

Respiratory disease burden in India: Indian chest society SWORD survey

Developing countries have to bear burden of both communicable and noncommunicable diseases simultaneously. The recent Global Burden of Disease (GBD) survey data have shown that both acute and chronic respiratory diseases are prevalent in substantial number in India.^[1] Chronic respiratory diseases, especially asthma and chronic obstructive pulmonary disease (COPD), are of particular importance for having wide variations in morbidity and mortality in various Indian states.^[2]

Certain questions still remain to be answered such as what are the factors that lead to region-specific variations in common respiratory diseases in India. The actual practice patterns and socioeconomic impact of these common respiratory ailments need to be known. The impact of seasonal trends in occurrence or exacerbation of these diseases is also not known. To answer some of these questions, the Indian Chest Society in association with Asthma Bhawan, as a national coordinating center, initiated the Seasonal Waves of Respiratory Disorders (SWORD) survey in India. There were four seasonal phases of this survey and dates were selected based on the midpoint of trimester coinciding with a stable climate of that season. With participation of over 350 principal investigators, it is expected to provide good data on various aspects of respiratory diseases. Four main levels of health care included in the survey were medical college, district hospital, private hospitals, and private clinic. Similarly, qualifications of health-care providers having DTCD, MD Chest, MD Medicine, and DM DNB/Other were also prespecified subgroups. In this manner, the survey intended to include all the respiratory practitioners working at all levels of health care across the states of India.

The pro forma used in SWORD survey was developed at a national coordinating center. Rigorous efforts were made in making it lucid and comprehensive so that it could be completed easily in a time-effective manner. The prevalence of symptoms on a single Indian healthcare day on a Nationwide scale (POSIEDON) study group had used similar pro forma.^[3] The pro forma included the risk factors including pollution, details of the residence, comorbid conditions, disease symptoms, standard International Classification of Diseases-10-based respiratory diagnosis, and its investigations. Air pollution is important as it might have significant impact on respiratory health of an individual. It is noteworthy that Delhi became one of the most polluted cities in the world in November 2017 and the situation is almost the same in other metropolitan cities of India.^[4,5]

After identification of participating respiratory health-care providers, ethical clearance was sought and data were

recorded at three levels of an individual seasonal survey. The data of patients coming to outdoor of a respiratory health-care provider were recorded first followed by data of all patients hospitalized for a respiratory illness within the next 24 h of start of survey. The mortality data were also recorded as per the WHO international standards at the third level of this point prevalence survey.^[6]

The field of respiratory epidemiology is relatively new as compared to its some more popular counterparts, for example, cardiovascular and cancer epidemiologies. The SWORD survey is expected to provide valuable Indian data. INSEARCH was an epidemiological survey from India on asthma, respiratory symptoms, and chronic bronchitis by Jindal *et al.* It included more than 1.5 lakh people both from urban and rural sites. Estimated asthma prevalence was 2% and that of chronic bronchitis was 3.5% while one or more respiratory symptoms were present in about 9% of individuals in this survey.^[7] In the Indian subgroup analysis of the International Study of Asthma and Allergies in Childhood study, the prevalence of asthma was found to be 6% among schoolchildren.^[8]

The POSIEDON was a point prevalence survey including all medical conditions that were seen by a population sample of practitioners in India. Clinic-based data constituted a large proportion of this survey.^[3] Respiratory symptoms and diagnoses emerged as the most common conditions seen by practitioners in the survey. Respiratory symptoms were recorded for all patients while diagnoses were also available in the majority of patients included in this survey. In a survey conducted during NAPCON 2015 by a separate group, it was pretty encouraging to find that majority of practicing doctors follow standard guidelines in making respiratory diagnosis in India.^[9]

In the Indian subgroup of Asia-Pacific Burden of Respiratory Diseases study, it was found that asthma was the most frequent primary diagnosis among four common respiratory diseases including COPD. Loss of productivity and expenditure on medications were the most significant contributors to the burden of disease.^[10] Similarly, secondary data analysis from the second round of Indian Human Development Survey showed that there is rising prevalence of asthma in India. The prevalence rate of asthma was higher in poorer states and in those individuals living in households using solid fuels (firewood and kerosene).^[11]

The respiratory subgroup analysis of GBD survey mentioned above showed that there is an increase in contribution to

the disability-adjusted life year (DALY) due to respiratory diseases in India from 1990 to 2016. COPD and asthma contributed to three-fourth and one-fifth of DALYs in 2016, respectively. The highest rates were in the states of Rajasthan and Uttar Pradesh. Furthermore, the DALY per case of asthma and COPD was approximately 2 times higher than the global average. The air pollution, tobacco use, and occupational risks were the leading risk factors for COPD.^[2]

Until now, in our country, only selected respiratory disorders have scarcely been studied with respect to seasonal variations. In a study by Chandra and Guleria from Delhi, it was found that there was an increase in the frequency of admissions due to acute exacerbation of COPD starting in November and peaking in February of the subsequent year without any clear-cut tendency toward seasonality.^[12] In another study by Behera and Sharma at the similar location, sputum-positive tuberculosis was seen maximally in April–June with a gradient of about 35% in comparison to October–December and an amplitude of about 14% to annual mean quarterly smear-positive cases.^[13] Similarly, the influenza viruses have shown seasonality at subregional level in India and that could have important implication in timing of vaccination.^[14]

Obstructive lung diseases are major contributors to adverse respiratory health status of a country, and control of these diseases is of paramount importance for any health-care system. In the last seasonal survey of SWORD, specific additional questions were included for obstructive lung diseases. For asthma, important questions related to control of disease were included, and for COPD, questions related to the severity of disease were included.

Finally, looking at the rising burden of respiratory diseases, especially obstructive lung diseases in India, extraordinary efforts need to be undertaken in order to control these problems. India represents replica of global atmosphere having all sorts of climatic conditions prevailing in disparate geographic locations. We think that recording of seasonal point prevalence data along with risk factors mainly tobacco, biomass fuel exposure, and air pollution will help in understating of interactive nature of major classifiable respiratory disorders better. It will also be useful to know why obstructive respiratory disorders still are number one adversary of public health in many parts of India. The SWORD, therefore, is likely to bridge the gap between disease burden data identified through national reporting system and actual practice patterns of our country.

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