

## Prospective Study on Utilization Pattern of Corticosteroids on DVL Patients at a Tertiary Care Teaching Hospital.

Aswin Leethiyal.A<sup>1\*</sup>, Gayathri.M<sup>1</sup>, Dr.Mahesh Kumar.V.P<sup>1</sup>, Dr.Kannambal. K<sup>2</sup>

<sup>1</sup>Department of Pharmacy, Annamalai University, Chidambaram, Tamilnadu.

<sup>2</sup>Department of DVL, RMMCH, Chidambaram, Tamilnadu.

\*Corresponding Author : AswinLeethiyal. A

Department Of Pharmacy, Annamalai University, Chidambaram, Tamil Nadu, India.

---

### Abstract:

**BACKGROUND:** Corticosteroids are steroid hormones secreted by adrenal cortex. It is extremely useful in the treatment of skin disorders. They have an important role because of their anti-inflammatory, immune-suppressive and anti-proliferative effect on keratinocytes. **AIM:** To study the utilization pattern of corticosteroids for various dermatological condition at a tertiary care teaching hospital. **METHODOLOGY:** A hospital based prospective observational study for 6 months on Rajah Muthiah Medical College, Chidambaram by enrolling outpatient and inpatient considering study criteria. Prescription with atleast one steroid were collected and analysed for utilization pattern of corticosteroids. **RESULTS:** Out of 75 patients studied, females (76%) were highly prescribed with corticosteroids than males (24%). Age group of 51-60 (25.3%) were highly prescribed with corticosteroids. Corticosteroids were highly indicated for dermatitis (34.3%). Prednisolone (47.9%) were highly prescribed. **CONCLUSION:** The drugs were prescribed rationally, and clinical pharmacist were involved in the patient counselling regarding the misuse of corticosteroids. Also involved in the early detection and prevention of Adverse Drug Reaction. Utilization pattern of corticosteroids varies for different hospital sectors.

**Keywords:** Corticosteroids, Utilization Pattern, Prednisolone, Adverse Drug Reaction.

---

Date of Submission: 14-11-2021

Date of Acceptance: 29-11-2021

---

### I. Introduction

Corticosteroids are steroid hormones secreted by adrenal cortex. Corticosteroids are the drugs which lower the inflammation in the body. They are involved in a wide range of physiologic systems such as stress response, immune response, regulation of inflammation, carbohydrate metabolism, protein catabolism, blood electrolyte levels, and behaviour. Drugs belonging to this class are **glucocorticoids** and **mineralocorticoids**.

Corticosteroids are widely used in all the field of medicine and it is also extremely useful in the treatment of **skin disorders**. It has an important role in dermatology because of their **anti-inflammatory, immunosuppressive** and also **anti-proliferative effects** on keratinocytes. Corticosteroids are used in different dosage forms like systemic, oral, topical, inhalation etc.

Unfortunately, corticosteroids are increasingly being abused or misused. As a result, the problem of steroid phobia is being increasingly recognized by physicians worldwide. It increases the risk of poor clinical response and treatment failure. So proper patient counselling should be given to the patients regarding the usage of corticosteroids and their related side effects due to their prolonged usage. Topical corticosteroids are mostly misused than systemic and oral corticosteroids.

In order to improve the rational use of drugs, the pharmacists have an important role in identifying and solving the problems which has correlation with the use of drugs and actual Drug Related Problems (DRP). DRPs are usually caused by the increased number of drugs that were consumed by the patient (poly-pharmacy) to overcome the suffering diseases.

In our study, dosage forms such as systemic, oral and topical are taken into account. From the observation, corticosteroids were prescribed for the following diseases: **various types of psoriasis, dermatitis, pemphigus**, and also for **leprosy, systemic sclerosis, erythema nodosum, urticaria, vasculitis** and **bullous pemphigoid**.

## II. Material And Methods

**Study Design :** Prospective Observational Study.

**Study Site:** Department of DVL, RajaMuthiah Medical College Hospital, Annamalai University, Annamalai Nagar, Tamil Nadu.

**Study Peroid:** November 2019 - April 2020 (6 months).

**Study Size** : 75 patients.

**Inclusion Criteria:**

1. Patients of both gender of above 12 years of age.
2. Both inpatients (IP) and outpatients (OP) in the department of DVL.
3. Patients who are on the treatment of corticosteroids.

**Exclusion Criteria:**

1. Patients who are unwilling to participate.
2. Lactating and pregnant women.

**Study Subject Recruitment Procedure:**

The recruitment of subjects was carried out with the help of physician who has knowledge of patient's medical history. The patient information form includes the details such as patient age, gender, I.P number, past medical and medication history, drug chart details, prescribed dosage, frequency, route of administration and clinical diagnosis. The study procedure was completely explained to the patient/ patient's caretaker and patient consent form will be collected from them. Subjects were selected based on exclusion and inclusion criteria.

## III. Results

A total number of 75 patients were enrolled in our study. All enrolled patients completed the study. Females (76%) were highly prescribed with corticosteroids than males (24%). Patients between the age group of 51-60 were highly prescribed with corticosteroids of about 25.3% (19 patients) and the patients between the age group of 71-80 were least prescribed with corticosteroids of about 4% (3 patients). Corticosteroids were highly prescribed for dermatitis of about 34.3% (25 patients), next to it, prescribed for leprosy of about 16.4% (12 patients) and prescribed least for scabies of about 1.4% (1 patient). Oral corticosteroids were highly prescribed of about 47.94% (35 prescriptions) and systemic corticosteroids were least prescribed of about 12.33% (9 prescriptions). 26.7% (20 prescriptions) were prescriptions with interactions and 73.3% (55 prescriptions) were prescriptions without interaction. Cost effective analysis for oral corticosteroids were done. Oral corticosteroid prednisolone was prescribed in most of the prescriptions. Here, we took wysolone 20 mg OD and did cost analysis for four diseases include dermatitis, pemphigus, psoriasis and leprosy, which were highly prescribed with corticosteroids in this study.

**Table 1:** Gender wise distribution of patient

| GENDER | NO. OF PATIENTS | PERCENTAGE (%) |
|--------|-----------------|----------------|
| Male   | 18              | 24             |
| Female | 57              | 76             |

In this study, females were highly prescribed with corticosteroids.

**Table 2:** Age wise Distribution

| AGE   | NO. OF PATIENTS | PERCENTAGE (%) |
|-------|-----------------|----------------|
| 13-20 | 8               | 10.7           |
| 21-30 | 11              | 14.7           |
| 31-40 | 15              | 20             |
| 41-50 | 12              | 16             |
| 51-60 | 19              | 25.3           |
| 61-70 | 7               | 9.3            |
| 71-80 | 3               | 4              |

In this study, the age group between 51-60 were highly prescribed with corticosteroids.

**Table 3:** Indications for Corticosteroids Prescribed

| INDICATION                 | NO. OF PATIENTS | PERCENTAGE(%) |
|----------------------------|-----------------|---------------|
| Psoriasis                  | 10              | 13.7          |
| Sclerosis                  | 4               | 5.5           |
| Vasculitis                 | 2               | 2.7           |
| Urticaria                  | 2               | 2.7           |
| Bells Palsy                | 2               | 2.7           |
| Scabies                    | 1               | 1.4           |
| Polymorphic Light Eruption | 3               | 4.1           |
| Bullous Pemphigoid         | 3               | 4.1           |
| Dermatitis                 | 25              | 34.3          |
| Vitiligo                   | 4               | 5.5           |
| Leprosy                    | 12              | 16.4          |
| Pemphigus                  | 5               | 6.9           |

In this study, corticosteroids were highly prescribed for dermatitis.

**Table 4:** Types of Corticosteroids

| TYPE OF CORTICOSTEROID | NO. OF PRESCRIPTION | PERCENTAGE (%) |
|------------------------|---------------------|----------------|
| Systemic               | 9                   | 12.33          |
| Oral                   | 35                  | 47.94          |
| Topical                | 29                  | 39.73          |

Oral route of administration was highly prescribed in this study.

**Table 5:** Interaction of Corticosteroids

| CATEGORY                          | NO. OF PRESCRIPTIONS | PERCENTAGE (%) |
|-----------------------------------|----------------------|----------------|
| Prescriptions with Interaction    | 20                   | 26.7           |
| Prescriptions without interaction | 55                   | 73.3           |

In this study, mostly the prescription were without interaction.

**Table 6:** Category of Interaction

| INTERACTIONS | NO. OF PRESCRIPTION | PERCENTAGE(%) |
|--------------|---------------------|---------------|
| Potential    | 11                  | 55            |
| Moderate     | 5                   | 25            |
| Both         | 4                   | 20            |

Among the prescription with interaction, potential interaction was highly noted. It was taken into the care of physician and the drugs which cause potential interaction were replaced with the non-interactive drugs of corresponding category.

**Table 7:** Cost Effective Analysis of Corticosteroids

|  | DERMATITIS | PEMPHIGUS  | PSORIASIS | LEPROSY  |
|--|------------|------------|-----------|----------|
| Cost per tablet (in rupees)              | 2.48/-     | 2.48/-     | 2.48/-    | 2.48/-   |
| Duration of treatment                    | 10-21 days | 1-3 months | 2 weeks   | 4 months |
| Total cost for the treatment (in rupees) | 52.16/-    | 226.04/-   | 34.77/-   | 303.04/- |

Based on cost effective analysis did for oral corticosteroid prednisolone 20 mg for four diseases, the conclusion drawn was the cost of treatment varies depending on the duration of treatment and the severity of the disease on the DVL patients.

#### IV. Discussion

The study on utilization pattern of corticosteroids in DVL department conducted in various hospital setting at different places across India has been reviewed, discussed and compared with this study.

The study conducted at a tertiary care teaching hospital in Karnataka region result shows that corticosteroid was mostly prescribed for **males** at a age group of **50-60**. The mostly prescribed drug was **Prednisolone** among oral corticosteroids,

**clobetamol** among topical and **Intermediate acting prednisolone** among systemic corticosteroid. The most commonly prescribed type of corticosteroid was oral route.

The study conducted at a tertiary care teaching hospital at Odisha result shows that **males** were highly prescribed with corticosteroids at a age group of 21-30. **Topical** corticosteroid was highly prescribed. **Potent drug interaction** was highly identified.

The study conducted at a tertiary care teaching hospital at Salem result shows that corticosteroid was highly prescribed for the indication of **Psoriasis** followed by Pemphigus Vulgaris and leastly prescribed for Eczema and Bullos Pemphigoid. **Systemic** corticosteroid was highly prescribed.

The study conducted at tertiary care teaching hospital at North India result shows that **females** were highly prescribed with corticosteroids and mostly prescribed at a age group of **31-40**. Indication for which corticosteroid mostly prescribed was **Psoriasis** followed by urticaria and leastly prescribed for **Tinea corporis**. **Systemic** corticosteroid was mostly prescribed. **Potent drug interaction** was highly detected.

The result of our study was **females** were highly prescribed of corticosteroids at a age group of **51-60**. Indications for which corticosteroids highly prescribed was **Dermatitis** followed by Leprosy and leastly prescribed for scabies. **Oral** corticosteroid was highly prescribed and **potent drug interaction** was highly seen.

By reviewing all the above studies, as the utilization pattern of corticosteroids varies for different hospital sectors depending upon the sample size, inclusion and exclusion criteria, the place and occupation of the patient, we cannot predict a particular gender and age group will receive a particular dosage form of corticosteroid.

#### V. Conclusion

In this study, corticosteroids were highly indicated for dermatitis. Dosage forms such as oral, systemic and topical were prescribed in which oral corticosteroids were highly prescribed. Among oral corticosteroids, prednisolone (Wysolone) were highly prescribed. Most of the prescriptions were without interaction. No adverse drug reaction was noted. Cost effective analysis was done for dermatitis, psoriasis, pemphigus and leprosy among the enrolled patients taking oral corticosteroid. The cost of treatment varies depending on the duration of treatment and severity of the disease. The study concludes that the utilization pattern of corticosteroids varies for different hospital sectors depending upon the exclusion and inclusion criteria. So we cannot predict a particular gender and age group will receive a particular dosage form of corticosteroid.

## References

- [1]. National Library of Medicine, History of the Development of Corticosteroid Therapy TGBenedek, Clin Exp Rheumatol. sep – oct 2011. [Accessed sep-oct 2011:29(5 suppl 68):S-5-12. Epub 2011 oct 21]
- [2]. Experimental and Clinical Pharmacology, The Role of the Corticosteroids in the Dermatology, Michael Lee and Robin Marks, Aust Prescr 1998, 21:9-11, 1 January 1998, DOI:10.18773/austprescr.1998.010. Available at: <https://www.nps.org.au/australian-prescriber>.
- [3]. Indian Journal of Dermatology, Use of Topical Corticosteroids in Dermatology: An Evidence-based approach, Anupam Das and Saumya Panda 2017 may-jun ;62(3):237-250. doi:10.4103/ijd.IJD-169-17. Available at: <https://www.ncbi.nlm.nih.gov/pmc> Adrenal Glands, Johns Hopkins Medicine, Available at: <https://www.hopkinsmedicine.org>
- [4]. Adrenal Gland Hormones – Canadian Cancer Society Available at: <https://www.cancer.ca/en/cancer>
- [5]. Rheumatic disease clinics of North America, Corticosteroids – Mechanism of Action in Health and Disease, Sivapriya Ramamoorthy and John A. Cidlowski, 2016 feb;42(1):132. doi:10.1016/j.rdc.2015.08.002.
- [6]. Corticosteroids Pharmacology, Pharmacology of Corticosteroids, march 21, 2018.
- [7]. Annals of Rheumatic Disease, Psoriasis: Epidemiology, clinical features, and quality of life, RGB Langley, GG Krueger, CEM Griffiths Available at: <http://dx.doi.org/10.1136/ard.2004.033217>
- [8]. Corticosteroids Pharmacology, Pharmacology of Corticosteroids, march 21, 2018.
- [9]. Annals of Rheumatic Disease, Psoriasis: Epidemiology, clinical features, and quality of life, RGB Langley, GG Krueger, CEM Griffiths, Available at: <http://dx.doi.org/10.1136/ard.2004.033217>
- [10]. Healthline, What is Dermatitis?, medically reviewed by Cynthia Cobb, DNP, APRN – Written by Mary Ann Depietro – updated on August 2, 2019, Available at: <https://www.healthline.com/health/dermatitis#types>
- [11]. Mayo Clinic, Dermatitis, July 11, 2019, Available at: <https://www.mayoclinic.org/disease-conditions/dermatitis/symptoms/syc-20352380>
- [12]. JAMA Dermatology Patient Page, Pemphigus, Marcel F. Jonkman, June 2014, *jamadermatol*, 2014;150(6):680. doi:10.1001/jamadermatol.2014.136. Available at: <https://jamanetwork.com/journals/jamadermatology/1879985>
- [13]. Nature reviews Disease primers, Pemphigus, Michael Kasperkiewicz and Christoph T. Ellebrecht et al, 2017 may 11;3:17026. doi:10.1038/nrdp.2017.26. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5901732>
- [14]. WHO launches "global leprosy strategy 2016-2020: Accelerating towards a leprosy-free world", Available at: <https://www.who.int/news-room/fact-sheets/detail/leprosy>
- [15]. Clinical Microbiology Reviews, Leprosy in the 21<sup>st</sup> Century, Cassandra White and Carlos Franco-Paredes, 2015 jan;28(1):80-94. doi:10.1128/CMR.0079-13.
- [16]. Systemic Sclerosis – Multidisciplinary disease: Clinical features and treatment, Piotr Sobolowski and Maria Maslinska et al, 2019;57(4):221-223. doi:10.5114/reum.2019.87619.
- [17]. Clinical Dermatology Review, Management of Systemic Sclerosis: A dermatologist's approach, Deepthi Ravi and Smitha Prabhu, 2019 volume: 3, issue: 1, page: 34-40 k
- [18]. Erythema nodosum – review of the literature, Malgorzata Chowaniec, Aleksandra Starba and Piotr Wiland, 2016;54(2):79-82. doi:10.5114/reum.2016.60217.
- [19]. Medical News Today, What are hives (Urticaria)?, Medically reviewed by Sarah Taylor – Written by Yvette Brazier on December 14, 2017.
- [20]. The Health and Environment Linkages Initiative, Cost-effectiveness analysis for health interventions, 2020.

## ACKNOWLEDGEMENT

Our sincere thanks of gratitude to mentors, Head of the Pharmacy department and the Head of DVL, RMMCH for their encouragement, advice and complete support to this study.

## DECLARATION

Funding: None.

Conflict of Interest: None declared.

Ethical Approval: Approved by Institutional Human Ethics Committee.

Aswin Leethiyal, A, et. al. "Prospective Study on Utilization Pattern of Corticosteroids on DVL Patients at a Tertiary Care Teaching Hospital." *IOSR Journal of Pharmacy and Biological Sciences (IOSR-JPBS)*, 16(6), (2021): pp. 45-49.