

RISK FACTORS FOR ACNE VULGARIS IN 7TH SEMESTER FEMALE STUDENTS OF THE FACULTY OF MEDICINE, PRIMA INDONESIA UNIVERSITY

Diah Listi Yurini ¹, Maria Mahdalena Saragih ² dan Fiska Maya Wardhani ^{3*}

¹Medicine Study Program, Faculty of Medicine, Prima Indonesia University, Medan

**Corresponding Author: fiskadr.mw@gmail.com*

ABSTRACT

Acne vulgaris is a common problem found in most teenagers. This research is conducted to determine the risk factors for acne vulgaris in the 7th semester female students of Faculty of Medicine, Prima Indonesia University. Acne vulgaris is a chronic inflammation of the pilosebaceous follicles with multifactorial causes and clinical manifestations in the form of blackheads, papules, pustules, nodules and cysts. This study is a case-control study with a retrospective approach. This study used a list of questions (questionnaires) that have been tested for validation and reliability to 7th semester female students of the Faculty of Medicine, Prima Indonesia University. The results showed that the most factor causing acne vulgaris in the 7th semester female students was sebum production.

Keywords: Acne Vulgaris, Risk Factors, Sebum, Hormones, Diet.

1. INTRODUCTION

A research conducted in the United States found that there is a percentage of approximately 80-90% young adults or adolescents with acne vulgaris, resulting in psychosocial disorders such as inferiority and self-confidence. In the Southeast Asian Region, research has been carried out and a percentage of 40-80% has been found. Acne vulgaris in Indonesia is the most common disease and patients also often visit hospitals and skin clinics, this is grouped by the Indonesian Dermatology Study of PERDOSKI (Oktarina, Sari and Prakoeswa, 2018) (Priyanto and Riyanto, 2016).

The highest prevalence of acne vulgaris occurs in young adults aged 14-17 years old, in women at a percentage of around 83-85% and men often affected at the age of 18-19 years old at a percentage of 95-100%. Estrogen and progesterone imbalance as well as

the increase in androgen level are the most common causes of menstrual cycle disorders. Acne vulgaris is often triggered by estrogen and progesterone hormones and also due to excess sebum during menstrual period, which is very related to the estrogen hormone levels (Afriyanti, 2015) (N., 2018).

Acne vulgaris is a chronic inflammatory disease caused by multiple factors with symptoms such as: blackheads, pustules, papules, nodules and cysts. It is often located in the face and neck region (99%), the back of the body (60%), under the chest (15%) and in the upper limbs. The patient also feels itchy and pain in the location of acne vulgaris. Additionally, acne vulgaris changes patient's aesthetics and may affect his/her quality of life (Irma, 2015) (Norita and Malfasari, 2017).

Microcomedo or micromedone is a change in the size of the follicles in the hair containing sebum and *Propionibacterium acnes* and it is the most common lesions in acne vulgaris. Lesions in acne vulgaris often appear under the surface of the skin, which is commonly known as blackheads. There are two types of blackheads, namely: white-head and black-head blackheads that appear black on the skin (Afriyanti, 2015) (Enny, 2018).

Until now, the exact cause or etiology of acne vulgaris remains unclear. There are multiple factors related to acne vulgaris such as genetic, hormonal, racial, climate, temperature, and use of cosmetics. There are many types of acne vulgaris: juvenile acne, infantile acne and infantile gram negative (Irma, 2015) (Purwaningdyah, Jusuf and Karmila, 2013).

There are many factors that have been suspected as triggers for acne, which are sebum, hormones, diet, hereditary, and psychological. These factors will be examined in this scientific paper to find out their influences on the emergence of acne among 7th semester students of the Faculty of Medicine, Prima Indonesia University so that preventive measures can be made and they can avoid these risk factors (Rimadhani M, 2017) (Sihaloho K, 2016).

2. METHODS

The study was conducted from October 2019 to November 2019 at the Faculty of Medicine, Prima Indonesia University. The sample of this study were 7th semester female students of the Faculty of Medicine, Prima Indonesia University, who met the inclusion criteria with an age range of 19-22 years. This research has been submitted to the Health Research Ethics Commission/ *Komisi Etik Penelitian Kesehatan* (KEPK) of the Prima Indonesia University and has been declared ethical.

The research data was collected from October 2019 and the sample were selected by simple random sampling.

Case control is a method used in this study. Case control is a non-experimental research in which risk factors are discussed with a retrospective technique.

This research used primary data which includes the respondent's identity, family history of acne and the severity level of acne vulgaris that were currently experienced. This study used a tool in the form of questionnaires that have been made in form of a list that has been assessed for its truth and reliability.

Data analysis was performed using the SPSS computer program. Hypothesis test of risk factors using One Way Anova test was used to analyze various risk factors and the onset of acne vulgaris. Risk factors for acne vulgaris are categorized into 3 categories: general, high and very high. The severity of acne vulgaris is categorized into mild, moderate and severe. The p value is considered significant if $p < 0.05$.

3. RESULTS AND DISCUSSION

The data that has been collected are grouped and processed based on the presence or absence of risk factors such as diet, hormonal changes, genetic history, psychological, and bacteria to find out the characteristics of respondents based on this. Then the data was collected and analyzed so that it can be concluded as follows:

It can be seen that from the 43 samples obtained, all female students had acne vulgaris.

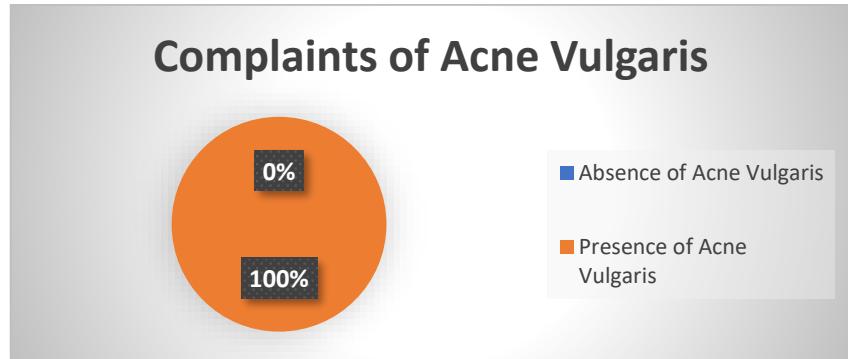


Figure 1. Characteristics of respondents based on complaints of acne vulgaris.

Of the 43 samples obtained, more students had a family history of acne vulgaris, which were 25 people (58%), compared with female students who had no family history of acne vulgaris, which were 18 people (42%). The data is in line with the theory that hereditary has a great influence on the emergence of acne vulgaris. Consequently, if parents have acne vulgaris, it is very likely that the children will suffer from acne vulgaris (Enny, 2018) (Ra, Ht and Dn, 2013).

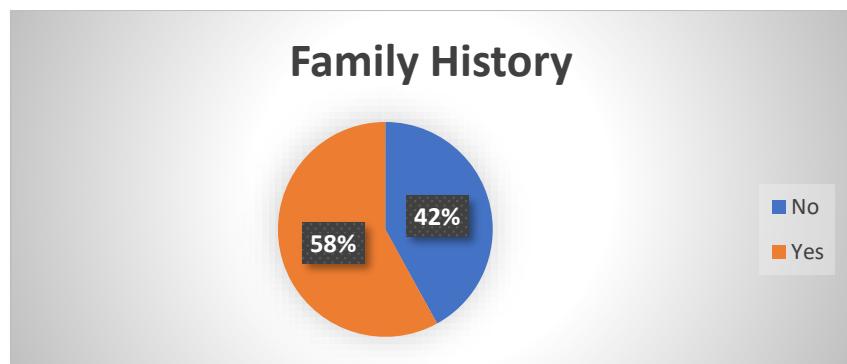


Figure 2. Relationship between family history and the incidence of acne vulgaris.

Of the 43 samples obtained, more female students do not have sebum (oily), which were 28 people (65%), compared to students who had sebum, which were 15 people (35%). The data is stated by a theory that sebum is the main factor for acne due to excessive organ response in the sebaceous glands due to increased androgen level in the blood, causing a high possibility of infection and the formation of blackheads resulting in the appearance of acne vulgaris (Enny, 2018) (Fatimah, Ramadhian and Tjiptaningrum, 2017).

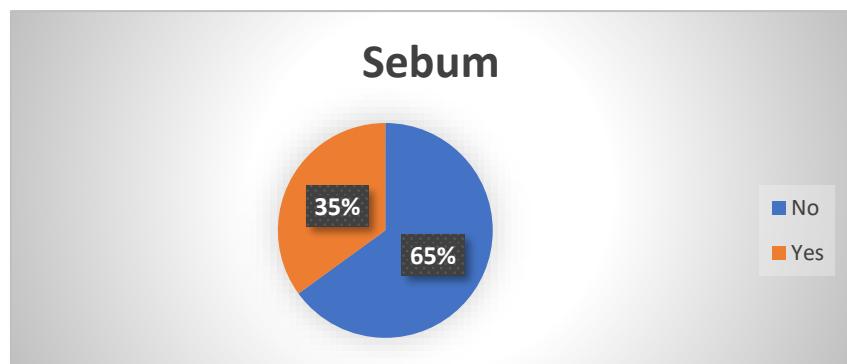


Figure 3. Relationship between the presence or absence of sebum and the incidence of acne vulgaris.

Of the 43 samples obtained, students who often consumed fried foods were 17 people (29.5%), students who sometimes consumed fried foods were 26 people (60.5%), and there are no female students who never consume fried foods.

Furthermore, female students who frequently consume nuts were 11 people (25.6%), female students who sometimes consumed nuts had the most distribution, which were 26 people (60.6%), and female students who had never consumed nuts had the smallest distribution, which were 6 people (14.6%).

Students who often consume cheese were 16 people (37.2%), students who sometimes consume cheese have the most distribution, which were 22 people (51.2%), and students who have never consumed cheese have the smallest distribution, which were 5 people (11.6%). Students who often consume milk have the most distribution, which were 28 people (65.1%), and female students who sometimes consume milk were 15 people (34.9%). There was no female student who never consume milk (Priyanto and Riyanto, 2016).

Students who often consume soda were 10 people (23.3%), students who sometimes consume soda have the most distribution, which were 25 people (58.1%), and students who have never consumed soda have the smallest distribution, which were 8 people (18.6%). Consumption of excessive fatty substances and carbohydrates can not be expressed as a measure of increased activity of the sebaceous glands. Some drinks and foods can cause acne vulgaris, such as milk. The process of making free fat milk is thought to change the bioavailability of these bioactive molecules and their interactions with binding proteins so that the hormonal alteration in milk can cause comedogenesis.

Consumption of iodine-rich foods and systemic drugs that contain iodine can cause acne vulgaris in the form of monomorphic eruption, which is pustule or acneformic eruption (Enny, 2018) (Pratama, Pradipta and Machlaurin, 2017).

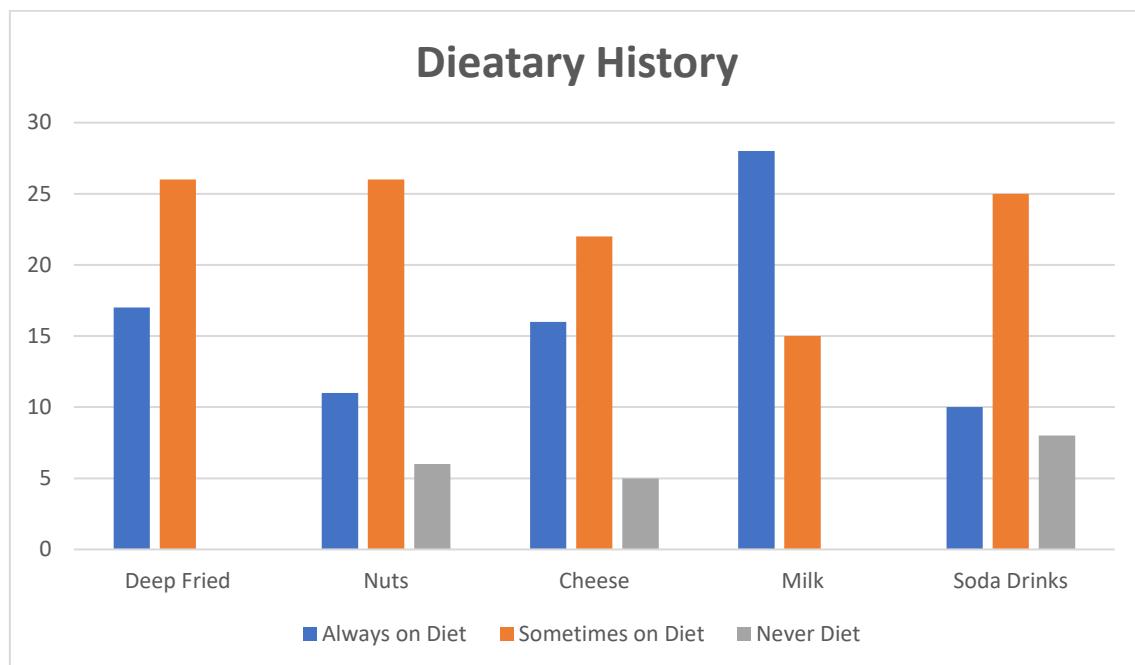


Figure 4. Relationship of dietary history to the incidence of acne vulgaris.

From the 43 samples obtained, the majority of female students who frequently complained of acne vulgaris stated that they often suffered acne a week before menstruation (9 people/ 44.2%), during menstruation (17 people/ 44.2%), and after menstruation (3 people/ 7%). This shows that there is a significant relationship between the onset of acne vulgaris and menstruation. This is consistent with the theory that progesterone receptors are considered to be the cause of acne during menstruation due to the decreased estrogen hormone in the luteal phase of the menstrual cycle and the presence of proinflammatory cytokines, namely IL-6, which causes increase in inflammation (Enny, 2018) (Nazaya, Praharsini and Rusyati, 2018).

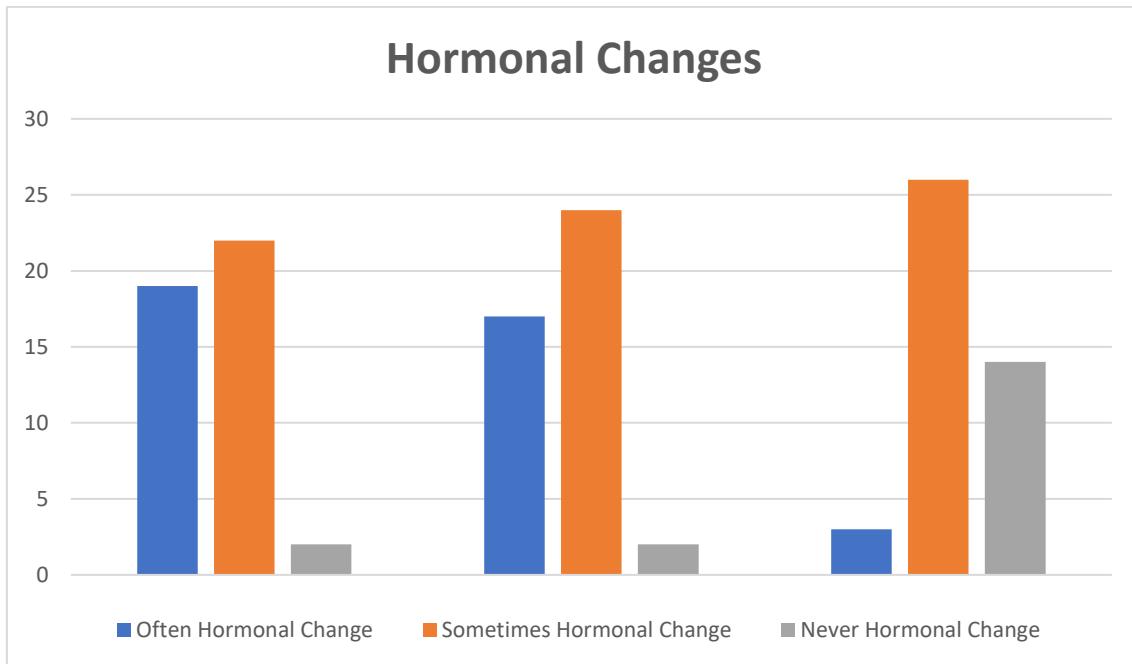


Figure 5. Relationship between hormonal changes and the incidence of acne vulgaris.

Of the 43 samples obtained, psychosocial factors such as anxiety can cause acne, which can damage and deregulate follicular walls, causing inflammation which is a factor in lesion formation. This is consistent with the results of the study in graph 6 in which the students who often experienced stress had complaints of acne vulgaris (13 people/ 29.3%) and students who experienced stress only occasionally also complained of acne vulgaris (23 people/ 52.3%).

The long-term use of cosmetics is one of the risk factors for acne and the presence of blackheads, followed by other lesions. Research that has been conducted in Leeds found that there is an association between the use of long-term cosmetics with cases of severe forms of acne. The results of this study showed that students who used cosmetics most often complained of acne vulgaris problems, which included 23 people (52.3%) (Enny, 2018) (Sam, Manado and Rompas, 2015).

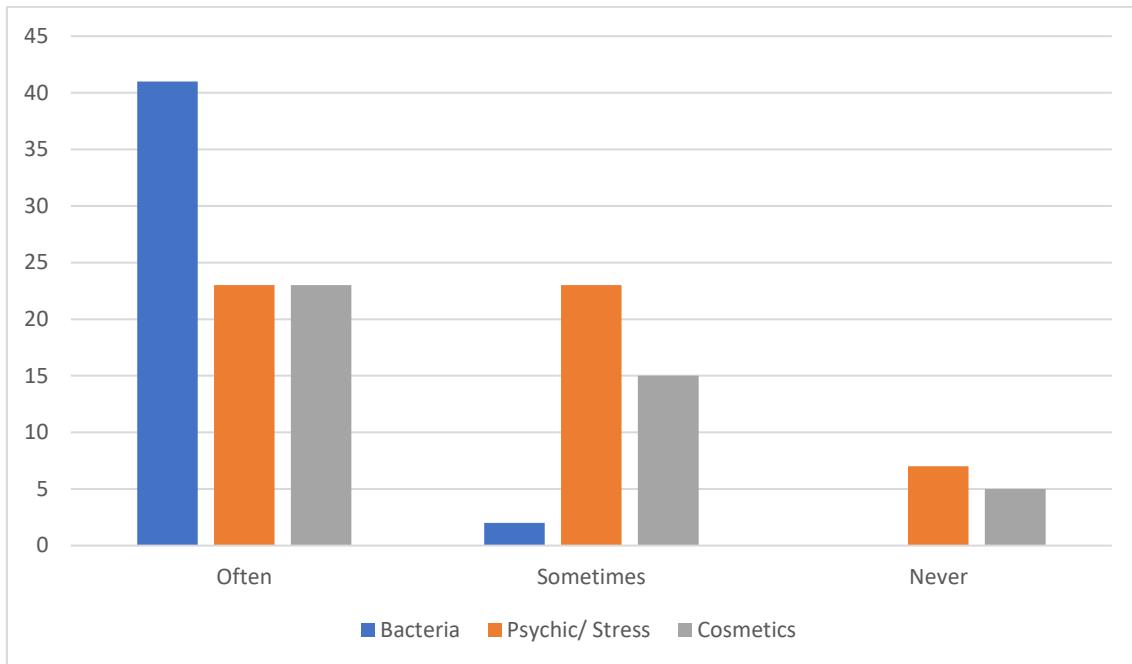


Figure 6. Relationship between the history of stress, bacteria and cosmetics to the incidence of acne vulgaris.

4. CONCLUSION

Based on the results of this study, it can be concluded that, of the 43 respondents, as many as 43 people (100%) had acne vulgaris. Family history was found to have an effect on the incidence of acne vulgaris in 25 people (56.8%). A significant relationship was found between sebum production and the incidence of acne vulgaris in 28 people (63.6%). A significant relationship was found between history of hormonal changes (a week before menstruation as many as 19 people (44.2%) and during menstruation as many as 17 people (44.2%)) to the occurrence of acne vulgaris. Of the 43 respondents who have been evaluated, the results showed that the most risk factors for acne vulgaris are sebum production with the number of 28 people (63.6%) at Faculty of Medicine, Prima Indonesia University.

5. ACKNOWLEDGEMENT

The author, along with other members of the team, acknowledges dr. Fiska Maya Wardhani, M.Biomed as an advisor, and dr. Linda Chiuman, M.K.M., AIFO-K as the Dean of Faculty of Medicine, who facilitated this study.

6. REFERENCE

Afriyanti, R. . (2015) ‘Akne vulgaris pada remaja’, *J Major*, 4(6), pp. 7–10.

Enny (2018) *Ilmu Penyakit Kulit. 2nd ed.* Edited by H. M. Penerbit Hipokrates.

Fatimah, R. N., Ramadhian, M. R. and Tjiptaningrum, A. (2017) ‘Hubungan Pemakaian BB Cream terhadap Keparahan Klinis Akne Vulgaris pada Mahasiswa Angkatan 2013 Fakultas Kedokteran Universitas Lampung The Relationship Between Use of BB Cream with Acne Vulgaris Clinical Severity on Medical Faculty Student of 2013 Lampu’, 6, pp. 39–44.

Irma, B. (2015) *Ilmu Penyakit Kulit dan Kelamin.* 7th edn. Edited by S. Linuwih. Jakarta: Fakultas Kedokteran Indonesia.

N., J. (2018) *Kelompok Studi Dermatologi Kosmetik Indonesia.* Edited by S. M. Badan Penerbit Fakultas Kedokteran UI.

Nazaya, M., Praharsini, I. G. A. A. and Rusyati, L. M. M. (2018) ‘Profil Gangguan Kualitas Hidup Akibat Akne Vulgaris Pada Mahasiswa Fakultas Kedokteran Universitas Udayana Tahun 2015’, *E jurnal medika*, 7(8), pp. 1–5.

Norita and Malfasari, E. (2017) ‘Hubungan antara Jerawat (Acne Vulgaris) dengan Citra Diri pada Remaja’, *Jurnal Keperawatan*, 9(1), pp. 6–12.

Oktarina, R., Sari, A. . and Prakoeswa, F. R. . (2018) ‘KEPARAHAN AKNE VULGARIS’.

Pratama, A. N. W., Pradipta, M. H. and Machlaurin, A. (2017) ‘Survei Pengetahuan dan Pilihan Pengobatan Jerawat di Kalangan Mahasiswa Kesehatan Universitas Jember’, *e-Jurnal Pustaka Kesehatan*, 5(2), pp. 389–393. Available at: <https://jurnal.unej.ac.id/index.php/JPK/article/download/5871/4358>.

Priyanto, O. J. and Riyanto, P. (2016) ‘Pengaruh Penambahan Bedak Padat Terhadap Jumlah Lesi Akne Vulgaris (Penelitian Klinis Pada Mahasiswa Penderita Akne Vulgaris Yang Diberi Terapi Standar Tretinoin 0,025% + Tsf 15)’, *Jurnal Kedokteran Diponegoro*, 5(4), pp. 1434–1443.

Purwaningdyah, R. A., Jusuf, K. and Karmila, N. (2013) ‘Profil Penderita Akne Vulgaris pada Siswa-Siswi di SMA Shafiyatul Amaliyyah’, *E-Jurnal Fakultas Kedokteran USU*, 1(1), pp. 1–8.

Ra, Y., Ht, S. and Dn, F. (2013) ‘Quality of Life of Acne Vulgaris Patient in DR . H . Abdul Moeloek Hospital at Lampung Kualitas hidup pada pasien Akne Vulgaris di

RSUD DR . H . Abdul Moeloek Lampung', pp. 139–145.

Rimadhani M, R. R. (2017) 'Pengaruh Hormon terhadap Akne Vulgaris', *Berk Ilmu Kesehat Kulit dan Kelamin*, 27(3), pp. 218–24.

Sam, U., Manado, R. and Rompas, S. S. (2015) 'Hubungan Pola Makan Dengan Kejadian Acne Vulgaris Pada Mahasiswa Semester V (Lima) Di Program Studi Ilmu Keperawatan Fakultas Kedokteran Universitas Sam Ratulangi Manado', *Jurnal Keperawatan UNSRAT*, 3(1).

Sihaloho K, I. D. (2016) 'Relationship between Diet and Acne.', *Berk Ilmu Kesehat Kulit dan Kelamin*, 28(2), pp. 155–60.