



**A COMPARITIVE PROSPECTIVE STUDY OF UTILIZATION PATTERN OF
DIFFERENT BRANDS OF METHYLPREDNISOLONE AND PREDNISOLONE DURING
COVID-19 PANDEMIC**

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ABSTRACT

Coronavirus disease [COVID-19] is an infectious disease caused by the novel corona virus. Most of the Patients infected with this virus develop a systemic inflammatory response that can lead to lung injury and multisystem organ dysfunction. Both beneficial and deleterious clinical outcomes have been reported with the use of corticosteroids, mostly Prednisolone and methylprednisolone in patients with pulmonary infections methylprednisolone available as tablets, Intravenous and intramuscular injection, intra articular suspensions branded PREDMET, SOLU-MEDROL, DEPOMEDROL etc. Prednisolone is available as tablets, eye drops branded WYSOLONE, PREDFORTE etc. The aim of this prospective study was to determine the utilization pattern of different brands of the drugs Prednisolone and Methylprednisolone. A total of 60 pharmacies was included in the study. All relevant data were collected and documented in a pretested, predesigned and semi structured questionnaire. About 90.1% of pharmacies was dispensing Prednisolone, 80.32% was dispensing Methylprednisolone and 73.7% was dispensing both the drugs. Prednisolone was distributed as 91.22% tablet, 3.50% oral suspension, 1.75% oral drops, 3.50% eye drops. MethylPrednisolone was distributed as 84.61% tablet, 13.46% injection, 1.93% eye drops. Dispensing brands of prednisolone was Wysolone 122(70.93%), Omnacortil 47(27.33%), Pred-forte 2(1.16%) and Kidpred 1 (0.58%). Dispensing brands of Methylprednisolone was Predmet 83(70.3%), Zempred 10(8.0%), Ivepred 10(8.0%), Medrol 7(5.76%), Dispred 2(1.69%), Solu Medrol 2(1.69%), Med-pred 29(1.69%) Nucort 1(0.8%), Mobilance 1(0.8%) and Neodrol 1(0.8%). Pharmacies was also dispensing about 3.3% of generic form of Prednisolone and 6.6% of generic form of Methylprednisolone.90.16% of pharmacies was not dispensing generic forms.

KEYWORDS: Coronavirus disease, corticosteroids, prednisolone, methylprednisolone.

INTRODUCTION

Coronavirus disease [COVID-19] is a respiratory tract infectious disease caused by the novel corona virus, also known as Severe Acute Respiratory Syndrome Coronavirus 2(SARS-CoV-2), was declared as global pandemic by World Health Organization on March 2020. It has been known to be the third outbreak of beta corona viruses in the twenty-first century. The relatively high infectivity, rapid progression of lung involvement, and absence of definite effective treatment, all contribute to a need to design an effective measure for management of COVID-19 based on the disease pathogenesis.^[1] Patients with severe COVID19 develop a systemic inflammatory response that can lead to lung injury and multisystem organ dysfunction. Potent corticosteroids, prevent or mitigate these deleterious effects.

Corticosteroids are class of drug that lower inflammation and also reduce immune system activity. WHO partnered

with investigators of trials on corticosteroids to conduct a prospective meta- analysis of randomized trials for corticosteroid therapy for COVID-19 in order to rapidly provide additional evidence to build on RECOVERY^[2] data and inform guidance development. Drawing on these data, an international panel of content experts, patients' clinicians and methodologists produced recommendations following standards for trustworthy guideline development using the GRADE approach.^[2] Both beneficial and deleterious clinical outcomes have been reported with the use of corticosteroids, mostly Prednisolone and Methylprednisolone in patients with pulmonary infections.^[4]

Prednisolone and methylprednisolone are corticosteroids that have severe impact on the body. Methylprednisolone is given orally and as injection while Prednisolone as orally. Methylprednisolone is more potent than Prednisolone,8 milligrams of methylprednisolone is

equivalent to 10 mg of Prednisolone.^[3,6,7] Methylprednisolone available as tablets, intravenous and intramuscular injection, intra articular suspensions branded PREDMET, SOLU-MEDROL, DEPOMEDROL etc. Prednisolone is available as tablets, eye drops branded WYSOLONE, PREDFORTE etc.^[7]

In this prospective study we have determined the utilization pattern of different brands of the drugs Prednisolone and methylprednisolone.

METHODOLOGY

Initial phase of the study was to determine the scope and to carry out literature survey. Based on the inclusion and exclusion criteria, pharmacies were enrolled in the study after obtaining the informed consent. All relevant data required for the study was obtained and mentioned in a suitably designed data collection form. The result was analyzed using suitable statistical method.

STUDY SITE AND DESIGN

This is a prospective observational study carried out at Community and Hospital pharmacy for the period of six months.

STUDY CRITERIA

Inclusion criteria

Pharmacies with various brands and formulations of Methylprednisolone and Prednisolone and providing drug information and medication counseling, Hospital pharmacy and community pharmacy in Urban region, Pharmacies selling two or more brands of same drug was included in the study.

Exclusion criteria

Pharmacies not dispensing methylprednisolone and Prednisolone, pharmacies not willing to participate in the study and the pharmacies not disclosing the price of drug was excluded in the study.

DATA COLLECTION PROCEDURE

Based on inclusion and exclusion criteria subjects were enrolled in the study after obtaining the informed consent. Conducted face to face survey with the respondents. Gaining information from respondents via face-to-face medium is much more effective than the other mediums [online surveys, paper survey etc] because respondents usually tend to trust the surveyors and provide honest and clear feedback about the subject in-hand. Data collection form and questionnaire designed and pilot for this study was used.

RESULTS

Frequency of combinational and non-combination of Methylprednisolone and Prednisolone drugs dispensed by pharmacies

Out of 61 pharmacies about 55 [90.1%] dispense Prednisolone, while 49[80.32%] pharmacies dispense Methyl Prednisolone and around 45[73.7%] dispense

both Methyl prednisolone and Prednisolone as shown in table 1.

Table 1: Frequency of combinational and non-combination of Methylprednisolone and Prednisolone drugs dispensed by pharmacies.

DRUG	No. of pharmacies dispensing	PERCENTAGE
Prednisolone	55	90.1%
Methylprednisolone	49	80.32%
Both	45	73.7%

Distribution of various formulation of Prednisolone

Among various formulations of Prednisolone, Tablet is the most selling formulation 91.22%, 3.50% oral suspension, 1.75% oral drops and 3.50% eye drops as shown in table 2.

Table 2: Distribution of various formulation of Prednisolone.

FORMULATION	PERCENTAGE
Tablet	52 (91.22%)
Injection	0 (0.0%)
Oral suspension/Solutions	2 (3.50%)
Oral drops	1 (1.75%)
Eye drops	2 (3.50%)

Distribution of various formulation of Methylprednisolone

Among various formulation of Methylprednisolone, tablet is the most selling formulation 84.61% and moderately selling formulation is injection 13.46% and 1.93% of eye drops as shown in table 3.

Table 3: Distribution of various formulation of Methylprednisolone.

FORMULATIONS	PERCENTAGE
Tablet	44 (84.61%)
Injection	7 (13.46%)
Oral suspension/Solutions	0 (0.0%)
Oral drops	0 (0.0%)
Eye drops	1 (1.93%)

Dispensing pattern of generic forms of Prednisolone and Methylprednisolone

About 3.3% of generic form of Prednisolone and 6.6% of generic form of Methylprednisolone was dispensed by the pharmacies and also 90.16% of pharmacies was not dispensing generic forms as shown in fig 1.

Dispensing pattern of generic forms of Prednisolone and Methylprednisolone

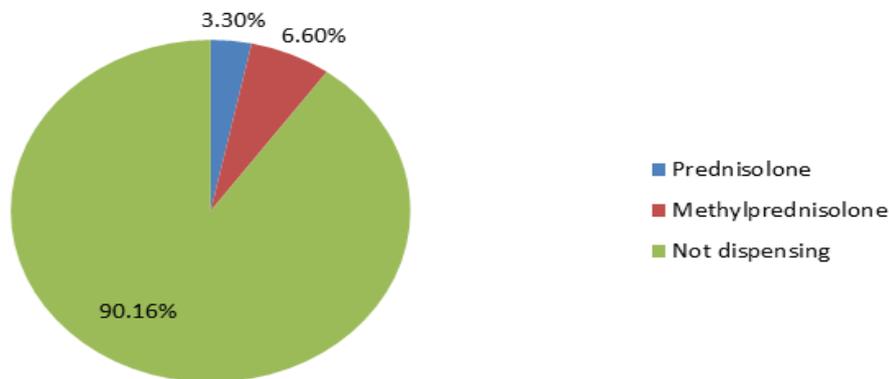


Fig 1.

Available brands of Prednisolone

Wysolone is most prescribed Prednisolone brand of around 70.93% when compared to other brands like Pred forte 1.16% followed by Omnacortil 27.33% and the least dispensed brand like Kidpred 0.58% as shown in table: 4 and fig:2.

Table 4: Available brands of Prednisolone.

BRANDS	PERCENTAGE
Wysolone	122 (70.93%)
Omnacortil	47 (27.33%)
Pred-forte	2 (1.16%)
Kidpred	1 (0.58%)

Available brands of Prednisolone

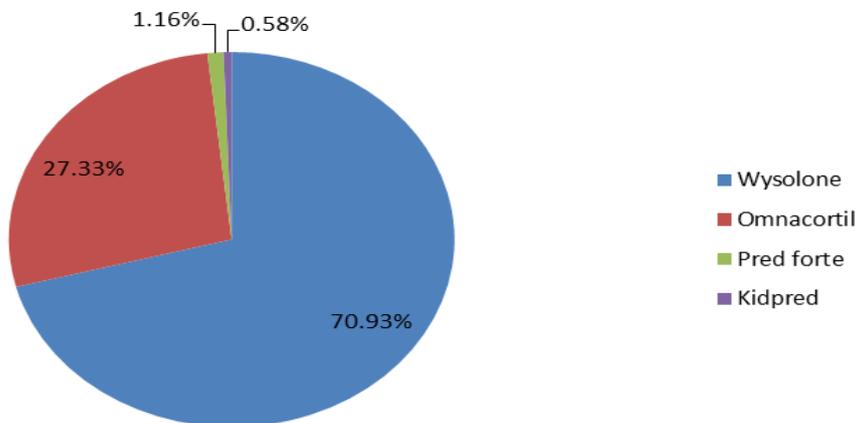


Fig 2.

Available brands of Methylprednisolone

Predmet is the most prescribed Methylprednisolone brand of 70.30%, moderately distributing Methylprednisolone brand are Zempred 8.0%, Ivepred 8.0% and Medrol 5.76% and least selling brands are Medpred, Dispred, Solu medrol about 1.69% each and Mobilanz, Nucort, Neodrol around 0.8% each as shown in table:5 and fig:3.

Table 5: Available brands of Methylprednisolone.

BRANDS	PERCENTAGE
Predmet	83 (70.3%)
Zempred	10 (8.0%)
Ivepred	10 (8.0%)
Medrol	7 (5.76%)
Dispred	2 (1.69%)
Solu Medrol	2 (1.69%)
Med-pred	2 (1.69%)
Nucort	1 (0.8%)
Mobilanz	1 (0.8%)
Neodrol	1 (0.8%)

Available brands of Methylprednisolone

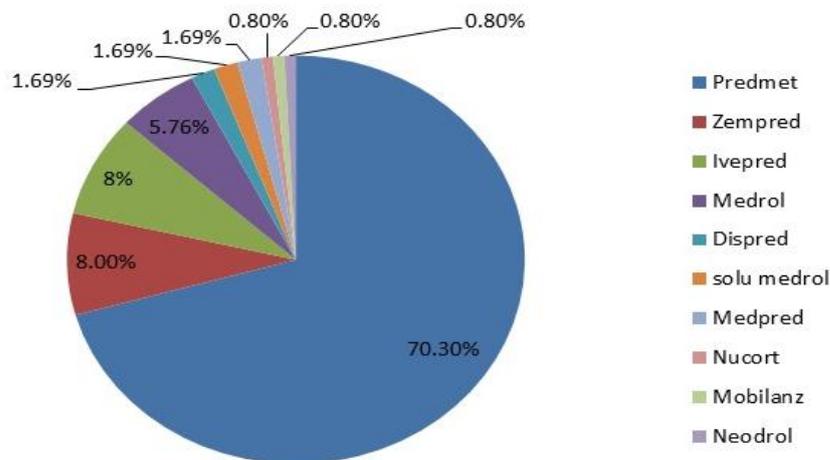


Fig 3.

DISCUSSION

Prednisolone and Methylprednisolone are corticosteroids which was used in the treatment of the global pandemic COVID 19. This prospective observational study was carried out for a period of 6 months to ascertain the utilization pattern of different brands of the drugs Prednisolone and methylprednisolone. In this study we have visited 61 pharmacies, majority of the pharmacies was dispensing Prednisolone and Methylprednisolone.

About 90.1% of pharmacies was dispensing Prednisolone. About 80.32% of pharmacies was dispensing methylprednisolone. About 73.7% was dispensing both the drugs.

Prednisolone was distributed as 92.22% tablet, 3.50% oral suspension, 1.75% oral drops, 3.50% eye drops. Methyl Prednisolone was distributed as 84.61% tablet, 13.46% injection, 1.93% eye drops.

Dispensing brands of prednisolone was Wysolone 122(70.93%), Omnacortil 47(27.33%), Pred-forte 2(1.16%) and Kidpred 1 (0.58%). Dispensing brands of Methylprednisolone was Predmet 83(70.3%), Zempred 10(8.0%), Ivepred 10(8.0%), Medrol 7(5.76%), Dispred 2(1.69%), Solu Medrol 2(1.69%), Med-pred 2(1.69%), Nucort 1(0.8%), Mobilance 1(0.8%) and Neodrol 1(0.8%). Pharmacies was also dispensing about 3.3% of generic form of Prednisolone and 6.6% of generic form of Methylprednisolone. 90.16% of pharmacies was not dispensing generic forms.

CONCLUSION

The study was taken up to ascertain the high selling brand of Prednisolone and Methylprednisolone during this global epidemic. Prednisolone was dispensed over Methylprednisolone. Wysolone was the most selling

brand of Prednisolone. Predmet was the most selling brand of Methylprednisolone.

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