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Correlation of Face Washing, Mask Use, and Acne Incidence During COVID-19 Among Gunadarma University Students

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Abstract

Prevention of COVID-19, in addition to washing hands and keeping distance, can be achieved by using masks regularly. The use of masks in the long term can cause acne vulgaris. Acne vulgaris is a chronic inflammatory condition in the pilosebaceous follicle. Acne vulgaris often occurs in adolescents and young adults. Housekeeping face aims to reduce bacteria, dirt, or microorganisms from the skin's surface by reducing sebum and impurities without removing the lipid barrier in the face. This study aims to understand the relationship between the habit of washing the face and using masks during the COVID-19 pandemic and the incidence of acne vulgaris in students at Gunadarma University, Depok. This type of research is an analytic observational cross-sectional design; the primary data is collected through questionnaires. The sample of this research is the students of the faculty of medicine at Gunadarma University. The sample size is as many as 64, and the sampling technique is simple random sampling. The data were analyzed using the SPSS program and tested using a multivariate logistic regression test. Statistical tests between the facial washing habits and acne vulgaris show a p-value = 0.948. This study shows no relationship between facial washing habits and acne vulgaris. The statistical test results between mask use and acne vulgaris show a p-value = 0.017. This study shows the presence of meaningful relationships between the use of the mask and acne vulgaris (OR = 3.992). The statistical test results of the type of mask with acne vulgaris p value> 0.05. This study shows no relationship between the kind of mask and the incidence of acne vulgaris. This study shows no relationship between facial washing habits and acne vulgaris. Still, there is a relationship between the use of masks and acne vulgaris, and there is no relationship between the type of mask and the incidence of acne vulgaris.

Keywords: Acne Vulgaris, Facial Washing, Mask, Maskne, Covid-19

1. Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is the causative agent of coronavirus disease 2019 (COVID-19), a respiratory sickness that first appeared in China in December 2019.[1] The World Health Organisation (WHO) proclaimed COVID-19 a worldwide pandemic on March 11, 2020. Every day, the incidence of COVID-19 has been rising globally, and five months later, the number of cases has not stopped growing. To prevent the spread of COVID-19, many nations, notably the US and Indonesia, instituted lockdowns that limited travel and entrance. As a result, people were told to stay indoors unless they had to go outside for necessary activities.[2]

One of the three most common skin conditions, acne vulgaris, is most common in young adults and adolescents, with an estimated 85% incidence in those between 12 and 25. The persistent inflammatory condition of the pilosebaceous follicles is known as acne vulgaris. According to Kang (2019), most acne instances have a pleomorphic arrangement of lesions that range in severity and extent, such as papules, comedones, pustules, and nodules.[3] Since these areas are known to have

a high density of sebaceous glands, acne lesions are most frequently detected on the chest, upper back, face, and upper arms.[4] Because it can diminish self-confidence, this skin condition substantially negatively impacts a person's quality of life.[5]

With an estimated frequency of 85% in people aged 12 to 25, acne vulgaris, often popularly known as acne, is one of the three most common skin illnesses, particularly among young adults and adolescents. The persistent inflammatory condition of the pilosebaceous follicles is known as acne vulgaris. According to Kang (2019), most acne instances have a pleomorphic arrangement of lesions that range in severity and extent, such as papules, comedones, pustules, and nodules. Since these areas are known to have a high density of sebaceous glands, acne lesions are most frequently detected on the chest, upper back, face, and upper arms.[4] Because it can diminish self-confidence, this skin condition substantially negatively impacts a person's quality of life. [5]

Acne vulgaris was ranked 19th among the most common diseases globally in the 2019 Global Burden of Disease research.[6] Between the ages of 15 and 19, there was a 95% increase in the incidence of acne vulgaris, with the most prominent peak observed in this age group. When it comes to the 14–15 age range, white people are more likely than other racial groups to have severe acne.[7] Eighty-eight percent of Southeast Asians have acne vulgaris.[8] In Indonesia, 85 to 100% of teenagers suffer from acne vulgaris, with males aged 16 to 19 and females aged 14 to 17 having the highest incidence.[9]

Good hygiene is crucial since it can help avoid various skin ailments, making it one of life's most significant features. Personal hygiene is an effort by individuals to maintain their health.[10] Personal cleanliness significantly impacts skin, especially skin on the face. Facial hygiene or cleanliness is an effort to eliminate bacteria, microbes, and dirt from the skin's surface by lowering pollutants and sebum without removing the skin's lipid barrier. Skin issues like acne vulgaris can be brought on by poor skin care.[11,12] The recommended frequency of face washing is at least twice a day to help prevent acne vulgaris.[13]

Fifin et al. (2019) reported that out of 71 participants who cleansed their faces twice or three times daily, 35 individuals (49.3%) exhibited neither mild nor no acne vulgaris, while 36 individuals (50.7%) had moderate to severe acne. Twenty respondents (83.3%) had moderate to severe acne, whereas four respondents (16.7%) had neither mild nor no acne vulgaris among the twenty-four respondents (who cleansed their faces more than three times a day or less than twice a day). This suggests that washing your face and acne vulgaris are significantly related. Fifin et al. (2019) found that 35 people (49.3%) with 71 respondents who cleansed their faces two to three times a day had neither acne vulgaris nor mild acne, while 36 individuals.[4]

During the COVID-19 pandemic, wearing a face mask when outdoors is intended to stop the spread of SARS-CoV-2, which is contracted by contacting contaminated surfaces and then touching the mouth, nose, or eyes, as well as by respiratory droplets, sneezing, or coughing from sick people. Long-term mask use can cause several skin issues, such as acne vulgaris.[2] Techasatian (2020) reported 454 instances (54.5%) of mask-related skin problems, with acne vulgaris accounting for 39.9% of cases. Surgical masks carry a greater risk of skin diseases than fabric masks.[14] According to Damiani (2021), wearing a mask during COVID-19 worsened acne vulgaris, suggesting a link between mask wear and the condition.[14,15]

Aravamuthan and Arumugam (2020) found that 134 (62.3%) of the 215 respondents had acne. Of the 81 individuals

(37.7%) who did not have acne, 52 were men, and 29 were women. Of those with mask-related acne, 37 were men, and 97 were women. 67 (50%) of the responders who experienced acne had new breakouts, and 67 (50%) had severe breakouts. The incidence of acne was identified among respondents who used surgical and N95 masks, and it was not correlated with the type of mask used. This suggests that using masks and acne vulgaris are significantly correlated.[16]

The background information provided above leads one to the conclusion that the occurrence of acne vulgaris during the COVID-19 pandemic is thought to be correlated with face-washing practices and mask use. Nevertheless, research has yet to examine how wearing a mask and cleaning your face together affects acne vulgaris during the COVID-19 epidemic. This prompted the authors to investigate the impact of mask use and face-washing practices during the COVID-19 pandemic on the prevalence of acne vulgaris among Gunadarma University students.

2. Methods

The type of research employed in this study is an observational analytic study with a cross-sectional design. This research will be conducted from October to December 2021 at Gunadarma University, Depok. The target population of this study is all students of Gunadarma University. The accessible population for this study comprises a subset of students from Gunadarma University, Depok. The sample in this study consists of students from the Faculty of Medicine at Gunadarma University, Depok, who meet the inclusion and exclusion criteria for the study subjects. The sampling technique used in this research is simple random sampling. Simple random sampling is a technique where sample members are selected randomly from the population without considering the existing strata within the population.[17] The type of data used in this research is primary data obtained through the completion of questionnaires by students of Gunadarma University. The primary data source refers to data directly collected by the researcher from questionnaires distributed to and completed by the respondents. The data collection procedure involves randomly distributing Google Forms questionnaires to respondents, who are answered and submitted directly.

3. Results

Based on Table 1, the ages of the respondents in this study are distributed as follows: 18 years old (9.4%), 19 years old (10.9%), 20 years old (14.1%), 21 years old (45.3%), 22 years old (15.6%), and 23 years old (4.7%). The youngest respondents were 18 (9.4%), and the oldest were 23 (4.7%). Most respondents were female, with 53 respondents (82.8%), while male respondents numbered 11 (17.2%). Regarding the facial skin condition of respondents, 25 respondents (39.1%) had normal skin, 11 respondents (17.2%) had dry skin, and 28 respondents (43.8%) had oily skin.

Based on the type of facial cleanser used by the respondents, the data reveals respondents who washed their faces with only water numbered 5 (7.8%), while those who used facial foam or facial soap numbered 59 (92.2%). In Kurniawati's study (2014), the types of facial cleansers used by respondents showed that 7 respondents (14.6%) washed their faces with only water, and 40 respondents (83.3%) used facial foam or facial soap.[18]

Table 2. shows the relationship between facial cleansing habits and the occurrence of acne vulgaris. The results show that among respondents who wash their faces 1-2 times/day, 8 respondents (12.0%) did not experience acne, while 27 respondents (23.0%) did. Among respondents who wash

their faces more than twice a day, 14 respondents (10.0%) did not experience acne, whereas 15 respondents (19.0%) did. The correlation analysis yielded a p-value of 0.039, indicating a significant relationship between facial cleansing habits and the occurrence of acne vulgaris. The strength of this relationship was measured using the Odds Ratio (OR), which was 3.15 with a 95% Confidence Interval (CI) of 1.08-9.22. This means that respondents who wash their faces 1-2 times/day have a 3.15 times higher likelihood (odds) of developing acne vulgaris than those who wash their faces more than twice a day.

Table 1. Distribution of Respondent Characteristics

Variable	Category	Frequency	%
Age	18	6	9.4%
	19	7	10.9%
	20	9	14.1%
	21	29	45.3%
	22	10	15.6%
	23	3	4.7%
Gender	Male	11	17.2%
	Female	53	82.8%
Skin Type	Normal	25	39.1%
	Dry	11	17.2%
	Oily	28	43.8%
Facial Cleanser	Only water	5	7.8%
	Facial foam	59	92.2%
Types of masks	KN95 Mask	42	65.6%
	Medical Mask	18	28.1%
	Cloth Mask	4	6.3%
Face Washing Habits	1-2 times/day	35	54.7%
	> 2 times/day	29	45.3%
Mask Use	1-3 times/day	31	48.4%
	> 3 times/day	33	51.6%
Acne Vulgaris	Acne	41	64.1%
	No Acne	23	35.9%

Table 2. The Correlation Between Face Washing Habits and Acne Vulgaris

Habit	Occurrence of Acne		Total	P value	OR
	Yes	No			
1-2 times/day	27 (23.0%)	8 (12.0%)	35 (35.0%)	0.039	3.150
> 2 times/day	15 (19.0%)	14 (10.0%)	29 (29.0%)		
Total	**42 (42.0%)**	**22 (22.0%)**	**64 (64.0%)**		

Table 3. Factors Associated with Acne Vulgaris

Variable	P value
Face Washing Habits	0.039
Masks Use	0.019
Use of KN95 Masks	1.000
Use of Medical Masks	0.053
Use of Cloth Masks	0.603

Table 3. shows the variables with a p-value of less than 0.025 from the bivariate selection included in the multivariate modeling process. These variables were identified as having a statistically significant relationship with the occurrence of acne vulgaris and were, therefore, considered for further analysis in the multivariate logistic regression model.

4. Discussion

Based on the data collection and processing conducted on students from the Faculty of Medicine at Gunadarma University, Depok, 64 samples were obtained for this study. The analysis of respondent characteristics related to facial cleansing habits revealed that 35 respondents (54.7%) washed their faces 1-2 times daily, while 29 respondents (45.3%) washed their faces more than twice daily. In a study by Indah (2020), 16 respondents (16%) washed their faces 1-2 times daily, and 84 respondents (84%) washed their faces more than twice daily (Indah S, 2020). This indicates that the majority of medical students at Gunadarma University, Depok, did not frequently wash their faces during the pandemic.

Regarding mask usage among respondents, it was found that 32 respondents (48.4%) used masks for 1-3 hours per day, while 33 respondents (52.6%) used masks for more than 3 hours per day. In a study by Elisheva (2020), 62 respondents (18.1%) used masks for 1-3 hours daily, and 151 respondents (44%) they have used masks for more than 3 hours.[19] This suggests that more medical students at Gunadarma University, Depok, tended to wear masks for extended periods during the pandemic.

In terms of the type of mask used, 42 respondents (65.6%) used KN95 masks, 18 respondents (28.1%) used medical/surgical masks, and four respondents (6.3%) used cloth masks. This shows that most Gunadarma University Depok medical students preferred KN95 masks. Regarding the incidence of acne vulgaris, 42 respondents (65.6%) were experiencing acne, while 22 respondents (34.4%) were not. This indicates that most Gunadarma University Depok medical students had skin issues, specifically acne vulgaris.

The Chi-Square test for the independent variable (X1) examining the relationship between facial cleansing habits and acne vulgaris revealed a p-value of 0.039 ($p < 0.05$). However, multivariate logistic regression analysis yielded a p-value of 0.948 ($p > 0.05$), which aligns with the findings of Kurniawati (2014), who found no significant relationship between the frequency of facial cleansing and the occurrence of acne vulgaris.[18]

Nonetheless, these findings contrast with a study by Fifin et al. (2019), which reported that among 71 respondents who washed their faces two to three times daily, 35 individuals (49.3%) did not have acne vulgaris or had only mild acne, while 36 individuals (50.7%) had moderate to severe acne.[4] Similarly, the findings differ from those of Indah (2020), where 78 respondents (78%) who frequently cleaned their faces more than twice daily did not have acne, while 6 respondents (6%) did. Among those who cleaned their faces 1-2 times daily, 11 respondents (11%) did not have acne, while 5 respondents (5%) did.[20]

The Chi-Square test for the independent variable (X2) examining the relationship between mask usage and acne vulgaris indicated a significant relationship, with a p-

value of 0.019 ($p < 0.05$). Multivariate logistic regression also showed a substantial relationship between mask usage and the occurrence of acne vulgaris, with a p-value of 0.017 ($p < 0.05$). This supports the research hypothesis that mask usage can influence the occurrence of acne vulgaris. This finding is consistent with a study by Elisheva (2020), where 182 respondents (53.1%) experienced acne vulgaris. Among them, 38 respondents (11.1%) developed acne vulgaris after wearing a mask for approximately 1-3 hours, and 164 respondents (47.8%) developed acne vulgaris after wearing a mask for over 3 hours. Of these, 121 respondents (35.3%) had a history of acne vulgaris, while the others did not.[19]

Similar results were found in a study by Aravamuthan and Arumugam (2020), involving 215 respondents, where 134 respondents (62.3%) experienced acne. Among those who developed acne due to mask usage, 37 respondents were male, and 97 respondents were female, while among the 81 respondents (37.7%) who did not develop acne, 52 were male, and 29 were female. Among those with acne, 67 respondents (50%) had new acne, and 67 (50%) had severe acne.[16] Therefore, this study also found a significant relationship between mask usage and acne vulgaris.

The strength of the relationship, measured using the OR (Odds Ratio), showed that respondents who wore masks for ≥3 hours per day had a 3.92 times higher likelihood (odds) of developing acne vulgaris compared to those who wore masks for 1-3 hours per day. Therefore, based on the research and results, the research hypothesis is accepted, confirming a relationship between mask usage during the COVID-19 pandemic and the occurrence of acne vulgaris among medical students at Gunadarma University, Depok.

The Chi-Square test for the type of mask (KN95, medical, and cloth) revealed no significant relationship between the type of mask used and the occurrence of acne vulgaris. The p-value for the KN95 mask was 1.000 ($p > 0.05$), for the medical mask, it was 0.053 ($p > 0.05$), and for the cloth mask, it was 0.603 ($p > 0.05$). Multivariate logistic regression also showed no significant relationship between the use of KN95, medical, or cloth masks and the occurrence of acne vulgaris, with a p-value > 0.05. This indicates no significant relationship exists between the type of mask used and the occurrence of acne vulgaris.

The differences in this study's results may be due to confounding factors that the researcher could not control. The risk factors for acne vulgaris are multifactorial. This study did not examine other risk factors, such as genetics, hormones, diet, and the use of comedogenic cosmetics, potentially influencing the results.[3,21-23]

Additional studies are recommended to explore other factors influencing acne vulgaris, such as genetic predispositions, hormonal changes, dietary habits, and comedogenic cosmetics. For students and the general population, especially those experiencing acne vulgaris, it may be beneficial to explore alternative preventive measures and skin care routines that do not solely focus on facial cleansing or mask type but consider a comprehensive approach to skincare. Increasing awareness and providing education about proper skincare practices and the effects of prolonged mask usage can help mitigate the risk of developing acne vulgaris. Considering the significant relationship between mask usage and acne vulgaris, it is advisable for individuals who experience acne to consult with a dermatologist for personalized advice on mask types and duration of usage.

5. Conclusions

There is no relationship between facial cleansing habits during the COVID-19 pandemic and the occurrence of acne vulgaris among students at the Faculty of Medicine, Gunadarma University, Depok. There is a relationship between mask usage during the COVID-19 pandemic and the occurrence of acne vulgaris among students at the Faculty of Medicine, Gunadarma University, Depok. The type of mask—whether KN95, medical, or cloth—does not significantly correlate with the occurrence of acne vulgaris among students at the Faculty of Medicine, Gunadarma University, Depok.

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