPA) axis will react more frequently to stress and poor sleep, which will increase the synthesis of androgen hormones. Additionally, androgen hormones can influence sebum production and alter sebocytes and follicular keratinocyte cells, which can result in the development of microcomedones or blackheads, which can develop into inflammatory lesions and lead to acne vulgaris[13].

Due to changes in androgen hormone levels that take place before adulthood, acne vulgaris creates an excessive amount of sebum during the disease, which causes flaws, turns normal skin oily, and provides Propionibacterium Acnes with nutrition. This bacterium produces inflammatory mediators that cause acne and possesses lipase, which changes lipids into fatty acids[12]. Therefore, the main risk factors that can cause acne vulgaris are hormones, particularly androgen hormone production. The synthesis of androgenic hormones can be influenced by a wide range of additional factors, including stress, diet, heredity, cosmetics, and drug usage[14].

Limitations in this study, not grouped by gender. because gender affects hormones, which are one of the factors causing acne vulgaris. then, sleep quality cannot be measured qualitatively, so it is not known whether the level of sleep depth controls the quality of sleep, deep sleep or not. In further research, it is hoped that other factors that cause acne vulgaris will be excluded, and many risk factors that can cause acne vulgaris, such as genetics, hormones, food, cosmetics, and poor lifestyle[11].

CONCLUSION

From the results of the study, it was found that there is a correlation between sleep quality and the incidence of acne vulgaris, this is because students of the Faculty of Medicine on average have poor sleep quality, this is due to the burden of studying and a busy lecture schedule while students cannot manage their schedules properly, resulting in poor sleep quality and patterns. So these factors cause hormonal imbalance and the growth of acne vulgaris.

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CONFLICT OF INTEREST

There is no conflict of interest.

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