

Original article:

Study of effect of use of Air-conditioners on Respiratory Rate of students living in Air conditioned environment

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Abstract:

Today's modern lifestyle and raised living standards have led to increased use of machines and electronic goods by common man. Air conditioner, popularly known as "AC" is one of them. Air conditioned environment was thought to be pleasant and harmless but many authors have observed that persons working in Air Conditioned environment are firmly related with increase in prevalence of work related headaches, fatigue and upper respiratory symptoms. Air conditioning may affect human health since it has a profound effect on our environment, than just lowering the temperature. AC usage increases the respiratory rate of an individual. Hence, long term usage may affect pulmonary functions.

BACKGROUND:

Today's modern lifestyle and raised living standards have led to increased use of machines and electronic goods by common man. Air conditioner, popularly known as "AC" is one of them. Air conditioned environment was thought to be pleasant and harmless but many authors have observed that persons working in Air Conditioned environment are firmly related with increase in prevalence of work related headaches, fatigue and upper respiratory symptoms. Air conditioning may affect human health since it has a profound effect on our environment, than just lowering the temperature.

OBJECTIVES:

Effect of use of AC's on Respiratory Rate of students living in Air conditioned environment.

MATERIAL AND METHODS:

The study was conducted in the Department of Physiology, Maharishi Markandeshwar Institute of Medical Sciences & Research, Mullana (Ambala).

STUDY GROUPS:

100 female subjects were selected from MMU HOSTELS.

The selected subjects were categorized into 2 major groups:

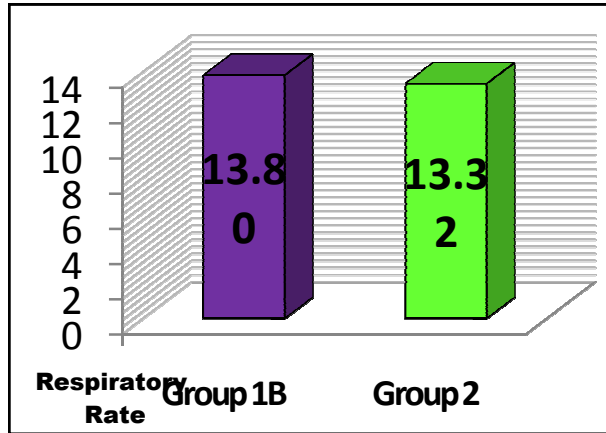
GROUP 1 (Study group) consisted of 50 healthy female students living in AC hostels who used AC for a minimum duration of 6 hrs / day and atleast 5 days a week from the past 6 months. Their respiratory rate was recorded twice. First reading was taken in the month of April before the usage of air conditioners and second reading after exposure of Ac's in October. All the subjects were staying in the same hostel and the AC's installed were of

centralized pattern i.e the temperature was similar in all the rooms.

GROUP 2 (Control group) consisted of randomly selected 50 healthy female students living in Non-AC hostels who didn't use AC at all.

RESULT:

The mean and standard deviation of Respiratory rate of AC users and Non-Ac users was found to be 13.80 ± 0.99 and 13.32 ± 0.77 respectively. The P value was found to be 0.008 i.e statistically significant. Hence, a significant increase was seen in the respiratory rate of students after exposure to AC's.



DISCUSSION:

George O.S and Chandan ML found a significant increase in respiratory rate but the study was carried on males as compared to our study that was carried on female subjects. However, the result is same.¹

Babitha R, Rangarajan R, Muhil M, Basavarajaiah GM found a significant increase in respiratory rate.²

Mc Donald, James S, Nelson J, Lenner KA, Melissal et al stated that stimulation of irritant receptors causes reflex tachypnoea and bronchoconstriction³

According to PierriFontanari, Burnet Henri et al the bronchoconstriction causes increased airway resistance that leads to increased respiratory rate.⁴

As observed by Hulke MS et al there is a consistent increase in respiratory rate of air conditioner users when compared to non-ac users.⁵

CONCLUSION:

AC usage increases the respiratory rate of an individual. Hence, long term usage may affect pulmonary functions.

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