

# Role of Environmental Conditions in Asthma Preventions in the Amroha District, Uttar Pradesh, India

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**Abstract-** In recent decades, asthma is considered as a one of the most vital chronic disease. The study area was consisting of various areas which was covered through periodical visits. We applied a uniform method during sampling periods. We found that the studied area exhibited around 47.37% of the sampled population is a regular user of the cigarette while bidi (21.47%), hookah (14.09%) and other smoking materials are contributing 17.07%. It shows that the consumption of smoke materials is one among the main causative agent which caused asthma disease in the Amroha district. Hence, socioeconomic condition of patients is influenced by the environmental exposure.

**Keywords:** Asthma, Environmental condition, Socioeconomic status.

## I. INTRODUCTION

In recent days, term asthma is considered as a one of the most vital chronic disease. In general, asthma causes substantial morbidity in human beings. The global Initiative for Asthma categorized asthma as a chronic disease inflammatory disorder, caused due to the airways and resulted in the hyper responsiveness as it is observed in asthma disease. In addition, the research findings suggest about the epigenetic changes may arise initially and longer exposure may also cause respiratory disease like asthma. Recently, World Health Organization reported that the actual burden of asthma at global scale has been estimated around 300 million and its budget exceeded more than HIV and tuberculosis treatment. Although, the existing data is scarcity however, recent studies which are carried out in India showed that the prevalence of asthma exit around 2.05%.

Throughout the globe, biomass fuel such as kerosene, petroleum, gas and electricity are key resources for food cooking and even in some places, the discussed facilities are available as alternatives. Moreover, the common substances which are used as biomass fuel consist of crop residues, dung cakes, and dried woods. Typically, the combustion of such biomass fuel yields carcinogenic polycyclic aromatic compounds, carbon monoxide, nitrogen dioxide and sulfur dioxide along with particulate organic matters. Generally, domestic biomass fuel work within the range of limited ventilation and inhalation of such particles caused respiratory irritation and even pulmonary disease in local population. Studies have demonstrated that asthma prevalence is varied with the different social backgrounds. However, people are living with limited number of resources with high level of health hazards/ susceptibility. Keeping in the consideration, the International Study of Asthma Allergy in Childhood developed a sophisticated and standardized method for the study of asthma prevalence. Worldwide, nearly 2.4 billion people are relying on biomass fuels for their household needs.

The increasing rate of hospital admission particularly of asthma cases, are considered as global concern. In this regard, studies have been proven confounding association and relationship with certain factors like air, pollution, smoking and tobacco exposure. However, the availability of scientific contributions is still scare. Nonetheless, it is difficult to extrapolate the available studies and their findings for whole India. A number of studies are available on the prevalence of asthma disease population in India. However, there are no studies which have examined the prevalence of asthma disease at district level and its prevention methods in local population. Therefore, this study is proposed to investigate prevalence and prevention methods in Amroha district.

## II. MATERIALS AND METHODS

An extensive study was carried out at multiple locations for estimation of asthma prevalence in the Amroha district from Jan 2018 – Dec 19. The study area was consisting of various areas through periodical visits. A uniform methodology was applied during sampling periods. We used a generic method which contains a systematic, proper and easier explanation/ definition of questions which were included for data collection. we applied a concise, well define and scientific questionnaire for local people or and respondent under field conditions with their willingness. Further, we explained respondent about the procedures in details as they

become familiar with us and also assured that they are free to refuse or participate during interaction and even, can leave incomplete questionnaire. Moreover, we also assured to the participants that the obtained data will be confidential and will not be disclosed in any form and it will be used for research purposes only.

### III. RESULTS AND DISCUSSION

In case of an urban area, the occurrence of asthma cases was relatively lower in proportion (32.21%) which shows that consciousness on the health issues, the urban population which was studied during the study periods are more in healthy conditions and lower in disease treatment or they are more sustainable and strong immunity and lesser sustainable than the other group members in Amroha district. Chest tightness, another parameter which was accessed through a questionnaire was found moderate in a rural area (24.54%) in comparison to the semi-urban area (19.88%) while it was exhibited surprising results in urban areas (55.58%, Figure 1). It might be a reason that the urban area is having more pollutants and thus residing masses are more prone and sustainable for health issues. Though it was not common in all places which were accessed during the sampling days, the frequencies of asthma prevalence were a little unexpected as it was noted in the results. The overall outcome and statistical interpretation the occurrences and prevalence of asthma can be monitored at regular basis and conclusive days, its frequencies can be controlled through the adaptation and implementation of various prevention methods of all group of the sampled population (Castro-Rodriguez and Garcia-Marcos, 2017; Guilleminault *et al.*, 2017).

Table 1. Composition of diet among the studied population.

	<b>Rarely</b> (Mean $\pm$ SD)	<b>Occasionally</b> (Mean $\pm$ SD)	<b>Frequently</b> (Mean $\pm$ SD)
Butter	89 $\pm$ 12	171 $\pm$ 25	174 $\pm$ 65
Cereal	175 $\pm$ 51	66 $\pm$ 23	180 $\pm$ 53
Corn	79 $\pm$ 10	51 $\pm$ 41	50 $\pm$ 47
Eggs	86 $\pm$ 15	59 $\pm$ 37	120 $\pm$ 51
Fast food	92 $\pm$ 19	94 $\pm$ 61	84 $\pm$ 49
Fish	96 $\pm$ 09	183 $\pm$ 24	180 $\pm$ 40
Fruit	93 $\pm$ 24	156 $\pm$ 31	114 $\pm$ 27
Meat	163 $\pm$ 41	47 $\pm$ 47	92 $\pm$ 34
Milk	75 $\pm$ 37	185 $\pm$ 15	64 $\pm$ 28
Nuts	183 $\pm$ 15	60 $\pm$ 35	56 $\pm$ 45
Pasta	96 $\pm$ 19	187 $\pm$ 25	149 $\pm$ 51
Potatoes	116 $\pm$ 17	47 $\pm$ 12	188 $\pm$ 15
Pulses	132 $\pm$ 15	112 $\pm$ 32	170 $\pm$ 50
Rice	178 $\pm$ 23	108 $\pm$ 35	61 $\pm$ 25
Vegetables	121 $\pm$ 16	51 $\pm$ 24	109 $\pm$ 59

In some cases, it has a pivotal role in the few measured characteristics such as family structure, pollution sources, population density, sociodemographic features, and other relevant characteristics and in general, this might be ameliorating the proximity of the asthma is a term of prevalence and occurrence in the study areas.

The results which were extracted from the obtained data were majorly associated with the living standard and socioeconomic structure of the local population of Amroha district and had a considerable association with the occurrence of various diseases including asthma cases in all the studied areas. The statistical analysis of this study shows that the probability of asthma cases increased with increasing the population density and consumption of local smoking materials while in few cases it was adversely affecting the health in all aspects especially fitness and work efficiencies (Milota *et al.*, 2019). Other than the socioeconomic structure of the studied population, it was also commonly found that they had a strong association with the number of hospitalization as well as the number of actual exiting asthma patients which categorically differed in all aspects especially prevalence and occurrence of asthma cases in the study area.

Though it is obvious that the populated areas are having a greater number of population and gathering at a particular time period and are potentially prone and sustainable for various diseases. In terms of infection, a large number of diseases are come into consideration to consider as a disease which is one of the massive and main causative agents for health hazards. Apart from the massive health hazards, the occurrence of asthma cases in rural areas is more prone than other regions and probably this might be a valid reason which is positively responsible for the occurrence and determination of asthma frequencies in the Amroha district.

Table 2. The availability and utilization of food resources by sampled population.

Food items	Rarely (Mean $\pm$ SD)	Occasionally (Mean $\pm$ SD)	Frequently (Mean $\pm$ SD)
Butter	89 $\pm$ 31	171 $\pm$ 30	174 $\pm$ 41
Cereal	175 $\pm$ 25	66 $\pm$ 26	180 $\pm$ 30
Corn	79 $\pm$ 17	51 $\pm$ 34	50 $\pm$ 14
Eggs	86 $\pm$ 20	59 $\pm$ 30	120 $\pm$ 32
Fast food	92 $\pm$ 41	94 $\pm$ 27	84 $\pm$ 54
Fish	96 $\pm$ 59	183 $\pm$ 57	180 $\pm$ 61
Fruit	93 $\pm$ 31	156 $\pm$ 51	114 $\pm$ 18
Meat	163 $\pm$ 51	47 $\pm$ 23	92 $\pm$ 19
Milk	75 $\pm$ 40	185 $\pm$ 60	64 $\pm$ 24
Nuts	183 $\pm$ 64	60 $\pm$ 12	56 $\pm$ 23
Pasta	96 $\pm$ 52	187 $\pm$ 47	149 $\pm$ 43
Potatoes	116 $\pm$ 13	47 $\pm$ 09	188 $\pm$ 52
Pulses	132 $\pm$ 60	112 $\pm$ 53	170 $\pm$ 57
Rice	178 $\pm$ 57	108 $\pm$ 51	61 $\pm$ 18
Vegetables	121 $\pm$ 56	51 $\pm$ 36	111 $\pm$ 21

In our study which was carried out at from massive population to the individuals are basically had a wide range of modulated frequencies which reflect a measurable sign for a disease assessment and also for the development of systematic analysis in order to quantify the additional study and another survey-based research in the studied as well as the non-studied area on Amroha and another district also. We also tried to incorporate the key finding into the development of various generic and specific conservative approaches which are certainly a remarkable step towards the disease controlling, management and prevention of pretexting diseases particularly in most populated areas as well as the prone area of rural, semi-urban and urban areas (Hassan *et al.*, 2017).

The continuous efforts which were inserted during the course of study and data collection need further refine the hindrances and challenges to explore and implement the key finding for all group of residing population in all area of villages, cities, town, etc. Further, the outcome of this study also may contribute a significant line in order to measure and develop a novel prevention technique for asthma disease and certainly, it would be more helpful in the prevent sever frequencies of asthma and other common diseases in the study area and other native reasons.

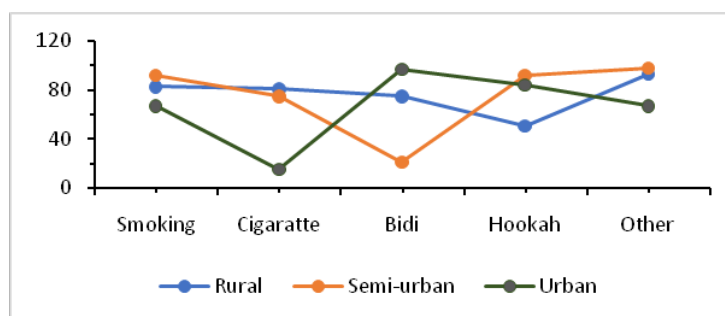


Figure 1. Details of smoke consumption materials.

During the study period, it was found the who were marked as asthma patients; are used smoking regularly. Through interview sessions, it was found that the current asthma patients are categorized through the proper medical check-up and systematics diagnosis. It was obvious that the medically recommended asthma patients need a proper precaution and they were also advised that the asthma patient should not consume some materials (Mukherjee *et al.*, 2018).

However, it was commonly noted that the asthma patient was regularly consuming smoke products and a large number of smoke products are available in the market. Among the diagnose patients, most of the patients are a good smoker before the asthma diagnosis. It was also found that their family members are strictly advised them to stop the massive consumption of smoke in any form but due to their habit or their living style adaptation, they deeply engaged in the chain-smoking. As a result, their lungs get sustainability for the asthma disease.

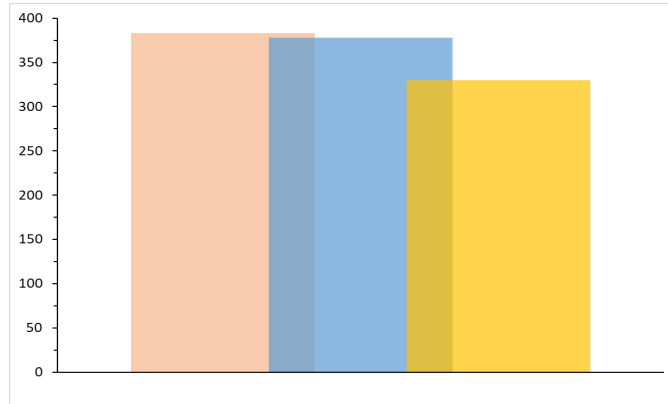


Figure 2. Mean number of recorded asthma cases.

It was found that 47.37% of the sampled population is a regular user of the cigarette while bidi (21.47%), hookah (14.09%) and other smoking materials are contributing 17.07%. it shows that the consumption of smoke materials is one among the main causative agent which caused asthma disease in the Amroha district.

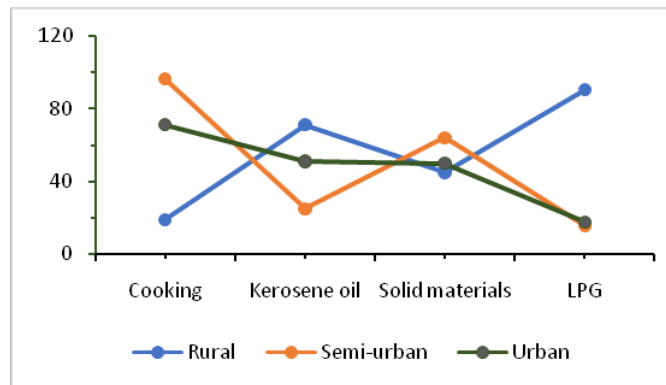


Figure 3. Use of domestic fuel in the study area.

In continuation of asthma prevalence assessment, we found that the users of domestic fuel are also playing a considerable role in the study area. In the study area, it was found that the residential masses are using a variety of domestic fuel to cook their food. The frequency of domestic fuel was varied from area to area as well as season to season. It shows that local communities are having a wide range of application compatibility in terms of their cooking materials which they are using on a regular basis (Deng *et al.*, 2016).

Though the used domestic fuel materials are entirely based on the availability of cooking materials in their surroundings. Nowadays, it is challenging to access and utilize natural resources for cooking food items. In the dense rural area, the respondents explain the availability of cooking materials in the village area is still not in a proper way. Though the availability of LPG is frequent in the rural area however because less economical security, the rural population and former are using cow and buffalo dungs or sometimes, dried wood from their domestic grooves (Sultana and Alam, 2018).

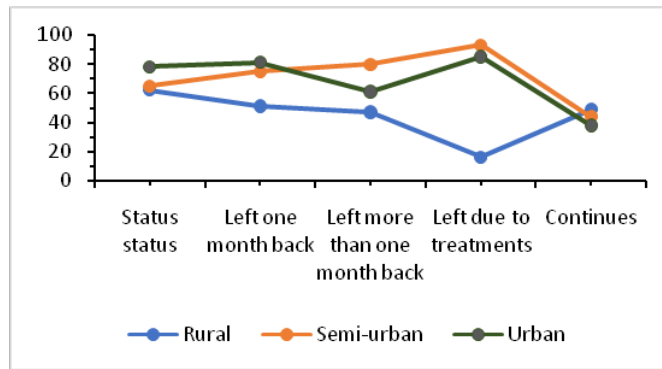


Figure 4. The precautionary presentation of asthma patients.

It was found that the study area is having a diversity of food consumption, agricultural varieties, and other optional management for their livelihoods. However, it was common across the study area that the respondents are very clear for their response and they are also very sincere for medical treatment and probably, it may be a considerable step towards asthma control at the primary level (Nanzer *et al.*, 2020). Due to the treatment, the majority of the residential population is avoiding smoking. As a result, a good number of former as well as other sampled populations are cured asthma as it noticed during the time of sampling as well as doctor's interactions and thus, they all are in good health.

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