



## Level of Knowledge on Acne Vulgaris and Its Treatment Among Undergraduates Medical Students at Universitas Sumatera Utara

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### ABSTRACT

**Background:** Acne vulgaris (AV) is a skin disorder commonly found on late teens, young adults and most patients are females. The classic pathophysiology circulates the relationship between inflammation, bacterial colonization, sebum excretion and follicular epidermal hyperproliferation. Other factors may include diet, stress level, self-hygiene, and hormones especially in female patients. A proper diagnosis and the right treatment approach will help treat patient significantly. Sufficient knowledge on acne vulgaris and its treatment is important for a person to self-medicate or a visit to the dermatologist can be another option. Commonly used self-medication for acne are clindamycin and benzoyl peroxide (BPO). Treatment can either be single or combined therapy to achieve better results. Acne treatments might take some time to show its effects and it may also relapse. **Objectives:** The study aims to see the level of knowledge on acne vulgaris by the respondents. **Methods:** This cross-sectional study was conducted to medical undergraduates at Universitas Sumatera Utara. **Results:** 85.2% from total respondents have had acne before. 142 (55.5%) students chose to seek treatment with a dermatologist which majority of them are females (34.4%). Female students contribute the most with 160 responses. Most respondents are from age category of 16 to 21 (75.4%). **Conclusion:** Students do have the knowledge on acne vulgaris and its treatment hence almost half of them chose to self-medicate. Students are also aware that other treatment options are available.

**Keywords:** acne vulgaris, behavior, Cutibacterium acnes, knowledge, treatment

### ABSTRAK

**Latar Belakang:** Akne vulgaris (AV) merupakan kelainan kulit yang sering ditemukan pada remaja akhir, dewasa muda dan kebanyakan penderitanya adalah wanita. Patofisiologi klasik mengedarkan hubungan antara peradangan, kolonisasi bakteri, ekskresi sebum dan hiperproliferasi epidermal folikel. Faktor lain mungkin termasuk diet, tingkat stres, kebersihan diri dan hormon terutama pada pasien wanita. Diagnosis yang tepat dan pendekatan pengobatan yang tepat akan membantu merawat pasien secara signifikan. Pengetahuan yang cukup tentang akne vulgaris dan pengobatannya penting bagi seseorang untuk mengobati sendiri atau kunjungan ke dokter kulit bisa menjadi pilihan lain. Pengobatan sendiri yang umum digunakan untuk jerawat adalah klindamisin dan benzoil peroksida (BPO). Perawatan dapat berupa terapi tunggal atau kombinasi untuk mencapai hasil yang lebih baik. Perawatan jerawat mungkin membutuhkan waktu untuk menunjukkan efeknya dan mungkin juga kambuh. **Tujuan:** Mengetahui gambaran pengetahuan dan pemilihan pengobatan akne pada mahasiswa Fakultas Kedokteran Universitas Sumatera Utara. **Metode:** Menggunakan metode desain penelitian potong lintang (cross sectional) dengan membagikan kuesioner kepada mahasiswa/i Fakultas Kedokteran Universitas Sumatera Utara. **Hasil:** 85,2% dari total responden pernah menderita akne sebelumnya. 142 (55,5%) mahasiswa memilih berobat ke dokter spesialis kulit dengan mayoritas berjenis kelamin perempuan (34,4%). Mahasiswa perempuan berkontribusi paling banyak dengan 160 respon. Responden terbanyak adalah dari kelompok usia 16 sampai dengan 21 tahun (75,4%). **Kesimpulan:** Mahasiswa memiliki pengetahuan tentang akne vulgaris dan pengobatannya sehingga hampir separuh dari mereka memilih untuk berobat sendiri. Siswa juga menyadari bahwa pilihan pengobatan lain tersedia.

**Kata Kunci:** akne vulgaris, Cutibacterium acnes, over-the-counter, pengetahuan, perilaku

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## INTRODUCTION

Acne vulgaris (AV) is also known as acne and pimples, is a dermatologic condition caused by chronic inflammation. Acne vulgaris is a self-limiting disease and one of the most common skin diseases in Indonesia.<sup>[1]</sup> It can be categorized simply into inflammatory lesion and non-inflammatory lesion.<sup>[2]</sup> According to the World Health Organization (WHO), AV affects all age groups with 85% of them teenagers. Acne also affects 20% – 40% of young adults and adults.<sup>[3]</sup>

Proliferated ductal layer at the infundibulum provides a suitable condition for bacterial colonization. Bacteria that is known to cause acne vulgaris is *Cutibacterium acnes* (*C.acnes*). The bacteria are commensal to the skin and often found on the face and the trunk of the body.<sup>[4]</sup> Apart from that, amount of sebum excretion and inflammation are also known as part of the classic pathogenesis of acne vulgaris.<sup>[5]</sup> Other predisposing factors include diet, facial hygiene, weight, and hormones especially female patients.<sup>[6]</sup> Facial hygiene is a part of personal hygiene whereby a person cleanses the face not just by using water but with facial soap. It is important as the skin is the first line protection of the human body.<sup>[7]</sup> A study by Hernowo, et al., in 2020 shows that people who do not wash their face are much more prone to get acne.<sup>[8]</sup>

Diagnosis of AV can be done through history taking and physical examination by observing any visible lesion on the skin. Once diagnosed, dermatologists may categorize the severity of acne as there are numerous severity scales such as Global Alliance, European guidelines, and Global Acne Severity Scale.<sup>[9]</sup> The right approach will benefit patients physically, esthetically, and psychologically. Acne can either be self-medicated or by seeing a dermatologist. 35.8% subjects in Saudi Arabia chose to self-medicate and only visit

the doctor when the condition worsens. The choice of treatment for acne vulgaris has a wide variety starting from pimple patch, antibiotics, and laser treatment.<sup>[10][11]</sup>

Based on the introduction above, the author is interested to see the knowledge of acne vulgaris and its treatment by medical undergraduates in Universitas Sumatera Utara.

## METHODS

The study is a descriptive study with cross sectional design conducted from 11 September 2021 to 12 November 2021. The subjects were medical undergraduates that fit the inclusion criteria. The inclusion criteria were active medical undergraduates from 2017 - 2020 and ready to be part of the study. Consecutive sampling was then used to recruit 256 subjects. The study has been approved by the Research Ethical Committee of Universitas Sumatera Utara. A link to the questionnaire and consent form was given to the subjects. It consists of two parts with six items for each part. The data is then processed and displayed in table and graphic form.

## RESULTS

**Table 1.** Characteristic Distribution of Respondents

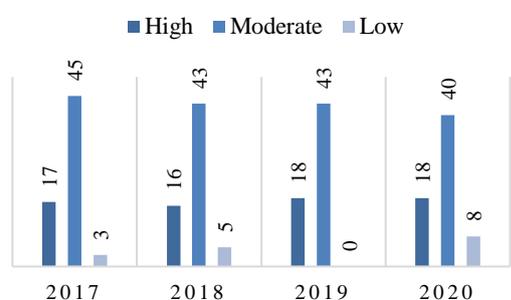
Variable	Frequency	%
<b>Gender</b>		
Male	96	37.5
Female	160	62.5
<b>Academic year</b>		
2017	65	25.4
2018	64	25
2019	61	23.8
2020	66	25.8
<b>Age group</b>		
16 – 21	193	75.4
22 – 26	63	24.6

As seen from **Table 1**, more than half of the respondents were female with total of 160 (62.5%). Out of 160 females, 138

(53.9%) of them have had history of acne such as seen in **Table 2**. From the table below, each academic year has more than 50 people with a history of acne. 165 subjects (64.5%) acne history aged from 16 to 21 which is also seen in other studies such as in H. Adam Malik Central General Hospital in 2019.<sup>[12]</sup>

**Table 2.** Respondents' Distribution with History of Acne

	Yes N (%)	No N (%)
<b>Gender</b>		
Male	80 (31.3)	16 (6.3)
Female	138 (53.9)	22 (8.6)
<b>Academic year</b>		
2017	57 (22.3)	8 (3.1)
2018	55 (21.5)	9 (3.5)
2019	52 (20.3)	9 (3.5)
2020	54 (21.1)	12 (4.7)
<b>Age group</b>		
16 – 21	165 (64.5)	28 (10.9)
22 – 26	53 (20.7)	10 (3.9)



**Figure 1.** Respondents' Knowledge on Acne Vulgaris

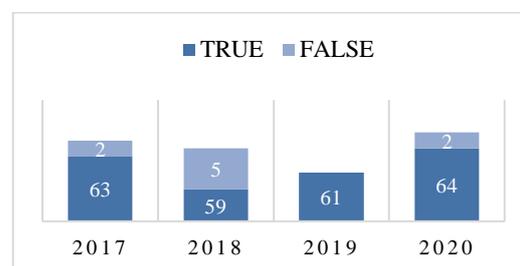
Most subjects had moderate knowledge on the skin condition. Respondents from the academic year of 2019 and 2020 had the most knowledge on AV with total respondents of 16. The knowledge was assessed by asking questions such as shown in **Table 3**.

**Table 3.** Acne is Caused by Blocked Pores That Leads to Bacterial Colonization and Inflammation

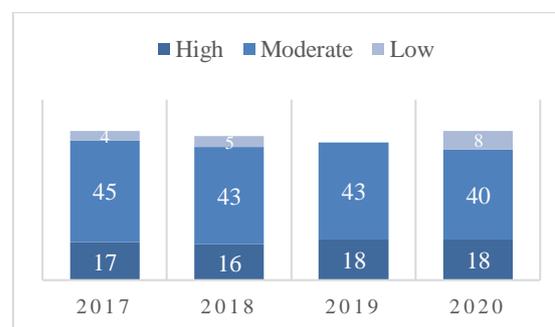
Yes	No
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	N (%)	N (%)
<b>History of acne</b>	214 (83.6)	37 (14.5)
<b>Academic year</b>		
2017	64 (25)	1 (0.4)
2018	62 (24.2)	2 (0.8)
2019	61 (23.8)	0 (0)
2020	64 (25)	2 (0.8)

Respondents were also aware that blocked pores are not the only cause of acne and etiology can be due to various other reasons such as stress and facial hygiene especially those with history of acne. Other items in the questionnaire include acne scars and the effect of acne on self-esteem and it can be seen in **Figure 2** below shows that the majority agree acne does affect an individual's self-esteem especially for those who had experience with acne vulgaris.



**Figure 2.** Acne Can Cause Low Self-Esteem



**Figure 3.** Level of Knowledge on AV

**Figure 3** shows significant numbers of respondents who have moderate knowledge while less than ten respondents from all academic year have low knowledge on acne vulgaris. Apart from having knowledge on

the skin condition, respondents also have knowledge on treating AV. The result is the same as **Table 3** which shows that the majority respondents do know that facial hygiene can help to treat and reduce acne. **Table 4** shows that there are some disparities when respondents were asked on antibiotic usage in treating acne.

**Table 4.** Usage of Oral and Topical Antibiotics in Treating Acne

	Yes N (%)	No N (%)
<b>History of acne</b>	166 (64.8)	26 (10.2)
<b>Academic year</b>		
2017	50 (19.5)	15 (5.9)
2018	53 (20.7)	11 (4.3)
2019	49 (19.1)	12 (4.7)
2020	40 (15.6)	26 (10.2)

**Table 5.** Level of Knowledge and Choice of Acne Treatment

	Knowledge		
	Low	Moderate	High
<b>Self-medicate with OTC acne medication.</b>	6 (2.3%)	19 (7.4%)	89 (34.8%)
<b>Visiting dermatologist</b>	7 (2.7%)	39 (15.2%)	96 (37.5%)

**Table 5** shows the respondent's choice of treatment and their level of knowledge on the treatment of AV. Even though they have prior knowledge on acne vulgaris and its treatment, more than 55.4% of the respondents chose to seek dermatologists to treat the skin condition.

## DISCUSSION

The aim of the research is to know the knowledge of medical undergraduates in Universitas Sumatera Utara on AV and its treatment based on the academic year starting from 2017 to 2020. Many

respondents have moderate to high knowledge about the skin condition with majority respondents being female.<sup>[13]</sup> In this study, the age group with the most history of suffering from acne were respondents aged 16 to 21 years, the same as from the research done at H. Adam Malik Central General Hospital with an age range of approximately the same, namely 16-20 years old.<sup>[12]</sup> Data from the Indera General Hospital in Bali shows the age range of 15-24 years as the largest group.<sup>[14]</sup> Most respondents in this study answered correctly, 251 (98.1%) at the same time showed that their knowledge description was good. The respondents are aware that the blockage of pores with sebum is associated with an increase in the number of acne lesions. Research in India found an increase in sebum secretion in acne sufferers in the T zone (forehead to nose) and U zone (cheek to chin) with several acne lesions. Another study in Korea that is similar with the study conducted in India, also only mentions increased sebum as a phenomenon and not the main cause.<sup>[15][16]</sup> The use of cosmetics is also one of the factors that cause acne especially if the face is not thoroughly cleansed.<sup>[17]</sup> Since the pandemic, the use of masks has also been associated with the occurrence of acne or referred to as 'maskne'. This is thought to be related to changes in temperature or moist skin conditions which cause inflammation of the keratinocytes and irritation of the pilosebaceous glands as well as an occlusive effect on the pores on the face.<sup>[18]</sup> Apart from drugs, acne treatment is also currently using energy-based devices (EBD) such as lasers and radio frequency which can inhibit bacterial colonization, reduce inflammation and sebaceous production from the glands. EBD is chosen by 74% dermatologists to treat active acne and acne scars. A combination of various types of acne treatment such as oral, topical and laser drugs can improve a good

prognosis in acne.<sup>[19]</sup> In a study in 13 European countries, 40% of the subjects were very concerned about the condition of acne with up to 12% of them had suicidal thoughts. This large-scale study used the Dermatology Life Quality Index (DLQI) and the total average in people with acne was  $6.2 \pm 5.2$  which means that they are affected by their acne condition. This study also shows that females with acne are at higher risk of getting anxiety.<sup>[20]</sup> In another study involving the psychological and emotional problems of people with acne, 88% of 171 subjects at a university in Malaysia felt insecure about themselves due to facial acne with majority chose not to participate in various social activities.<sup>[21]</sup> A study found that 307 people (96.5%) out of 318 stated that acne needed to be treated by a dermatologist yet 244 (76.7%) of them self-treat themselves before going to the doctor. The results of this study are not in line with research conducted by researchers because most respondents think acne can be treated independently. Few known reasons to self-medicate acne were the availability of OTC drugs, lack of time, knowledge of acne medications, degree of severity of acne, and feeling embarrassed to discuss acne symptoms with colleagues. Yet, the majority worldwide do seek treatment from dermatologists when the condition becomes a lot more severe.

## CONCLUSION

The knowledge of acne vulgaris in medical undergraduates in Universitas Sumatera Utara students is moderate. Respondents also have good knowledge on the treatment of AV and that the treatment varies. Even with the knowledge they have that is sufficient to self-medicate the skin condition, the majority choose to get treatment from a dermatologist.

## RECOMMENDATIONS

Medical undergraduates need to increase their knowledge on the skin condition and its treatment. More in-depth research on the knowledge and attitudes of respondents towards acne vulgaris as it is a common skin condition worldwide.

## REFERENCES

- [1] S. Murlistyarini, *Pendahuluan: Akne Vulgaris*, Malang, UB Press, pp. 1-6, 2019.
- [2] N. F. Mahmood and A. R. Shipman, "The age-old problem of acne," *International Journal of Women's Dermatology*, vol. 3, no. 2, pp. 71-6, June 2017.
- [3] A. S. H., Hwee and T. C., Fook, "Systematic review of the epidemiology of acne vulgaris," *Scientific Reports*, vol. 10, no. 1, pp. 1-29, April 2020.
- [4] J. McLaughlin et. al, *Propionibacterium acnes and Acne Vulgaris: New Insights from the Integration of Population Genetic, Multi-Omic, Biochemical and Host-Microbe Studies*, microorganisms, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC6560440/>, 2019, retrieved May 25, 2021.
- [5] Tamara et. al., "Association Between Magnesium Levels and The Severity of Acne Vulgaris," *Journal of Widya Medika Junior*, vol. 3, no. 4, pp. 237-41. 2021.
- [6] Kristina S. and Diah M. I., "Relationship Between Acne and Diet", *Periodical of Dermatology and Venereology*, vol. 28, no. 2, pp. 77-82, June 2016.
- [7] Isnaeni, Mahyar S. and Desi E., "Gambaran Personal Hygiene Wajah Pada Pasien Acne di The Aesthetic Dental and Skin Clinic Jakarta Tahun

- 2018”, *Jurnal Antara Keperawatan*, vol. 3, no. 1, pp. 28-34, 2020.
- [8] Hernowo et. al., “Hubungan Kebersihan Wajah Terhadap Kejadian Akne Vulgaris Pada Siswa Kelas X SMK Negeri Tanjungsari Lampung Selatan Tahun 2020”, *Jurnal Medika Malahayati*, vol. 4, no. 2, pp: 82-6, April 2020.
- [9] J. L. López-Estebanz et. al., “Consensus-Based Acne Classification System and Treatment Algorithm for Spain,” *Actas Dermo-Sifiliograficas*, vol. 108, no. 2, pp. 120-31, March 2017.
- [10] Shadi. Z and Asraa T., “Acne Vulgaris in Jeddah Medical Students: Prevalence, Severity, Self-Report, and Treatment Practices”, *Journal of Cosmetics, Dermatological Sciences and Applications*, vol. 7, no. 1, pp. 66-76, March 2017.
- [11] Rex WH Hui, “Common misconception about acne vulgaris: A review of the literature”, *Clinical Dermatology Review*, vol. 1, no. 2, pp-3306, July 2017.
- [12] L. Sari, “Identifikasi Bakteri Pada Lesi Akne Vulgaris.” *Repositori Institusi Universitas Sumatera Utara*, [Online] Available: <http://repositori.usu.ac.id/handle/123456789/26824> [Accessed: November 12, 2021].
- [13] Panjaitan, J. S. G., “Hubungan Antara Penggunaan Kosmetik Terhadap Terjadinya Akne Vulgaris di Poliklinik Kulit Kelamin Royal Prima dan Murni Teguh Memorial Hospital Kota Medan”, *Nommesen Journal of Medicine*, vol. 6, no 1, pp. 22-5, August 2020.
- [14] Wibawa, G. A. E. & Winaya, K. K., “Karakteristik Acne Vulgaris di Rumah Sakit Umum (RSU) Indera Denpasara Periode 2014-2015”, *Jurnal Medika Udayana*, vol. 8, no. 11, pp. 1-4, November 2019.
- [15] Ovhal, A. G., R, J. H. & S, D. R., “A comparative study of sebum secretion rates and skin types in individuals with and without acne”, *MedPulse International Medical Journal*, vol. 3, no. 2, pp. 88-92, September 2018.
- [16] Jung, I. S., Yun, S. J. & Lee, J. B., “The Difference in Sebum Secretion Affecting Development of Acne”, *Annals of Dermatology*, vol. 31, no. 4, pp. 426-33, August 2019.
- [17] Maryanto, E. P., “Hubungan Penggunaan Kosmetik Terhadap Kejadian Akne Vulgaris”, *Jurnal Medika Hutama*, vol. 2, no. 1, pp. 304-7, October 2020.
- [18] Han et. al., “Increased flare of acne caused by long-time mask wearing during COVID-19 pandemic among general population”, *Dermatologic Therapy*, vol. 33, no. 4, pp. 1-3, May 2020.
- [19] Salameh, F. et al., “Energy-based devices for the treatment of acne scars: 2022 International Consensus Recommendations”, *Lasers in Surgery and Medicine*, vol. 53, no. 9, pp. 1-17, October 2021.
- [20] Özkur, E. et al., “Psychosocial Aspects of Adult Acne: Data from 13 European Countries”, *Acta Dermato-Venereologica*, vol. 100, pp. 1-6, January 2020.
- [21] Abhinitha, P. et al., “Acne and One’s Self-Confidence: Cross-sectional study on Malaysian Student population”, *Bangladesh Journal of Medical Science*, vol. 18, no. 1, pp. 83-6, December 2019.