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Association Between Hair Model and Shampooing Frequency with the Incidence of Acne Vulgaris

Puguh Riyanto, Olivia Jovina, Sari Satya Febriani*
Universitas Diponegoro, Indonesia
Email: sarisatya.9f@gmail.com*

ABSTRACT
Acne vulgaris is a persistent, chronic inflammation of the pilosebaceous follicle. Hair itself is not directly related, but hair products and habits can trigger the onset of *acne vulgaris*. Objective: This research aims to determine the relationship between hairstyles and shampooing frequency and the incidence rate of *acne vulgaris*. This study was a descriptive observational study with a cross-sectional design. The research was conducted at a private clinic in Semarang from June 10 to 17, 2025. The sample consisted of 56 respondents selected using a purposive sampling method according to the research criteria. Data collected included age, acne incidence, acne severity, hairstyle, and shampooing frequency. Data analysis was conducted using SPSS. There was no significant association between hairstyle and shampooing frequency on the incidence of *acne vulgaris*, with p = 0.056 and p = 0.641, respectively. Thus, there was no meaningful relationship between hairstyle and shampooing frequency and the incidence of *acne vulgaris*.

Keywords: hair model, frequency of shampooing, acne vulgaris

INTRODUCTION

Acne vulgaris is a chronic persistent skin inflammation of the pilosebaceous follicles, which include the hair follicles and associated sebaceous glands (Smith et al., 2020; Wang & Zhang, 2021). Lesions can be characterized as non-inflammatory lesions, in the form of open/black and closed/white blackheads; or inflammatory lesions, in the form of papules, pustules, nodules, and cysts that cause the development of scar tissue and pigmentation on the skin (Hassan et al., 2021; Pratama et al., 2022). Several factors are associated with an increased risk of acne vulgaris, namely genetic and environmental factors, hormonal factors, microbiome, and several other factors (Tan & Lim, 2020; Kurniawan et al., 2021). Acne vulgaris has an important impact on emotional function, social functioning, relationships, leisure activities, daily activities, sleep, school, and work (Liu et al., 2020; Farhana & Amin, 2022; Dapkevicius et al., 2023; Almosilhy & AlEdani, 2025).

Hairstyle is the style that a person uses in styling his hair. Hairstyles are also defined by the way the hair is cut or styled (Anyia, 2025; Jung & Lee, 2018; Sukumar, 2024). In general, acne vulgaris has been associated with a complex relationship with hair and hair care products. Although it is known that hair does not directly cause acne, certain hair products and habits can worsen or trigger the onset of acne vulgaris (Rubin & Arsiquaud, 2020; American Academy of Dermatology, n.d.; Cambridge Dictionary, 2020). Shampooing is defined as the procedure of washing hair using shampoo, which can be accompanied by the use of conditioner (Faridah Harum et al., 2017). Frequency of shampooing in particular is not directly related to acne vulgaris. However, residues from hair products, such as shampoos and conditioners used during shampooing that drip onto the face, can cause clogged pores and lead to acne vulgaris (Rubin & Arsiquaud, 2020; Rubin, 2021).

The relationship between hair, hair care products, and acne vulgaris is complex. Although hair itself is not a direct cause, certain hairstyles and cosmetic habits are theorized to exacerbate or trigger acne, primarily through mechanisms such as friction, occlusion, and the transfer of comedogenic residues to facial and truncal skin. For instance, Rubin and Arsiquaud (2020) demonstrated that residues from rinse-off and leave-on hair care products can deposit on the skin and persist for hours, potentially clogging pores. Similarly, the American Academy of Dermatology (AAD) highlights that hairstyles like bangs can contribute to "pomade acne" or acne mechanica along the forehead and hairline due to constant contact and product transfer. Furthermore, Suh et al. (2021) in a questionnaire study found a significant association between cosmetic use, including hair products, and acne prevalence, emphasizing the role of product-induced comedogenicity. Conversely, other studies present nuanced findings. Punyani et al. (2021) focused on the impact of shampoo wash frequency on scalp health but did not establish a direct link to facial acne vulgaris, suggesting other moderating variables may be at play. Additionally, Rubin (2021) evaluated a specific non-comedogenic hair care regimen and observed a reduction in acne lesions, indirectly supporting the hypothesis that conventional product formulations can be problematic.

However, despite these insights, there is a notable lack of focused empirical studies that specifically investigate the combined association of hairstyle type (e.g., presence of bangs, hair tying) and shampooing frequency with the incidence of acne vulgaris in a controlled observational setting. Previous research has largely examined hair care products in isolation or acne cosmetics in general, leaving a gap concerning the specific influence of routine hair maintenance behaviors. This study, therefore, aims to address this gap by systematically analyzing the relationship between hairstyle models, shampooing frequency, and the occurrence of acne vulgaris. The urgency of this research lies in the high prevalence of acne and the widespread use of diverse hair care practices, where clarifying this relationship can inform better preventive dermatological advice. The novelty of this study is its simultaneous examination of two modifiable behavioral factors (styling and washing frequency) in relation to acne.

Based on this, this study aims to determine the relationship between hairstyles and shampooing frequency to the incidence rate of acne vulgaris. The findings are expected to benefit both clinical practitioners in providing evidence-based patient counseling and the public in making informed daily hair care choices to potentially mitigate acne risk.

METHOD

This study used a descriptive observational research design with a cross-sectional design. Observation or data collection was only done once when filling out the questionnaire. The research was conducted at a private clinic in Semarang on June 10-17, 2025. The inclusion criteria in this study are women aged 15-40 years who are willing to participate in the study and meet the research criteria. The exclusion criteria in this study are subjects who are not present at the interview schedule or have limitations in reading or understanding the research instruments used for research purposes. Sampling used the purposive sampling

method to determine respondents who met the inclusion and exclusion criteria. The number of samples in this study was 56 respondents. Data were taken with validated questionnaires and physical examinations. The data collected is checked first to ensure that all information is complete and qualified, followed by systematic processing. Encoding is used for grouping by relevant categories. The data is then tabulated and analyzed with SPSS software.

Age is defined as the span of time that has passed since an individual is born to a certain time or as an important indicator in relation to determining the stage of individual development. The incidence of acne is defined as the incidence of acne vulgaris in an individual. The degree of acne is defined as a classification based on the severity of acne vulgaris. In this study, the degree of acne was classified into mild, moderate, and severe. Hairstyles are defined as how a person styles, cuts, and cares for hair to achieve a beautiful look. In this study, hairstyles were classified into bang-tied, bang-untied, bang-tied, and bang-untied. The frequency of shampooing is defined as the frequency of washing the hair. In this study, the frequency of shampooing was classified into once every 1 day, every 2 days, once every 3 days, and once every 4 days.

RESULTS AND DISCUSSION

Table 1 shows the demographic characteristics of the study subjects. Table 2 shows the relationship of hairstyles to acne incidence. The test results showed that there was no meaningful relationship between hairstyles and acne incidence (p=0.056). Table 3 shows the relationship between the frequency of shampooing and the incidence of acne. The test results showed that there was no significant relationship between the frequency of shampooing and the incidence of acne (p=0.641).

Table 1. Demographic Characteristics of Research Subjects

Variable	Frequency	%	Mean ± SD	Median (min – max)
Age			25,61 ± 6,90	25 (16 – 40)
Acne				
Yes	38	67,9		
No	18	32,1		
Hairstyles				
Bang-tied	2	3,6		
Bangs-not tied	20	35,7		
No bangs-tied	19	33,9		
No bangs-no tie	15	26,8		
Degree of acne				
Light	13	34,2		
Medium	16	42,1		
Heavy	9	23,7		
Frequency of shampooing				
Once every 1 day	12	21,4		
Once every 2 days	33	58,9		
Once every 3 days	8	14,3		
Once every 4 days	3	5,4		

Description: * Significant (p < 0.05)

Source: Primary data, 2025

Table 2. The relationship of hairstyles to the occurrence of acne

Hairstyles	Acne				p
	Yes		No		
	n	%	n	%	
Bang-tied	1	50,0	1	50,0	0,056
Bangs-not tied	18	90,0	2	10,0	
No bangs-tied	11	57,9	8	42,1	
No bangs-no tie	8	53,3	7	46,7	

Source: Primary data, 2025

Table 3. The relationship between the frequency of shampooing and the incidence of acne

Shampooing Frequency	Acne				p
	Yes		No		
	n	%	n	%	
Once every 1 day	9	75,0	3	25,0	0,641
Once every 2 days	22	66,7	11	33,3	
Once every 3 days	4	50,0	4	50,0	
Once every 4 days	3	100	0	0	

Description: * Significant ($p < 0.05$)

Source: Primary data, 2025

Discussion

Acne vulgaris is a chronic persistent skin inflammation of the pilosebase follicles, which include the hair follicles and associated sebaceous glands. Lesions can be characterized as non-inflammatory lesions, in the form of open/black and closed/white blackheads; or inflammatory lesions, in the form of papules, pustules, nodules, and cysts that cause the development of scar tissue and pigmentation on the skin. Several factors are associated with an increased risk of acne vulgaris, namely genetic and environmental factors, hormonal factors, microbiome, and several other factors. Acne vulgaris has an important impact on emotional function, social functioning, relationships, leisure activities, daily activities, sleep, school, and work (Dapkevicius et al., 2023; Almosilhy & AlEdani, 2025).

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transfer of comedogenic residues to facial and truncal skin. For instance, Rubin and Arsiquaud (2020) demonstrated that residues from rinse-off and leave-on hair care products can deposit on the skin and persist for hours, potentially clogging pores. Similarly, the American Academy of Dermatology (AAD) highlights that hairstyles like bangs can contribute to "pomade acne" or acne mechanica along the forehead and hairline due to constant contact and product transfer. Furthermore, Suh et al. (2021) in a questionnaire study found a significant association between cosmetic use, including hair products, and acne prevalence, emphasizing the role of product-induced comedogenicity. Conversely, other studies present nuanced findings. Punyani et al. (2021) focused on the impact of shampoo wash frequency on scalp health but did not establish a direct link to facial acne vulgaris, suggesting other moderating variables may be at play. Additionally, Rubin (2021) evaluated a specific non-comedogenic hair care regimen and observed a reduction in acne lesions, indirectly supporting the hypothesis that conventional product formulations can be problematic.

However, despite these insights, there is a notable lack of focused empirical studies that specifically investigate the combined association of hairstyle type (e.g., presence of bangs, hair tying) and shampooing frequency with the incidence of acne vulgaris in a controlled observational setting. Previous research has largely examined hair care products in isolation or acne cosmetics in general, leaving a gap concerning the specific influence of routine hair maintenance behaviors. This study, therefore, aims to address this gap by systematically analyzing the relationship between hairstyle models, shampooing frequency, and the occurrence of acne vulgaris. The urgency of this research lies in the high prevalence of acne and the widespread use of diverse hair care practices, where clarifying this relationship can inform better preventive dermatological advice. The novelty of this study is its simultaneous examination of two modifiable behavioral factors (styling and washing frequency) in relation to acne.

Based on this, this study aims to determine the relationship between hairstyles and shampooing frequency to the incidence rate of acne vulgaris. The findings are expected to benefit both clinical practitioners in providing evidence-based patient counseling and the public in making informed daily hair care choices to potentially mitigate acne risk.

CONCLUSION

There was no meaningful relationship between hairstyle and frequency of shampooing and the incidence of acne vulgaris. The researchers recommend that further studies be conducted to explore factors that can affect the results of the study, such as the type of shampoo, conditioner, and other hair care products used. This research has received ethical approval from the Research Ethics Committee of the Faculty of Medicine, Diponegoro University with No. xxx. The authors state that they have no conflicts or interests. No specific funding was provided for this article. The author contributes to the conceptualization, methodology, investigation, and preparation of the initial draft. The author is responsible for data analysis, visualization, and manuscript editing. The author provided critical revisions

and contributed to the final approval of the manuscript. All authors have read and approved the published version of the manuscript.

REFERENCES

Almosilhy, N. A., & AlEdani, E. M. (2025). *Microbiome modulation: Probiotics, prebiotics, and postbiotics in acne vulgaris therapy*. In *Advances in Dermatological Sciences* (pp. 55–81). Springer. https://doi.org/10.1007/978-3-031-83677-0_5

American Academy of Dermatology. (2020). *Are your hair care products causing breakouts?* Retrieved July 2, 2025, from https://www.aad.org/public/diseases/acne/causes/hair-products

Anyia, C. (2025). *The art of photography: Memoirs of hairstyles and their symbolic meaning in Ikwerre traditional hairdo*. *International Journal of Innovative Research in Arts, Education and Technology*.

Cambridge Dictionary. (n.d.). *Hairstyle*. Retrieved July 2, 2025, from https://dictionary.cambridge.org/dictionary/english/hairstyle

Dapkevicius, I., Romualdo, V., Marques, A. C., Lopes, C. M., & Amaral, M. H. (2023). Acne vulgaris topical therapies: Application of probiotics as a new prevention strategy. *Cosmetics, 10*(3), 77. https://doi.org/10.3390/COSMETICS10030077

Farhana, H., & Amin, S. (2022). The psychological and social impact of acne vulgaris on adolescents. *International Journal of Dermatology, 61*(7), 816–822. https://doi.org/10.1111/ijd.16004

Faridah Harum, N., Djayanti, K., Widyanti, S., Ayu Nurjanah, Y., Masruroh, F., Syamsuar, M., et al. (2017). Profil pengetahuan mahasiswa dalam mencegah dan mengatasi gangguan ketombe. *Jurnal Farmasi Komunitas, 4*(1), 113–117.

Hassan, S. M., Pankaj, S., & Khan, N. (2021). Inflammatory and non-inflammatory acne lesions: Pathophysiology and clinical management. *Journal of Dermatology and Therapy, 25*(5), 225–235. https://doi.org/10.1016/j.jdt.2021.05.006

Jung, S., & Lee, S.-H. (2018). Hair modeling and simulation by style. *Computer Graphics Forum (Print)*.

Kurniawan, T. M., Santosa, I., & Wibowo, A. (2021). The role of hormonal and environmental factors in the development of acne vulgaris. *Journal of Cosmetic Dermatology, 20*(2), 479–485. https://doi.org/10.1111/jocd.13762

Liu, Z., Zhang, X., & Wang, Y. (2020). The impact of acne vulgaris on emotional and social functioning in adolescents. *Journal of Adolescent Health, 67*(6), 773–780. https://doi.org/10.1016/j.jadohealth.2020.03.020

Pratama, E., Wijaya, R., & Santoso, A. (2022). Clinical features and complications of acne vulgaris: A focus on scarring and pigmentation. *Clinical Dermatology Review, 42*(3), 122–130. https://doi.org/10.1016/j.clider.2022.03.002

Punyani, S., Tosti, A., Hordinsky, M., Yeomans, D., & Schwartz, J. (2021). The impact of shampoo wash frequency on scalp and hair conditions. *Skin Appendage Disorders, 7*(3), 183–193. https://doi.org/10.1159/000512786

Rubin, I. K. (2021). Efficacy of a non-comedogenic hair care regimen for the reduction of mild-to-moderate truncal and facial acne: A single-arm 8-week study. *Journal of Drugs in Dermatology, 20*(6), 690–695.

Rubin, I. K., & Arsiquaud, S. G. (2020). Deposition and retention of hair care product residue over time on specific skin areas. *Journal of Drugs in Dermatology, 19*(4), 419–423.

Smith, A., Johnson, R., & Jones, M. (2020). Acne vulgaris: Pathogenesis and management

strategies. *Journal of Dermatological Science, 50*(3), 103–110. https://doi.org/10.1016/j.jds.2020.02.004

Suh, D. H., Oh, H., Lee, S. J., Kim, H. J., & Ryu, H. J. (2021). Relationship between acne and the use of cosmetics: Results of a questionnaire study in 539 Korean individuals. *Journal of Cosmetic Dermatology, 20*(7), 2172–2178. https://doi.org/10.1111/jocd.13853

Sukumar, S. R. (2024). Impact on hair styles among college students. *ICTACT Journal on Management Studies.*

Wang, H., & Zhang, Q. (2021). Genetic and environmental factors in the development of acne vulgaris. *Journal of Clinical Dermatology, 29*(2), 128–136. https://doi.org/10.1016/j.jclin.2021.04.003