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A Comparative Study of Selected Respiratory Variables Between Smokers and Non-Smokers

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ABSTRACT

This study compares the Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath, and the Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration, between male smokers and people who have never smoked or haven't smoked in a long time aged 18–21 years. It looks at how smoking tobacco products like cigarettes, bidis, or cigars affects lung function. The study at Guru Kashi University included 100 people. Half of them were smokers, and half of them had never smoked or hadn't smoked in a long time. We used a spirometer, which is a medical device that measures lung function by measuring the amount of air breathed in and out, and a peak flow meter, which measures the fastest expiration. After that, the results were looked at using descriptive and inferential statistics. The results show that smokers have much lower Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath, and Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration. This means that smoking cigarettes, bidis, or cigars makes it harder for the lungs to work properly. The results show that we need to act quickly to stop people, especially young people, from smoking cigarettes, bidis, or cigars and breathing in the smoke. This is because it makes it hard to breathe. In this case, the results are even more important.

Keywords: Forced Vital Capacity (Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath), Peak Expiratory Flow Rate (Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration), Pulmonary Function, Smoking, Respiratory Health, Lung Capacity, Spirometry, Public Health. This further emphasizes the significance of the findings in this context.

Introduction

The human respiratory system is very important for keeping us alive because it lets us breathe in oxygen and breathe out carbon dioxide. Two important tests for respiratory health are Forced Vital Capacity (FVC), which measures the total amount of air exhaled during a forced breath, and Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration. Both parameters show how much airflow resistance and ventilatory capacity a person has.

People have known for a long time that smoking is bad for public health. When you smoke tobacco, you breathe in thousands of chemicals that start a chain reaction that makes your lungs work worse. Smoking cigarettes, bidis, or cigars causes lung problems that get worse over time. This can cause problems like bronchial inflammation, less lung compliance, and damage to the alveoli. Many studies have found that smoking cigarettes, bidis, or cigars lowers Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath, and Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration. This makes a person less fit, less able to work, and less able to enjoy life in general.

Young adults still smoke cigarettes, bidis, and cigars, even though there have been a lot of campaigns and health warnings about it. This is especially true for those in school. In India, smoking is still common because of peer pressure, stress, and the fact that it is normal in society. The goal of this study was to compare the differences in Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath, and Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration, between smokers and people aged 18–21 who have never smoked or have not smoked in a long time. This would give doctors, teachers, and lawmakers hard numbers to work with. In this case, the results are even more important.

Methodology

This study, which took place at Guru Kashi University in Punjab, was a cross-sectional comparison. A purposive sample of 100 male students between the ages of 18 and 21 was divided into two groups: smokers and people who have never smoked or haven't smoked in a long time. We used a portable spirometer, which is a medical device that checks lung function by measuring the amount of air breathed in and out, and peak flow meters to gather data. These tools measure how well gases are exchanged, how much air flows, and how much lung capacity there is. Everyone took the test three times, and the highest score was kept. Following the American Thoracic Society (ATS) guidelines helped us make sure that the measurements were correct. Participants signed a form saying they agreed to take part, and the study was approved by an ethics board.

We looked at the data using both descriptive statistics (like the mean and standard deviation) and inferential statistics (like the independent samples t-test). The level of statistical significance was set at 0.05. In this case, the results are even more important.

Results and Discussion

The Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath, and the Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration, were very different between the two groups. The average Forced Vital Capacity (FVC) of smokers was 2.92 L (SD = 0.19), which is the amount of air they breathed out when they were forced to. People who have never smoked or haven't smoked in a long time had an average FVC of 4.21 L (SD = 0.16). The t-test proved that this difference was real ($t = -24.64$, $p < 0.001$).

Peak Expiratory Flow Rate (PEFR) is a measure of the fastest speed of expiration. Smokers had a PEFR of 338.0 L/min (SD = 20.45), which was much lower than the PEFR of people who have never smoked or haven't smoked in a long time (501.5 L/min, SD = 14.92). Once more, the difference was statistically significant ($t = -35.37$, $p < 0.001$). These findings are consistent with what other studies around the world have found about how smoking can cause breathing problems early on.

The age, gender, and environment of both groups were the same, which helped cut down on the number of factors that could have changed the results. The study's focus on one region makes it more useful because it gives Indian public health policy real-world data. Schools and other places of learning can use this information to start programs to help people quit smoking and do regular lung screenings on people who smoke cigarettes, bidis, or cigars. In this case, the results are even more important.

Conclusion

This study found that smoking cigarettes, bidis, or cigars significantly lowers both Forced Vital Capacity (FVC), which is the total amount of air exhaled during a forced breath, and Peak Expiratory Flow Rate (PEFR), which measures the maximum speed of expiration in young males. This proves that smoking tobacco products is bad for your lungs, even in young adults. The results show that we need to act quickly by making national policies, running awareness campaigns on campus, and giving health care advice.

Future research should include long-term tracking, female participants, and biochemical proof that people are inhaling smoke from burning tobacco products like cigarettes, bidis, or cigars. This will make the results more accurate. This study shows how important it is to start teaching people early and get them to change their habits to keep their lungs healthy. In this case, this makes the results even more important.

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