Blog on Pulmonary Disease

Introduction: Prevalence, Causes, Prevention & Treatment

COPD, asthma, acute lower respiratory tract infections, TB and lung cancer are among most common causes of severe illness and death worldwide

COPD affects more than 200 million people in the world [2], 65 million of whom have moderate or severe airway disease, and most studies show it is underdiagnosed by 72 to 93% . This is higher than reported for hypertension, hypercholesterolaemia and many other important disorders. Misdiagnosis is also common. The high prevalence and severity of illness make its economic cost high. The direct cost of COPD is 6% of total healthcare spending (€38.6 billion annually) in the European Union and accounts for 56% of the total cost of treating respiratory diseases.

The most important factor leading to the development of COPD is tobacco smoking. Tobacco smoke causes destruction of lung tissue (emphysema) and obstruction of the small airways with inflammation and mucus (chronic bronchitis), leading to the cardinal symptoms of COPD, namely shortness of breath and cough. Indoor and outdoor air pollution, inhaled tobacco smoke and occupational dust, genetic syndromes (such as $\alpha 1$ -antitrypsin deficiency), childhood pneumonia and other diseases that involve the airways (such as chronic asthma and TB) are also factors contributing to the development of COPD.

Prevention Discouraging individuals from starting to smoke tobacco and encouraging smokers to reduce and quit smoking are the first and most important priorities in preventing COPD.

Spirometry is required to establish a clinical diagnosis of COPD and is the first step in treatment. Using spirometry avoids misdiagnosis and assists in evaluating the severity of the airflow limitation.

Global burden of different types of pulmonary disease or disorders

COPD remained the most prevalent disease-specific chronic respiratory disease worldwide in 2017, accounting for 55·1% of chronic respiratory disease prevalence among men and 54·8% among women globally. The relative increase in overall prevalence was 5·9% between 1990 and 2017.

Morbidity and mortality associated with pulmonary disorders

Global Age specific prevalence of Chronic Respiratory Diseases by disease category 2017

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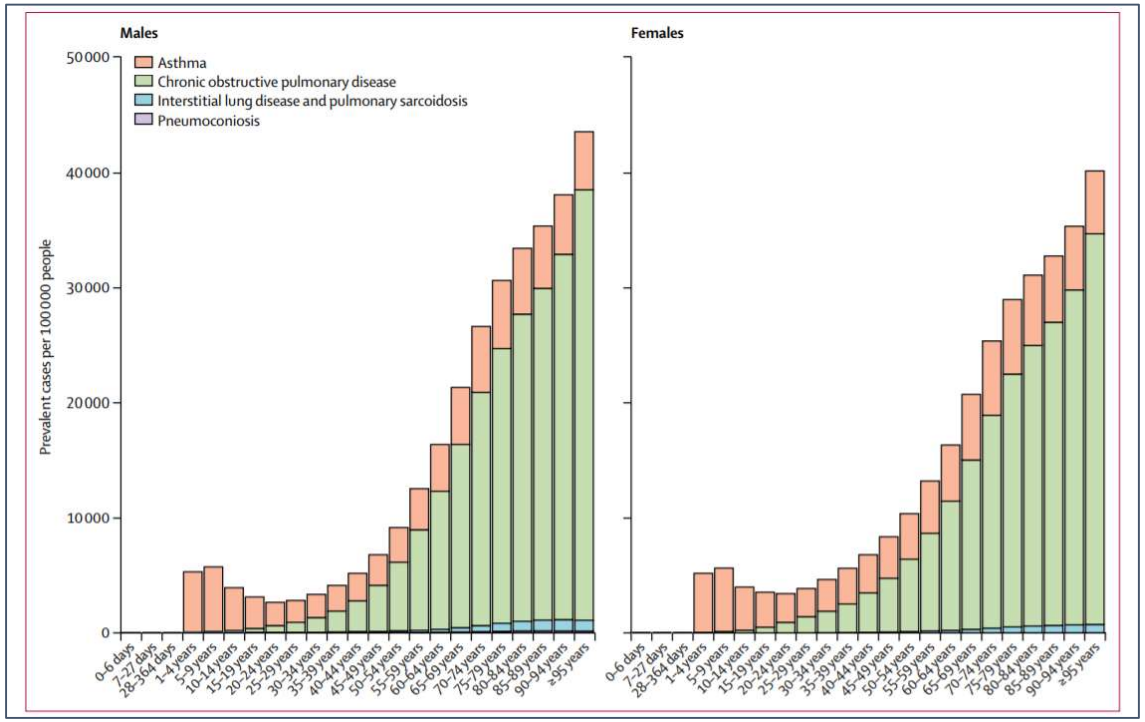
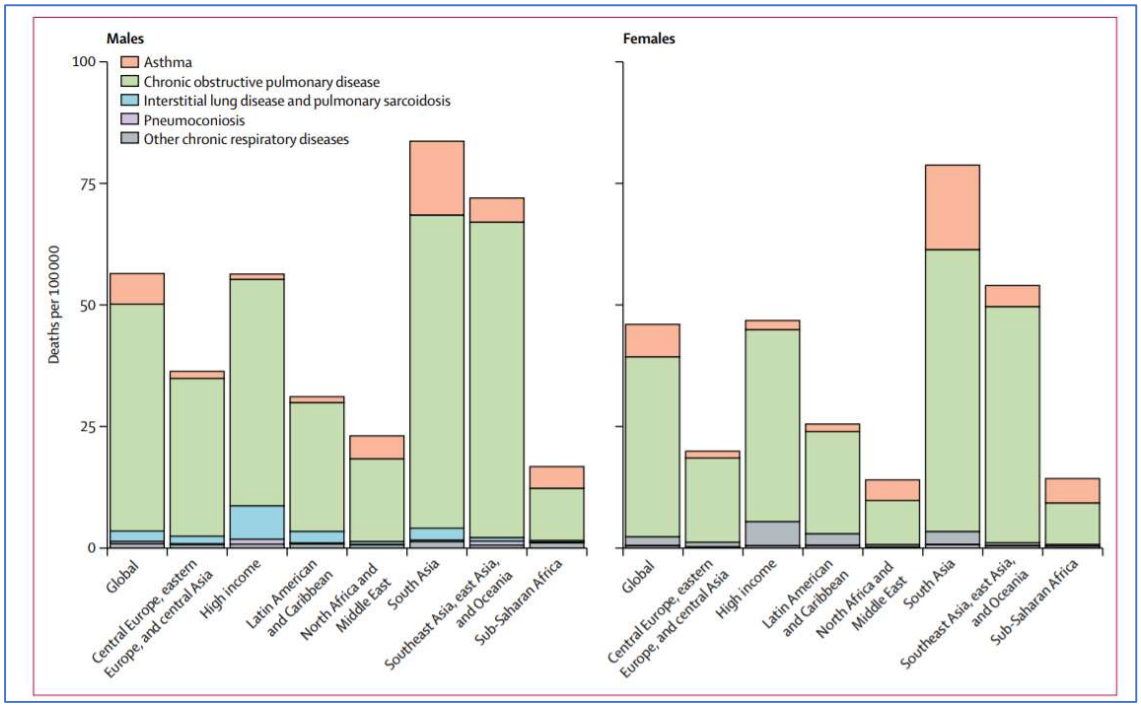
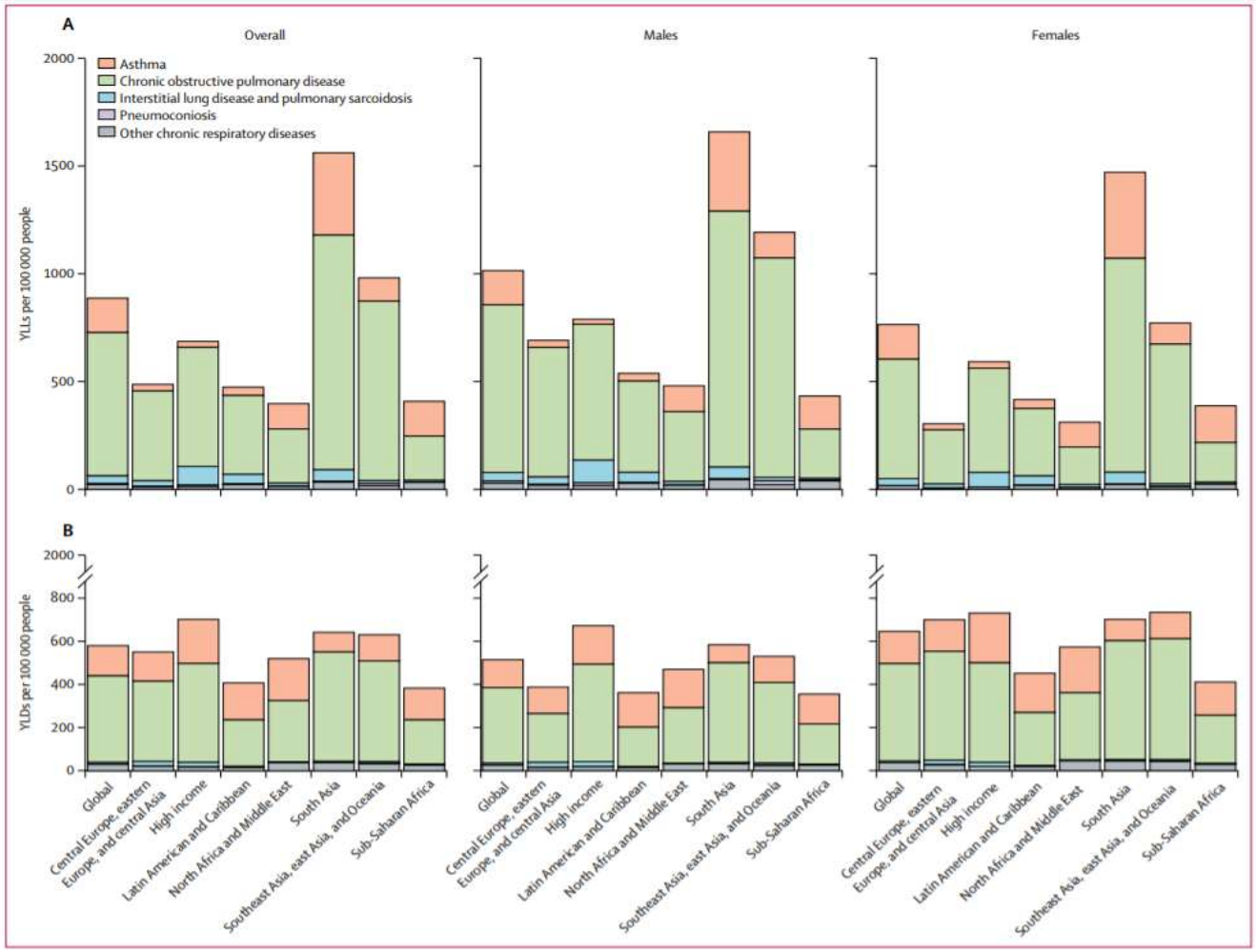


All Age mortality rates of Chronic Respiratory Disease by disease category globally

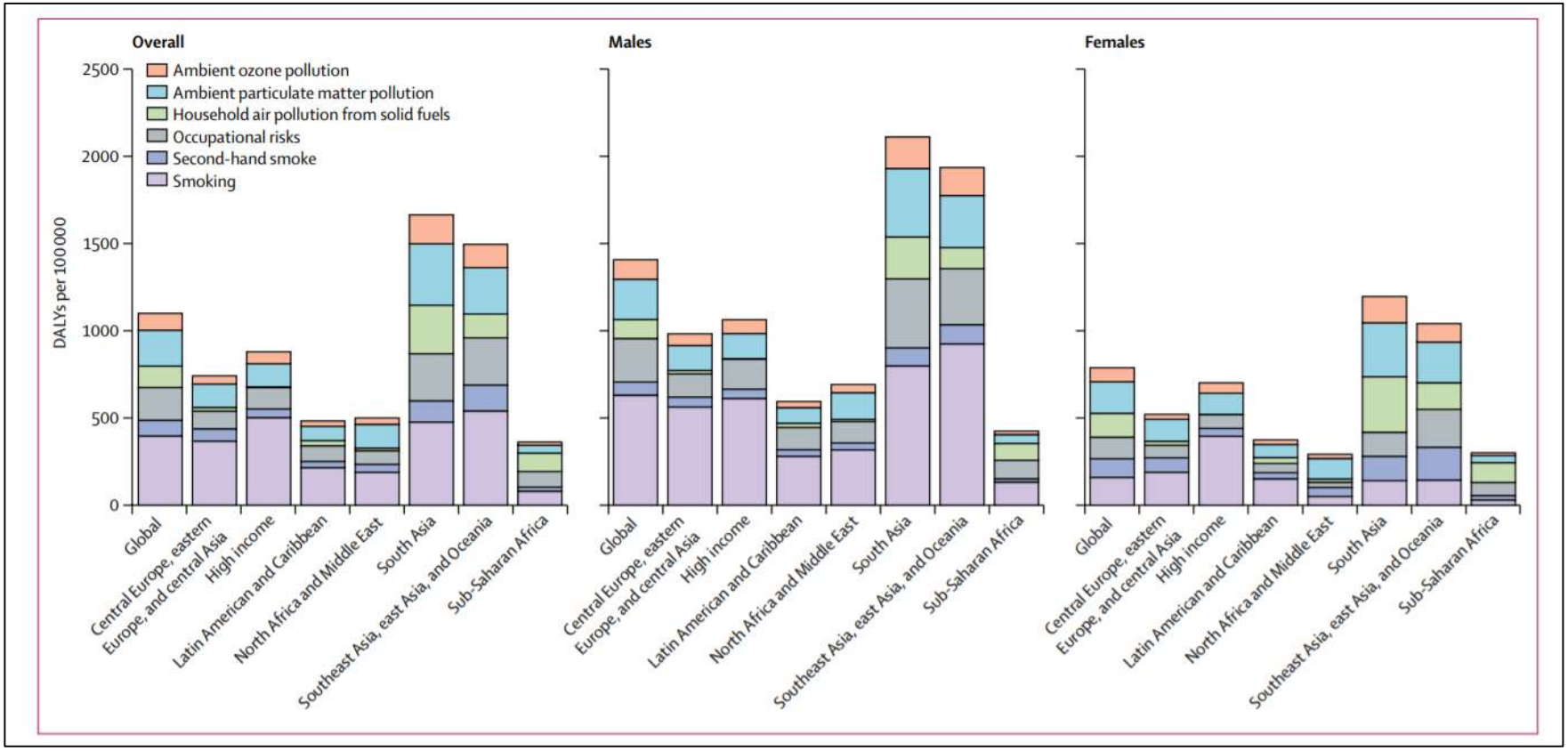


Chronic respiratory disease Attributable to YLL rates (A) and YLD rates (B) globally

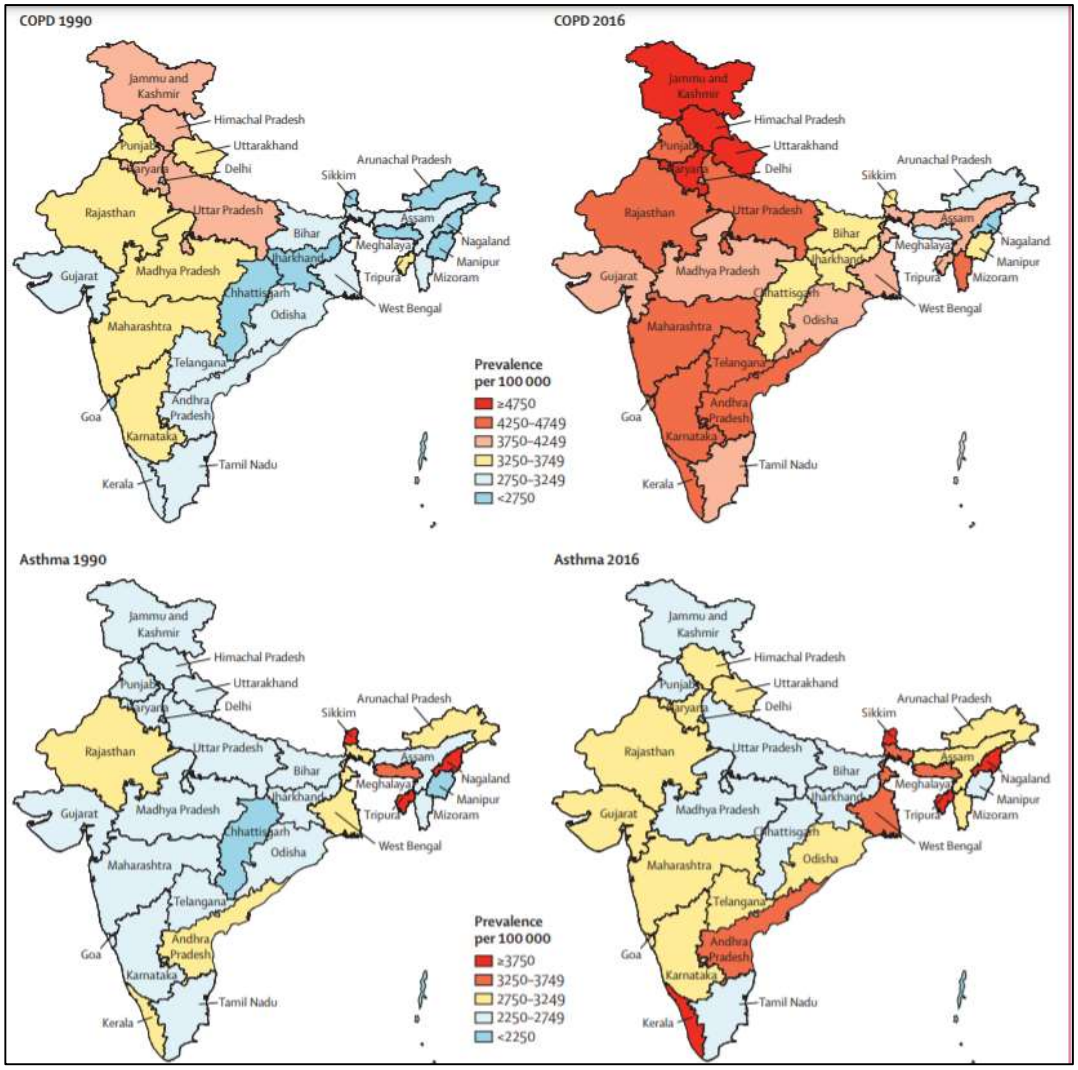


Risk factors and patient characteristics

Chronic Respiratory Disease Attributable DALY rates

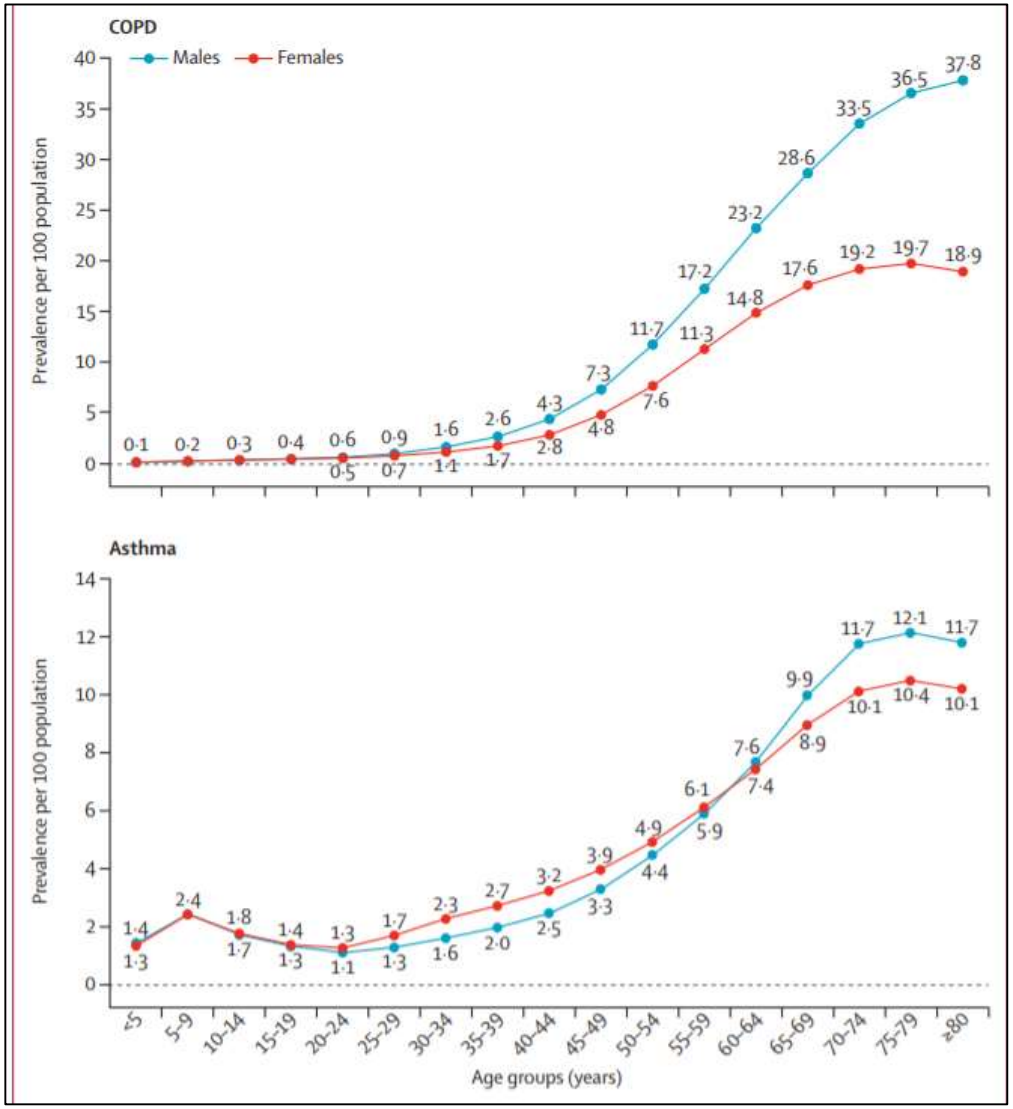


Crude prevalence of COPD and asthma in the states of India, 1990 and 2016



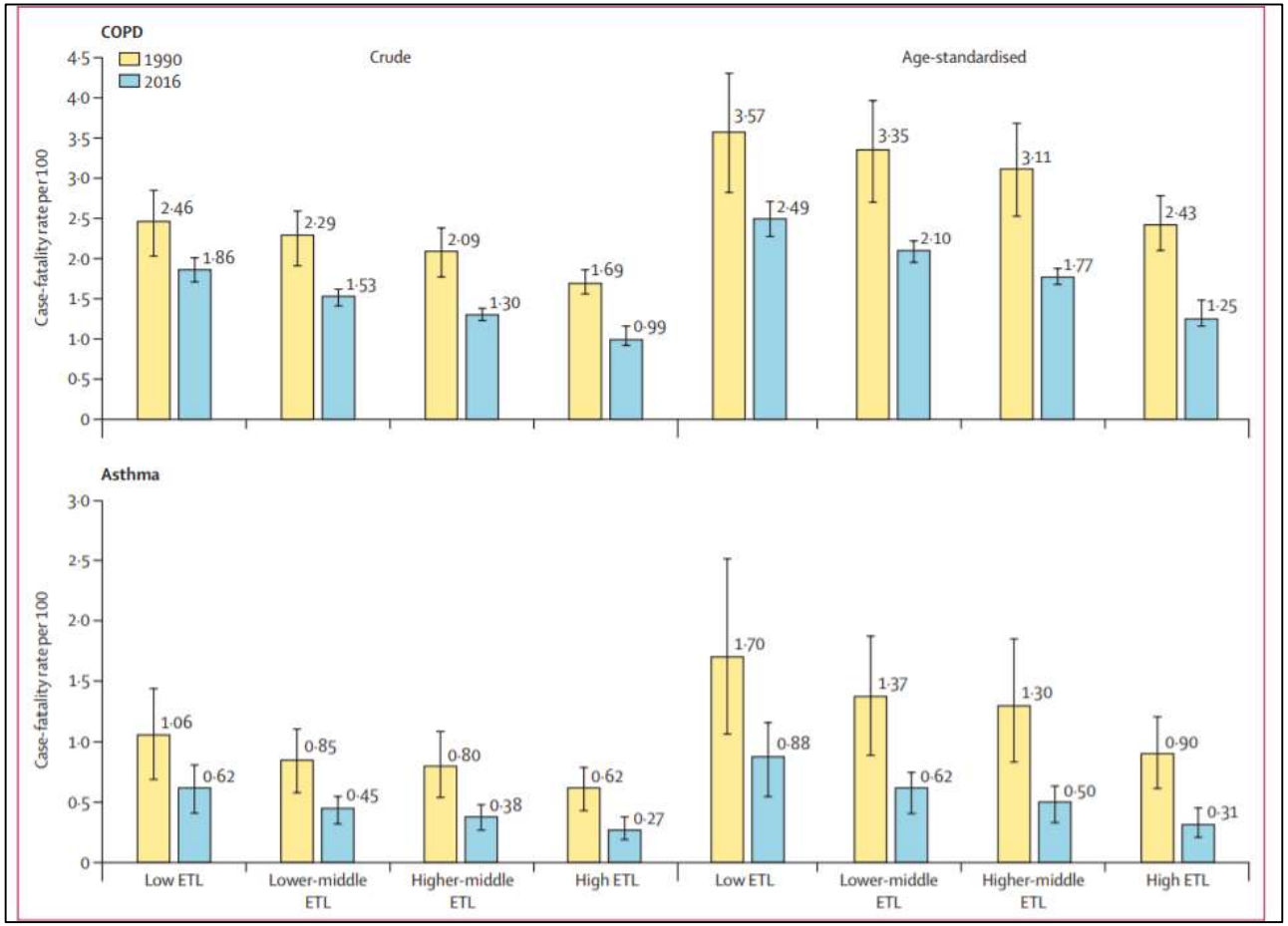
India has **18% of the global population and an increasing burden of chronic respiratory diseases**. However, a systematic understanding of the distribution of chronic respiratory diseases and their trends over time is not readily available for all of the states of India

The contribution of chronic respiratory diseases to the total DALYs in India increased from 4·5% in 1990 to 6·4% in 2016. Of the total global DALYs due to chronic respiratory diseases in 2016, **32·0% occurred in India.** COPD and asthma were responsible for 75·6% and 20·0% of the chronic respiratory disease DALYs, respectively, in India in 2016. The number of cases of COPD in India increased from 28·1 million in 1990 to 55·3 million in 2016, **an increase in prevalence from 3·3% to 4·2%**



Age-sex-specific prevalence of COPD and asthma in India, 2016

The age-specific prevalence of COPD increased rapidly after the age of 30 years, with a greater increase in men than in women, reaching the highest prevalence among men in the 80 years or older age group and among women in the 75–79 years age group



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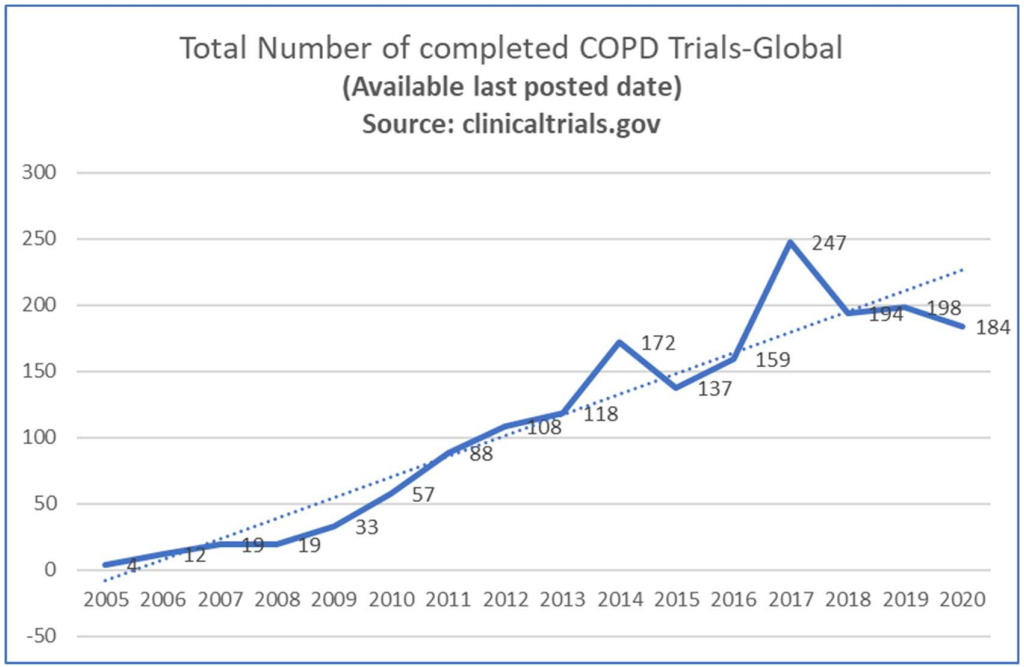
Case-fatality rates for COPD and asthma in the states of India grouped by ETL, 1990 and 2016 Error bars represent 95% uncertainty intervals. COPD=chronic obstructive pulmonary disease. ETL=epidemiological transition level.

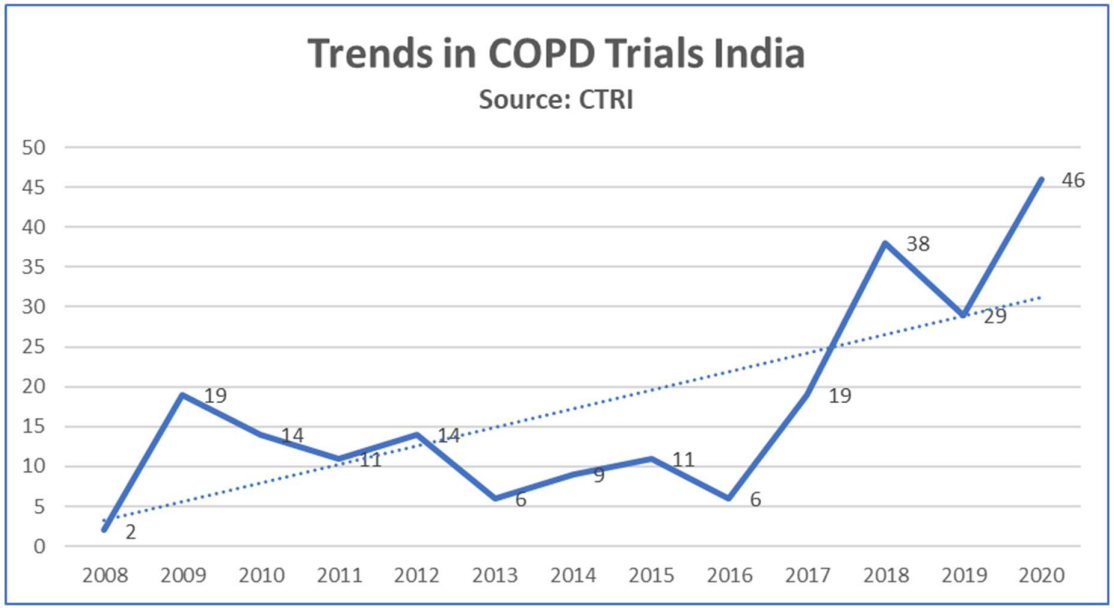
The number of COPD deaths in India increased from 624000 (508000–741 000) in 1990 to 848 000 (765 000–939 000) in 2016, while the number of asthma deaths in 2016 was 183000 (118000–247000), which was not significantly different from that in 1990

Trends in COPD Trials -Global (Criteria: Completed Trials with available last completion date)



Total Number of completed trials =1844

Trends in COPD Trials -India



Total Number of registered trials =244

India's share in COPD trials has taken a steep rise since the year 2017 and is expected to rise exponentially in the coming years. 13 % of the world's total COPD trials are done in India since the last decade.

COD Research

COPD Clinical Trial Capabilities

- At COD, we have extensive experience and expertise in handling some of the unique aspects of respiratory and inhaled drug products. We help our clients navigate the complex challenges of respiratory clinical trials through our experienced clinical development team.
- We have a well-established site relationship, clinical operation skills and committed study team to drive your complex respiratory and inhalation studies towards a successful outcome. We have a dedicated medical and scientific team for the management and execution of respiratory clinical trials in line with regulatory requirements.

COD Pulmonology clinical trial advantage

- In-depth understanding of conduct of respiratory clinical trials particularly with respect to bronchial asthma and Chronic Obstructive Pulmonary Disease (COPD)
- Our clinical operations team is well equipped with the knowledge of epidemiology, etiology, diagnosis and treatment options for respiratory diseases
- We have the expertise in patient recruitment and management with respect to seasonality for respiratory clinical trial conduct coupled with our developed site network

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