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PRESCRIBING PATTERNS OF DRUGS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE- IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

The current study was aimed to assess prescribing patterns of drugs in chronic obstructive pulmonary disease in a tertiary care teaching hospital. This was an observational prospective study on drug prescription and severity assessment in COPD patients conducted in Department of Medicine at Sri Venkateswara Institute of Medical Sciences (SVIMS). 64 prescriptions were collected over a period of six months from August 2018 to January 2019.Patients of age group above 40 years, current smokers, reformed smokers and who were diagnosed with FEV1 / FVC < 70% on Pulmonary Function Test are included in the study. This study highlighted some rational prescribing practices in the hospital, like legible prescriptions, increased consultation time, use of inhalers as per WHO core indicators. The study suggested that there was need to pay attention in the areas of prescribing antibiotics, vaccines, average number of drugs per encounter, prescribing drugs by generic names and provides baseline data that will be useful for COPD patients on drug prescription.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a lung disease characterized by chronic obstruction of lungs that interferes with normal airflow in bronchioles which is partially reversible[1]. COPD was diagnosed by complications like chronic bronchitis, small airways disease (bronchiolitis) and emphysema which may vary among the affected individuals[2].As of 2015, COPD affected about 174.5 million (2.4%) of the global population, Chronic Obstructive Pulmonary Disease claimed 3.0 million lives in 2016. It was found to be third leading cause of death in world by 2020 and it affects both males and females equally over the age of 40. In addition to the pharmacological therapy smoking cessation is the only treatment modality that can Significantly control the disease progression. The guidelines for appropriate management of COPD along with treatment and prevention are framed and revised by Global initiative for Chronic Obstructive Lung Disease (GOLD) based on evidences from recent researches[3]. In order to understand the way drugs are used it is important to consider what takes place at health facilities from both the provider's and the patient's perspectives The indicators of prescribing patterns measure the performance of health care providers in several key dimensions related to the appropriate use of drugs[4]. Prescribing pattern studies are powerful exploratory tools to ascertain the role of drugs in society. In a tertiary care center, prescribing is expected to be judicious,

appropriate, safe, effective and economical. The ultimate goal is to achieve rational and effective medical care, particularly in the economically developing countries[5]. Considering these facts, this study was planned to analyze the prescribing pattern in COPD patients at a tertiary care hospital to generate data on the extent of rational/irrational prescribing in this institute. According to WHO guidelines the assessment of drug use indicators to investigate drug use in health facilities can be assessed by using prescribing indicators, patient care indicator and Facility indicators. The objectives of this study are to assess the prescribing patterns of medicines, by using WHO core indicators and to assess the severity by using GOLD guidelines. Some of the core indicators are used in early studies in Yemen[6] and Uganda[7]. It was used to quantify the impact of essential drugs programs. INRUD (International Network of Rational Use of Drugs) network member undertook systematic programs to develop field test and refine drug use indicators during the time of the early work building[8]. In an observational prospective survey, the drug use indicators can be collected at one time or they can be measured at different points in time to assess change in performance. Depending upon the purpose of a particular study the data was collected from a number of health facilities, and the process of collecting and interpreting data for supervision is quite different from the sample survey approach[9]. The prescribing indicators can be based on either retrospective or prospective data. For the retrospective, the data were extracted from medical records kept at the health facilities, these data describe drug use during patient visits that took place in the past, preferably over a one-year period to control for seasonal variations. For prospective, the data were collected from the patient about drug use during the visit of the indicators survey. The weaknesses and strengths of prospective versus retrospective data depend on the method of collecting the information[10].

METHODOLOGY

This was an Observational prospective study on drug prescription, and severity assessment in COPD patients conducted in Department of Medicine at Sri Venkateswara Institute of Medical Sciences (SVIMS). The study was carried out according to the guidelines of the Institutional Ethics Committee (IEC No. 818), Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, India. Totally 64 prescriptions were collected over a period of six months from August 2018 to January 2019.

Study criteria

Inclusion criteria: Patients who visit the outpatient department, patients of age group above 40 years, who are current smokers, reformed smokers and Patients who are diagnosed with FEV1 / FVC < 70% on pulmonary function test.

Exclusion criteria: Patients who are not willing to participate in the study, patients with severe co-morbid conditions, obstructive sleep apnea and other chronic respiratory conditions.

Data collection: Written informed consent was obtained from all subjects participating in the study (Annexure-I). Patient demographic and treatment data was collected using patient profile forms (Annexure-II). Prescription pattern will be assessed from the data collected in outpatient department by using WHO core indicators (Annexure-III). Patient's risk and severity of disease was assessed using GOLD guidelines (Annexure-IV). Suspected adverse drug reactions were monitored and reported by using adverse drug reaction reporting form (Annexure-V). The data was recorded and managed using microsoft excel work sheet. After obtaining the data prescription pattern was analyzed and descriptive statistics such as frequencies, percentages and average/mean were used to present the data. Risks and severity of disease was assessed using GOLD guidelines.

RESULTS AND DISCUSSION

In improving human health, drugs play an important role. In order to produce the desired effect, drug use should be efficacious and safe. So, this study has attempted to evaluate the prescription pattern and severity among COPD patients. The

study included 64 patients who were diagnosed as COPD and were prescribed with various drugs in department of Medicine, reviewed over a period of 6 months from August -2018 to January- 2019.

Characteristics of study patients

Gender distribution data: A total of 64 patients were analyzed in the Medicine unit. Out of 64 patients, 54 (84.3%) were males and 10 (15.7%) were females. The gender distribution data of study patients are presented in Figure-1. Results were identical to the study conducted by Mazher Maqusood 2016 and Jacob N. Thomas 2018.

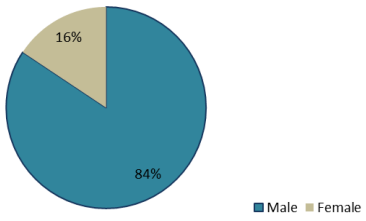

Figure 1: Gender Vs No. of patients

Age wise distribution data: Patients with age group between 40-45, 46-50, 51-55, 56-60, 60-65, 66-70, 71-75, 76-80 and >80 years were found to be 8, 5, 5, 10, 17, 8, 5, 3 and 3. The Age distribution data of study patients are presented in **Figure-2**. These determinations were reciprocal to the study conducted by Mazher Maqusood 2016 and Jacob N. Thomas 2018.

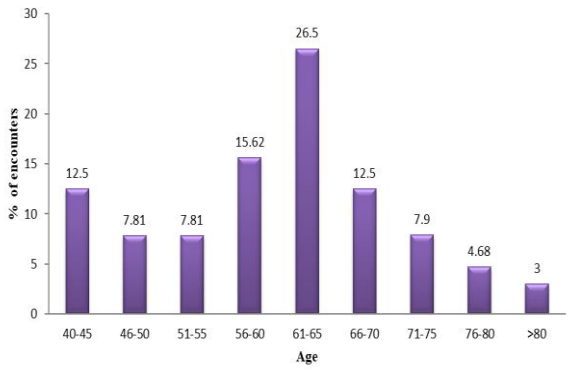

Figure 2: Age Vs percentage of encounters

Drug characteristics in the study

Out of 64 encounters, 25 were prescribed with 1-4 drugs whereas 37 with 5-7 drugs and 2 with >7 drugs as depicted in Figure-3. Study results state that patients were prescribed with inhalers (82), respules (25), tablets (142), syrups (16), injections (14) and others (18) as shown in Figure- 4. These determinations were reciprocal to the study conducted by Mazher Maqusood 2016 and Jacob N. Thomas 2018.

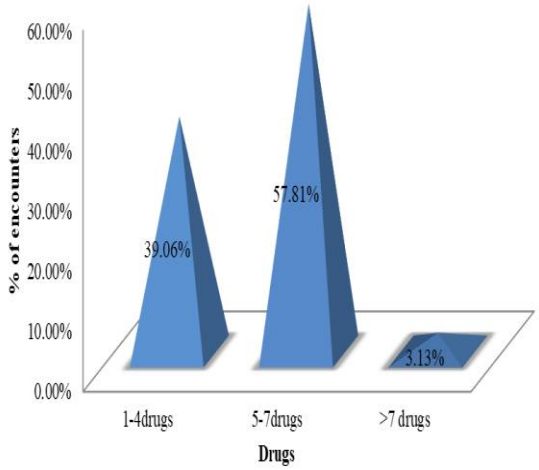

Figure 3: No of Drugs Vs percentage of encounters

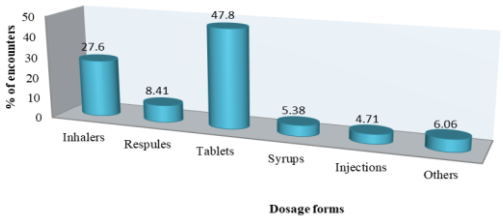

Figure 4: Dosage form Vs percentage of encounters

Data on prescribing pattern

Commonly prescribed drug classes: A total of 297 drugs were prescribed in this study. Most commonly prescribed drug classes were corticosteroids (23), bronchodilators (59), Methylxanthines (34), antibiotics (43), LABA and ICS (37), mast cell stabilizers (06) and others (93).

Data on commonly prescribed drug classes were in below figure-5.

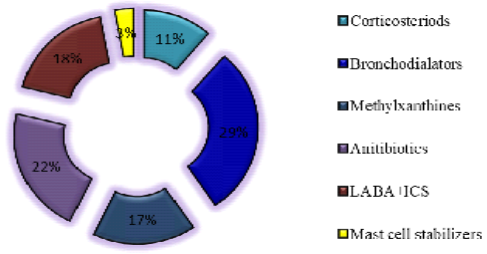

Figure 5: Category of drugs Vs percentage

Most commonly prescribed drugs

A total of 297 drugs were prescribed in this study. Most commonly prescribed drugs were salbutamol (40), formoterol+budesonide (28), azithromycin (16), cefpodoxime (14), doxofylline (12), deriphylline (11), macphylline (11), ipratropium bromide (08), montelukast + levocetrizine (06), prednisolone (05), hydrocortisone (05), amoxicillin (04), ceftriaxone (04), levocetrizine (03) and methyl prednisolone (02) and represented in Figure-6.

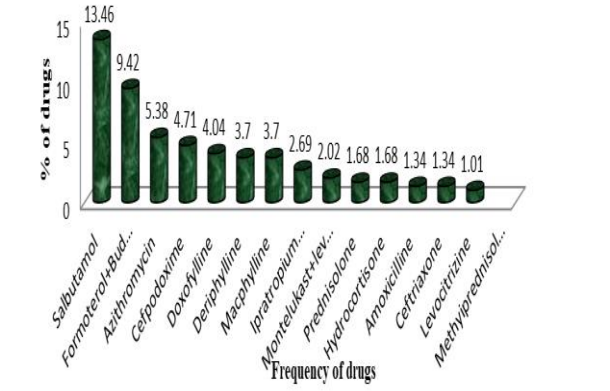

Figure 6: Frequency of drugs Vs percentage

Data on WHO core indicators

Prescribing indicators: A total of 297 medicines were prescribed to 64 patients. An average number of drugs per prescription were 5. Among 297 medicines prescribed, 42 drugs were prescribed by generic name. Therefore the percentage of drugs prescribed by generic name is 14.14%. Total number of antibiotics prescribed in this study was 40 and therefore the percentage of antibiotics prescribed is 62.5%. A total of 61drugs of the prescription were administered as inhalers, and the percentage of encounters with inhalers is 95.3%. A total of 284 drugs (95.6%) prescribed to theCOPD population were from Essential Drug List (EDL) and presented in table-1.

Patient care indicators: Several studies have acknowledged the improvement in patient's knowledge about medications following counseling by a pharmacist. One of the reasons for an increased percentage of patients with knowledge of correct doses could be due to increased consultation time. In this study, the average consultation time was found to be 10.35 minutes. The percentage of patients with the knowledge of correct doses was found to be almost 82.81%. Data on patient care indicators were presented in below table-1.

Facility indicators:* The copy of essential drug list and clinical guidelines with internet facility was available. 95% medicines were availablefrom the list of EDL. Data on facility indicators were presented in below **Table-1.**

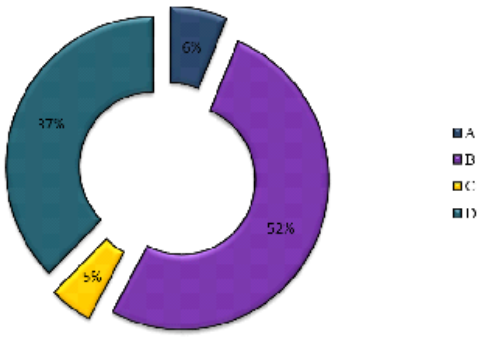

Figure 8: Severity category Vs Percentage of encounter

Data on gold guidelines

Based on severity, category distribution

A total of 64 patients were analyzed in the Medicine unit. Out of 64 patients, 4 falls under Category A, 33 fall under Category B, 3 falls under Category C and 24 falls under Category D and presented in Figure-7 and 8. According to GOLD guidelines, the present study shows category B were higher with more symptoms and low risk, followed by

category D were next higher with more symptoms and high risk.

Table 1: WHO core indicators assessed for drug prescriptions (n=64)

Indicators	Result
Prescribing indicators	
Average number of drugs per encounter	5
Percentage of drugs prescribed by generic name	13.86%
Percentage of encounters with an antibiotic prescribed	62.5%
Percentage of encounters with an inhalers prescribed	93.3%
Percentage of drugs prescribed from WHO essential drug list	95%

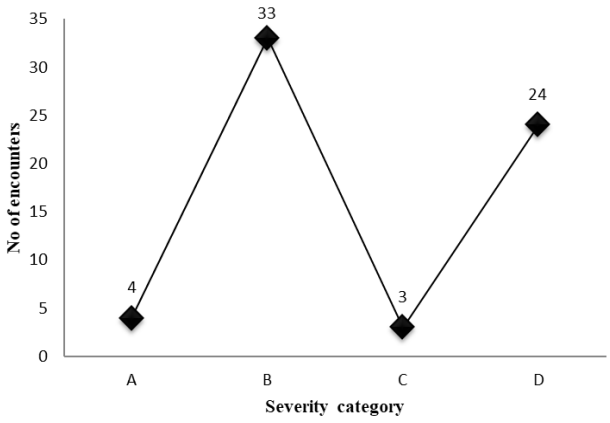

Figure 7: Severity category Vs No of encounters

Distribution based on smoking

A total of 64 patients were analyzed in the Medicine unit. Out of 64 patients, 17 were current smokers, 32 were Ex-smokers and 15 were Non-smokers and the data was distributed and presented in Figure-9.

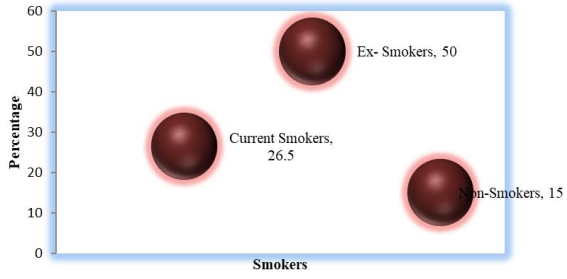

Figure 9: Smokers Vs Percentage

Distribution based on smoking Vs Category

A total of 64 patients were analyzed in the Medicine unit. Out of 64 patients, current smokers were 17 in which 3 belong to category A, 7 belong to category B, 1 belong to category C, 6 belong to category D, ex-smokers were 32 in which 19 belong to category B, 1below to category C, 12 belong to category D, non-smokers were 15 in which 1 belong to category A, 7 belong to category B, 1 belong to category C, 6 belong to category D. The smoking pattern Vs category distribution data of study patients are presented in Figure-10.

Patient care indicators	
Average consultation time (minute)	10mins
Percentage of patients with knowledge of correct doses	82.81%

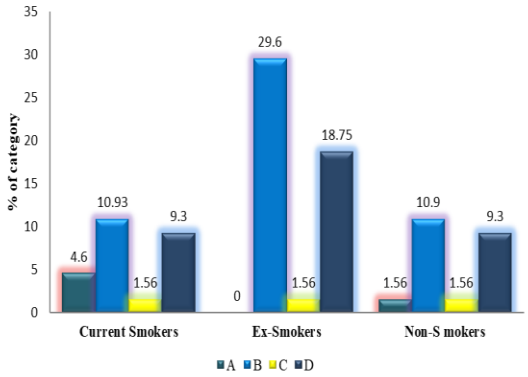

Figure 10: Smokers Vs GOLD Category

SUMMARY & CONCLUSIONS

In this study, only outpatient prescriptions were considered. About 297 medicines were prescribed to 64 patients. An average number of drugs per encounter were found to be 5.0. As per WHO, the average number of drugs per prescription should be less than three (3.3)5. WHO core guidelines recommends prescribing all drugs in the generic name for better information and communication among healthcare professionals[5]. In this study, the percentage of drugs prescribed by generic name was found to be 14.1% lower than the ideal WHO standard value 100%.

The percentage of encounters with an antibiotic prescribed was 62.5 % higher than the optimal value proposed (≤ 30%). The use of antibiotics was found to be more in inpatient department. The commonly prescribed antibiotics were azithromycin, cefpodoxime, amoxicillin and clavulonic acid, ceftriaxone, piperacillin and tazobactum. However, the use of antibiotic has to be minimized to prevent adverse drug reactions and risk of antimicrobial resistance. A total of 61 of the prescription were administered as inhalers and the percentage of encounters with inhalers was 95.3 % higher than the optimal limit. Overuse of inhalers will have the risk of increased heart rate, headaches and nervousness problem5.The copy of Essential Drug List (EDL) and clinical guidelines were available in the hospital. This was encouraged by WHO to provide a frame work for rational prescribing of drugs5. In this study, the percentage of drugs prescribed from EDL was 95.6% which implies that most of the drugs were assigned from EDL. The average consultation time in this study was 10 min which was equal to the WHO standards (10 min). In this study, the patient's knowledge of their medication was evaluated, 81.25% of the patients were aware of their drugs use correctly; remaining patients have some knowledge about medications but not in all aspects. Suspected adverse drug reaction were headache, palpitations, arrhythmias, insomnia, constipation and dry mouth. From the data obtained none of the prescriptions have reported the above suspected adverse drug reactions and drug-interactions. The study indicates that all the 64 prescriptions were found to be appropriate, which indicates a direct rationality of prescription.

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