



RELATIONSHIP BETWEEN AIR CONDITIONER USAGE AND ALLEGIC RHINITIS IN
HOSPITAL WORKERS – A HOSPITAL BASED STUDY

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Abstract:

Introduction: Exposure to cold has been often associated with increased incidence of allergic rhinitis. On prolonged exposure to cold, either through low environmental temperatures areas, there is an increased risk of developing allergic rhinitis. Many clinical studies states that inhaled cold air, cooling of the body surface(decreasing the body temperature) and stress induced by cold leads to pathophysiological changes such as vasoconstriction in the respiratory tract mucosa and suppression of immune responses, which leads to possible susceptibility of infection level will be higher. **Aim:** To study the correlation between air conditioner usage and allergic rhinitis in hospital workers. **Methodology:** The study was approved by Institutional human ethical committee, a cross sectional study was conducted in 120 employees of a hospital, workers were included based upon the inclusion/exclusion criteria after getting their informed consent .The study participants were interrogated with questionnaires, which were retrieved and analyzed statistically. **Result:** As a result of 120 employees in the hospital intragauted, 100 were had symptoms of headache , nasal discharge , sneezing and nasal stuffiness, 70 had sore throat, 40 had chest thightness. Hence with the intragauted report air conditioner users were having allergic rhinitis with sensitivity of 84% and specificity of 82% and p value 0.001. **Conclusion:** The data available suggest that exposure to cold environment increases the risk of allergic rhinitis and their severity .Personal protective measures against indoor and outdoor cold stress, such as face mask ,ear plugs, clothing and outdoor physical activity which reduces the chances of allergic rhinitis in workers who exposed to cool temperature areas.

Key words: Allergic rhinitis, Air-conditioner

Introduction:

Exposure to cold has been often associated with increased incidence of allergic rhinitis. On prolonged exposure to cold, either through low environmental temperatures areas, there is an increased risk of developing allergic rhinitis(1). Many clinical studies states that inhaled cold air, cooling of the body surface(decreasing the body temperature) and stress induced by cold leads to pathophysiological changes such as vasoconstriction in the respiratory tract mucosa and suppression of immune responses, which leads to possible susceptibility of infection level will be higher(2). Allergic rhinitis is the more common encountered in people exposed to cool airs and more than 70% people having allergic rhinitis this cause increase in respiratory tract infection in hospitalization (3) . Symptoms can be intermittent or persistent and include nasal obstruction (congestion or blockage), sneezing, rhinorrhoea, nasal itching and post nasal drip.1- 2,5-8 Nasal congestion is the most common and troublesome symptom which occurs in up to 90% of patients.3,7 Patients can also suffer from insomnia, fatigue, irritability, memory .Many data available suggest that exposure to cold, either through exposure to low environmental temperatures or during induced hypothermia, increases the risk of developing allergic rhinitis and dying from them; in addition, the longer the duration of exposure the higher the risk of infection(4). Most of the available evidence from laboratory and clinical studies suggests that inhaled cold air, cooling of the body surface and cold stress induced by lowering the core body temperature cause pathophysiological responses such as vasoconstriction in the respiratory tract mucosa and suppression of immune responses, which are responsible for increased susceptibility to infections(5). the general public and public health authorities should therefore keep this in mind and take appropriate measures to prevent increases in morbidity and mortality during winter due to respiratory infections. Safety precautions can reduce the prevalence of respiratory tract infection.

Aim:

To study the correlation between air conditioner usage and allergic rhinitis in hospital workers

Objectives:

- To identify the relationship between cold exposure and allergic rhinitis
- To assess the development of allergic rhinitis is potentiated by cold exposure

Inclusion criteria :

1. Age between 20- 60yrs
2. No family history of respiratory tract infections
3. Persons exposed to air condition(lab technician,icu workers,casualty workers theater staff)
4. No history of smoking
5. No history of drug abuse

Exclusion criteria:

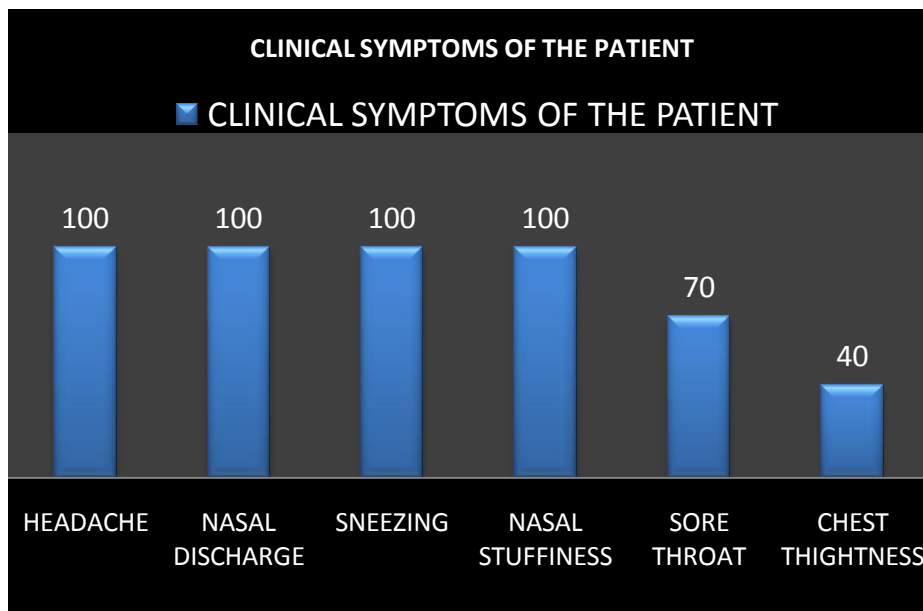
1. Known case of respiratory tract infection
2. Family history of COPD
3. Persons not exposed to air condition
4. History of smoking
5. History of drug abuse

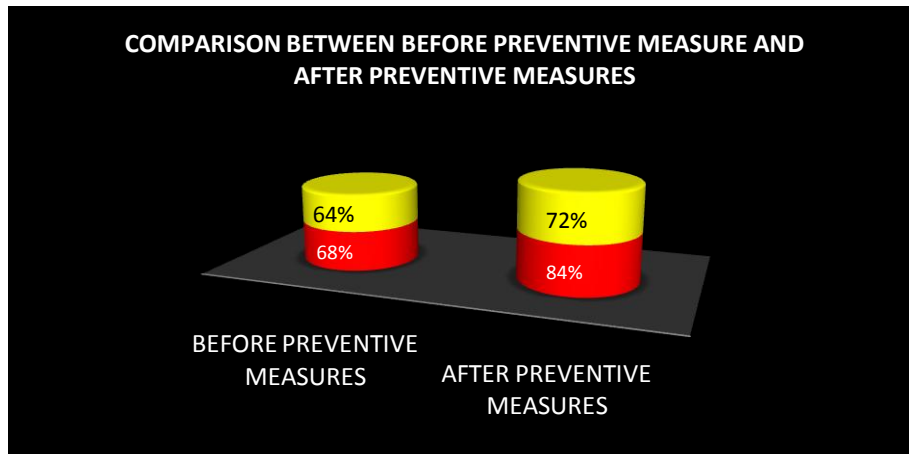
Material And Methods:

The study was approved by Institutional human ethical committee, a cross sectional study was made in 120 hospital workers in medical college and hospital .Workers were included based upon inclusion/exclusion criteria after getting their informed consent. The study participants were interrogated with questionnaires, which were retrieved and analyzed statistically. Patient was provided with appropriate clothing , face mask ,ear plugs, clothing and outdoor physical activity, was observed and followed for six months.

Results:

In 120 hospital workers ,100 people had symptoms of headache , nasal discharge , sneezing and nasal stuffiness, 70 had sore throat, 40 had chest tightness. Air conditioner users were having allergic rhinitis than non users with sensitivity 84% and specificity of 82% and p value 0.001.





Discussion:

Under normal circumstances, the human body adjusts physiologically to exposure to cold by increased shivering thermogenesis and increased peripheral vasoconstriction to maintain the core body temperature(6). The immune system also responds to cold stress sometimes a drop in the core body temperature causes leukocytopenia, suppression of chemotactic migration of leukocytes, suppression of phagocytosis, reduction of the release of cytokines, insulin resistance and hyperglycemia, factors that increase susceptibility to infections. Allergic rhinitis is the allergic reaction of a sensitive individual to specific allergens. Its symptoms, apart from those similar to those of rhinitis, are itchy eyes, throat and ears(7,8). If a patient is exposed to an allergen, the allergen will react with the antibody IgE in the blood and bind together the allergen and the receptors on the mast cell, which causes an allergic condition. If he/she comes into contact with the same allergen again, the IgE molecules in the vicinity will cross-link and cause the mast cells to break down, releasing different substances like histamine, leukocyte chemotactic factor or prostaglandin. Histamine can lead to allergic reactions or inflammation and in turn produce basic symptoms of nasal allergy including sneezing, itchy nose and runny nose(9,10). Safety measures decrease the exposure to cool air and maintains the body temperature and decrease the respiratory tract infection in hospital workers. According to Samuel G in his study they have sensitivity and specificity of 78%, 76% P value 0.001. In Chingo GH in his study they have a sensitivity and specificity of 68%,62% with p value less than 0.001. George et mandel in his study they have a sensitivity and specificity of 72% ,68% with p value less than 0.001.

Conclusion:

The data available suggest that exposure to cold environment increases the risk of respiratory tract infections and their severity. Personal protective measures against indoor and outdoor cold stress, such as appropriate heating of houses, appropriate clothing , face mask ,ear plugs, clothing and outdoor physical activity reduces the respiratory tract infection in workers who exposed to cool airs .



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