

PROFILE OF ORAL CORTICOSTEROID USE IN PATIENTS IN MADIUN CITY PHARMACIES

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ABSTRACT

Hyperglycemia induced by corticosteroid use depends on the dose, indication and setting of use. The type of corticosteroid that causes a greater degree of hyperglycemia is the use of Deksametasonor metilprednisolonrednisolone compared to prednisolone or hydrocortisone. High risk of hyperglycemia due to the use of oral corticosteroids, especially Deksametasonor metilprednisolonrednisolone. The aim of this study was to determine the profile of oral corticosteroid use in Madiun City pharmacies. This research is an observational study using retrospective data. Where data was obtained from profile data on the use of oral corticosteroids in one of the pharmacies in Madiun City. Then the data is analyzed, percentages are calculated and presented in the form of tables, graphs and diagrams. The results obtained were that the number of oral corticosteroids used in Madiun City pharmacies in 2022 was 44,270 tablets and increased in 2023, namely 50,680 tablets. Meanwhile, the type of oral corticosteroid that is widely used is metilprednisolonrednisone 4 mg, namely 13,090 tablets (29.57%) in 2022 and 14,950 tablets (29.50%) in 2023. The increase in the use of metilprednisolonrednisolone 4mg from 2022-2023 is 1,860 tablets . The conclusion of this research is that the use of oral corticosteroids in Madiun City pharmacies in 2022 and 2023 will increase and the most common type of corticosteroid is metilprednisolonrednisolone 4 mg.

KEYWORDS Pharmacy, Deksametasonone, Corticosteroids, Metilprednisolonrednisolone, Profile



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INTRODUCTION

In 1948, cortisone was first used and showed considerable clinical benefit for patients with *rheumatoid arthritis* (Noetzlin et al., 2022). Both oral and parenteral

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systemic corticosteroids, e.g. prednisolone, methylprednisolone, dexamethasone, have potent anti-inflammatory, immunomodulatory and *antineoplastic* properties and are part of the treatment of various conditions, including autoimmunity, allergic reactions, asthma, chronic obstructive pulmonary disease and certain malignancies (Rice et al., 2017).

Corticosteroids are also associated with a number of side effects including hypertension, insomnia, glaucoma, nausea, abdominal pain, hyperglycemia, insulin resistance, increased risk of infection, *immunosuppression* (Kapugi & Cunningham, 2019). These hyperglycemic side effects may occur due to inhibition of insulin signaling in skeletal muscle, insulin resistance, and decreased insulin sensitivity.

Such hyperglycemia can occur in patients without a history of diabetes mellitus (DM) or severe uncontrolled hyperglycemia in patients with known DM (Suh & Park, 2017). Globally, oral glucocorticoid use is associated with 2% of new diabetes mellitus cases. When glucocorticoids are administered for 1-7 days in healthy individuals, insulin resistance and impaired glucose homeostasis occur (Li & Cummins, 2022).

In a retrospective study of which types of corticosteroids caused greater levels of hyperglycemia, the use of dexamethasone or methylprednisolone was associated with greater hyperglycemia compared to prednisolone or hydrocortisone. These findings may help raise awareness about which steroids require more stringent glucose monitoring. Seeing the high risk profile of hyperglycemia due to the use of oral corticosteroids, especially dexamethasone or methylprednisolone, it is necessary to conduct research on the profile of oral corticosteroid use in patients in Madiun City pharmacies.

RESEARCH METHOD

The samples used in this study were all types of oral corticosteroids available at one of the pharmacies in Madiun City. The oral corticosteroids observed were Methylprednisolone 4mg and 8mg, Dexamethasone 0.5mg and 0.75mg, Prednisolone, and a combination of dexamethasone 0.5mg and Chlorpheniramine Maleat (CTM). The sales profile data used is sales data in 2022 and 2023, then the data obtained is presented in tables and graphs.

RESULT AND DISCUSSION

Below is a table and graph showing the amount of oral corticosteroid use in Madiun city pharmacies in 2022 and 2023 in tablet units.

Table of Oral Corticosteroid Usage in 2022 and 2023 (Tablets)

Types of Corticosteroids	Dosage	YEAR			
		2022		2023	
		n	%	n	%
Dexamethasone	0.5 mg	8930	20,17	9300	18,35
	0.75 mg	12110	27,36	14100	27,82
Methylprednisolone	4 mg	13090	29,57	14950	29,50
	8 mg	4460	10,07	4880	9,63

Prednisone	5 mg	1180	2,66	1190	2,35
Dexamethasone 0.5mg + CTM		4500	10,16	6260	12,35
AMOUNT		44270	100	50680	100

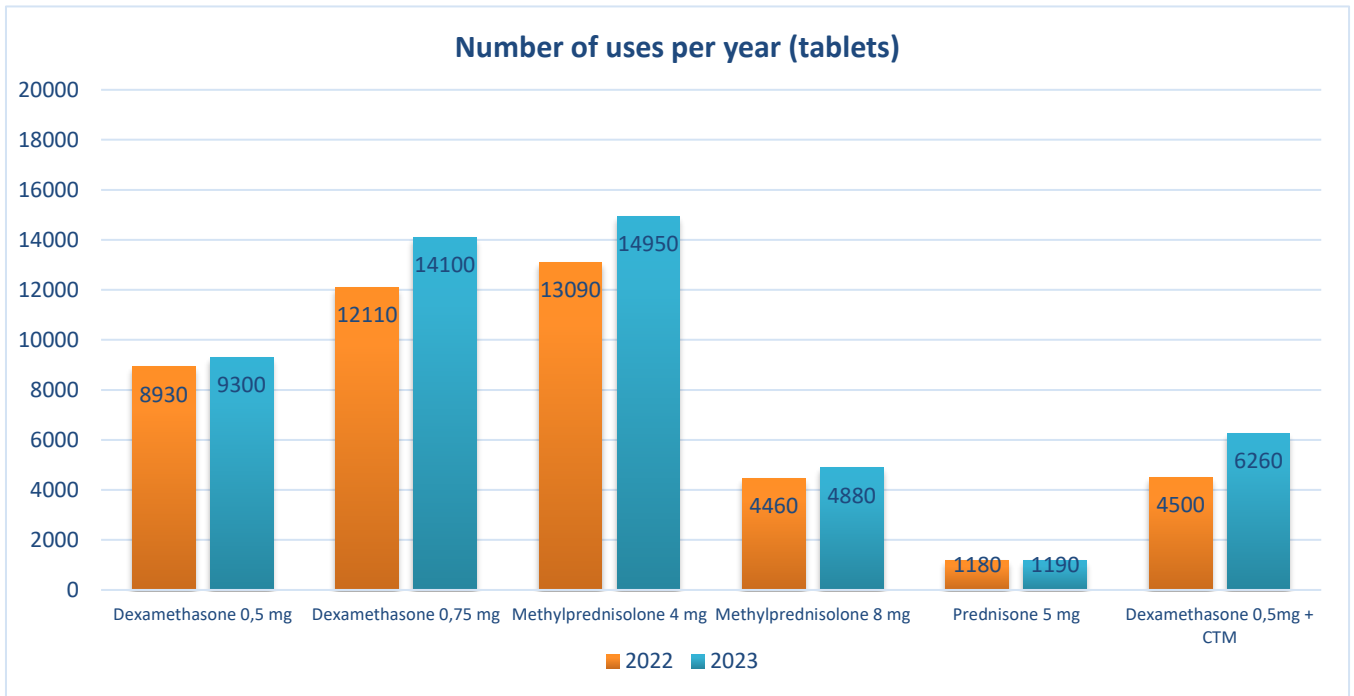
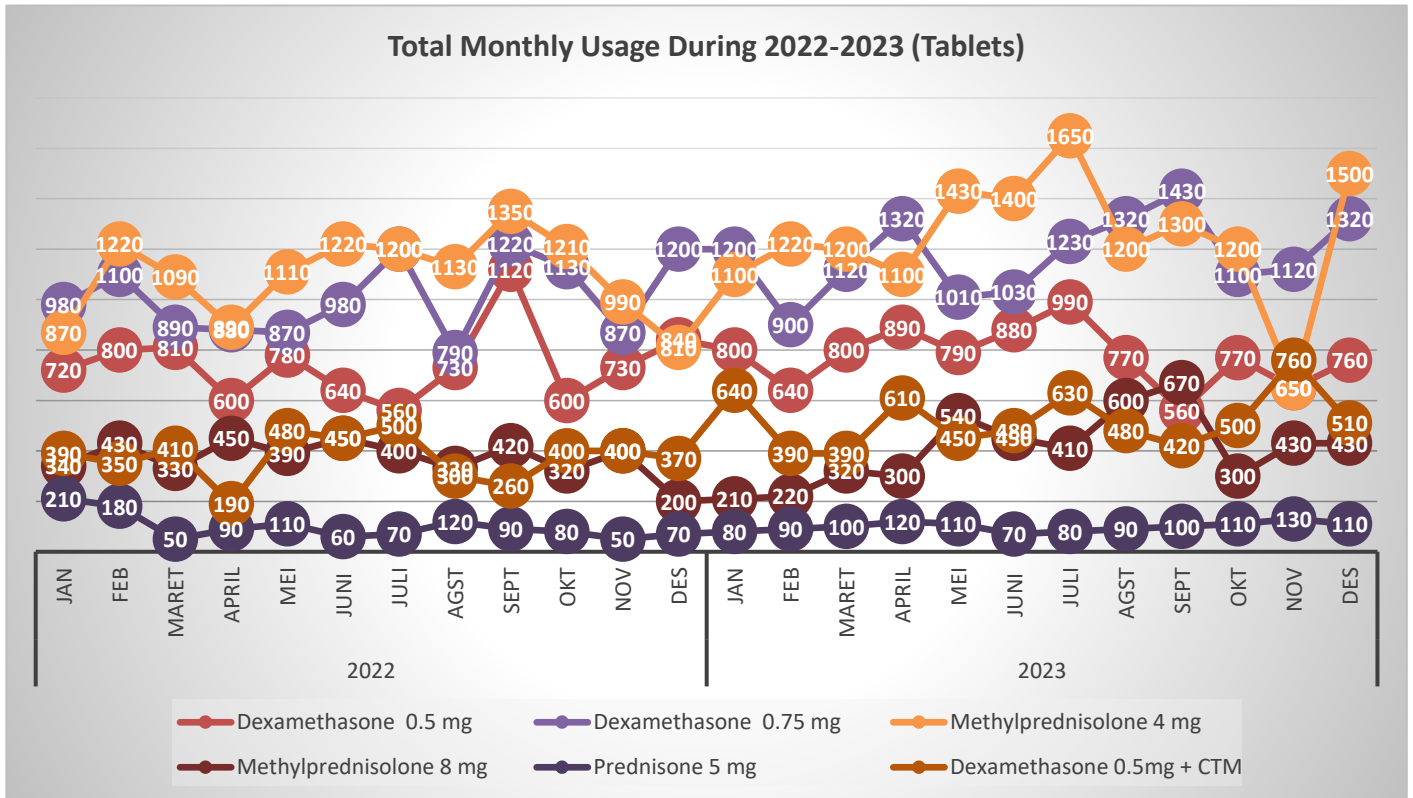


Figure Diagram of Oral Corticosteroid Usage in 2022 and 2023 (Tablets)

**Table of Duration of Oral Corticosteroid Use at Sina Medika Pharmacy
Year 2022 - 2023**

No.	Name of Medicine	Dosage	Usage Rules	Number of Tablets Per- Prescription	Usage Duration
1	Dexamethasone	0.5 mg	2 - 3 times a day	10 - 15 Tablets	3 - 8 Days
2	Dexametasonone	0.75 mg	2 times a day	10 - 15 Tablets	3 - 8 Days
3	Methylprednisolone	4 mg	2 - 3 times a day	10 - 15 Tablets	3 - 8 Days
4	Methylprednisolone	8 mg	2 times a day	10 - 15 Tablets	3 - 8 Days
5	Prednisone	5 mg	2 - 3 times a day	10 - 15 Tablets	3 - 8 Days
6	Dexamethasone 0.5mg + CTM		2 - 3 times a day	10 - 15 Tablets	3 - 8 Days

Figure Chart of Oral Corticosteroid Use Profile of Sina Medika Pharmacy Madiun City in 2022-2023



Discussion

The various indications for the use of oral corticosteroids have resulted in the wide use of oral corticosteroids in the community. However, there are several side effects in the use of oral corticosteroids, including hypertension, insomnia, glaucoma, nausea, abdominal pain, hyperglycemia, insulin resistance, increased risk of infection, *immunosuppression* (Kapugi & Cunningham, 2019). A meta-analysis study summarized, patients without a previous history of diabetes who received systemic glucocorticoids showed an incidence rate of hyperglycemia of 32.3% and subsequently 18.6% developed diabetes mellitus (Liu et al., 2014). The magnitude of the potential for hyperglycemia due to the use of corticosteroids is the basis for researchers to examine how the profile of corticosteroid use in one of the pharmacies in Madiun City.

Based on the tabular data generated, the results obtained the amount of oral corticosteroid use in Madiun City pharmacies in 2022 and 2023 which was the most was methylprednisolone 4 mg with a total of 13,090 (29.57%) in 2022 and as many as 14,950 (29.50%) in 2023. So that in the study period, namely 2022 to 2023, the most widely used oral corticosteroid in the Madiun city community was methylprednisolone 4 mg. This data is supported by additional data, namely pareto data. In 2022-2023 Methylprednisolone 4mg is included

in one of the pareto A drugs at Sina Medika Pharmacy Madiun City. In the graph of the use of oral corticosteroids in 2022 and 2023, it can be seen that the use of corticosteroids from 2022 to 2023 has increased from each type of corticosteroid. The highest percentage of oral corticosteroids each year is the type of oral corticosteroid methylprednisolone 4 mg.

From the results of the research obtained, it has the same results as research conducted by Setyaningrum et al, where the off-label use of methylprednisolone-rednisolone in Yogyakarta city pharmacies gives a high percentage of 21% (Setyaningrum et al., 2017). In addition, research conducted by Asyikin (2016) on the description of public knowledge of users of corticosteroid drugs by self-medication at the Berkat Farma Pharmacy in Makassar showed that the use of corticostrioid was 80.40%.

Globally, oral glucocorticoid use is associated with 2% of new cases of diabetes mellitus. When glucocorticoids are given for 1-7 days in healthy individuals, insulin resistance and impaired glucose homeostasis occur (Li & Cummins, 2022). Based on the table of the duration of use of oral corticosteroids at Sina Medika Pharmacy, it can be seen that the average prescription of oral corticosteroids is around 10-15 tablets in each prescription. With the rules of use 2-3 times a day, the duration of use of oral corticosteroids is around 3-8 days. Therefore, there is a need for further research that can monitor the effects of hyperglycemia after the use of oral corticosteroids for more than 7 days.

CONCLUSION

The use of oral corticosteroids in Madiun City pharmacies from 2022 to 2023 has increased, the type of corticosteroid that has the highest number of uses is methylprednisolone-rednilon 4 mg, which was 29.57% in 2022 and 29.50% in 2023.

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