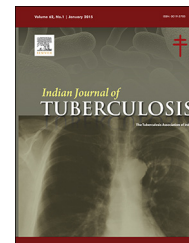


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Original Article

Prevalence of chronic respiratory diseases from a rural area in Kerala, southern India

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ABSTRACT

Background: Chronic lung diseases are one of the leading causes of morbidity in developing countries. A community based survey was undertaken with an objective to estimate the prevalence of chronic respiratory diseases and to describe the profile of people with CRDs in the rural area Nilamel health block in Kollam district, Kerala, southern India.

Methods: A household information sheet and a translated respiratory symptom questionnaire based on International Union against Tuberculosis and Lung Disease (IUATLD) bronchial symptoms questionnaire was administered to 12,556 people above 15 years, selected randomly from Nilamel health block.

Results: Prevalence of self reported asthma was 2.82% (95% CI 2.52–3.12) and that of chronic bronchitis was 6.19% (95% CI 5.76–6.62) while other CRDs which did not fit to either constitute 1.89%. Prevalence of asthma among males was 2.44% (95% CI 2.05–2.85) while that of females was 3.14% (95% CI 2.71–3.57). Chronic bronchitis prevalence was 6.73% and 5.67% among males and females respectively.

Conclusion: Although India has devised a programme to combat cancer, diabetes, cardiovascular disease and stroke, none have been devised for chronic respiratory illness till date. Considering high prevalence and its contributions to morbidity and mortality, a comprehensive programme to tackle chronic respiratory diseases is needed.

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1. Background

Lung diseases are one of the leading causes of death in developing countries. Chronic obstructive pulmonary disease (COPD) was the third leading cause of death worldwide.¹ Chronic

respiratory diseases (CRDs) as a group accounted for 4.7% of global Disability Adjusted Life Years (DALY).² CRDs, if not diagnosed, treated and managed correctly can adversely affect individuals and health systems. But chronic respiratory disorders (CRDs), particularly asthma and COPD, have attracted very little special attention in low- and middle-income countries.

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A systematic review reports that the prevalence of chronic bronchitis in rural areas in India is somewhere between 6.5% and 7.7%.³ The review also points to the limited number of community based studies estimating the prevalence of chronic respiratory diseases in India.³ A large multi-centric study done in India (INSEARCH) to estimate the prevalence of CRDs reported wide variations in the prevalence of bronchial asthma among different cities ranging from 0.37% in Secunderabad to 4.45% in Thiruvananthapuram (Kerala) and that of chronic bronchitis from 0.61% in Guwahati to 13.54% in Thiruvananthapuram. The prevalence of chronic respiratory diseases, as reported by the INSEARCH study was very high in Thiruvananthapuram city as compared to all other 11 centres in India.⁴

Kerala, the southern State in India, has a reasonably strong primary health care system with a good infrastructure of primary health centres.⁵ Government of Kerala had implemented a pilot project of the World Health Organisation (WHO) recommended Practical Approach to Lung health (PAL) strategy, with an intention to further strengthen the health system and to improve the quality of diagnosis, treatment and management of common chronic respiratory illnesses in primary healthcare settings.⁶ PAL has been piloted in three health blocks with a population of approximately 550,000 in Kollam district and these areas reflects the typical state scenario in terms of geography and health care delivery. Estimating true burden of chronic respiratory diseases in the community was the first step in the implementation, as it was essential to further plan the logistics. Hence a community based survey was undertaken with an objective to estimate the prevalence of chronic respiratory diseases and to describe the profile of people with CRDs in the rural area Nilamel health block in Kollam district.

2. Methods

2.1. Study setting

Nilamel health block, situated in South East part of Kollam district, consists of four grama panchayats divided into 69 wards (lowest division of Local self Government) with a total population of around 125,034. Scheduled tribe constitutes 0.4% of the population. The area is bounded by mountains and forest on Eastern side. Sex ratio is 1113 females for 1000 males. Literacy rate for females is 92%. In 2014, 276 people with chest symptoms per 100,000 population were tested for TB and 35 new smear positive TB cases per 100,000 population were notified from this area.

2.2. Study population

Adult permanent residents of the area were eligible to be included. Children and adolescents less than 15 years were excluded, as PAL services in the state intended to include only people above 15 years, in initial phase.

2.3. Study tool

A household information sheet and a respiratory symptom questionnaire were designed based on International Union against Tuberculosis and Lung Disease (IUATLD) bronchial

symptoms questionnaire and adopted from the Malayalam (regional language) translated and validated version of questionnaire used in INSEARCH study sponsored by Indian Council of Medical Research.^{4,7} The questionnaire was pilot tested before initiation of the study.

2.4. Sampling and sample size

To detect a minimum prevalence of 5% with a relative precision of 20% and a design effect of 6.08 (intra cluster correlation from pilot study was 0.017, around 300 persons from a cluster) the sample size was estimated to be 11,557. Hundred consecutive houses were selected from each 40 randomly selected wards, with the first house selected randomly.

2.5. Data collection

160 community volunteers were trained over a day regarding data collection process. Training included study protocol, structure of study questionnaire, standardisation of asking questions, exercise on interviewing two households in the field and verification of the same. 40 multipurpose health workers (MPW) were trained separately for supervision of data collection and study protocol. 20% of the houses were re-visited by the MPW and 2% by doctors as part of quality control. The survey was carried out during December 26th, 2014 to January 3rd 2015. In case a house was locked, the data collectors would return at a later date, to at least three attempts.

2.6. Analysis

Asthma was diagnosed if the person answers "yes" to any of the questions a or b AND "yes" to any of the questions c, d or e.

- Have you ever experienced wheezing (without cold) or whistling sound from the chest during last 12 months?
- During last 12 months, have you ever woken up in the morning with a feeling of tight chest or breathlessness?
- Have your doctor ever told you that you are suffering from asthma?
- Have you ever had an attack of asthma in last 12 months?
- Have you ever taken any inhaler, rota haler or nebulisation or oral pills for breathlessness?

Chronic bronchitis was diagnosed by presence of cough with expectoration for three or more months in a year for two or more years assessed by asking

- Do you usually cough first thing in the morning?
- Do you usually bring up phlegm from your chest first thing in the morning?
- Did you had any of the above said problems for most of the morning for at least three consecutive months during last year?
- For how many years have you been experiencing the above said problem?

These definitions of bronchial asthma and COPD were validated in the field using physician diagnosis as gold standard in a previous multi-centric study done in India.^{4,8} Double data

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