Original Article
MVP Journal of Medical Sciences, *Vol 6(1), 72-77, January-June 2019*
ISSN (Print) : 2348–263X
ISSN (Online) : 2348-2648
DOI: 10.18311/mvpjms/2019/v6i1/18602

Study of Drug Utilization Pattern in Acne Vulgaris in Skin Outpatient Department in Tertiary Health Care Centre

Sameer Balasaheb Dharrao[1] and Premsaroj Bansilal Bhansali[2*]

[1]PG Resident, Department of Pharmacology, Dr. Vasantrao Pawar Medical College Hospital & Research Centre, Nashik - 422003, Maharashtra, India; dr.sameerd007@gmail.com
[2]Professor & Head, Department of Pharmacology, Dr. Vasantrao Pawar Medical College Hospital & Research Centre, Nashik - 422003, Maharashtra, India; drpremsarojbhansali@rediffmail.com

Abstract

Background: Acne vulgaris is common skin disorder which dermatologists come across in day to day practice. Drug utilization studies are very useful to explore role of drugs in the society. It involves prescription, distribution, marketing and use of drugs and its different consequences like medical and socio-economic. **Aims and Objective:** To obtain information of drug prescription pattern in acne vulgaris in skin outpatient department and to evaluate pattern of prescription using World Health Organization (WHO) drug use prescribing indicators. **Material and Methods:** This was cross sectional observational study conducted by department of pharmacology in dermatology OPD in medical college and tertiary care centre from August 2015 to December 2017. During study period total 414 prescriptions of acne patients were analysed. **Results:** Out of 414 patients 226 (54.59%) were females and 188 (45.41 %) were males with male to female ratio was 1:1.20. Majority of patients belonged to 21-25 years (38.90%) followed by 15-20 (36.48%), 26-30 (18.59%), 31-35 (4.59%) and 36-40 (1.44%) with Mean age of 22.74 years. Grade II (52.66 %) consists of the majority of patients while others Grade I (35.27%), grade III (10.14%) and grade IV (1.93%). Monotherapy was prescribed in 35.26% cases and polytherapy in 64.74% cases. A total number of 950 drugs were prescribed out of them 306 (32.21%) were oral and 644 (67.79%) were topical, percentage of total fixed dose combination of topical preparations were 4%. Average number of drugs per prescription were 2.29. All drugs prescribed by prescribers are in brand names 76% (722 out of 950) of drugs were prescribed from national essential medicines list (NELM, 2015) and 19th WHO list of essential medicines, April 2015. **Conclusion:** Percentage of drugs prescribed in this study from National List of Essential Medicines (NLEM) was satisfactory but shows complete use of Non-Generic (Branded) drugs. The prescription audit or the drug utilization studies can be used as further basis for the prescribers. Periodic drug audits must be conducted to reduce errors, make prescription rationalize and for effective management of acne vulgaris.

Keywords: Acne Vulgaris, Drug Utilization Pattern, WHO Drug Prescribing Indicators

1. Introduction

Acne vulgaris is common skin disorder encountered in skin outpatient department in day to day practice. Acne can be defined as chronic inflammatory disease of pilosebaceous units. It is multifactorial in origin. It manifests in various clinical forms like erythematous papules comedones seborrhoea, and pustules, less commonly deep pustules, pseudocysts and nodules. Sometime results in scarring. There are four pathogenic mechanisms involve in development of acne, infection by Propionibacterium acne (P. acne), inflammatory products, increase in sebum production and follicular hyperkeratinization[1].

*Author for correspondence

Drug utilization studies are very useful to explore role of drugs in the society. It involves prescription, distribution, marketing and use of drugs and its different consequences like medical and socio-economic[2].

In recent day to day medical practice irrational use of drugs is a major problem, its various drawbacks are less or ineffective treatment, unnecessary prescription which leads to adverse effects and financial burden on patients. Use of the minimum number of drugs to get ultimate possible effect in shortest possible period and in a reasonable cost is considered as rational drug prescribing. Periodic assessment of prescriptions is necessary to decrease adverse effects, to increase the therapeutic effect, and provide useful feedback to prescribing doctors[3].

This study was undertaken to describe the prescribing pattern of prescriptions in acne vulgaris patients in dermatology OPD of medical college and tertiary health care centre in order to enhance rational prescribing.

2. Material and Methods

This was cross sectional observational study conducted by pharmacology department in dermatology outpatient department of Dr. Vasantrao Pawar Medical College and Tertiary Health Care Centre, Nashik, Maharashtra from the period August 2015 to December 2017. A total 414 randomly selected patients of acne vulgaris, attending dermatology OPD, after fulfilling eligibility criteria were included in study. Written informed consent was obtained. Institutional ethical committee approval was taken. The data was obtained from patient's prescriptions and noted in predesigned proforma i.e. case record forms and analyzed as per drug use prescribing indicators of World Health Organization (WHO)[4].

2.1 Patient Selection

2.1.1 Inclusion criteria

Newly diagnosed patients of acne vulgaris irrespective of age and gender willing to participate were included in this study.

2.1.2 Exclusion Criteria

- Patients not willing to give consent.
- Patients associated with other skin conditions e.g. eruptive skin conditions.
- Drug eruption acne.
- Pregnancy and lactating mothers.

3. Results

A total 414 prescriptions of acne patients were analysed.

Table 1. Gender distribution

Gender distribution	Number	Percentage
Male	188	45.41%
Female	226	54.59 %
Total	**414**	**100 %**

Out of 414 patients 226 (54.59%) were females and 188 (45.41%) were males.

The male to female ratio was 1:1.20 (Table 1).

Table 2. Age distribution

Age group (in years)	Number	Percentage
15-20	151	36.48 %
21-25	161	38.90 %
26-30	77	18.59 %
31-35	19	4.59 %
36-40	6	1.44 %
Total	**414**	**100 %**

Patients having age between of 21-25 years consists of 38.90% followed by 15-20 years (36.48%), 26-30 years (18.59%), 31-35 years (4.59%) and 36-40 years (1.44%) (Table 2). Can age of 22-74 years.

Table 3. Distribution as per grade of acne

Grade of acne	Number	Percentage
I (comedones, occasional papules)	146	35.27 %
II (comedones, many papules, few pustules	218	52.66 %
III (predominantly pustules, nodules and abscesses)	42	10.14 %
IV (mainly cysts or abscesses, widespread scarring)	08	1.93 %

Grade II (52.66 %) consists of the majority of cases while others are Grade I (35.27%), Grade III (10.14%) and Grade IV (1.93 %) (Table 3).

Table 4. Type of prescription

Type of prescription	Number of prescriptions	Percentage
Monotherapy	146	35.26 %
Polytherapy	268	64.74 %

Monotherapy was prescribed in 35.26% cases and polytherapy in 64.74% cases (Table 4).

Table 5. Analysis of prescription

Number of prescriptions	414
Total number of prescribed drugs	950
Total number of oral route drugs prescribed	306 (32.21%)
Total number of topical route drugs prescribed	644 (67.79 %)
Average number of drugs prescribed per prescription	2.29

Total 950 drugs were prescribed in 414 prescriptions. Average number of drugs per prescription were 2.29. Out of 950 drugs prescribed 306 (32.21%) were oral and 644 (67.79%) were topical (Table 5).

Table 6. Frequency and percentage of different oral drugs

No. of drugs	No. of encounters (n=268)
Single drug	230 (85.82)
Azithromycin	136 (50.75)
Doxycycline	94 (35.07)
Two drugs	38 (14.18)
Azithromycin + Isotretinoin	25 (9.32)
Doxycycline + Isotretinoin	13 (4.85)

Azithromycin (50.75%) was most commonly prescribed oral antibiotic while doxycycline consists of (35.07%) (Table 6 and Diagram 1).

Benzoyl peroxide was most frequently prescribed topical agent as monotherapy (20.04%) as well as polytherapy (34.05 %) followed by Adapalene (15.23%) as monotherapy and (30.68%) as polytherapy. Clindamycin was most commonly used topical antibiotic (Table 7 and Diagram 2).

Table 7. Frequency and percentage of different topical drugs

No. of drugs	No. of encounters (n=414)
Single drug	146 (35.27)
Benzoyl peroxide	83 (20.04)
Adapalene	63 (15.23)
Two drugs	268 (64.73)
Benzoyl peroxide + Clindamycin	141 (34.05)
Adapalene + Clindamycin	127 (30.68)

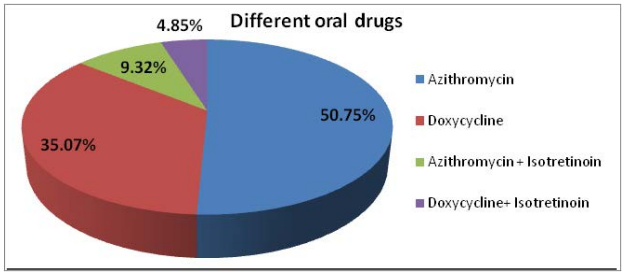

Diagram 1. Distribution of different oral drugs prescribed among acne prescriptions

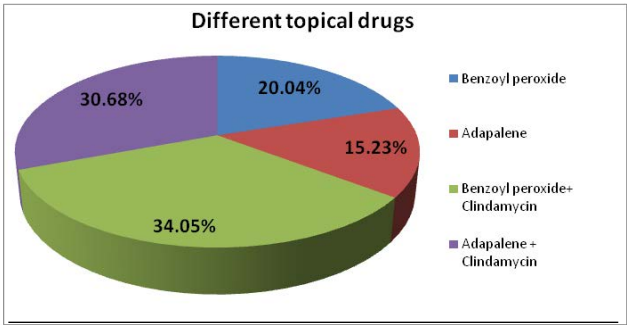

Diagram 2. Distribution of different topical drugs prescribed among acne prescriptions.

Table 8. Fixed dose combinations of topical preparations

Total no. of fixed dose combinations	38
Clindamycin + Adapalene	23 (60.52%)
Clindamycin + Benzoyl peroxide	15 (39.48%)

In fixed dose combinations of topical preparations Clindamycin + Aadapalene accounts for 60.52% followed by Clindamycin + Benzoyl peroxide (39.48 %) (Table 8).

Percentage of total fixed dose combination of topical preparations = 4%.

Table 9. Drugs used as per grade of acne

Grade of acne	Oral	Topical
I	-	Benzoyl peroxide/ Adapalene
II	Azithromycin/ Doxycycline	Benzoyl peroxide/ Adapalene and Clindamycin
III	Azithromycin/ Doxycycline and/ or Isotretinoin	Benzoyl peroxide/ Adapalene and Clindamycin
IV	Azithromycin/ Doxycycline and/or Isotretinoin	Benzoyl peroxide/ Adapalene and Clindamycin

Protocol of treatment for different grades of acne are,

Grade I – topical agents – Benzoyl peroxide/Adapalene

Grade II – topical agents (Benzoyl peroxide/Adapalene) + topical antibiotic (Clindamycin) + oral antibiotic (Azithromycin/Doxycycline)

Grade III - topical agents (Benzoyl peroxide/Adapalene) + topical antibiotic (Clindamycin)/Fixed drug combination + oral antibiotic (Azithromycin/ Doxycycline) and or Isotretinoin.

Grade IV- topical agents (Benzoyl peroxide/Adapalene) + topical antibiotic (Clindamycin)/ Fixed drug combination + oral antibiotic (Azithromycin/ Doxycycline) + Isotretinoin (Table 9).

Table 10. WHO drug prescribing indicators

Indicator	Value
Average number of drugs per encounter	2.29
Percentage of drugs prescribed by generic name	0 %
Percentage of encounters with antibiotic prescribed	64.73 %
Percentage of encounters with an injection prescribed	0 %
Percentage of drugs prescribed from essential drug list	76 %

Average no. of drugs prescribed per encounter was 2.29%. All drugs prescribed by brand names. 76% (722 out of 950) of drugs were prescribed from national essential medicines list (NELM, 2015) (Table 10).

4. Discussion

4.1 Gender Distribution

As shown in (Table 1), in the present study, 188 patients were male and 226 were females with male to female ratio 1:1.20, which is comparable with study[5] where sex ratio was 1:1.29, study[6] where sex ratio was 1:1.07, study[7] having sex ratio 1:1.33, as well with study[8] where sex ratio was 1:1.41. Above studies including this study observed higher number of female patients attending skin outpatient department for acne vulgaris.

4.2 Age Distribution

As shown in (Table 2), in present study, majority of patients belongs to 15-25 years age group (75.36%) followed by 26-40 years age group (24.63) ,which is comparable with study[7] where majority of patients were from 15-25 years age group (64.12%) followed by 26-40 years age group (32.94), similarly in the study[5] majority of patients were from 10-25 years age group (69.83%) followed by 26-45 years age group (23.96%).

In present study patients had mean age of 22.74 which is comparable to study[7] where mean age was 22.79, also study[6] where mean age was 21.67.

Above studies including present study observed higher number of younger age peoples affected with acne vulgaris.

4.3 Distribution as per Grade of Acne

As shown in (Table 3), in present study majority of patients were of grade II acne (52.66%) which is comparable to study[5] where majority of patients were of grade II acne (60%), similar finding was seen in study[8] where majority of patients were grade II acne (44.76%).

4.4 Type of Prescription

As shown in (Table 4), in present study monotherapy accounts for 146 (35.26%), 268 (64.74%) which is comparable with study[5] where polytherapy (93.80%) is more than monotherapy (6.20%)

4.5 Route of Administration of Drugs

As shown in (Table 5), in present study, out of 950 drugs 306 (32.21%) drugs given by oral route and 644 (67.70%) given by topical route, comparable with studies[5] 44.74%

by oral and 52.56% by topical, and 41.50% by oral and 58.50% by topical[6] where drugs given by topical route were more than drugs given by oral route for acne vulgaris.

4.6 Utilization Pattern of Different Oral and Topical Drugs

In present study Azithromycin (50.75%) was most frequently prescribed oral antibiotic followed by antibiotic doxycycline (35.07%) which is comparable with study[8] where Azithromycin was more common (38.64%) followed by doxycycline (28.41%.). Study[6] Azithromycin was most frequent (85.78%). While in study[5] doxycycline was most common (54.18%).

In present study Benzoyl peroxide was most frequently prescribed topical agent as monotherapy (20.04%) as well as polytherapy (34.05%) followed by Adapalene (15.23%) as monotherapy and (30.68%) as polytherapy which is comparable with other studies[6-9].

In present study Clindamycin was most commonly used topical antibiotic which is consistent with study[6,9].

In present study topical fixed dose combinations were 4% which is consistent with study 4.39%[9], and 3.08%[6].

5. WHO Drug Prescribing Indicators

5.1 Average Number of Drugs Per Encounter

Average number of drugs prescribed per prescription were 2.29 which is comparable with study[8] 2.49, and 3.03[5] while it was higher in study 4.01[9], and 4.76[6].

5.2 Percentage of Drugs Prescribed by Generic Name

In present study drugs prescribed by brand names are 100%, which is consistent with study[6] 100% by brand names while in study[9] about 48% drugs prescribed by brand names and 52% by generic name.

In present study non-prescription of drugs by generic name may be due to concern of their quality.

5.3 Percentage of Prescriptions with Antibiotic Prescribed

In present study percentage of prescriptions with antibiotic prescribed were 64.73% which is comparable with study[9] where percentage of prescriptions with antibiotic prescribed were 75.26%.

5.4 Percentage of Drugs Prescribed from National Essential Drug List[10]

In present study 75% of drugs were prescribed from essential drug list which is comparable with study[9] 65%, while it is higher than study[6] 39%.

6. Conclusion

In present study percentage of drugs prescribed from national essential medicines list (NLEM) was found to be satisfactory but shows use of branded (Non-Generic) drugs. Drug utilization studies can be used as further basis for the prescribing doctors. Such periodic audits must conduct to reduce errors, rationalize prescriptions and provide effective treatment of acne vulgaris. Drug utilization studies have the power to make objective evaluation as well as analysis of prescribers work and help them by giving feedback about their way of practice. This will help to determine and employ rational use of drugs among population. The hospital administration can implement a formulary into the hospital so dermatologist, treating physicians, or concern prescribers should restrict their prescribing for effective therapy to the patients. Prescriber must prescribe the drugs in generic names. This study helps to give feedback to the treating doctors, by improving patient care by the way of rational prescribing of drugs. It is recommended that there is a need for all doctors to work together to establish rational and practical protocol for various clinical conditions and also to take educational initiative to encourage appropriate and rational use of drugs.

7. References

1. Ebling FJG, Cunliffe WJ. Disorders of sebaceous glands. In: Rook / Wilkinson/ Ebling, *Textbook of dermatology*, Fifth edition, vol.4, chapter 38, Willey-Blackwell publication p. 1699-744.
2. World health organization, Introduction to drug utilization research, Geneva; 2003, p. 6-48.
3. Santosh Kumar, Shaktibala Dutta, Mirza Atif Beg, Anil Kumar Mehta, Mohammad Anjoom, Saubhagya Sindhu. Drug utilization pattern in acne vulgaris in skin outpatient's department of a tertiary care teaching hospital at Dehradun, Uttarakhand, International Journal of Medical Science and Public Health. 2014; 3(7):855-58.

4. WHO, How to investigate drug use in health facilities; selected drug use indicators, Geneva, World health organization 19993; WHO/DAP/93.1.
5. Nibedita Patro, MonalisaJenna, Maitreyee Panda, Mrutyunjay Dash. A study on the prescribing pattern of drugs for acne in a tertiary care teaching hospital in Odisha, Journal of CLINICAL and Diagnostic Research. 2015; 9(3): WC04-WC066.
6. Santosh Kumar, Shaktibala Dutta, Mirza Asif Beg, Anil Kumar Mehta, Mohammad Anjoom, Saubhagya Sindhu. Drug utilization pattern in acne vulgaris, International Journal of Medical Science and Public Health. 2014; 3:855-58. https://doi.org/10.5455/ijmsph.2014.120420142.
7. Vinay Sharma, Anurag Bajpai. Study of prescription pattern for acne vulgaris in dermatology OPD in a tertiary care teaching hospital, International Journal of Medical Research Professionals. 2016; 2(2):316-19.
8. Nandini T, Shivprasad K, Padmanabha TS, Purushotham K, Narendra G. A prospective study of pattern of prescription for acne vulgaris in a tertiary care hospital: An observational study, Int. J. Basic and Clin. Pharmacology. 2016; 5(6):2357-61.
9. Agrawal Sneha, Pillai Ajit, Singh Anil, Parik Reena, Bhuptani Neeta. Drug utilization study of medications used for acne vulgaris in a tertiary care hospital, EJBPS. 2016; 3,11,311-15.
10. National list of essential medicines in India 2015. Accessed on 25 September 2017. www.pharmaceuticals.gov.in/pdf / NLEM.pdf.

How to cite this article: Dharrao SB, Bhansali PB. Study of Drug Utilization Pattern in Acne Vulgaris in Skin Outpatient Department in Tertiary Health Care Centre. MVP J. Med. Sci. 2019; 6(1):72-77.