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EVALUATION OF THE ACCURACY OF USING TOPICAL ANTIBIOTICS IN SELF-MEDICATION FOR ACNE VULGARIS AT THE DENPASAR REGIONAL PHARMACY

Alma Lystia Savitri Mahayasa[1], Ida Ayu Manik Partha Suthema[1], I Made Bakta[1]

[1]Clinical Pharmacy Department, Universitas Bali Internasional, Bali-Indonesia

Corresponding author email: idaayumanik85@gmail.com

ABSTRACT

Background: One of the skin problems that are often experienced by teenagers today is acne. Acne vulgaris or acne is a chronic inflammatory disease of pilosebaceous follicles which is characterized by the formation of papules, pustules, or nodules. Purpose: This study aims to provide an accurate description of the use of topical antibiotics in acne vulgaris patients and to find out which drugs are often used as self-medication for acne vulgaris. **Methods**: This research is included in a descriptive research design. Data collection was done by direct observation and recorded on the checklist sheet for Acne Vulgaris patients who did self-medication at the pharmacy. **Results**: Judging from the evaluation of the accuracy of the use of topical antibiotics in AV patients at the Denpasar Regional Pharmacy, the results obtained were 53 patients, or 92.98% of patients included in the right indication group, 57 patients, or 100%, included in the right dose group, 54 patients or 94.74% included in the right group for the duration of administration, 57 patients or 100% were included in the appropriate time interval group for administration and 100% of patients were included in the side effect alert group. The accuracy of giving antibiotics, which is included in the category of inappropriate indications by 5.71% of respondents, and inappropriate duration of administration by 5.08% of respondents. The drugs used for AV therapy are Topical Retinoids, Mediklin Gel, Mediklin TR, and Erymed. The drug most often given by pharmacists is topical antibiotics, namely Mediklin TR from the Semisynthetic Lincosamide group, as much as 38.57%. **Conclusion**: There is still suitability for prescribing topical antibiotics in acne vulgaris seen from its severity.

Keywords: Acne; Evaluation; Topical antibiotics

INTRODUCTION

One of the skin problems that are often experienced by teenagers today is acne. Acne vulgaris or more often called acne is a chronic inflammatory disease of pilosebaceous follicles that is characterized by the formation of papules, pustules, or nodules. Acne vulgaris is a common skin disorder and attacks almost all adolescents aged 16-19 years. It can even continue until the age of 30 years[1].

Acne is a multifactorial disease because many factors cause and influence the onset of acne. The factors that cause acne vulgaris in adolescents according to are the age factor that occurs in adolescents at the age of 14-17 years in women, ages 16-19 in men 80-100%[2]. Furthermore, the cosmetic factor that causes acne vulgaris is that they often use the type of powder/cream on the face. Then the last is the food factor that causes acne vulgaris, namely foods that are high in fat, foods high in carbohydrates, and foods high in iodine. This is because, towards adulthood, the body undergoes various physical, social, and psychological

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adjustments which are generally caused by hormones, one of which is the androgen hormone. The androgen hormone is a hormone that plays an active role in stimulating the body. Androgen hormone levels increase and reach a peak at the age of 18-20 years[3]. In addition to the factors mentioned above, there are several factors that can trigger acne vulgaris as well, including genetic, environmental, seasonal factors, psychological factors, skin type, and the activity of the sebaceous glands themselves[3]. Of the factors that have been mentioned, the average growth factor for acne vulgaris is the thing that we often encounter, so it is possible for someone to get acne vulgaris.

Topical antibiotics have been widely used as an effective means of treating acne vulgaris over the past 30 years. Antibiotic therapy not only reduces the number of P. acnes on the skin but also works by decreasing the number of inflammatory mediators of P. acnes. Topical therapy is usually used for the treatment of mild acne. This topical drug can act directly on the sebaceous follicles without giving the patient the risk of adverse drug effects, which may be caused by systemic drugs[4]. As the use of topical antibiotics increases, so does antibiotic resistance, with many countries reporting that more than 50% of P. acnes strains are resistant, especially to topical macrolides. Making it less effective. The Global Alliance to Improve Outcomes in Acne recommends that oral and topical antibiotics in acne vulgaris not be used as monotherapy or concurrently and that a combination of topical retinoids and antibiotics (such as benzoyl peroxide / BPO) is recommended as first-line therapy in almost all patients with acne. To minimize resistance, BPO should always be given to long-term antibiotic use if it is really needed.

The basic principles that must be considered in the appropriate use of topical antibiotics are, among others, the right indication, the right patient, the right type of antibiotic, the right dose, being aware of side effects, the right combination when needed, and considering economic aspects. However, during a preliminary study conducted by researchers at several pharmacies in the Denpasar area, many of the patients suffering from acne vulgaris came to the pharmacy and asked for drug advice and were given topical antibiotic therapy by the pharmacist. This can cause unwanted things if the topical antibiotics are administered arbitrarily without seeing the diagnosis of acne vulgaris suffered by the patient himself. This can cause resistance to topical antibiotics if the administration of topical antibiotics is not appropriate for the diagnosis of the disease. Judging from the problems experienced, the author wants to examine the evaluation of accuracy of the use of topical antibiotics for patients with Acne Vulgaris and will be carried out in several pharmacies located in Denpasar.

METHODS

This research is included in analytic observational study with a descriptive study design. Data collection was done by observing patients who did self-medication to pharmacists with complaints of acne vulgaris when buying drugs at the pharmacy. The study was conducted in several pharmacies in the Denpasar area.

RESULTS

Based on Table 1, patients suffering from Acne Vulgaris who underwent self-medication at several Denpasar Regional Pharmacies in March-May were 75 patients. Patients with inclusion criteria were patients with complaints of acne vulgaris, adolescent patients aged 13-23 years who underwent self-medication at the pharmacy, and patients who were given topical antibiotic therapy, which were 70 people, so the number of patients

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who were excluded was 5 people. Based on table 1. 17 patients with mild acne vulgaris, 53 patients with moderate AV. There are 38 genders who suffer from Acne Vulgaris in women and 32 people in men. There were 20 smoking patients (28.57%) and 50 non-smokers (71.43%). And none of the patients were on a Diet program.

Table 1. Characteristics of AV Patients in February-May 2022

Category	Frequency (f)	Presentation (%)
Diagnosis		
Mild	17	24.29
Moderate	53	75.71
Gender		
Man	32	46.71
Woman	38	54.29
Age		
16	7	10
17	14	20
18	10	14.29
19	10	14.29
20	8	11.43
21	2	2.86
22	9	12.86
23	10	14.29
Smoke		
Yes	20	28.57
No	50	71.43
Diet		
Yes	0	0
No	70	100

Precise Indication

Each drug has a specific therapeutic spectrum. For example, the use of antibiotics is indicated for infections caused by bacteria, thus, the administration of this drug is only recommended for patients who experience symptoms of a bacterial infection[5]. The right indication in this study is the use of topical antibiotics based on the presence of inflammation in Mild, Moderate and Severe Classification of Acne Vulgaris caused by P. acnes bacteria. The patient data with appropriate indications are as follows.

Table 2. Data on the accuracy of indications in patients with Acne vulgaris

Type of Therapy	Result	Number of Patient	%
Mediclin Gel	Precise Indication	16	28.07
	Incorrect Indication	1	1.75
Mediclin TR	Precise Indication	24	42.11
	Incorrect Indication	3	5.26
Benzolac Cl	Precise Indication	12	21.06
	Incorrect Indication	0	
Erymed	Precise Indication	1	1.75
	Incorrect Indication	0	
Total		**57**	**100**

Based on the data in Table 2, there are 16 patients who have the right use of Topical AB drugs on Mediklin Gel or 25.71% and 2.86%, who do not have the right indication. In Mediklin TR there are 34.29% of people who use the right drug and 2.86% who do not use the drug correctly. Then the use of Benzolac CL, Erymed and Topical Retinoids are all classified as appropriate for the use of drugs for AV indications.

The following is data that will show the suitability of drug administration given by pharmacists to Acne Vulgaris patients according to the classification of severity based on the literature as shown in Table 3 below.

The table above shows that patients with mild classification who were given topical retinoids were 18.57% including the right indication and 4.28% were given medicline TR and 1.43% were given medicline gel, where this use was not exactly indicated. In moderate AV classification, many patients were given

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Mediklin Gel by 22.86%, Mediklin TR by 34.29%, Benzolac CL by 17.14% and Erymed by 1.43% where the indication was appropriate according to the classification. In patients who experience severe acne severity, it is recommended by pharmacists to have their acne checked by a dermatologist.

Tabel 3. Appropriateness of drug administration

Diagnosis	Therapy type	Number of patients	%	Information
AV Light Classification	Retinoid Topical	13	18.57	Precise Indication
	Mediclin TR	3	4.28	Incorrect Indication
	Mediclin Gel	1	1.43	Incorrect Indication
AV Classification Moderate With Papules Pustules	Mediclin Gel	16	22.86	Precise Indication
	Mediclin TR	24	34.29	Precise Indication
	Erymed	1	1.43	Precise Indication
	Benzolac CL	12	17.14	Precise Indication

Right Dosage

The method and duration of drug administration greatly affect the effect of drug therapy. Giving excessive doses, especially for topical use drugs will be at risk of side effects. Conversely, a dose that is too small will not guarantee the achievement of the expected therapeutic level, so that one of the important factors in the success of therapy is the determination of the appropriate dose The data on the accuracy of topical antibiotic dosing in patients with mild, moderate and severe acne vulgaris are as shown in Table 4 below.

Table 4. Dosage accuracy data in AV patients

Result	Number of patients	%
Right Dosage	57	100
Incorrect Dosage	0	0
Total	**57**	**100**

Based on Table 4, the number of patients who were given the right dose of antibiotics was 57 people or 100%. So that the accuracy of the dose given by pharmacists to self-medication patients with Acne vulgaris is appropriate and in accordance with the literature.

Right Time of Giving

The results of the research on the accuracy of the duration of drug administration in patients with mild, moderate, and severe acne vulgaris with papules and pustules and severe inflammation in self-medication patients at several Denpasar pharmacies are as shown in Table 5.

Based on the data in Table 5, the number of patients who were right for the duration of antibiotic drug administration was 54 people while for those who were not right there were 3 people or 5.26%, so that 94.74% of the samples in this study were given antibiotics with the right duration of drug administration.

Appropriate Delivery Time Interval

The results of the research on the accuracy of the time interval for drug administration as seen from the self-medication given by pharmacists to patients with mild, moderate and severe acne vulgaris are as shown in table 6.

Based on the data in Table 6, there are 57 patients who have the right time interval for drug administration, so that 100% of the sample in this study suggested the right time interval for drug administration by pharmacists.

Table 5. Data on the accuracy of the duration of drug administration in AV . patients

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Antibiotic	Recommended Duration	Literature Duration	Correct		Incorrect	
			Number	(%)	Number	(%)
Mediklin TR	2 weeks	4-12 weeks	24	38.98	3	5.08
Mediklin Gel	4 weeks	4-12 weeks	17	33.90	0	-
Benzolac cl	4 weeks	4-12 weeks	12	20.34	0	-
Erymed	4 weeks	4-12 weeks	1	1.70	0	-
		Total	**54**	**94.74**	**3**	**5.26**

Table 6. Data on the accuracy of the time interval for drug administration in patients with acne vulgaris

Result	Number of patients	%
Correct	57	100
Incorrect	0	0
Total	**57**	**100**

Beware of Side Effects

Drug administration has the potential to cause side effects, namely unwanted effects that arise when administering drugs with certain therapeutic doses. The data on the results of the study on being aware of side effects in patients are seen from the information provided by pharmacists to patients regarding ESO on the drugs given and interviews with patients who have used the drugs given by the pharmacist as shown in Table 7.

Table 7 Data Alert for Side Effects in AV . patient

Result	Number of patients	Percentage (%)
There Are Drug Side Effects	-	-
No Drug Side Effects	57	100
Total	**57**	**100**

Based on the data in Table 7, the number of patients who had no drug side effects in the awareness of drug side effects was 57 patients so that 100% of the sample of this study had been given the right drug by paying attention to the side effects that might be caused by the topical antibiotic drug given.

Evaluation of Antibiotic Use

The checklist method was used to evaluate 57 patients who received topical antibiotic drug therapy for Acne Vulgaris given by the pharmacist at the time of self-medication at the pharmacy. The components that are considered in this evaluation are indications of therapy, characteristics of antibiotics (efficacy, safety, price), dose, interval, duration of administration and side effects of the drug. The results of the analysis are presented in Table 8.

Table 8. Results of a Qualitative Analysis of the Use of Antibiotics in AV Patient

Evaluation Checklist for Appropriate Use of Topical Antibiotics in AV	Appropriate (%)	Not appropriate (%)
Precise Indication	92.98	7.02
Right Dosage	100	0
Right Time of Giving	94.74	5.26
Appropriate Delivery Time Interval	100	0
Beware of Side Effects	100	0

Based on table 8 as many as 63 patients or 90% of the entire sample, it can

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be said that the use of topical antibiotics is appropriate/wise while those belonging to the inappropriate group are 7 people (10%), i.e. 4 people are classified as Incorrectly indication and 3 people are not. right in duration of administration.

DISCUSSION

1. Characteristics of Respondents

In this study, patient characteristics, including gender, age, diagnosis, smoking, and diet program, are data on characteristics of patients with acne vulgaris. Based on the characteristics, the female gender is more than the male sex with a total percentage of 54.29% and the male as much as 46.71%. The study is in accordance with the results of research conducted by that the highest prevalence is at the age of 14-17 years, where in women ranged from 83-100% and in men at the age of 16-19 years ranged from 80-95%. In general, 60-70% of women with acne lesions become more active before menstruation because of the hormone progesterone[6].

Estrogen in certain levels can suppress growth because it reduces levels of gonadotropins from the pituitary gland. Generally, acne vulgaris occurs at puberty. At this time, the androgen hormone will increase and make the oil glands attached to the hair follicles produce more sebum (oil) than usual[7].

In this study, the characteristics of patients were divided based on the diagnosis of self-medication at the Denpasar Regional Pharmacy in 2022. Based on the AV diagnosis at the Denpasar Regional Pharmacy in 2022, the diagnosis of acne vulgaris included mild AV and moderate AV by looking at the symptoms, namely in patients belonging to the AV group. Mild have open and closed comedones but no lesions, then moderate AV has inflammatory lesions such as papules and pustules with a number of lesions not more than 5.

2. Right Indication

From the results of the research data, it can be seen that the administration of topical antibiotics for AV therapy which is categorized as an inappropriate indication, is 1.75% for Mediklin Gel and 5.26% for Mediklin TR. Then the right indication is categorized as 92.98%. Topical antibiotics can be said to be appropriate indications in this case, but there are still some patients who are classified as inappropriate indications. Inaccuracy of indications is related to the inappropriateness and in selectivity of the treatment given to the patient's clinical condition. In this case, it can be seen from the complaints experienced by the patient that only closed and open comedones appear, but there is no inflammation which makes the AV experienced by the patient classified as mild. Giving the type of drug that is in accordance with the severity of Acne Vulgaris will reduce the occurrence of Topical Antibiotic resistance if given with the right indications. The selectivity of antibiotics can reduce the number of antibiotics so that they can approach the principle of rational use of antibiotics[8].

Inappropriate treatment with indications, namely the use of Mediklin TR and Mediklin Gel in patients with mild AV Classification. Based on the 2015 FK Dermatology UI reference, the therapeutic algorithm for Mild Acne Vulgaris is Topical Retinoids for the first line and Salicylic Acid for the second line. At the same time, therapy with Mediklin TR and Mediklin Gel should be intended for patients with moderate to severe acne vulgaris. Mediklin TR and Mediklin Gel contain clindamycin which is a macrolide antibiotic. This antibiotic works by binding to the 50S subunit of the microbial ribosome with a binding site, antibacterial activity, and a macrolide-like action. Mutations in chromosomes cause resistance because there is no binding to the 50S ribosomal subunit [9].

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3. Right Dose

Dosage is very influential on the therapeutic effect of the drug. Giving excessive doses will be very risky for side effects. Conversely, a dose that is too small will not guarantee the achievement of therapeutic levels expected by an antibiotic[5].

In this study, all topical antibiotics and retinoids given by pharmacists to patients with Acne Vulgaris can be categorized as correct dose or 100%. The pharmacist's recommended dose for retinoids is to apply a thin layer 1-2 times a day or every 12 hours on the affected area. Mild irritation may occur during the course of treatment with retinoids and it is therefore advisable to start with a low dose[10]. The dosage recommended by pharmacists for topical antibiotics is to apply a thin or about the size of a green bean seed to the affected area once a day at night. The use of this dose is also recommended by BPOM as much as 1 time a day and is applied thinly evenly on the part of the pimple after cleansing the face. Because when applying topical antibiotic gel/cream too much can cause the skin to feel like it burns and stings, then the skin feels dry and itchy.

4. Right Time of Giving

Based on the results of the study, it can be seen that 54 or 94.74% of patients are in the right category in the duration of drug administration, and three patients (5.26%) are in the inappropriate category, the inappropriate duration in question is the length of administration that is too fast so that the therapy the patient undergoes is too long. Based on the confirmation process carried out by the researcher to the pharmacist that the administration was too short can occur because the patient's acne condition is not too severe. However, this can lead to antibiotic resistance if the use is too short, according to the 2015 BPOM. This result is supported by the research of where the inappropriate use of antibiotics is mainly due to the short duration of drug administration or less than the duration of administration which should lead to an increase in antibiotic resistance[11]. Several countries report that more than 50% of P. acnes strains are resistant, especially to topical macrolides, so that therapy becomes less effective. The effects of antibiotic resistance against P. acnes in acne vulgaris patients can be in the form of decreased response or recurrence immediately after therapy, the potential for increased pathogenicity of P. acnes, and the possibility of transferring resistance to other pathogenic organisms[12].

5. Appropriate Delivery Time Interval

The pharmacodynamic activity of antibiotics is based on the concept of time-dependent vs. concentration-dependent antibiotics, meaning that the antibiotic work will be maximized if the interval of antibiotic administration is correct[13]. Antibiotics that must be taken three times a day must mean that the drug must be taken at intervals of every 8 hours[5]. The duration of antibiotic administration is very important because if an antibiotic does not work in accordance with the duration of its use, it will result in the tolerance of microorganisms that have not been completely destroyed so that they become resistant bacteria[14]. Giving drugs that are too short or too long will affect the results of treatment[5]. Prolonged use of topical antibiotics will not significantly reduce symptoms but will cause side effects such as dryness and burning of the skin, and rashes on the skin.

In this study, the accuracy of the time interval for drug administration showed exactly as many as 57 people (100%), which means all patients received topical antibiotic therapy in accordance with the prescribed time interval. Administration of topical antibiotics in accordance with the time interval of administration can reduce the risk of antibiotic resistance[15].

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6. Beware of Drug Side Effects

In this study, patients who experienced side effects were none, and those who did not experience drug side effects were 57 patients or 100%. Be aware of the side effects of administering drugs that have the potential to cause side effects, namely unwanted effects that arise when administering drugs with therapeutic doses. Therefore a red face after administration of atropine is not an allergy but a side effect related to vasodilation of blood vessels in the face[16].

The side effects of giving topical antibiotics arise due to several factors, such as improper dosing. Besides being able to thwart therapy, it can also cause other dangers, such as resistance, supra-infection, and negative side effects. Intrinsic factors of drugs, namely the nature and potential of drugs to cause side effects, such as drug selection, duration of drug use, and interactions between drugs. 1) Drug selection. Each drug certainly has a different mechanism of action, a different place of action, and of course, different effects. Therefore, you must also watch out for side effects that may occur from the drugs consumed). 2) Duration of drug use. Side effects of some drugs can arise if taken for a long time[11]. In this study, none of the respondents who had used topical antibiotics experienced any side effects caused by the use of these antibiotics because the dosage recommended by the pharmacist was correct.

7. Evaluation of Use of Antibiotics Checklist Method

Based on the results of the percentage results of the checklist evaluation of the accuracy of the use of topical antibiotics in acne vulgaris patients in several pharmacies in the Denpasar area, there are five indicators for assessing drug accuracy, namely Right Indication, Right Dosage, Right Duration of Administration, Right Interval Time of Administration and Beware of Drug Side Effects (4T). +1W). The entire study sample was assessed for the accuracy of the drugs given based on the literature that was used as a reference to assess pharmacists in carrying out their role for self-medication in patients who came to the pharmacy. Based on the results of the study, it was found that 63 patients, or 90% of patients, belonged to the right/wise group in the use of topical antibiotics, while seven patients (10%) belonged to the inappropriate group in the use of topical antibiotics. Of the seven patients, 4 were included in the inappropriate indication, and three were not appropriate for the duration of the use of the topical antibiotic.

In this study, it can be categorized that the use of topical antibiotics in patients with mild, moderate acne vulgaris with inflammatory papules & pustules and severe acne is appropriate. This is because pharmacists who provide information regarding the use of AV drugs are quite competent and have good knowledge regarding the treatment of Acne vulgaris.

Although the number of inappropriate use of topical antibiotics is not very high, this cannot be ignored. The inaccuracy of indications in drug administration must be considered more deeply to give drugs according to the classification and severity of Acne vulgaris so that pharmacists are not wrong in giving drugs, especially for giving topical antibiotics to patients suffering from mild acne vulgaris. According to FK UI in 2015, the right algorithm for the treatment of acne vulgaris based on the severity of AV at a mild degree is not using topical antibiotics but retinoids or salicylic acid. Topical retinoids work to clear and prevent the formation of micro-comedones, which are precursors to acne-prone lesions. So it is more recommended for patients with mild AV classification without inflammation. The use of topical antibiotics that are not

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in accordance with the diagnosis can lead to antibiotic resistance[17].

CONCLUSION

Based on the results of the research that has been done, the following conclusions can be drawn: Judging from the description of the evaluation of the accuracy of the use of topical antibiotics in AV patients at several pharmacies in Denpasar, the results obtained were 53 patients or 92.98% of patients included in the right indication group, 57 patients or 100% included in the right dose group, 54 patients or equal to 94.74% belong to the right group for the duration of administration, 57 patients or 100% are included in the right time interval group for administration, and as many as 57 patients or 100% of the patients are included in the side effect alert group. Judging from the use of topical therapy in AV patients at the Denpasar Regional Pharmacy, the drugs used are Topical Retinoids, Mediklin Gel, Mediklin TR, and Erymed. The drug most often given by pharmacists is topical antibiotics, namely Mediklin TR from the Semisynthetic Lincosamide group as much as 38.57%.

CONFLICT OF INTEREST

There is no conflict of interest in this article. This article is written independently without the involvement of other parties who could improperly influence this article.

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