

# Correlation of Socio-Economic Status and Allergic Rhinitis

<sup>1</sup>Akansha Dhillip

<sup>2</sup>Dr. Raadhika Shree

Saveetha Medical College and Hospital

## Abstract

### ➤ Introduction

Allergic rhinitis is an IgE mediated nasal response to allergens in the atmosphere. In areas where there is high amounts of pollution, like in developing countries, this condition is quite prevalent.

### ➤ Aim

To study the environmental factors in allergy and the nutritional status in allergy. The purpose of this study was to see if a person's socio-economic status plays a role in the development of AR.

### ➤ Methodology

Prospective study on 50 patients with allergic rhinitis. Patients were diagnosed with allergic rhinitis based on clinical symptoms and by serum IgE. Nutritional status was assessed and patients were given a questionnaire.

### ➤ Results

The presence of allergic rhinitis was more in the upper class. Common environmental allergens seemed to affect them more than the others.

### ➤ Conclusion

The hygiene hypothesis holds good based on the results of this study. The upper class individuals who are usually exposed to lesser environmental antigens are more prone to develop allergic rhinitis.

**Keywords:-** Allergic Rhinitis, Socio-Economic Status, Upper Class, Pets, BMI,

## I. INTRODUCTION

Allergic rhinitis is an IgE mediated nasal response to allergens in the atmosphere. (1)

It is a global problem that affects all age groups. It affects 10-25% of the population in India. (2) It constitutes 55% of all allergies in India. (2)

Allergic rhinitis has a multifactorial etiology. Airborne allergens such as dust, dander, mould, industrial and vehicular exhaust are some of the major inhalant allergens. Triggers of Allergic rhinitis are domestic allergens as mites, domestic animals, insects or of plant origin; common outdoor allergens include pollens and moulds; occupational triggers as latex; tobacco smoke;

automobile exhaust include ozone, oxides of nitrogen and sulphur dioxide. (3) In some, there is a genetic predisposition.

It can either be seasonal or perennial. In areas where there is high amounts of pollution, like in developing countries, this condition is quite prevalent. The usual symptoms are stuffy nose due to blockage or congestion, itching, usually in the nose, mouth, eyes, or throat, puffy, swollen eyelids, sneezing and cough. It may also be associated with decreased sleep, reduced concentration and impaired decision making, irritability and fatigue. (4) Due to the symptoms, a person's productivity at work or school is affected, so also is their sleep and social life.

Treatment of this condition consists of avoidance of the allergen, use of antihistamines, corticosteroids, sodium Cromolyn, nasal decongestants, immunotherapy and in severe cases anti IgE drug; the drug used is omalizumab. In India, we spend almost 1000 crores each year on medications for this condition.

Depending on the person's socio-economic status, which in turn affects their nutrition and the location of their houses, they will be exposed to different allergens that leads to AR.

The purpose of this study is to see if a person's socio-economic status plays a role in the development of AR.

The aims of the study were to study the environmental factors in allergy and the nutritional status in allergy.

## II. METHODOLOGY

Prospective study on 50 patients with allergic rhinitis.

Patients were diagnosed with allergic rhinitis based on clinical symptoms such as: sneezing, runny nose, itchy nose, itchy and watery eyes and by taking the serum IgE.

Once diagnosed, the patient's BMI and MUAC (mean upper arm circumference) were recorded.

The patients were given a questionnaire which helped to determine the following:

Socio-economic status using the Modified Kuppuswamy Scale, assessment of living conditions such as wall moisture, presence of air conditioners and pets at home.

To ease the presentation of data, 2 categories were created after taking into consideration the socio-economic status: upper and lower class.

Accordingly the patients were grouped into 2.

The data was analysed using the T-test. Confidence interval of 95% was considered significant.

### III. RESULTS

The number of males in this study was 24 of which 10 belonged to the upper class and 14 to the lower class. The

number of females in the study was 26 of which 15 belonged to the upper class and 11 to the lower class.

The presence of allergic rhinitis was more in the upper class.

Presence of a separate kitchen was a significant cause for allergic rhinitis in the upper class. Presence of pets at home was also a significant factor for the development of allergic rhinitis in the upper class. Smoking did not prove to be a cause for allergic rhinitis. Besides BMI & MUAC, hemoglobin was as a good predictor of nutritional status for this study.

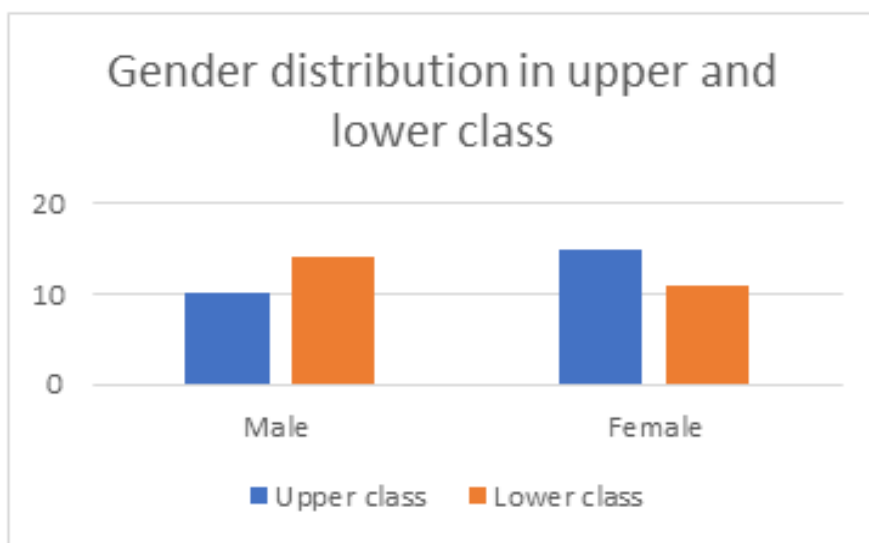


Fig 1

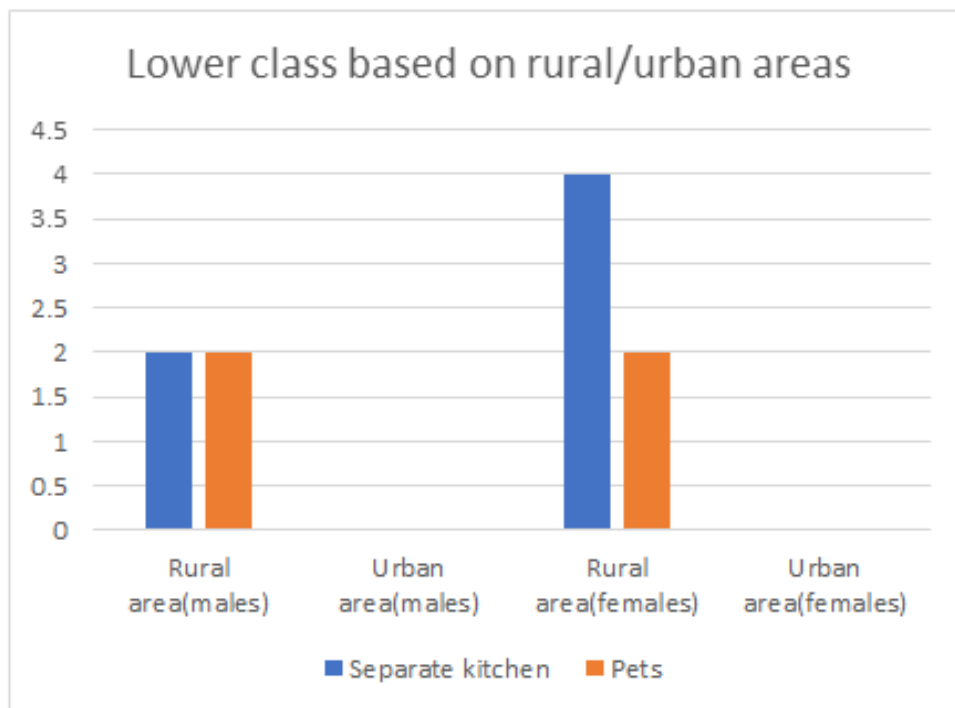


Fig 2

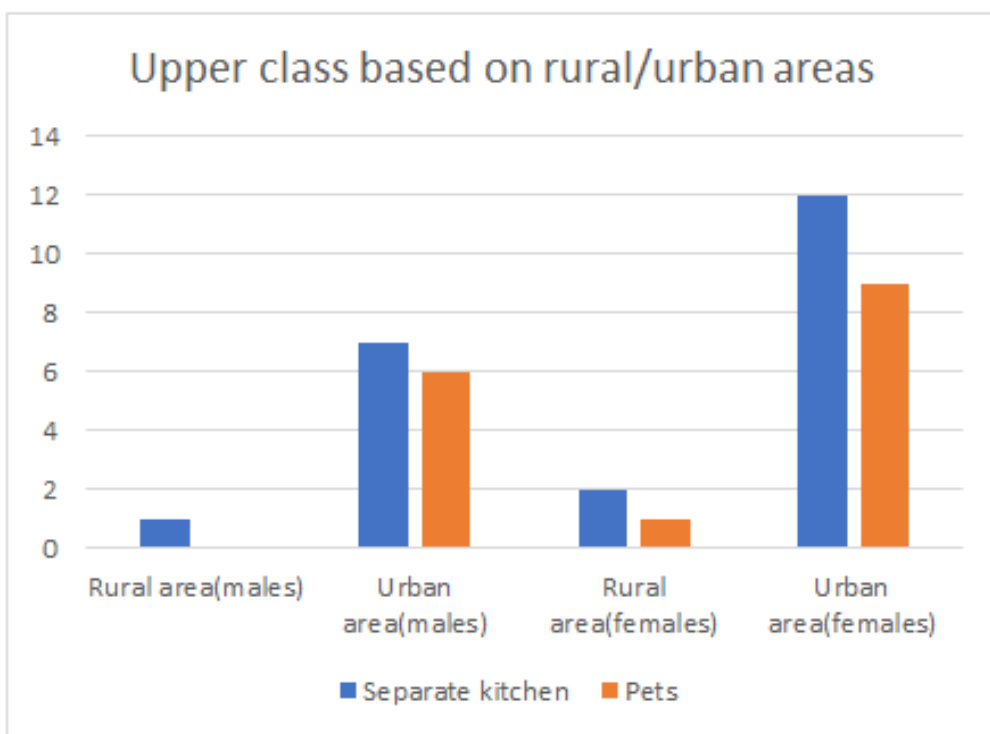


Fig 3

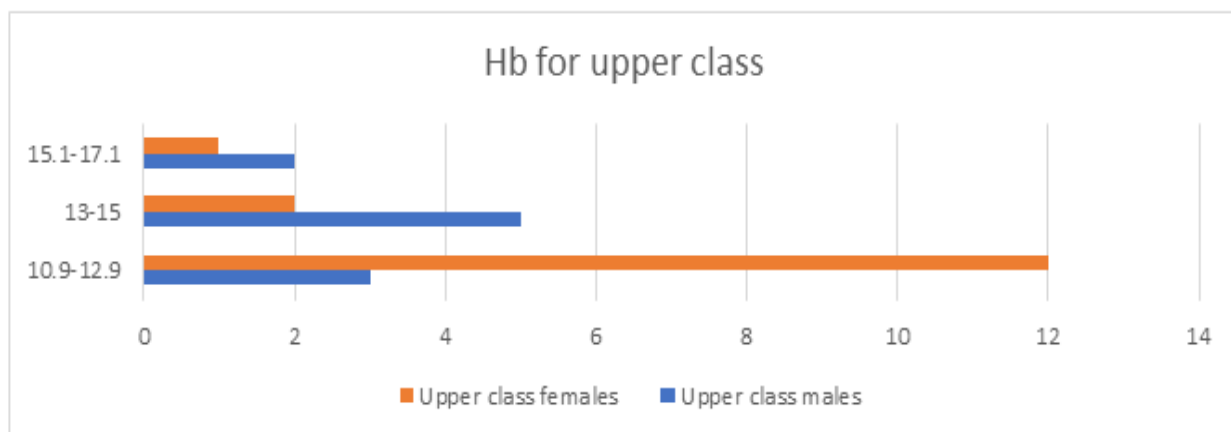


Fig 4



Fig 5

#### IV. DISCUSSION

It was concluded that AR is more common in the upper class. This study showed only a few factors to be significant in the causation of allergic rhinitis in the upper class. The results of this study showed similarity with another study conducted in South Africa where a positive association was shown between AR and socio-economic status in an urban adolescent population.(5) Another study whose results varied from this study showed that AR was higher in females, urban areas and in the lower socio-economic status. (6). In a study conducted by Sinha et al, smoking was a significant risk factor for the development of allergic rhinitis(7). In the study done by Bener et al it was shown that iron deficiency lead to the development of allergic rhinitis and asthma (8), which was also reflected in this study where many of the patients had low hemoglobin. In a study conducted on the effect of socioeconomic status on the quality of life in allergy affected individuals, it was established that patients from the lower social class had lower prevalence of allergy than patients of the higher social class but, the allergy affected the quality of life to a greater extent in the lower class. (9)

Presence of pets was shown as a causative agent of allergy in this study, which is similar to another study where cat and dog dander exposure was related to rhinitis symptoms in adults. (10)

In a study conducted in Korea, it was proven that age, stress level, marriage, occupation, asthma, atopic dermatitis, pulmonary tuberculosis, depression, thyroid disease, and parental AR history, all affected the prevalence of AR. (11)

With the changing levels of air pollutants as a result of global warming and due to the increased pollen load, more people are developing allergic rhinitis (12). A few simple steps to reduce the burden of pollen would be to clear weeds growing, to have plants that flower during winter and summer and pruning shrubs before they flower.

Though the results of these studies were different, it can be concluded that allergic rhinitis affects the quality of life of the patients.

#### REFERENCES

- [1]. Textbook of ear, nose, throat and head and neck surgery by Hazarika.
- [2]. Chandrika D. Allergic rhinitis in India: an overview. *Int J Otorhinolaryngol Head Neck Surg* 2017;3:1-6.
- [3]. Varshney J, Varshney H. Allergic Rhinitis: an Overview. *Indian J Otolaryngol Head Neck Surg*. 2015;67(2):143–149. doi:10.1007/s12070-015-0828-5
- [4]. <https://acaai.org/allergies/types/hay-fever-rhinitis>
- [5]. Mercer MJ, Joubert G, Ehrlich RI, Nelson H, Poyser MA, Puterman A, Weinberg EG. Socioeconomic status and prevalence of allergic rhinitis and atopic eczema symptoms in young adolescents. *Pediatr*

*Allergy Immunol* 2004; 15: 234–241. Ó 2004 Blackwell Munksgaard

- [6]. Todkill D, Loveridge P, Elliot AJ, et al. Socioeconomic and geographical variation in general practitioner consultations for allergic rhinitis in England, 2003–2014: an observational study. *BMJ Open* 2017;7:e017038. doi:10.1136/bmjopen-2017-017038
- [7]. Sinha B, Vibha, Singla R, Chowdhury R. Allergic Rhinitis: A neglected disease - A community based assessment among adults in Delhi. *J Postgrad Med* 2015;61:169-75
- [8]. Bener A, Ehlayel MS, Hamid Q. The impact of anemia and hemoglobin level as a risk factor for asthma and allergic diseases. *Indian J Allergy Asthma Immunol* 2015;29:72-8
- [9]. Pawlinska-Chmara R., Wronka I., Marchewka J. (2013) Effect of Socio-Economic Status on Quality of Life in People Affected with Respiratory Allergy. In: Pokorski M. (eds) *Neurobiology of Respiration. Advances in Experimental Medicine and Biology*, vol 788. Springer, Dordrecht
- [10]. Shargorodsky, J, Garcia-Esquinas, E, Umanskiy, R, Navas-Acien, A, Lin, SY. Household pet exposure, allergic sensitization, and rhinitis in the U.S. population. *Int Forum Allergy Rhinol*. 2017; 7: 645–651.
- [11]. An S.Y., Choi H.G., Kim S.W., Park B., Lee J.S., Jang J.H., Sung M.W. Analysis of various risk factors predisposing subjects to allergic rhinitis. *Asian Pac. J. Allergy Immunol*. 2015;33:143–151. doi: 10.12932/AP0554.33.2.2015.
- [12]. Patella, Vincenzo & Florio, Giovanni & Magliacane, Diomira & Giuliano, Ada & Angiola Crivellaro, Maria & Di Bartolomeo, Daniela & Genovese, Arturo & Palmieri, Mario & Postiglione, Amedeo & Ridolo, Erminia & Scaletti, Cristina & Ventura, Maria & Zollo, Anna. (2018). Urban air pollution and climate change: “The Decalogue: Allergy Safe Tree” for allergic and respiratory diseases care. *Clinical and Molecular Allergy*. 16. 10.1186/s12948-018-0098-3.