

# SHIKSHA SAMVAD

International Open Access Peer-Reviewed & Refereed  
Journal of Multidisciplinary Research

ISSN: 2584-0983 (Online)

Volume-1, Issue-3, March- 2024

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## “Indoor air Pollution and Prevalence of Asthma In Rural Women”

**Anshika Sharma**

Research Scholar  
Glokal University, Sharanpur.

**Dr. Sobha Gill**

Research Supervisor  
Glokal University, Sharanpur

### Abstract-

*Household air pollution from combustion of solid biomass fuel/such as dried dung, wood and crop residues for cooking and heating purpose has emerged as an important and risk factors in the pathogenesis, prevalence, morbidity and mortality from chronic respiratory disease such as chronic bronchitis, chronic obstructive pulmonary disease and asthma. Exposure to household air pollution also accounts for frequent occurrence of respiratory infections and lungs function impairment particularly in children and women. In the present investigation shows the higher percentage of women suffering from asthma or respiratory disease than that women using LP Gas as fuel for cooking purpose.*

**Key word:** Indoor air pollution, Asthma, Respiratory, Infections, symptom.

### Introduction

Burning of biomass emits smoke that causes very high level of indoor pollution. Indoor air pollution from biomass burning in rural households often exceed the level of outdoor air pollution in the cities. Indoor air pollution from biomass burning is also increasing among poor dwellers of the country. The common forms of biomass used as fuel are wood agricultural waste/crop residue and cow dung. Biomass is a major household energy source in rural India.

Health effects due to indoor air pollutants may be short as well as long term. Short term problems include a stuffy, odorous environment and symptoms such as burning eyes, skin irritation

and headaches. Long term health problems have a longer latency period or one chronic in nature. The magnitude and duration of detrimental health effects are influenced by the time of exposure, concentration presence of a pre-existing unhealthy condition and age.

Health conditions involving some allergic reactions such as hypersensitivity, pneumonitis, asthma and respiratory disease (Behra and Jindal 1991). Symptoms related to bio aerosols including sneezing. Coughing shortness of breath, fever and dizziness. Infections such as influenza, measles and chicken pox are also transmitted through the air. People with asthma are more susceptible to the adverse effects of the gas as high concentrations may result in the fail of lung function in asthmatics and may lead to tight chest, coughing, wheezing and phlegm at high levels (Howks and Hassen 2002). Different types of solid bio fuel used in both rural and urban area significantly contributed to the atmospheric air pollutant load in the ambient atmosphere. Wood as solid fuel contributed maximally and carbon cake minimally contributed towards generation of air pollutions among the different solids fuels studied under the present investigations. Results of this present investigation also suggest an association between respiratory disease and exposure to domestic biomass fuel smoke.

Actually people with allergies, asthma or chronic respiratory or heart problems are particularly susceptible to health problem are particularly susceptible to health effects from combustion pollutants. This is quite possible because when wood, household garbage, dry leaves are burned they produced smoke and release toxic gases (Kiraz et. al. 2003, Orozco- Levi et.al. 2006, Po et, al. 2011, Quarbani and Yunesian 2012 and Sood 2012)

### **Materials and Methods**

Present investigation was conducted in rural area of Amroha Distt. The females were divided into two groups. One groups was LP gas used and other group was biomass fuel user such as wood, cow dung and dried leaves etc. in the present investigation the some of these households burn solid fuels, use inefficient devices and often work in kitchens that are poorly ventilated, data collection instruments which we sued through the interviews in our study, record independent variables of age groups. Frequency of asthma and respiratory infection were examined closely using existing data taken from household's record, disease report and family physician reporting forms and pathological test report and lung functions tests are asthma. The common lungs function tests used to diagnose asthma are spirometry test.

The data analysis was performed using Analysis of Variance (ANOVA).

### **Result and Discussion.**

Table No. 1 : Percentage occurrences of Asthma disease for LPG users.

Age Group (years)	Asthma (%)
15-30 yrs	5.12%

31-45 yrs	11.32%
46-60 yrs	19.1%

N = 100, number of women interviewed using LP Gas for cooking.

Table No. 2: Percentage occurrence of Asthma disease for biomass fuel (wood, cow dung and dried leaves) user age group years).

Asthma (%)

15-30 yrs	8.35%
31-45 yrs	23.2%
46-60 yrs	28.98%

N=100, number of women interviewed using biomass fuel (wood, cow dung and dried leaves) for cooking.

Background women who are at risk of exposure to indoor smoke are 3 times more probable to suffer from chronic obstructive pulmonary disease (COPD), acute and chronic bronchitis and asthma than those women who use clean fuels such as LP Gas, electricity etc. for cooking. Asthma is a chronic respiratory disease characterized by sudden attacks of laboured breathing chest tightness and coughing. Some studies have been found a positive association between cooking smoke and asthma (Mohammed et. al. 1995, Xu et al. 1996, Pistelly 1997). The prevalence rates of chronic bronchitis and asthma in communication exposed to indoor biomass smoke have been reported to be high (Pandey 1984, Behra and Jindal 1991, Parez- Padilla et al. 1996, Albalak et al. 1999).

It was concluded that different types of solid biomass fuel use in rural area significantly contributed to the atmospheric air pollutant load in the ambient atmosphere. Results of this present investigation also suggest an association between respiratory disease and exposure to domestic biomass fuel smoke. The female with asthma are more susceptible to the adverse effects of the gas as high concentrations may results in the fail of lung function in asthmatics and may lead to tight chest, coughing, wheezing and phlegm at high levels. Similar finding have been reported by Dulfa et. al. (2007). Kurmi et. al. (2010), Mortimer et. al. (2012) Jindal et. al. (2012) and Ebrahimi et.al. (2015).

Wood as solid fuel contributed maximally and carbon cake minimally contributed towards generation of air pollutions among the different solid fuels studied under the present investigation. High exposures to air pollutants among the different solid fuels studied under the present investigation. High exposures to air pollutants in biomass smoke have been associated with a host of respiratory diseases, including acute respiratory infections. Air pollutants commonly found in biomass smoke have been associated with compromised pulmonary immune defence mechanism in both animals and humans. It is plausible that exposure to cooking smoke can impair pulmonary

defence mechanism and increase the risk of developing asthma or increase the frequency and severity of attacks in asthmatic people.

Wood burning stoves, furnaces and fire places emit significant quantities of toxic compounds, including respirable particulate matter (PM) carbon monoxide (CO), nitrogen and sulphur oxides (NO<sub>x</sub> and SO<sub>x</sub>), aldehydes, PAHs, volatile organic compounds (VOCs), Chlorinated dioxins and free radicals, wood smoke, emitted of ultrafine/ fine and coarse particles can penetrate into the deep lung, producing a variety of morphological and biochemical changes. A considerable body of epidemiologic evidence has associated short term exposure to PM from a variety of sources with respiratory symptoms, increased use of asthmatic medication, hospital admissions, early mortality, exacerbation of pre-existing medical conditions including a reduced likelihood of recovering from infectious such as pneumonia and an increased incidence and rate of infectious respiratory diseases in female and children (Travor et.al. 2014)

Summer et. al. (2004) reported pulmonary infection in adults exposure to biomass fuel in mid Anatolia. Ezzati and Kammen (2001 a and 2002 b) studied acute respiratory infection in female exposure to biomass combustion in Kenya.

The findings have important program and policy implications for countries such as India, Where large proportions of the population still rely on polluting biomass fuels for cooking and heating. Decreasing household biomass and solid fuel use and increasing household biomass and solid fuel use and increasing use of improved stove technology (like LP Gas) may decrease the health effects of indoor air pollution.

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# SHIKSHA SAMVAD



An Online Quarterly Multi-Disciplinary  
Peer-Reviewed or Refereed Research Journal  
ISSN: 2584-0983 (Online) Impact-Factor, RPRI-3.87  
Volume-01, Issue-03, March- 2024  
[www.shikshasamvad.com](http://www.shikshasamvad.com)  
Certificate Number-March-2024/31

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**“Indoor air Pollution and Prevalence of Asthma In Rural Women”**

Published in ‘Shiksha Samvad’ Peer-Reviewed and Refereed Research Journal and  
E-ISSN: 2584-0983(Online), Volume-01, Issue-03, Month March, Year- 2024,  
Impact-Factor, RPRI-3.87.

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