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A study on drug utilization evaluation of duolin (ipratropium bromide+salbutamol) in a tertiary care corporate hospital

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ABSTRACT

Background & Objectives

Drug utilization Evaluation (DUE) is an ongoing authorized and systematic quality, Improvement processes that will help ensure that medicines are used appropriately. According to WHO (World Health Organization), Drug Utilization Evaluation is defined as the marketing, distribution, prescription and use of drugs in society, with special emphasis on the resulting medical, social, economic consequences. DUOLIN contains two active bronchodilating substances, salbutamol sulphate and Ipratropium bromide Salbutamol sulphate is a beta2-adrenergic agent which acts on airway smooth muscle resulting in relaxation. Ipratropiumbromide is a quaternary ammonium compound with Anticholinergic properties. The main objectives of this study is to assess the duolin use in tertiary care hospital & to analyse the prescription pattern ,categorisation & combinations of Duolin by assessing age & gender specific distribution, pharmacoeconomics in duolin management.

Methodology

A prospective observational study using patient medical records and the necessary data were collected by using data collection forms and results were evaluated against the criteria prepared from the standard treatment guidelines.

Results

Prescription of 250 patients were studied & analysed. The demographic data revealed that there are 105(42%) female patients and 145 (58%) male patients respectively.

Conclusion

In conclusion, our study on the prescription pattern of duolin shows that male gender was found majorly taking duolin. Due to the use of nebulizer use the drug has many positive impacts which can improve patient condition. It shows that the most commonly the drug was prescribed with generic name rather than brand name. The study concludes that nebulizers are much better used than inhaler in case of respiratory tract infections. Lack of specific guidelines for the usage of DUOLIN in India, the rationality in the prescription is poor and variable.

Keywords: Prescription pattern of DUOLIN, Nebulizer use.

INTRODUCTION

Objectives of the study

Primary objective

To evaluate the usage of Duolin (Ipratropium bromide+salbutamol) in a tertiary care corporate hospital [1-5].

Secondary objectives

- To identify the variables like age, gender and other factors on Duolin usage.
- To assess the severity of disease.
- To educate the people regarding drug usage.
- To assess safety and efficacy of the outcomes.
- To assess the percentage of drugs prescribed by generic and brand name of DUOLIN

METHODOLOGY

This is a prospective and observational study. A protocol was prepared and submitted, which was approved by Institutional Ethics Committee of Sunshine hospitals, Secunderabad, which is a Multi-super specialty tertiary care hospital. In this study 250 patients were enrolled after obtaining the consent. The data collection form was prepared and

used. This form mainly contains the demographic details of the patient, medication history, diagnosis and treatment of the patient [6-10].

This study was carried out in In-patient department (IPD) of Sunshine hospitals, Secunderabad, which is a 500+ bedded Multi-super specialty tertiary care hospital. Patients from pregnant and lactating women, and pediatrics were excluded from our study. Randomly 250 patients were enrolled in to the study based on study criteria. A self-designed patient data collection form was developed and used for this study [11-15]. Patient records from the inpatient ward were obtained. A total of 250 prescriptions prescribed with duolin written by qualified medical doctors were collected from wards and analysed. Latest edition of DRUG TODAY manual was used to decode brand name of drugs to generic names for the purpose of analysis. Data was analyzed using descriptive statistics namely total numbers, percentage, mean and chi-square test wherever applicable. Microsoft word and Excel have been used to generate graphs, tables etc. After data collection it was analysed for statistical significance [16-20].

RESULTS

Table 1: Gender wise distribution

Gender	No. Of Patients(N)	(%) (n)
F	145	42%
M	105	58%
Total	250	100%

N=Number of patients, n=Percentage of number of patients

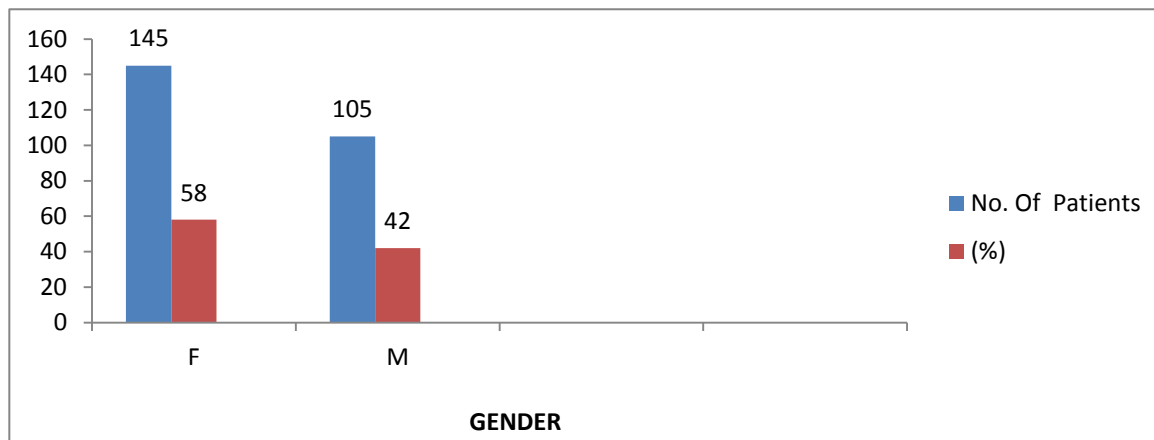
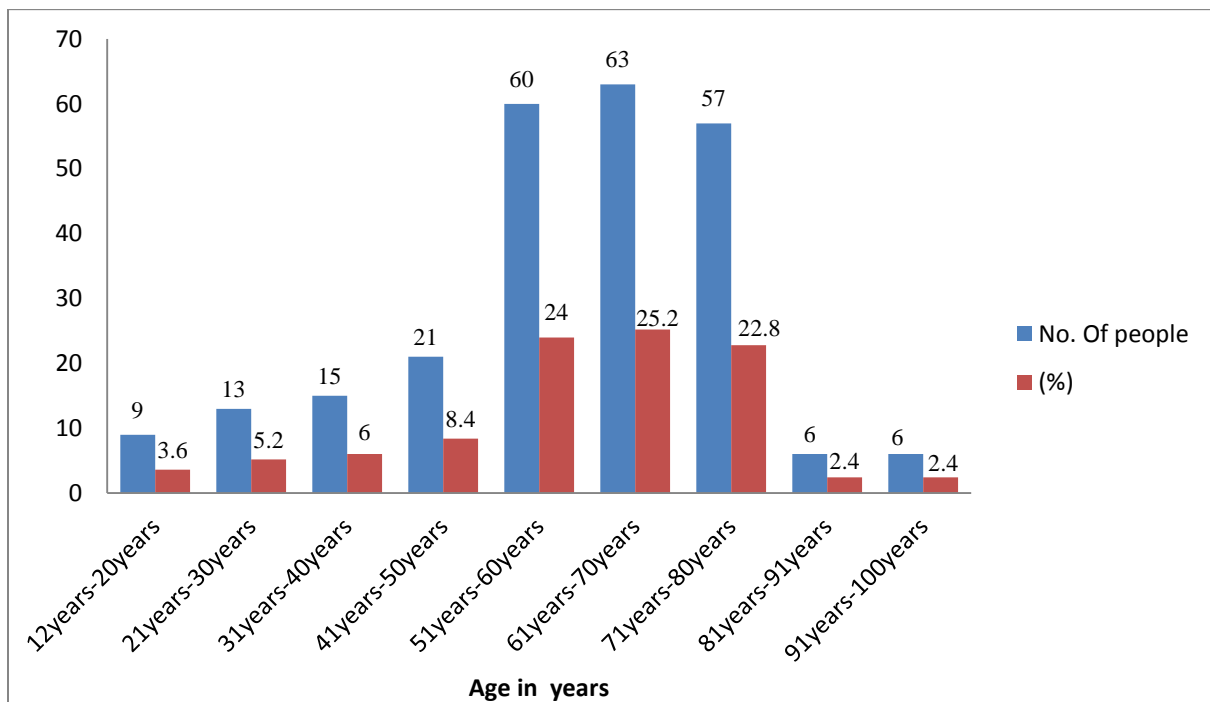


Table 2: Age wise distribution

Age group	No.of .patients(N)	(%)(n)
<21	9	3.6
21-30	13	5.2
31-40	15	6
41-50	21	8.4
51-60	60	24
61-70	63	25.2
71-80	57	22.8
81-90	6	2.4
91-100	6	2.4
Total	250	100

N=Number of patients, n=Percentage of number of patients

**Table 3: Department wise distribution**

Department	No. Of patients	(%)
Orthopaedics	11	4.4
General medicine	28	11.2
Gastroenterology	11	4.4
Nephrology	7	2.8
Pulmonology	140	56
Vascular Surgery	3	1.2
Cardiology	27	10.8
Urology	2	0.8
Neurology	21	8.4
Total	250	100

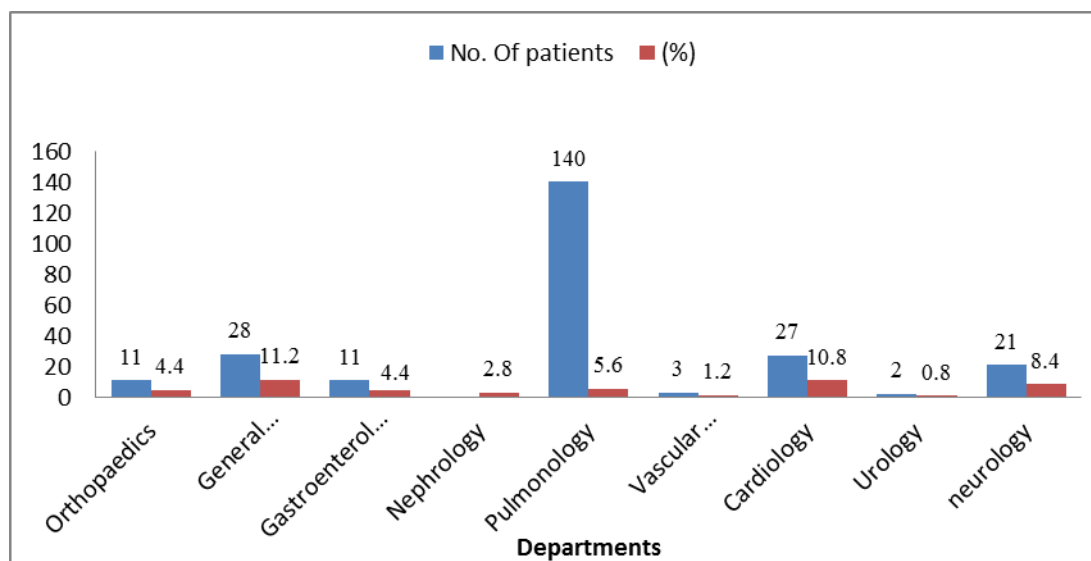


Table 4: Rationality wise distribution

Rationality	No. of. Patients(N)	(%)(n)
Irrational	28	11.2
Rational	222	88.8
Total	250	100

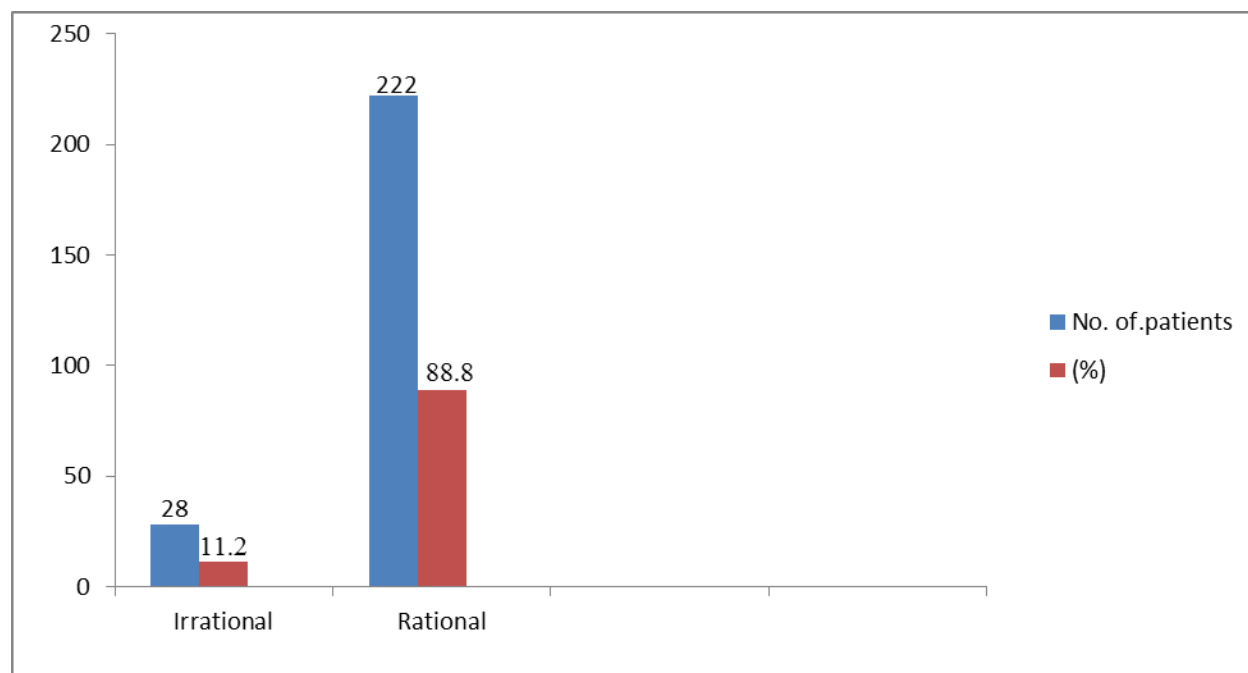


Table 5: Prescription wise distribution

Prescribed As	No. Of. Prescriptions	(%)
Brand Name	242	96.8
Generic Name	8	3.2
Total	250	100

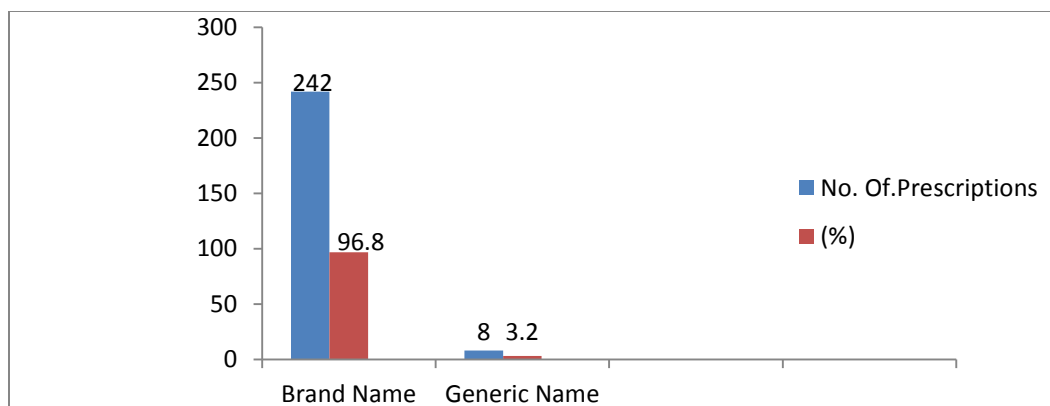


Table 6: Route of administration wise distribution

Route of Administration	No. Of Patients	(%)
Nasal	234	93.6
Inhaler	16	6.4
Total	250	100

N=Number of patients, n=Percentage of number of patients.

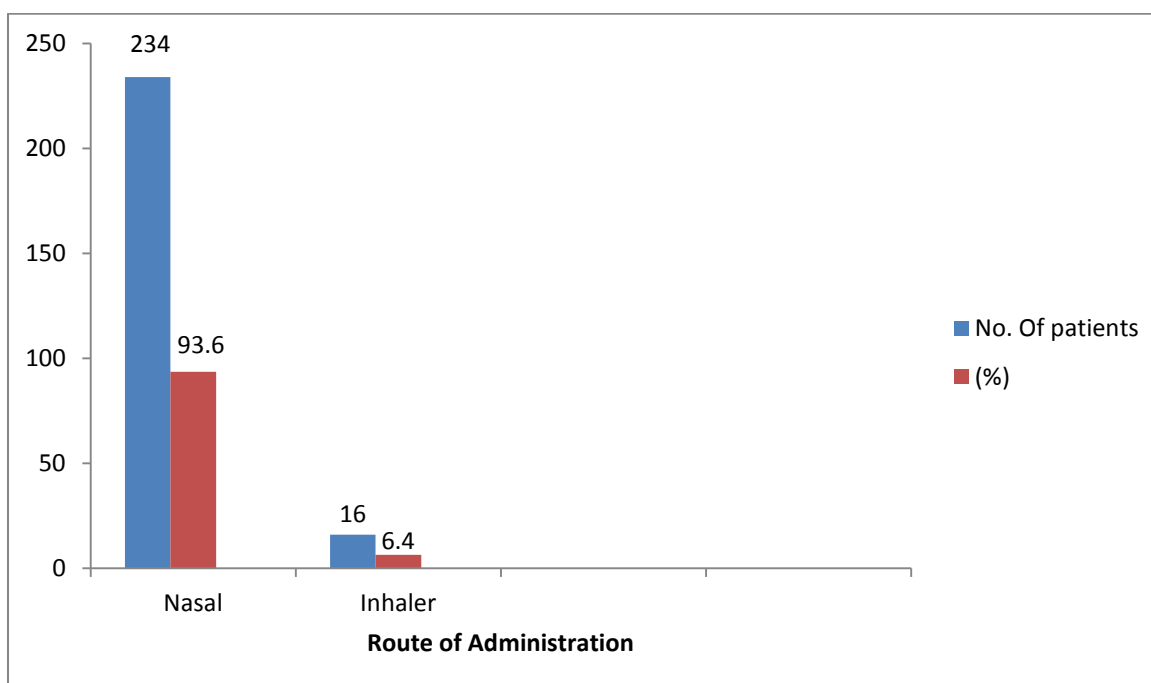
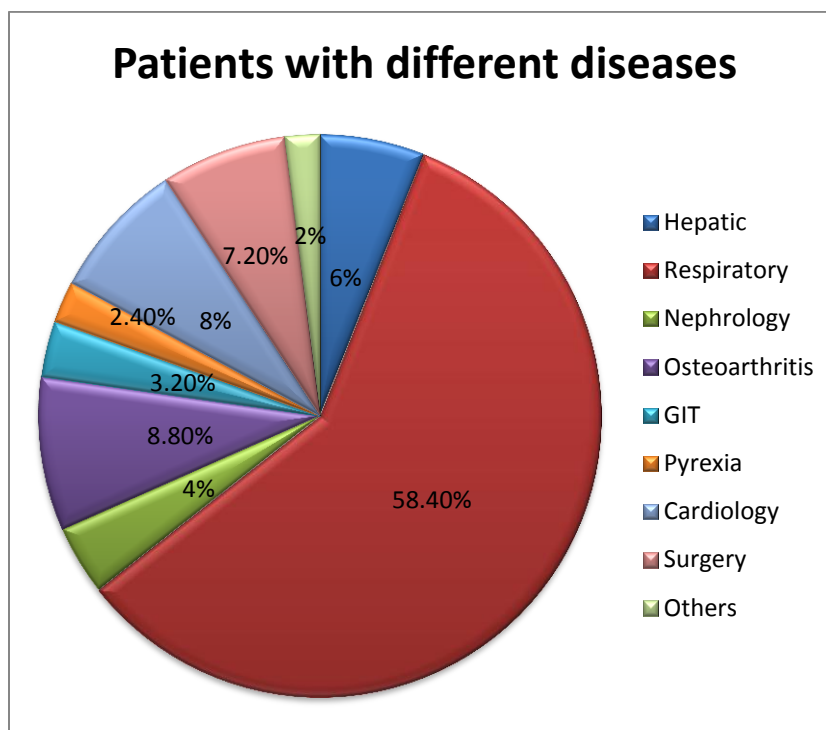


Table 7: Disease wise distribution

Disease	No. Of. Patients(N)	(%)(n)
Hepatic	15	6
Respiratory	146	58.4
Nephrology	10	4
Osteoarthritis	22	8.8
GIT	8	3.2
Pyrexia	6	2.4

Cardiology	20	8
Surgery	18	7.2
Others	5	2
Total	250	100

N=Number of patients, n=Percentage of number of patients.



N=Number of patients, n=Percentage of number of patients.

DISCUSSION

A total of 250 prescriptions of duolin patients have been analyzed for the study. The study describes the utilization pattern of duolin with demographic characteristics and pharmaco-epidemic data of patients. It was completely a prospective observational study, conducted in a tertiary care hospital for the duration of six months. The aim of duolin usage therapy is to improve the quality of life of the patient. By gender wise distribution, it was revealed that male predominance over female patients. Out of 250 patients, number of male patients were 145 (58%) and female patients were 81 (42%). Several other similar literatures also states that number of male patients were more than female patients. The reason behind the gender difference was not clear. But, it supposes that it is due to environmental

triggers such as pollution pathogens and various microbes.

Age distribution of the study population revealed that maximum number of patients were between 61-70(25.2%), followed by 51-60(24%), 71-80(22.8%), 41-50(8.4%), 31-40(6%), 21-30(5.2%), <21(3.6%) and the least number of patients were in the age group of 81-90(2.4%). In our study, the minimum age of patient taking duolin was 20 and maximum age of patient was 65. The reason of higher incidence of older patients i.e., above 51 years may be due to long exposure to irritating gases or particulate matter, most often from cigarette smoke. Sometimes it may be due to environmental triggers which may be caused due to infections.

The use of Nebulizer Duolin were found to be maximum in Pulmonology (140, 56%), followed by General Medicine (28, 11.2%), Cardiology (27, 10.8%) respectively. The use of Nebulizer Duolin

were rational in most of the cases i.e., (222, 88.8%) and Irrational use is (28, 11.2%).

Out of 250 cases, a majority of them were prescribed based on the Brand names (242, 96.8%) followed by Generic names (8, 32%).

Majority of drugs were prescribed in Nasal route (234, 93.6%) and followed by inhaler (16, 6.4%). In majority of cases the Duolin were mostly given in case of Respiratory tract infections (146, 58.4%) followed by Osteoarthritis (22, 8.8%) and Cardiology (20, 8%). When we see the department compared with reference to gender, majority of cases were found in males i.e., 81 in pulmonology, 20 in Cardiology, 13 in General medicine department followed by females i.e., 59 in pulmonology, 15 in general medicine, 11 in neurology department. The lowest number of cases in both males and females were seen in Urology (1 case in males and 1 case in females) and surgical (1 case in males and 2 cases in females) departments respectively.

In this study, out of 250 cases, when we compare department with respect to age, majority of cases which used duolin were seen in Pulmonology department i.e., 38 cases in the age group of 51-60 years followed by Cardiology i.e., 8 cases in the age group of 61-70 years and 6 cases in the age group of 61-70 years respectively. Very few cases were noticed in the age groups of 81-90 years and 91-100 years respectively. Majority of the cases were found in pulmonology and age groups 61-70 years respectively. When we compare department with respect to rationality, the rational use was found to be more (i.e., 136 cases in pulmonology department) while was found to be less in irrational use (i.e., 2 in Nephrology department).

When we take into consideration of department with respect to drug distribution, Majority of cases were found in pulmonology in which drug was prescribed in brand names (i.e., 136 cases in pulmonology) department. Very few cases were found in generic names (i.e., 1 case in Nephrology and Cardiology) departments respectively. Prescribing the drug with brand name is more than a generic name. And also it is very poor and variable.

(a) When we compare department with respect to route of administration, the majority of cases

were found to be through nasal route (i.e., 130 in pulmonology) department. Very few cases were found through inhaler route (i.e., 1 case in Ortho and Neurology) departments respectively. This shows that majority of cases take duolin through nasal route than inhaler respectively. Comparison of Department with reference to Gender ($P < 0.0001^{***}$).

- (b) Comparison of Department with reference to Age ($P < 0.00001^{**}$).
- (c) Comparison of Department with reference to Rational Use ($P = 0.0012$).
- (d) Comparison of Department with reference to Drug Distribution ($P < 0.0001^{***}$).
- (e) Comparison of Department with reference to Route of Administration ($P < 0.12$).

When we compare the disease with respect to gender, the majority of drugs were found in males (i.e., 82 cases in Respiratory tract infections). Very fewer cases were found to be in females (i.e., 2 cases in Nephrology department) respectively. According to the above table given majority of diseases are caused in males regarding respiratory tract infections.

Out of 250 cases when we compare the disease with reference to age, the majority of cases were found in 61-70 years (i.e., 46 in respiratory tract infections). Very few cases were found in age group of 91-100 years (i.e., 1 case in hepatic, pyrexia, surgery) departments respectively.

When we compare with respect to rational use, majority of cases were found in the usage of duolin rationally (i.e., 136 cases in respiratory tract infections). Very few cases were found in the usage of duolin irrationally (i.e., 1 case in other) 2 (pyrexia), 4 (osteoarthritis and surgical) diseases respectively. Majority of cases were found prescribing duolin brand name (i.e., 141 cases in respiratory tract infections). Very few cases were found prescribing generic name (i.e., 1 case in Osteoarthritis) respectively.

In accordance, with respect to route of administration, the majority of the cases it was taken in Nasal route (i.e., 140 in respiratory tract infections). Very few cases were found to be through inhaler (1 case in pyrexia, Cardiology, Surgery) disease respectively.

CONCLUSION

In our study on the prescription pattern of DUOLIN it was found that that male gender was more prone to this drug. In our study, we found that only 3.2% cases were presented with generic name, rest all prescriptions were found to be according to brand name. We concluded that the prescription pattern of DUOLIN was found to be dissatisfactory. From over view of the study, DUOLIN is widely used in pulmonology department. Very few cases were found in other departments. Majority of the cases were found in pulmonology department followed by General medicine and Cardiology respectively. Rational prescribing of bronchodilator would help in avoiding poly pharmacy and prevent drug resistances. Majority of the diseases were found in Respiratory tract infections such as COPD, LRTI (i.e., mainly in pulmonology) The majority of diseases were found in pulmonology department i.e., 140, (56%) followed by General Medicine i.e., 28, (11.2%) and Cardiology i.e., 27, (10.8%). The clinical use of NEB.DUOLIN is likely to be considered in patients who are hospitalized or are immune compromised .Nebulizer is a drug delivery

device used to administer in the form of mist inhaled into the lungs. Nebulizers are commonly used for the treatment of asthma, cystic fibrosis, COPD and other respiratory diseases or disorders.

Majority of the cases were prescribed in nasal route rather than through inhalation. But nebulizers accept their medicine in the form of liquid solution, which is often loaded into the device upon use. Corticosteroids and bronchodilators such as salbutamol are often used, and sometimes in combination with Ipratropium. The reason these pharmaceuticals are inhaled instead of ingested in order to target their effect to the respiratory tract, which speeds onset of action of the medicine and reduces side effects. The present study shows the high proportion of hospitalized patients who receive NEB.DUOLIN used via nasal route. A nebulizer changes medication from a liquid to a mist so that it can be more easily inhaled into the lungs. Nebulizers are particularly effective in delivering asthma medications to infants and small children and to anyone who has difficulty using an asthma inhaler. Finally, nebulizers are much better used than inhaler in case of respiratory tract infections according to the data evaluated.

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