

Prevalence and Prevention Method of Asthma Cases in Amroha District, Uttar Pradesh, India

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Abstract: Asthma is a common chronic disease with higher prevalence in the population and its pathogenicity was triggered by environmental and pathophysiology exposure. In this study, we collected data on potential occupational risk factors through occupational modules. During the present study, prevalence of asthma was recorded in lower proportion in urban areas (17.2%) while higher in rural areas (23.2%). It was also found that the ratio of asthma patients was comparatively different in urban (9.1%) and rural participants (4.7%). Though, common workers in the study area were used a variety of intoxicant in daily life. The agricultural worker used to smoke or tobacco and found 35% of college students parents are used such materials regularly. Thus, this study may play an important role in estimation of asthma cases in the regional studies.

Keywords: Asthma Disease, Prevalence, Prevention methods, Pathogenicity

1. Introduction

Asthma and its allergies effects are common throughout the world. Asthma is a common chronic disease with high prevalence frequencies which commonly occur in among children and young peoples and a large number of variations between and within the population of several countries and its cities (Laurent *et al.*, 2008). These pathologies are basically associated with the negative outcomes at the emotional, physical, professional, and social level have existed as patients as well as family's backgrounds and significantly interfering the normal life activities of the populations (Bryant-Stephens, 2009). Since the existence of asthma cases was recorded and presently, a total of 1133 asthma patient was reported at the district level in district. It was found that the asthma pathogenicity was triggered by the diversity of environmental exposure as well as pathophysiology. It was well established that asthma can be cured by stepwise as it was standardized by international agencies (Sultana and Alam, 2018; Singh and Kumari, 2019). Asthma and its impact in the form of novel allergies which are increasing in several countries (Beigelman and Bacharier, 2016). Presently, it is common in the developing regions appeared it prevalence as rising in various conjunction with the increasing rate of urbanization in rural as well as urban areas (Sears *et al.*, 1996; Ozturk *et al.*, 2017).

In recent decades, the Global Initiative for Asthma explained about the asthma disease. It was mentioned that asthma is a type of chronic inflammatory disorder of polluted airways in which many of our body cells get infected (Dy *et al.*, 2018) and even several elements which are also played a key role in the asthma cause, prevalence and its frequencies modulation in the many areas (Chen *et al.*, 2006). In addition, the chronic inflammation as it was considered as a major component of asthma cases is associated with airway (Parulekar *et al.*, 2018) and hyperresponsiveness which leads to recurrent of common wheezing, sometimes breathlessness, chest tightness, and even coughing, especially during night hours or at the early morning periods

(Mielck *et al.*, 1996). Hence, asthma also can be explained as it is a type of complex system which is well coordinated with the multicell and in some cases, it was also categorized as an inflammatory disorder of human (Klouda *et al.*, 2018). However, it is obvious that asthma also requires significant interaction between the environment variables and genetic susceptibility of the particular persons of the studied population (Nixon *et al.*, 2017).

2. Material and Methods

This study was designed to investigate and describe the risk factors of asthma. In addition, we have collected information on potential occupational risk factors through occupational modules. The prepared questionnaire was standardized with the various procedures which are available in various research resources and based the resource availability and observation of this study; the study was carried out accordingly. In some places where the application of the English language was not applicable and fruitful, a local person was hired as a local supporter and facilitating hand for data collection. Though it was quite common across the study area however the presence of local supportive persons makes sampling, interactions and questionnaire more feasible for the standard sampling.

2.1 Sample selection

Data collection was conducted into two basic phases. Firstly, a few schools were selected randomly from various locations and regions. Initially, the randomly selected school was informed about our objectives and the data collection process. During the school visit for data collection, a few general information about the school such as location, transportation facility, locality, class standards, number of students, number of teachers and number of non-teaching staff was collected prior to the sampling. The selected school was considered as a unit of data site however some time schools were not agreed to allow us to interact with students, distribute the questionnaire, data collection due to time constraints or sometimes parents were not allowed for any

kind of outsource interactions with the external agencies. Though we had faced such issues and tried to sort out such problems at our level, it was entirely non-materialized to encase such opportunities.

The prepared questionnaire is having basic and primarily asthma diagnostic questions. These questions were assumed and synthesized at a minimum standard so that the target populations from various age groups respond to it very well. Our regular visit to several study sites made us to more familiar with the localities and respondent behaviour. In continuation, a slight change was also carried out in the prepared questionnaire for a standard data collection.

2.2 Data Collection

During sampling, the population was randomly selected from the various sites. The randomly selected population was further classified in several groups which are well categorized and defined in the questionnaire. The filled questionnaire was arranged in a systematic hierarchy such as day, date, month place and zones of the study area. In order to avoid pseudo-counting in the previously organized data, a well-planned and higher level of accuracy was taken care of during the time data entry into the excel sheet. Though, data were well categorized with their definition in questionnaire however the profiling of variables and its relevant data was kept at their respective place for proper and meaningful analysis of the define variables.

The physical examination was carried out during the sampling. The patients were estimated from the interacted population and obviously, they are having and even self-maintained previous treatment records. The scanned records were taken as a general clue for asthma patient identification while patients without exiting records or general symptoms were strongly neglected. The additional counselling and medical suggestions were not addressed as they are in normal condition without any health issues especially asthma. The wheezing on auscultation and a prolonged expiratory phase is the most common abnormal physical symptoms which confirm the air limitations as it is basically integrated with the generic characteristics of asthma. However, auscultating on the chest needs to be placed on the chest before the check-up while and may be informative after the first process or at the end of the treatment. Along with the physical verification through general, nose, pharynx and skin were also keenly observed as additional information.

2.3 Data Processing and Statistical Analysis

The existing condition of the study area is quite different as it was presumed in the initial stage of the study and a set of problems which was raised during sampling as well as data collection makes us make and redesign our study in a more specific way. In order to keep and collect more specific data, we were collected data and processed with the appropriate statistical tool and their statistical inference was present in a very systematic and scientific way. The data collection is having a certain level of limitation and it's certainly its limitation causes hampering in the data collection and data

management however, we had precise care during data collection and its processing.

The descriptive statistics of all data were obtained from MS Excel 2007 and mean and slandered deviation was presented in \pm at appropriate places. The analysis of univariate data was carried out separately and each question which was considered as a factor was analyzed along with the excel data collected from the various study sites and periods. The Chi-square tests were performed to check the levels of statistical significance were also carried out between the different variables and significance was considered at 5%. The collected data were analysed by SPSS (16 version).

3. Results and Discussion

During the present study, it was found that the prevalence of asthma was recorded in a lower proportion in urban areas (17.2%) while it was higher in the rural areas (23.2%). It was also found that the ratio of asthma patients was comparatively different in urban (9.1%) and rural participants (4.7%). It was really hard to cover such a diversified area in terms of its geographical and cultural verities. However, the designed questionnaire was uniformly distributed in each sampling site and observational areas where it was possible. Though it was common in workers as they used a variety of intoxicant materials in their daily life. The agricultural worker used to smoke or tobacco and found 35% of college students' parents are used such materials regularly.

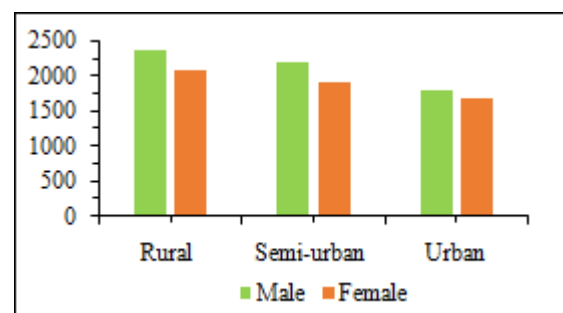


Figure 1: Availability of asthma cases in the study area.

The availability of asthma cases in the study area was depicted in figure number 1. The number asthma cases were found more in number in the rural area and it reflected that the rural population was more exposed by environmental as well as other associated factor which is leading as the causative agents of the asthma diseases. In the case of semi-urban areas, the availability of asthma cases was found in lower proportion in comparison to the rural area; it shows that the existing population of the semi-urban area is less sensitive and more resistant for the asthma causative agents in all forms. In the case of the urban area, it the only area which shows a minimum level of response to the environment as well as the anthropogenic cause which primarily played a major in the asthma causation in all age of the human population. It was found that the studied area are significantly different in rural ($t = 7.13; p < 0.001$), semi-urban ($t = 8.29; p < 0.001$) and urban areas ($t = 4.57, p < 0.001$) however the studied area are also different significantly in term of case availability and occurrence ($r = 8.53, p < 0.001$).

In the case of pure rural habitation, the sampled population was exhibited a lesser number of positive responses to the asthma disease. Other than this as a major reason, education level, and living style also determine the prevalence of asthma in the urban area and probably it might be an authentic and considerable argument for the lesser frequency of asthma in the urban area. As it can be clearly observed that the availability and prevalence of asthma cases were comparatively higher in frequency in males than females.

Basically, a male is spending most of the time in their agricultural forms, nurseries, crops of other associated components of agriculture hence they consumed tobaccos and bidis more frequently. In addition, they are also more exposed by a variety of environmental hazards and probably it might be another dominant reason which accelerated not only the asthma cases on the rural areas but also in other regions of human existence particularly where agriculture is persisted as the main source of their survival and living hoods.

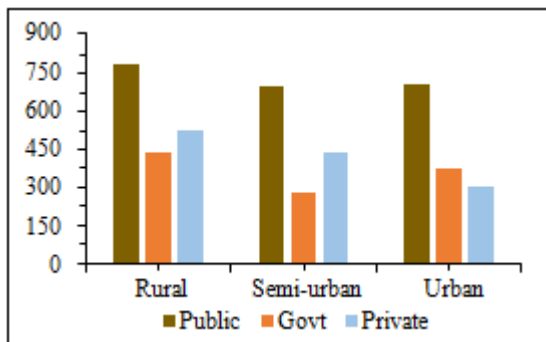


Figure 2: Mean difference in asthma cases in the study area

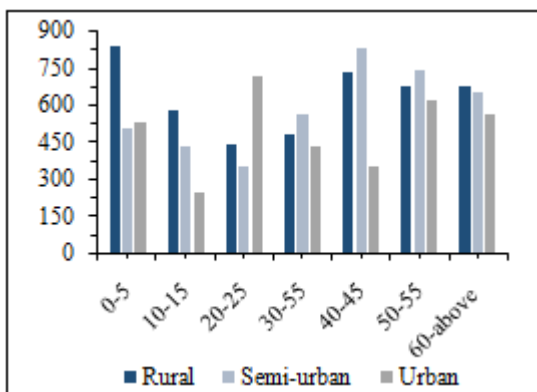


Figure 3: Occurrence and prevalence of asthma cases in a different group

During the study periods, a number of patients based on their occupation were also accessed. We found that the number of asthma patients was more in number in public sector worker particularly those who are travel in various areas. Usually, a few were more polluted and probably, it may have a significant impact on the daily traveller worker who faced a lot of pollutants. Though similar research findings have been declared by various investigations (Laffont *et al.*, 2017).

The exposure such pollutants is also influenced adversely on the common residential population as well as a regular visitor. The number of asthma cases was more prominent in

such an environment and daily workers are comparatively higher in the number than another studied area. In the case of another studied group, the frequency of asthma cases was less because they are not a frequent visitor of polluted areas. Hence, they all are minimally exposed to pollution hazards in such areas and probably, lesser asthma cases are among the reason. Other than this, the most polluted area caused other health hazards among the local and regional population and thus, it would be a chance the occurrence and prevalence of asthma cases might be more crucial in other cases. Though, they had maximin probability to get allergic reactions to form the various type of pollutant materials and also prone to higher asthma disease (Carr *et al.*, 2016).

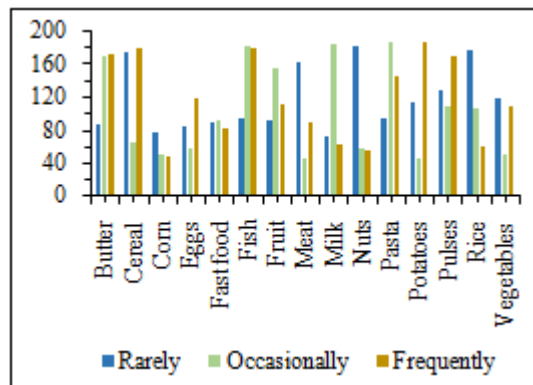


Figure 4: Regular consumption of food resources in the study area

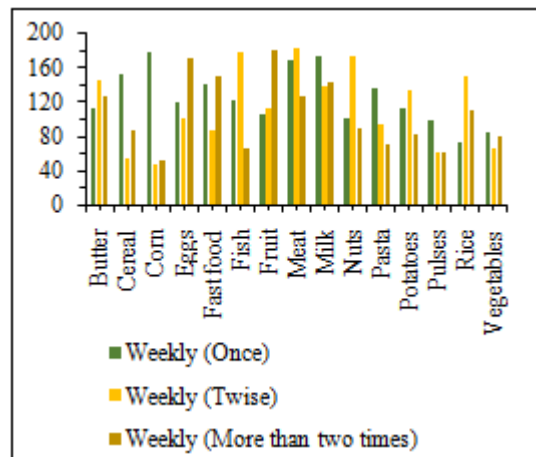


Figure 5: Frequency of food consumption in the study area

In the study area, a diversity of food resources was also noted during the time of interaction. We found that most of the rural population who are doing agricultural works are primarily dependent upon the local resources. In the study sites, the local resources are consisting of locally available food resources. We found that they are very limited but common for food resources which can be found throughout the Amroha district. The locally identified food resources were quite similar in all rural areas where we had conducted our study from in the very diverse families and agricultural structure. The main food resources which were noted are like milk, eggs, pulses, grains, vegetables, cereals, and fast food was so common (Table 5). We found that the locally available food is mainly accounted for its availability in the rural, semiurban and urban areas whilst it was completely determined by its useless in rural areas. Basically, in the rural area, it was assumed that the availability of such

components was not merely associated with the consumption and local availability but it is also dependent on the socioeconomic structure of the local communities which are found as a major population of asthma cases. The local communities that are suffering from asthma are closely attached to the agricultural occupations (Medina-Remón *et al.*, 2018; Whyand *et al.*, 2018).

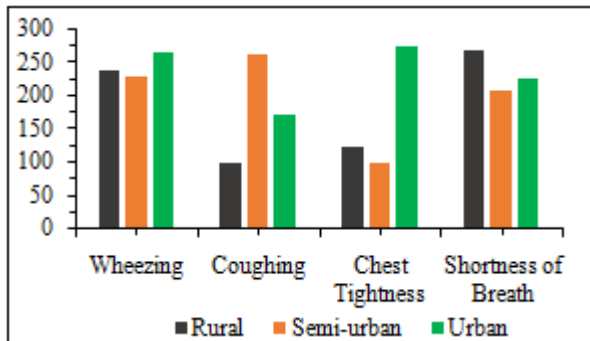


Figure 6: The observed common symptoms of asthma cases

It was also found that the local population is consuming the food resources are frequently, commonly and sometimes rarely due to their socioeconomic structure and exposure of environmental variables. Due to their close attachment with limited resources, they are faced with a lot of exposure to another disease also and probably, the occurrence and prevalence are higher in the number than the semi-urban and urban areas.

It was found that wherever the area was densely populated; the asthma case was more prevalent than the less populated areas and it was also noted that dense population exhibited a significant population load on the cause and consequence of the asthma occurrence. Among all variables which were collected through the synthesized questionnaire, wheezing was recorded as 32.56% in a rural area while it was recorded as 31.34% in a semi-urban area and in the case of the urban area; it was recorded as 36.10%. In the case of cough, it was more diverse than wheezing cases of the study area. The lowest proportion of cough was recorded in the rural area (18.54%) probably due to the lower proportion of pollution contents. In the case semi-urban area (49.25%) the proportion of asthma cases was comparatively higher which shows that the residing population had a massive number of exposures of various hazards which causes asthma in all group members of the sampled society.

Table 1: Mean number of asthma cases in the study area

		Rural (Mean ± SD)	Semi-urban (Mean ± SD)	Urban (Mean ± SD)
Sex	Male	1862 ± 274	1879 ± 249	1787 ± 247
	Female	2069 ± 218	1714 ± 301	1674 ± 371
Occupation	Public	790 ± 157	700 ± 98	710 ± 163
	Govt.	439 ± 114	282 ± 95	378 ± 89
	Private	531 ± 102	440 ± 59	309 ± 72
Age	0 – 5	840 ± 189	510 ± 125	529 ± 97
	10 – 15	577 ± 124	433 ± 104	243 ± 112
	20 – 25	439 ± 167	353 ± 119	722 ± 101
	30 – 55	480 ± 97	563 ± 115	433 ± 86
	40 – 45	740 ± 83	835 ± 204	351 ± 69
	50 – 55	676 ± 91	742 ± 106	619 ± 91
	60 -above	679 ± 104	657 ± 195	564 ± 110

Table 1 show the number of patients of asthma in various areas was densely populated; the asthma case was more prevalent than the less populated areas and it was also noted that dense population exhibited a significant population load on the cause and consequence of the asthma occurrence.

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