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Original Article

Prevalence and determinants of self-reported chronic bronchitis among women in rural Central India

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ABSTRACT

Background: Chronic respiratory conditions are increasingly becoming a cause of health concern with India attributing 11% of its mortality due to non-communicable diseases to chronic respiratory conditions. Chronic bronchitis and asthma take a large toll in terms of morbidity. Lesser number of studies have mentioned their counts of these conditions affecting women in rural area and therefore the present study was conducted with the objectives of determining the prevalence and correlates of chronic obstructive pulmonary diseases (COPD) in an area of a primary health centre in rural central India.

Methods: A cross-sectional study was conducted in 24 villages of the study area. Women aged 40 years or more were interviewed using the IUATLD questionnaire. Chronic bronchitis was measured by using the standard criteria for chronic bronchitis, that is, "Presence of cough with expectoration for more than 3 months in a year for the past two or more years".

Results: Prevalence of chronic bronchitis among women was found to be 2.7%. Factors like older age, presence of a cattle shed within house premises, storage of fertilizers inside house, history of allergy, past history of pulmonary tuberculosis emerged as significant correlates of chronic bronchitis.

Conclusions: The present study provides an insight into the prevalence of chronic bronchitis among rural women exposed to several epidemiological determinants and an opportunity to address the modifiable risk factors.

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Introduction

The disease profile of the world is changing at an astonishingly fast rate, especially in low and middle income countries.

Non-communicable diseases (NCDs), principally cardiovascular diseases, diabetes, cancers, and chronic respiratory diseases, caused an estimated 35 million deaths in 2005. This figure represents 60% of all deaths globally, with 80% of deaths due to NCDs occurring in low- and middle income countries.¹

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Of the non-communicable diseases, chronic respiratory diseases afflict hundreds of millions of adults worldwide with chronic obstructive pulmonary disease (COPD) being one of the most serious and debilitating disease. In the year 2005, when measured in Disability Adjusted Life Years (DALYs), the burden of chronic respiratory disease was projected to account for nearly 4% of the global burden and nearly 8.3% of the burden of chronic diseases.² With demographic changes in the developing world and some of the changes in health care system, education, awareness and income, the burden of communicable disease is likely to lessen, however the burden of chronic respiratory diseases including chronic obstructive pulmonary disease, asthma and lung cancer are likely to worsen because of increasing tobacco use, environmental hazards and ageing population.³

Rural women in developing countries bear the largest share of this burden resulting from chronic exposure to biomass fuel smoke. Much of the reported prevalence of the respiratory morbidities in our country come from studies conducted in the urban areas although most of the Indian population lives in rural areas. Also, the estimates of respiratory morbidities in females who are exposed to biomass fuels for cooking and second hand tobacco smoke has been less reported and less studied. This study was therefore conducted in the rural settings to study the prevalence and correlates of self-reported chronic bronchitis in women as it is one of the important chronic obstructive pulmonary disease.

Material and methods

A cross-sectional study was conducted in the area covered by a primary health centre in rural Central India. The primary health centre covered a total of 24 villages and a total population of 35,948. Women residing in the study area, aged 40 years or more, and able to respond to the interview themselves, formed the study population. The study was approved by the Institutional Ethics Committee. It was carried out from December 2010 to April 2012.

The sample size was calculated by taking into consideration, the prevalence of chronic bronchitis in Indian setting to be 2%, as reported by Chhabra et al, in 2008.⁴ Considering this as the minimal expected prevalence and an alpha error of 5%; an absolute error of 1% in the estimate of prevalence, a non-response rate of 10% and the design effect of 2.0 (because of multistage sampling) the sample size was estimated to be 1623 (adjusted for population). A 30-cluster sampling method was used to select the study participants. Probability Proportionate to Size (PPS) was used to draw 30 clusters from the 24 villages. A total 55 households were studied in each cluster to meet the sample size requirement of 1623. The households in each cluster were identified by systematic random sampling. All married women of age 40 years and above in the selected family were included in the study and interviewed on obtaining consent (Fig. 1).

On visiting the sampled household, initially a rapport was established and then an informed written consent was taken from the eligible participant, i.e., women of age 40 years and above in the family. Following consent, the participant was interviewed using a pretested questionnaire, the International

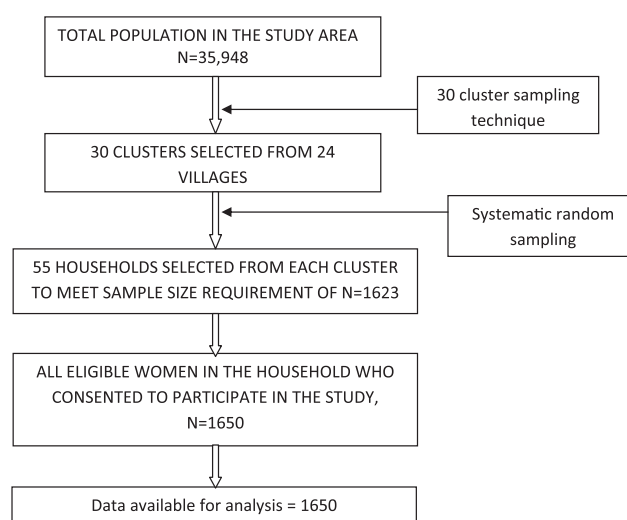


Fig. 1 – Flow chart explaining selection of study subjects.

Union Against Tuberculosis and Lung Disease (IUATLD) bronchial symptoms questionnaire.^{5–7} The questionnaire used to collect information on respiratory symptoms also had some additional questions in the first part containing questions related to the socio-demographic profile of the individuals and the second part included some questions on presence of some risk factors or correlates of chronic bronchitis. Finally, the last part of the questionnaire (adapted from the IUATLD questionnaire) was used for obtaining information on presence of respiratory symptoms for the diagnosis of chronic bronchitis.

In the present study, chronic bronchitis was measured by using the standard criteria for chronic bronchitis, that is, “presence of cough with expectoration for more than 3 months in a year for the past two or more years”.⁸

The data was entered and analysed using software SPSS version 12. For studying epidemiological correlates we used odds ratio as a measure of association. 95% confidence interval (95% CI) was also calculated for odds ratio. Chronic bronchitis was taken as dependent variable while age, education, occupation, income, BMI, type of family, type of kitchen, cooking fuel, presence of cattle shed, pets, storage of fertilizers and pesticides in house, tobacco consumption and exposure to second hand tobacco smoke, history of allergy and tuberculosis and frequency of fruits consumption were taken as independent variables. Logistic regression using backward likelihood ratio method was carried out for multivariate analysis to derive the final model for correlates of chronic bronchitis. A *p*-value <0.05 was taken to be significant.

Results

Most women in this study belonged to age group 40–49 years, while only 10.3% were of age 70 years and above. Of the 1650 women 40.6% were illiterate, 41.8% were educated till 8th standard, while 17.6% were educated till 9th standard or above. Majority of women were labourers (64.4%) and lived in nuclear families (51.6%). The mean annual per capita income

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