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# A REVIEW ON PRESCRIPTION PATTERN AND ASSESSMENT OF SMOKING AS A RISK FACTOR AMONG COPD PATIENTS IN A TERTIARY CARE HOSPITAL

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**Abstract:**

*Chronic obstructive pulmonary disease is a serious respiratory disorder that may leads to airway obstruction and may further causes difficulty in breathing. Smoking is considered as the major risk factor for the occurrence of COPD. Both current smokers and ex-smokers have a great chance for chronic obstructive pulmonary disease. Smoking cessation is the most effective method to control COPD to a great extend. Improving the lifestyle may helps to reduce chronic obstructive pulmonary disease to a great extend.*

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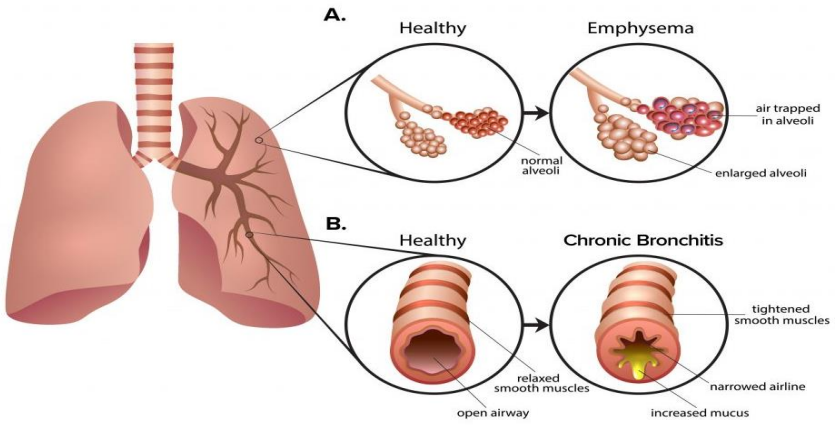
## INTRODUCTION:

Chronic obstructive pulmonary disease (COPD) is characterised by chronic airflow limitation and a range of pathological changes in the lungs which may further leads to difficulty in breathing. Emphysema and Chronic Bronchitis are the two most common conditions that contribute to COPD.

Pathophysiological characterisation of chronic obstructive pulmonary disease may include:

- **Emphysema** is characterised by alveolar wall destruction and airspace enlargement as a result of damaging exposure to cigarette smoke and other irritating gases and particulate matter.
- **Chronic Bronchitis** may include inflammation and fibrosis of the smaller airways which is characterised by chronic cough and sputum production.




Signs and symptoms of COPD may include;

- Shortness of breath, especially during physical activities.
- Wheezing
- Chest tightness
- A chronic cough that may produce sputum that may be clear, white, yellow or greenish.
- Frequent respiratory infections.
- Lack of energy.
- In later stages it may include unintended weight lose, swelling n ankles, feet or legs.

**Epidemiology:**

COPD is the fourth leading cause of death globally and second in India. It is projected to become the second leading cause of global mortality by 2030. It affects 5% to 19% of adults over 40 years of age, making it the fourth most common cause of hospitalization in males and seventh in the females. As per the INSEARCH study, the prevalence of COPD is 3.49% in the population above 35 years, whereas in southern state of Kerala it is 10%. Global Burden of Disease study had estimated the prevalence of COPD in India at national level to be 2.7%, while it was found to be 4.0% for the state of Kerala. A high proportion of COPD remains undiagnosed and there is also poor recognition of COPD by treating doctors.

The increase in prevalence of COPD is believed to be related to the aging of the population and past smoking behaviour, because COPD death rates and prevalence lag behind smoking rates by several decades.

**Etiology:**

Chronic obstructive pulmonary disorder is strongly associated with cigarette smoking. Both active and passive smoking may contribute to this. Other factors such as air pollution, occupational exposure to dust particles may also results in chronic obstructive pulmonary disease.

Cigarette smoking may results in increased bronchial reactivity and inflammation. Ciliary function is depressed; result in decreased clearance of mucus and particles.

Macrophage function is similarly inhibited. Release of lysosomal enzymes destroys the connective tissue in the lung.

A history of chronic bronchitis can often be elicited in patients with the centrilobular form of emphysema. Inborn errors resulting in enzyme deficiencies are rare causes of emphysema. If an imbalance elastase and elastase inhibitors occur, alveolar destruction results. A deficiency of $\alpha_1$ trypsin, elastase inhibitor, indicates a genetic basis; as the reason for alveolar wall destruction.

**Risk factors for copd:**

- Cigarette smoking is the major risk factor for COPD and in most cases it may occur due to a current or past history of cigarette smoking.
- In patients with severe emphysema approximately 99% have a history of regular cigarette smoking.
- Occupational exposure to dusts and chemicals.
- Indoor and outdoor air pollution.
- Infections including respiratory viruses.
- Genetic abnormalities including deficiency of α1- antitrypsin enzyme.

**Smoking:**

COPD is rapidly becoming a global public health crisis with smoking being recognised as its most important causative factor. One hundred million deaths were caused by tobacco in the 20th century and is estimated that there will be upto one billion deaths attributed to tobacco use in 21st century. The most effective available treatment for COPD is smoking cessation. Passive exposure to cigarette smoke may also contribute to the development of COPD by increasing the lung total burden of inhaled particles and gases.

Among people who smoke chronic lung diseases accounts for 73% of all smoking related illness. In former smokers, chronic lung disease accounts for 50% of all smoking related conditions. That's because smoking causes a number of different harmful reactions in the lungs. Each of these can contribute to COPD. During smoking the lungs become inflamed. The inflammation damages lung tissue, causing it to thicken. Thickened airways obstruct the air that is inhaled and exhaled which may results in symptoms of COPD. Oxygen deprivation may results in shortness of breath and exhaustion which may further leads to an increase in risk of lung infections. The harmful chemicals introduced into the lungs during smoking may cause cellular changes that permanently interfere with airway expansion and contraction. The resulting lung stiffness further contributes to shortness of breath and exercise intolerance. Smoking continues to damage the lungs even after COPD develops, worsening the disease and triggering exacerbations. It can be life threatening and can increase the severity of the disease. In addition to this, smoking induces an abrupt elevation of chemicals in the blood that are linked with COPD associated death.

**Pathophysiology:**

The pathogenesis of COPD may involve activation of innate and adaptive immune system leading to chronic inflammation. In general, inhalation of noxious agents such as cigarette smoke leads to the activation of resident immune and parenchymal cells, which in turn recruit additional inflammatory cells from the systemic compartment into the resident tissue and airway. The activation and recruitment of immune cells is largely mediated through the production and release of cytokines and chemokines. The most well studied cause of COPD and particularly emphysema relates to protease-antiprotease imbalance. Inflammation promotes the production and release of proteases from inflammatory and parenchymal cells. The disease pathogenesis may also focuses on the smoking related lung injury, most recent hypothesis suggest that another important component of disease pathogenesis may involve inadequate lung repair.

**Complications of copd:**

- **Respiratory Infections:** People with COPD are more likely to catch colds, flu and pneumonia. Any respiratory infection can make it much more difficult to breathe and could cause further damage to lung tissue,
- **Heart Problems:** COPD can increase the risks of heart problems including heart attack.
- **Lung Cancer:** People with COPD have a higher risk of developing lung cancer.
- **High Blood Pressure In Lung Arteries:** COPD may cause high blood pressure in the arteries that may leads to pulmonary hypertension.
- **Depression:** Difficulty in breathing may contribute to decrease in physical as well as other extracurricular activities which may further contribute to the development of depression.

**Stages of copd:**

COPD gradually get worse. The progress of COPD is from mild to severe from person to person.

- **Mild COPD (stage 1 or early stage)**

The first sign of COPD is often feeling out of breath with light exercises like walking up stairs. Another sign is a cough with mucus that's often particularly troublesome in the morning. These are early warning signs of COPD.

- **Moderate to severe COPD (stages 2 and 3)**

Shortness of breath is most evident with more advanced with COPD. Difficulty in breathing occurs even during everyday activities. Increased phlegm, discolouration of phlegm, and more shortness of breath are generally more common in higher stages of COPD. There is an increase chance for occurrence of lung infections like bronchitis and pneumonia.

- **Very severe COPD (stage 4)**

When COPD becomes severe almost all of the activities that are done may cause shortness of breath. This may limit the mobility. There will be a need for supplemental oxygen from a portable tank.

**Management of copd:**

**Objectives of copd management:**

- ✓ Relieve symptoms.
- ✓ Prevent disease progression.
- ✓ Reduce mortality and improve exercise tolerance.
- ✓ Prevent and treat complications.

**Drugs used in treatment of copd:**

**a) Bronchodilators:**

**Sympathomimetics:**

Salbutamol
Terbutaline
Salmeterol
Formeterol
Ephedrine
Isoprenaline

**Methylxanthines:**

Theophylline
Aminophylline
Hydroxyethyl theophylline

**Anticholinergics:**

Ipratropium bromide
Tiotropium bromide

**Mast cell stabilizers**:

Sodium chromoglycate
Ketotifen

**Leukotriene antagonist:**

Montelukast
Zafirlukast

**Coticosteroids:**

**Systemic:**

Hydrocortisone
Prednisolone

**Inhalational:**

Beclomethasone dipropionate
Fluticasone propionate
Flunisolide

**Mechanism of action:**

**Bronchodilators:**

- ➢ **Adrenergics** stimulate beta$_2$-adrenergic receptors in bronchial smooth muscle. The receptors in turn stimulate the enzyme adenyl cyclase to increase to increase production of cyclic AMP. The increased cyclic AMP produces bronchodilation.
- ➢ **Methylxanthines** were formerly thought to increase cyclic AMP by inhibiting the enzyme phosphodiesterase, which metabolizes cyclic AMP. However it may also possesses several other mechanisms which may include; increasing endogenous catecholamine's, inhibiting calcium ion movement into smooth muscle, inhibiting prostaglandin synthesis and release or inhibiting the release of brochoconstrictive substances from mast cells and leukocytes. In addition to their bronchodilating effects xanthines also increase cardiac output, cause peripheral vasodilation, exert a mild diuretic effect and stimulate the central nervous system. The cardiovascular and CNS effect are considered as adverse effects.
- ➢ **Anticholinergics** block the action of acetylcholine in bronchial smooth muscle when given by inhalation. This action reduces intracellular GMP, a bronchoconstrictive substance.

**Leukotriene antagonist:**

They are strong mediators of bronchoconstriction and inflammation. They also increase mucus secretion and mucosal oedema in the respiratory tract. They are formed in response to tissue injury, which causes the breakdown of phospholipids layer of cell membranes and subsequent release of arachidonic acid. Arachidonic acid is then metabolized to leukotriene by the lipoxygenase pathway and prostaglandins by the cyclooxygenase pathway.

The leukotriene inhibitor drugs include two agents with different mechanism of action. Zileuton inhibits lipoxygenase and thereby reduces formation of leukotriene. Zafirlukast inhibit leukotriene receptors and is classified as a leukotriene receptor antagonist.

**Mast cell stabilizers:**

Cromolyn and Nedocromil stabilize mast cells and prevent the release of bronchoconstrictive and inflammatory substances when mast cells are confronted with allergens and other stimuli.

**Corticosteroids:**

Corticosteroids have two major actions.

1. The drugs suppress the inflammation in the airways by inhibiting the processes including movement of fluid and protein into tissues, migration and function of neutrophils and eosinophils, synthesis of histamine in mast cells and production of proinflammatory substances.
2. The second action is to increase the number and sensitivity of beta$_2$-adrenergic receptors, which restores or increases the effectiveness of beta$_2$-adrenergic bronchodilators. The

number of beta$_2$ receptors increases within about 4 hours and improved response occur within 2 hours.

**Medical management of copd:**

- **Risk Reduction:** Smoking cessation is the single most effective intervention to prevent COPD or slow its progression. Nurses play a key role in promoting smoking cessation and educating patients about the ways to do so.
- **Oxygen Therapy:** Oxygen therapy is done for more than 15 hours per day for COPD patients in chronic hypoxic respiratory failure. It may increase the chance for survival. The goal of oxygen therapy should be an oxygen saturation of 88% to 90%.
- **Surgical Management:** Surgical options for treatment of severe COPD include lung volume reduction surgery and lung transplantation.
- **Vaccinations:** All patients with COPD should be given annual influenza vaccinations.
- **Pulmonary Rehabilitations:** Pulmonary rehabilitation programs serve as adjuncts to drug treatment to improve physical function. It includes exercise, education and behavioural interventions.

**Smoking cessation and copd:**

Smoking cessation is the single most cost effective treatment for COPD. Smoking cessation is associated with a reduction in the risk of developing stroke, coronary heart disease different types of cancer and is associated to an increased life expectancy. Smoking cessation at an early stage of COPD is more effective than in the later stages.

Tobacco dependence is a chronic condition that often required repeated intervention to succeed. Once users are dependent on tobacco, quitting is extremely difficult. Studies have shown that a considerable number of smokers want to stop smoking, but a significant proportion of them have never tried. A large portion of all smokers are in the stage of preparation. Most smokers go through several stages before they finally take the decision to make a cessation attempt and at last succeed with their intentions and stop smoking. Smoking cessation advice or other interventions appear to have their effect by triggering a cessation attempt. Each year about 2% of smokers succeed in quitting by their own initiative.

Pharmacotherapies for smoking cessation are twice as likely more efficacious than placebo. Pharmacologic agents are classified as ***first line pharmacotherapy***, which includes:

- Nicotine replacement therapy.
- Bupropion.
- Varenicilline.

***Second line pharmacotherapy*** may include:

- Nortryptiline (tricyclic anti depressant agent )
- Clonidine (antihypertensive drug)

**Nicotine:**

Nicotine is a naturally produced alkaloid in the nightshade family of plants and is widely used recreationally as a stimulant and anxiolytic. As a pharmaceutical drug, it is used for smoking cessation to relieve withdrawal symptoms. Nicotine acts as a receptor agonist at most nicotinic acetylcholine receptors.

**Nicotine replacement therapy:**

Most regular smokers are addicted to nicotine. When a subject smokes a cigarette, nicotine will get into the blood stream and almost immediately stimulate the brain. In regular smokers when the blood level of nicotine decreases, withdrawal symptoms such as restlessness, increased appetite, inability to concentrate, irritability, dizziness and nicotine craving will develop. These symptoms begin within a few hours after having the last inhalation of tobacco smoke, if they are not relieved by smoking a cigarette, withdrawal symptoms will increase in severity.

Nicotine replacement therapy will allow the smoker to maintain stable nicotine levels in the blood stream

to avoid withdrawal symptoms without smoking. The therapies available may include nicotine gum, patches and inhalers. These therapies aid in smoking cessation by replacing the nicotine mediated neuropharmacologic effects achieved by smoking.

- ***Nicotine patch:*** The over the counter patch is placed directly on your skin to release a low, steady amount of nicotine over time. Possible side effects may include irritation or redness on your skin, dizziness, headache, nausea, racing heartbeat, muscle pain or stiffness or problems in sleeping.
- ***Nicotine gum:*** The over the counter nicotine replacement gum comes in 2mg and 4mg strengths and the nicotine is immediately released through the mucus membrane in the mouth during chewing. Possible side effects may include irritation to the mouth or throat, bad aftertaste, problems with existing dental work, nausea, jaw pain, racing heartbeat.
- ***Nicotine lozenges:*** Like gum, nicotine lozenges are available over the counter. During sucking the nicotine is released slowly. They are meant to dissolve like hard candies. Possible side effects may include coughing, gas, heartburn, trouble sleeping, nausea, hiccups, racing heartbeat.
- ***Nicotine inhaler:*** The prescription-only inhaler release nicotine when cartridge is attaches to mouth piece and inhale. They are the nicotine replacement method that is most like smoking a cigarette. Possible side effects may include coughing, irritation to the mouth or throat, runny nose, nausea. Other side effects that can occur include headache, nervousness and a racing heartbeat. These are related to the nicotine, not the inhaler itself.
- ***Nicotine nasal spray:*** This prescription-only nasal spray allow a quick burst of nicotine into the bloodstream directly through the nose. Possible side effects may include irritation to the nose or throat, coughing, watery eyes, sneezing. These side effects usually get better after one to two weeks of treatment. Other side effects that can occur may include headache, nervousness and a racing heartbeat. These are related to the nicotine, not the spray itself.

**Strategy for smoking cessation:**

The strategy for smoking cessation utilized a mnemonic system based on the five **'A'**s;

- **Ask:**

Systematically identify all tobacco users at every visit. Write a patients smoking status in the medical chart under vital signs. Implement a system which ensures that, for every patient at every clinic visit, tobacco use status is queried and documented. Ask patients about their desire to quit and reinforce their intentions.

- **Advice:**

  Give proper advice to the tobacco smokers to quit smoking. In a clear, strong and personalized manner encourage them to quit. Motivate the patients who are reluctant to quit.

- **Assess:**

  Most individuals go through several stages before they stop smoking. Determine willingness to make a quit attempt. Ask every tobacco user if he/she is willing to make a quit attempt at this time.

- **Assist:**

  Aid the patient in quitting. Help the patient with a quit plan; help motivated smokers set a quit date. Provide practical counselling; provide if available intra-treatment social support including Bupropion SR, Varenicilline, Nicotine gum, Nicotine inhaler, Nicotine nasal spray and nicotine patch are effective and atleast one of these medications should be prescribed in the absence of contraindications.

- **Arrange:**

  Schedule contact with patients either in person or via telephone. Encourage relapsed smokers to try quitting again. Tobacco dependence is a chronic condition that warrants repeated treatment until long term or permanent abstinence is achieved.

**Review of literature:**

1. **Poonam Salwan, Juhi Singla, Shalini Salwan** conducted a study on **Prescription pattern in the management of chronic obstructive pulmonary patients in a tertiary hospital**. The study is aimed to analyse and evaluate the trends and patterns of prescribing drugs among chronic obstructive pulmonary disease patients. The study concludes that symptomatic treatment was given to COPD patients in the hospital. The prescribing pattern was in concordance with the current global initiative for chronic obstructive lung disease guidelines in the management of COPD.
2. **DB Jyothi, S Vijay Prasad, Ambadasu Bharatha** conducted a study on **prescription pattern in chronic obstructive pulmonary disease**. Screening of prescription and evaluation of drug utilization can identify the issues regarding drug use and help in contributing feedback to prescribers to create awareness about irrational drug use. The study concluded that

COPD treatment had low rate of adherence to chronic obstructive lung disease guidelines.

3. **Bhandari Puja** conducted a study titled **Drug use in COPD prescription patterns and cost of medications in a multispeciality tertiary care hospital in India**. The aim of the study was to identify the most prescribed drugs in COPD, their patterns, cost of medications and laboratory investigations. The study concluded that the prescribing trend that was observed at the hospital appears to be in concordance with the current guidelines for the management of COPD patients. However the cost of treatment is indeed more than other hospitals.
4. **Sharon Sunil, Arya Gigi, Prince Hepzhiba, Dr. Mahesh NM, Mrudula Giri, Dr. Ajoy Krishnamurthy** conducted a study on **Drug utilization evaluation in chronic obstructive pulmonary disease patients.** The study concluded that drug utilization in COPD was evaluated in patients who were admitted in general medicine ward. Independent of socioeconomic status, poor health literacy is associated with greater COPD severity, greater COPD helplessness, and higher odds of COPD related emergency healthcare utilization. These results underscore that COPD patients with poor health literacy may be at particular risk for poor health related outcomes.
5. **A Shirisha Reddy, K vijaya Lakshmi, M Kavitha and D Dharani Krishna** conducted a prospective observational study on **prescribing pattern in the treatment of COPD**. The study aim to analyse and evaluate the trends and patterns of prescribing drugs among COPD patients using chronic obstructive lung disease criteria as base. The present study concludes that many of the prescriptions were rational and in accordance with the chronic obstructive lung disease guidelines.
6. **A. Unni, AK Jayaprakash, MC Yadhukrishnan, P Uma Devi** conducted a study on **Drug utilization pattern in chronic obstructive pulmonary disease inpatients at a tertiary care hospital**. The study was designed to establish the drug utilization pattern in hospitalized chronic obstructive pulmonary disease patients. The study concludes that the prescribing trend observed at the hospital appears to be in concordance with the current guidelines for the management of COPD patients.
7. **Mazher Maqusood, Farhan Ahmad Khan, Mukesh Kumar** conducted a study of **prescription pattern in the management of COPD in a tertiary care hospital**. The aim and objective of this study is to evaluate the current prescription pattern of COPD management using data generated in a tertiary care hospital. The study concludes that the prescribing trend observed in the study appears to be in concordance with the current chronic obstructive lung disease guidelines for the management of COPD patients.
8. **Shiv Kumar, G Madhuri, Anju Wilson, Tigi S George** conducted a Study of **prescribing pattern of drugs in chronic obstructive pumnonary disease in tertiary care teaching hospital**. This was a prospective study with an aim to analyze the drug prescribing pattern in chronic obstructive pulmonary disease patients. The study concludes that symptomatic treatment was given for COPD patients in the hospital. Combination therapy was preferred over monotherapy. Bronchodilators were the mostly prescribed class of drugs among COPD drugs. Antimicrobial therapy was given for all patients. Polypharmacy was found in all prescriptions. Diagnosis of COPD lacked spirometry
9. **Avinash Teli, Arvind Kumar, Akshi Denod, Parminder Nain** conducted a study on **drug utilization and prescribing pattern of drugs in chronic obstructive pulmonary disease patients (IPD and OPD) in tertiary care hospital**. The study was carried out assess the drug use and prescribing pattern by various medical practitioners in COPD patients with or without co-morbidity. In conclusion maximum improvement in the symptoms of disease, quality of life, severity of disease found to be improved with Bi-therapy.
10. **Dhaval B Joshi, Avinash Khadela, Bhavin Vyas, Ekta Patel** conducted a study on the **impact of counselling in patients with chronic obstructive pulmonary patients: knowledge, attitude and practice outcome**. The study aims to assess the baseline levels of knowledge, attitude and practice of COPD patients and to study the impact of patient counselling on level of knowledge, attitude and practice with COPD patients. The study concludes that pharmacist counselling may have an impact in improving the perception about disease and lifestyle change and thereby improving the quality of life of COPD patients.
11. **Mahadedo P Sawant, Sudhir L Padwal, Anand S kale, Harshal N Pise, Rucha M Shinde** conducted a Study on **drug prescription pattern among the COPD patients admitted to medicine in-patient department of tertiary care hospital**. Study data highlights that average number of drugs were higher than WHO norms, antibiotics were commonly used, and drugs

prescribed with brand names were higher than the generic names.

12. **Dr. Sankara Babu Gorle, Dr. Madhav P** conducted a cross-sectional study on **prescribing pattern on patients suffering from chronic obstructive lung disease in a teaching hospital at vizianagaram**. The study shows that majority of drugs were give in accordance with global initiative for chronic obstructive lung disease criteria recommendations. In this study numbers of male patients are more compared to female. All were having smoking history and also some had history of exposure to jute mill dust.
13. **VN Vamsi Krishna, Siva George M, Christine Undurthi** conducted a study on **Prescribing pattern of drug in the management of chronic obstructive pulmonary disease at an Indian tertiary care teaching hospital**. The main aim of this study is to evaluate the prescribing pattern of drugs in the management of chronic obstructive pulmonary disease. The study concludes that proper pharmacological approaches help to improve the patient's quality of life in COPD. Hence clinical pharmacists should take the responsibility in providing effective pharmaceutical care in case of these patients.
14. **Niffy Abraham, A. Vikneswari, Neeba Sunny, and Sherlet George** conducted a study titled **Analysis of prescribing pattern of drugs obstructive lung diseases**. This was a prospective study with the aim to analyze the drug prescribing pattern in obstructive pulmonary disease. The study concludes that chronic obstructive lung disease such as asthma and COPD are prominent cause of death in the world. The majority of patients have intermittent exacerbations of asthma and COPD due to the inadequate pattern of drug use.
15. **R Shrestha** conducted a cross-sectional study on **medication adherence pattern and factors affecting the adherence in chronic obstructive pulmonary disease**. The study aims to investigate the adherence pattern in the management of COPD and factors affecting patient adherence to the prescribed treatment. The study concludes that majority of COPD patients were elderly. Forgetfulness was associated with medication non-adherence. Most of the patients had discontinued medication because of side effects. Polypharmacy is one of the major factors associated with non-adherence to medication in COPD.
16. **Kuang-Ming Liao, Kai-Lin Chiu and Chung-Yu Chen** conducted a study on **Prescription pattern in patients with chronic obstructive pulmonary disease and osteoporosis.** The purpose of this study was to conduct a retrospective study of the prescription pattern in patients with COPD and osteoporosis in Taiwan. The study concludes that the rate of prescriptions for the treatment of osteoporosis in patients with COPD was low. Physicians need to be aware of this issue and treat osteoporosis more aggressively in patients with COPD.
17. **Aleemuddin Naveed, Syed Amir Ali, Aliya Parveen, Shazia Yousaf, Amena Ahmed, Mir Azad Ali Hashim, Yaseen Gigani** conducted a study on **Prescription pattern and cost of illness in asthma and chronic obstructive pulmonary disease patients**. The aim of study was to measure he prescription pattern and cost of illness of asthma and COPD patients. The study concludes that the cost of illness for asthma and COPD are substantial. Hospitalization and medication cost can be reduced by implementing preventive strategies including but not limited to home care services, rehabilitation therapies, smoking cessation programs, medication assessment and patient compliance programs. Future researchers should examine the treatment strategies and interventions that may help to reduce the burden of COPD and asthma.
18. **Dr. R Kothai, Dr. Rangabashayan, Dr B Arul, Punniya Mariyam Sunny**, **Reshma R Nair and Rinku Eliza Mathew** conducted a study titled **Analysis of prescribing pattern of COPD patients in a tertiary care hospital Salem.** The study concludes that the prescribing patterns were not in accordance with WHO guidelines so it is necessary to make doctors aware about the use of drugs, importance of prescribing drugs with generic name and safety of prescribing drugs.
19. **Miriam Barrecheguran, Monica Monteagudo, Jaume Ferrer, Eulalia Borrell, Carl Llor, Cristina Esquinas, Marc Miravitlles** conducted a study titled **Treatment pattern in COPD patients newly diagnosed in primary care**. The study concludes that initial treatment patterns often do not comply with guidelines. The use of inhaled corticosteroids is excessive but has decreased mainly in non exacerbator patients. Many COPD patients still remain untreated after diagnosis, although this has decreased.
20. **Sai Lakshmi Srikala T, Saika V, Raveendra Babu K, Chinna Eswaraiah M** conducted a study on **Assessment of prescription pattern among COPD patients in department of general medicine ward and pulmonology in**

**tertiary care hospitals of Khammam region**. The study is aimed to analyze and evaluate the trends and patterns of prescribing drugs among COPD patients. The study concludes that symptomatic treatment was given to COPD patients in the hospital. The prescribing pattern was found to be in concordance with current chronic obstructive lung disease guidelines in the management of COPD patients.

## METHODOLOGY:

The study is systematic review of various literatures which are available on the various sources.
The review, discussion were carried out and are concluded.

## DISCUSSION:

A review is conducted on the prescription pattern and assessment of smoking as a risk factor among chronic obstructive pulmonary disease patients in a tertiary care hospital. The review mainly aimed to analyse the impact of smoking for the occurrence of COPD.
It may also involves the medications suggested for COPD, most susceptible age group towards COPD, major comorbidities that are associated with COPD, risk factors for COPD and also the influence of smoking in chronic obstructive pulmonary disease. The overall criteria's related to COPD can be figured out through the review. Chronic obstructive pulmonary disease is a serious respiratory disorder that may leads to airway obstruction and may further causes difficulty in breathing.
From the review it was analysed that the main age group susceptible towards COPD are from middle age to old age people. Among males and females, it was found out that males are at more risk for the occurrence of COPD due to their smoking behaviour.
Smoking is one of the most prevalent risk factor towards the occurrence of COPD. Both current smokers and ex-smokers have a great chance for chronic obstructive pulmonary disease. Smoking cessation is the most effective method to control COPD to a great extend.
The various risk factors for chronic obstructive pulmonary disease may include indoor and outdoor air pollution, occupational exposure to dust and chemicals, respiratory viruses involved infections and also due to some genetic abnormalities. Among the risk factors the most important one is smoking.
The most preferred medications for COPD may include bronchodilators, antibiotics and corticosteroids. Among bronchodilators, Methylxanthines are given first priority which is followed by Sympathomimetics and Anticholinergics. Beta lactam antibiotics are most commonly prescribed antibiotics for COPD. In case of corticosteroids, both systemic and inhalational antibiotics are prescribed. The most favourable route through which the medications are administered is parenteral route which is followed by inhalational and oral route. The relevant topics associated with COPD are discussed through this review.

## CONCLUSION:

The review of this study was performed to assess the prescription pattern, comorbidities, risk factors and age wise distribution of COPD patients in a tertiary care hospital. Chronic obstructive pulmonary disease is a serious respiratory problem characterized with chronic airflow limitation which may further leads to difficulty in breathing. Smoking is the prime most risk factor that may contribute to the occurrence of COPD. Smoking cessation is the effective method in order to prevent COPD. By reducing the occurrence and exposure to various risk factors, chronic obstructive respiratory disease can be eradicated to a great extend.

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