

# THE CORRELATIONS BETWEEN BEHAVIOR OF WEARING MASK AND FACIAL HYGIENE WITH ACNE VULGARIS IN CLINICAL STUDENTS OF SWADAYA GUNUNG JATI UNIVERSITY

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**Abstract**—Acne vulgaris is a multifactorial skin disease characterized by inflammation of the pilosebaceous glands. The use of masks is one of the risk factors in the emergence of acne vulgaris, while facial hygiene is something that needs to be considered by someone in the behavior of using masks. The aims of this study is to analyze the relations between the behavior of wearing masks and facial hygiene with the incidence of acne vulgaris. This study is an analytic observational study with a cross-sectional design. The sample used in this study was 70 people. The sampling technique used is purposive sampling. Data were analyzed using the Spearman correlation test and logistic regression test.

Spearman correlation test analysis obtained p-values of 0.030 and 0.013 (p-value <0.05) which means there is a relationship between the behavior of wearing masks and facial hygiene with the incidence of acne vulgaris. Meanwhile, the multivariate analysis shows that the Odd ratio values for the behavioral variables of using masks and facial cleanliness are 1,947 and 1,827 for risk of ace vulgaris.

There is a significant relationship between the behavior of using masks and facial hygiene with the incidence of acne vulgaris. The behavior of wearing mask has a 1,9 times higher risk, while facial hygiene has a 1,8 times higher risk of developing acne vulgaris in students of the Medical Profession Study Program, Faculty of Medicine, Swadaya Gunung Jati University at Waled Hospital, Cirebon district.

**Keywords**—*the behavior of wearing masks; facial hygiene; acne vulgaris*

## I. INTRODUCTION

Acne vulgaris is an inflammatory condition affecting the hair follicles and sebaceous glands. It can last for a long time and can range from mild to severe. The condition is defined by the presence of comedones (both open and closed) as well as inflammatory lesions such as papules, pustules, and nodules. There are different levels of severity and variations in the clinical presentation of the condition (1). Several factors can trigger it. The occurrence of acne vulgaris includes genetics, hormonal, stress, climate, temperature or humidity, cosmetics, diet and medication. Apart from that, the use of masks is also considered to be a new factor in the emergence of acne vulgaris. Acne vulgaris has an impact on skin aesthetics and affects the sufferer's self-confidence (2).

In preventing COVID-19, the Indonesian Government has made efforts to overcome cases of the spread of COVID-19 such as socializing the 5M health protocol, namely wearing masks, maintaining distance, washing hands, avoiding crowds and reducing mobility (4). Wearing a mask is the easiest way to prevent exposure to COVID-19. Extended utilization of masks might result in various dermatological problems such as acne vulgaris, dermatitis, face erythema, and hyperpigmentation. During the ongoing pandemic, people are using masks more often and for longer periods of time than before. Wearing a mask might cause acne to form in the precise region it covers. The occurrence is a result of the interaction between temperature and humidity on the facial skin, leading to increased hydration and heightened vulnerability to friction and pressure. This event is popularly referred to as "mask induced acne". This phenomenon is supported by the accumulation of data about the adverse effects on the skin of Personal Protective Equipment (PPE),

including masks. (5) Leelawadee Techasatian said that in Thailand, out of 833 respondents, there were 54.5% or 333 respondents with acne when using masks for 4 hours and repeated use of masks. (2)

Facial cleanliness is something that needs attention because skin with a minimal level of cleanliness will contain dirt and dead skin cells which can become a blockage in the pilosebaceous follicles. Apart from that, skin that is not clean enough contains high levels of sebum so that it becomes a place for colonies of *Propionibacterium acnes* (*P. acnes*) microorganisms, and ultimately results in acne vulgaris (6,7). Using masks for a long duration and using masks repeatedly has an impact on the skin, especially acne vulgaris. (2) The American Academy of Dermatology 2020 said there are several ways to prevent maskne, one of the most important of which is maintaining facial cleanliness and moisturizing the face. This could be a hypothesis that the emergence of acne vulgaris in mask users is due to the use of masks or due to a lack of facial cleansing. (9) We hope this research can provide the information regarding the use of masks and facial hygiene to minimize the occurrence of acne vulgaris.

## II. METHOD

This research is included in the scope of the field of Dermatology and venereology. This research was conducted at the Faculty of Medicine, Swadaya University, Gunung Jati, from April to August 2023. This research was an analytical observational study with a cross sectional design. The sample for this research was taken from all students of the Medical Professional Study Program, Faculty of Medicine, Gunung Jati Swadaya University at Waled Hospital, Cirebon district. Samples were taken using a simple random sampling technique, by taking random samples from the existing population and then obtaining a sample size of 70 people. Data was taken using the Mask Using Behavior, Facial Cleanliness and Perceived Stress Scale (PSI) questionnaire for PSPD students, and a diagnosis of acne vulgaris was carried out by Dr. Frista Martha Rahayu from respondent's photo. Next, the data was processed statistically using the Spearman Correlation test to determine the relationship between the behavior of using masks and facial cleanliness and the incidence of acne vulgaris and the logistic regression test to determine which relationship has the most influence on the incidence of acne vulgaris. This research has received ethical clearance from the Health Research Ethics Commission (KEPK) Faculty of Medicine, Swadaya University, Gunung Jati with ethical number 78/EC/FKUGJ/VI/2023.

## III. RESULTS AND DISCUSSION

The respondents in this research were 70 PSPD FK UGJ students at Waled Hospital, Cirebon Regency. In the characteristics of this study, 23 respondents were male (32.9%) and 47 female respondents (67.1%). There were 16 people (22.9%) used medical masks, 31 people (44.3%) KF94

masks and 23 people (32.9%) KN95 masks. There were 43 respondents (61.4%) who experienced acne vulgaris and 27 respondents (38.6%) who did not experience acne vulgaris.

TABLE I. FREQUENCY DISTRIBUTION OF RESPONDENTS' MASK-USING BEHAVIOR

Variable	f	(%)
<b>Mask using behaviour</b>		
Good	13	18,6 %
Enough	28	40,0 %
Poor	29	41,4 %

The majority of respondents had poor mask usage behavior, namely 29 people (41.4%), followed by adequate mask usage behavior, 28 people (40.0%) and 13 people (18.6%) good mask usage behavior. The majority of respondents had moderate behavior in facial hygiene as many as 37 people (52.9%), followed by bad behavior in facial hygiene as many as 19 people (27.1%) and good behavior in facial hygiene as many as 14 respondents (20.0%).

TABLE II. FREQUENCY DISTRIBUTION OF RESPONDENTS' FACIAL CLEANLINESS

Variable	f	(%)
<b>Facial hygiene</b>		
Good	14	20,0 %
Medium	37	52,9 %
Less	19	27,1 %

From table II it is known that the majority of respondents have moderate behavior in facial cleanliness as many as 37 people (52.9%), followed by poor behavior in facial cleanliness as many as 19 people (27.1%) and good behavior in facial cleanliness as many as 14 respondents (20.0%).

TABLE III. DISTRIBUTION OF THE INCIDENCE OF ACNE VULGARIS AMONG RESPONDENTS

Variable	f	(%)
<b>Acne Vulgaris</b>		
Yes	43	61,4 %
No	27	38,6 %

From table III it can be seen that there were 43 respondents (61.4%) who experienced acne vulgaris and 27 respondents (38.6%) who did not experience acne vulgaris.

TABLE IV. RELATIONSHIP BETWEEN MASK USE BEHAVIOR AND THE INCIDENCE OF ACNE VULGARIS

		Acne Vulgaris		N	p value	S <sub>r</sub>
		Yes	No			
Good mask using behaviour	Good	6	7	13	0,013	-0,295
	Enough	46,2 %	53,8 %	100 %		
	Enough	14	14	28		

	50 %	50 %	100 %
Poor	23	6	29
	79,3 %	20,7 %	100 %
Total	43	27	70
	61,4 %	38,6 %	100 %

From table IV above, it can be seen that after testing the hypothesis using the Spearman test, a  $p$  value of 0.013 ( $p > 0.05$ ) was obtained, which means that there is a relationship between facial cleanliness and the incidence of acne vulgaris. Meanwhile, the Spearman correlation value ( $S_r$ ) was obtained at -0.295, meaning that the level of strength between the behavior of using masks and the emergence of acne vulgaris is a weak relationship.

In the analysis test, the Spearman correlation value was -0.295, which was negative, so the relationship between mask use behavior and the incidence of acne vulgaris was in the opposite direction or inversely proportional. Thus, it can be interpreted that the less or worse a person's mask-using behavior is, the higher the incidence of acne vulgaris or vice versa.

**TABLE V. RELATIONSHIP BETWEEN FACIAL CLEANLINESS AND THE INCIDENCE OF ACNE VULGARIS**

		Acne Vulgaris		N	$p$ value	$S_r$
		Iya	Tidak			
Facial cleanliness	Good	7	7	14	0,030	-0,259
		50,0 %	50,0 %	100,0 %		
	Medium	20	17	37		
		48,8 %	45,9 %	100,0 %		
	Poor	16	3	19		
		84,2 %	15,8 %	100,0 %		
Total	43	27	70			
	61,4 %	38,6 %	100,0 %			

From table V above, it can be seen that after testing the hypothesis using the Spearman test, a  $p$  value of 0.030 ( $p > 0.05$ ) was obtained, which means there is a relationship between facial cleanliness and the incidence of acne vulgaris. Meanwhile, the Spearman correlation value ( $S_r$ ) was obtained at -0.259, meaning that the strength level between facial cleanliness and the emergence of acne vulgaris is a weak relationship.

In the analysis test, the Spearman correlation value was -0.259, which was negative, so the relationship between facial cleanliness and the incidence of acne vulgaris was in the opposite direction or inversely proportional. Thus, it can be interpreted that the less or worse a person's facial cleanliness is, the higher the incidence of acne vulgaris or vice versa.

**TABLE VI. CHI SQUARE ANALYSIS TEST**

Variable	$p$ value
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Behaviour of using mask	0,034
Facial cleanliness	0,055

From table 6 above, it shows that the  $p$  value for the behavioral variables of using masks and facial cleanliness is 0.034 and 0.055 ( $p$  value  $< 0.25$ ) as a requirement to be able to continue in the logistic regression analysis test. So these two variables are suitable for testing in multivariate analysis using the logistic regression test.

**TABLE VII. RELATIONSHIP BETWEEN MASK USE BEHAVIOR AND FACIAL HYGIENE AND THE INCIDENCE OF ACNE VULGARIS**

Variabel	df	Sig.	Exp (B)
Behaviour of using mask	1	0,070	1,947
Facial cleanliness	1	0,135	1,827

\*Regression logistic test

From table 7 above, the results of the logistic regression test show that the Odd ratio/Exp (B) values for the behavioral variables of using masks and facial cleanliness are 1.947 and 1.827. So it means that someone whose behavior in using a mask is poor has a 1.9 times greater risk of experiencing acne vulgaris compared to someone whose behavior in using a mask is good, whereas for facial hygiene, this means that someone with poor facial hygiene has a 1.8 times greater risk of experiencing an incident of acne vulgaris compared to someone with good facial hygiene.

The results, it can be interpreted that the less or worse a person's mask-using behavior is, the higher the incidence of acne vulgaris or vice versa. The less or worse a person's facial cleanliness is, the higher the incidence of acne vulgaris or vice versa. That someone whose behavior in using a mask is poor has a greater risk of experiencing acne vulgaris compared to someone whose behavior in using a mask is good, whereas for facial hygiene, this means that someone with poor facial hygiene has a greater risk of experiencing an incident of acne vulgaris compared to someone with good facial hygiene.

#### IV. CONCLUSIONS

The study examined the correlation between mask-wearing habits and facial hygiene with the occurrence of acne vulgaris in students of the medical profession study program at Gunung Jati Swadaya University, located in Waled Hospital, Cirebon district. The research findings and discussions were taken into account. Therefore, the aforementioned conclusions are derived.:

1. There were 43 respondents who experienced acne vulgaris among students of the Medical Professional Study Program, Faculty of Medicine, Gunung Jati Swadaya University at Waled Hospital, Cirebon.
2. The behavior of using masks has a significant influence or relationship with the incidence of acne vulgaris in students of the Medical Professional Study Program, Faculty of

- Medicine, Gunung Jati Swadaya University at Waled Hospital, Cirebon.
3. Facial cleanliness has a significant influence or relationship with the incidence of acne vulgaris in students of the Medical Professional Study Program, Faculty of Medicine, Gunung Jati Swadaya University at Waled Hospital, Cirebon.
  4. The behavior of using masks has a risk effect of 1.9 times, while facial cleanliness has a risk effect of 1.8 times the incidence of acne vulgaris in students of the Medical Professional Study Program, Faculty of Medicine, Gunung Jati Swadaya University at Waled Hospital, Cirebon.

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