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A Study to Compare Spirometric Observations in Smokers and Non Smokers in Age Group between 25-55 Years

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Abstract **Original Research Article**

In India, smoking is a common habit prevalent in both urban and rural areas irrespective of mode of smoking i.e beedis, cigarettes, cigars etc. Tobacco smoke contains 400 chemicals out of which 60 are known carcinogens, which can lead to lung cancer. Smoking leads to rapid decline in pulmonary function test. Cigarette smokers have a high annual rate of decline in FEV1 of about 50ml, which is nearly double the average value in non smokers.

Keywords: FEV1, FVC, PFT.

SUMMARY

The present study was conducted in department of pulmonary medicine Bhaskar medical college, Hyderabad in June 2022- June 2023.Based on our present study it was concluded that majority of smokers had normal lung function and a few had obstructive pattern in their FEV1/FVC ratio.

Cigarette smoking is the single cause of death in developing and developed countries. Smoking is now increasing throughout the world. It is one of the biggest threats to world health. For smokers, quitting smoking is the most important thing they can do to improve their health.

Most effective and cost effective thing is Encouraging smoking cessation.

It will prolong their patients' lives

AIM

Objectives

- To study the influence of smoking in pulmonary function.
- To study the differences in spirometry findings in smokers and nonsmokers and their variations.
- To establish normal standards in healthy non smokers.

METHODS

Informed and written consent will be taken from patient/guardian. Pulmonary function tests are assessed and results are analyzed in smokers and non smokers

Study Population

- All smokers and smokers patients who come to Department of Pulmonary Medicine, Bhaskar Medical College and General Hospital.
- 50 smokers and &50 non smokers in the age group of 25-55years.

Inclusion Criteria

- Adult Male (25 to 55 years) with a history of cigarette/Bidi smoking dialy for atleast one year (case group)
- Adult male (25 to 55 years) with no past or present History of smoking taken as (Control group)

Exclusion Criteria

- Females were not included in this study Smoking cessation candidates
- The known case of bronchial asthma
- The person who were morbid or have full fledged picture of cor pulmonale on clinical

examination Person with known occupational lung diseases.

Study Period
Over a period of 12 months from June 2022 to June 2023

Study Design Data Analysis (Expected Outcome)

- Cross sectional study

Data will be subjected to ANOVA statistical method using SPSS software 2023

Ethical Implication

- The study subjects will be selected following inclusion and exclusion criteria.
- Written & informed consent will be taken.

Every patient will be completely explained about the study and related procedures and their importance and complications in their own understandable language

Financial Implication: Funding–none

Expenses if any will be incurred by me

Investigations: Chest x ray

Pulmonary Function Test: Spirometry

Statistical Analysis

All the information obtained from our study population was collected and recorded in master chart. Statistical significance was analysed by Chi-square test and logistic regression analysis was performed with SPSS software to assess independent association of variables found to be significant in univariate analysis.

If the Pvalue is between 0.000 to 0.010, it is considered to be significant at level1- Highly Significant If the P value is between0.011 to 0.050, it is considered to be significant at level 5- Significant If the P value is between 0.051-1.000, it is considered insignificant at level5- Not Significant.

RESULTS

AGE DISTRIBUTION IN SMOKERS

AGE IN YEARS	NO OF PATIENTS	PERCENTAGE
25 -35	9	18%
36 -45	10	20%
46-55	31	62%

In this Study About 62% of this study group belongs to age between 46-55 years.

About 18% contributed persons belongs 25-35 year of age group.20% of persons belongs to age group 36-45 years.

AGE DISTRIBUTION IN NON SMOKERS

AGE IN YEARS	NO OF PATIENTS	PERCENTAGE
25 -35	3	6%
36-45	16	32%
46-55	31	62%

In this Study About 62% of this study group belongs to age between 46-55 years .About 6%% contributed persons belongs 25-35 year of age group.32% of persons belongs to age group 36-45 years.

SMOKING DURATION IN YEARS

SMOKING DURATION IN YRS	NO OF PATIENTS	PERCENTAGE
< 20	22	44%
21-30	16	32%
>30	12	24%

Major part of members around 44% in less than 20 years of smoking duration.. Only 24% of participant have more than 30 years of smoking duration.

FEV1 STAGES IN SMOKER PARTICIPANTS

FEV1 STAGES	NO OF PATIENTS	PERCENTAGE
ABNORMAL	13	26%
NORMAL	37	74%

A total of 50 participant about 74% were have normal FEV1.Remining participant have abnormal values which is about 26%.

FEV1 STAGES IN Non Smoker PARTICIPANTS

FEV1 STAGES	NO OF PATIENTS	PERCENTAGE
ABNORMAL	2	4%
NORMAL	48	96%

A total of 50 participant about 96% were have normal FEV1.Remining participant have abnormal values which is about 4%.

FEV1 STAGES IN SMOKER PARTICIPANTS

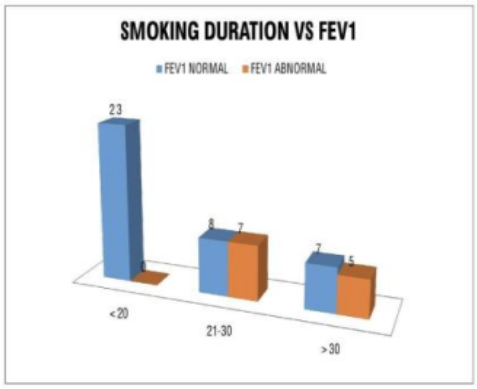
FEV1 STAGES	NO OF PATIENTS	PERCENTAGE
ABNORMAL	13	26%
NORMAL	37	74%

A total of 50 participant about 74% were have normal FEV1.Remining participant have abnormal values which is about 26%.

SMOKING DURATION VS FEV1

SMOKING DURATION IN YRS	FEV1	
	NORMAL	ABNORMAL
< 20	23	0
21-30	8	7
> 30	7	5
KRUSKAL WALLIS TEST		
P VALUE - 0.001		
SIGNIFICANT		

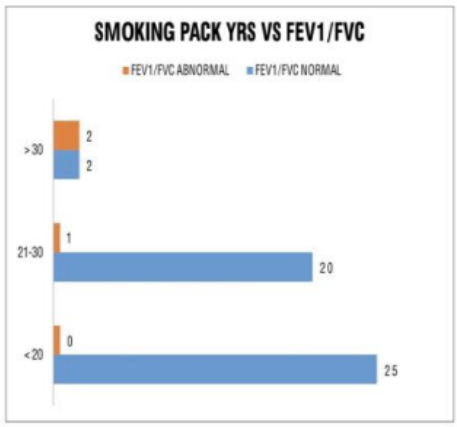
Smoking duration and FEV1 abnormality statistically significant



SMOKING PACK YRS VS FEV1/FVC

SMOKING PACK YRS	FEV1/FVC	
	NORMAL	ABNORMAL
< 20	25	0
21-30	20	1
> 30	2	2
KRUSKAL WALLIS TEST		
P VALUE - 0.001		
SIGNIFICANT		

This study shows significant P value – 0.001 in KRUSKAL WALLIS TEST.

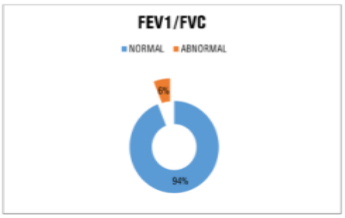


IN SMOKERS

FEV1/FVC< 0.07, FEV1 <80% Predicted value consider as abnormal

FEV1/FVC	NO OF PATIENTS	PERCENTAGE
NORMAL	47	94%
ABNORMAL	3	6%

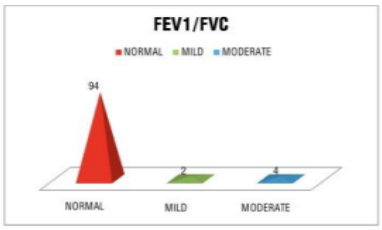
Among the 50 persons studied 94% persons have normal FEV1/FVC that is more than 80% rest of 6% only in less than 80% of the predicted levels.



FEV1/FVC

FEV1/FVC	NO OF PATIENTS	PERCENTAGE
NORMAL	47	94%
MILD	1	2%
MODERATE	2	4%

In the studied population FEV1/FVC Ratio shows only 6% abnormality as mild and moderate category.



DISCUSSION

In our study, a total of 100 males were selected, out of them 50 were smokers and 50 were non smokers. World health organisation (WHO) reported that tobacco smoking killed 100 million people world wide in 20th century and warned that it could kill one billion people around the world in 21st century also. By the early 2030, tobacco related deaths would increase to 10 million a year.

This was a study conducted in Bhaskar medical college hospital with 100 consecutive patients. The purpose of this study is to compare the spirometric observations in smokers and non smokers in the age group between 25-55 years.

In this study, a major group about 94% showed normal pattern, a minor group of about 6% showed abnormal obstructive pattern in FEV1/FVC criteria in smokers, where as in non smokers group 4% shows mild decrease in FEV1 and FVC with no obstructive pattern in FEV1/FVC ratio with (100%) normal result In this study, there is a significant airflow limitation in relation to pack years of smoking

This study shows significant P value – 0.001 in KRUSKAL WALLIS TEST

In a similar study by Dan Stanescu *et al*., the middle aged smokers were at less risk of developing COPD, but smokers above the age of 50 years were at more risk of development of COPD which was comparable to our study.

A similar study was done in Canada which showed the prevalence of airway obstruction of about 4.6% in the Age of 55 – 64 years and 5% in 65 – 74 years which was comparable to this study.

CONCLUSION

This study will show that early detection yield of COPD in increasing age (> 40 YR) and the quantity of smoking year make the screening method more cost effective in undiagnosed smokers.

In this study, 94% of smokers had normal lung function and 6% showed obstructive pattern in their FEV1/FVC LUNG ratio. Decline in FEF25-75% significant number of patients can be diagnosed as small airway disease.

Nearly 40% were observed as reduced FEF25-75% even though ratio was normal in 94% of patients. Whereas in non smokers 4% showed mild decrease in FEV1/FVC ratio with no obstructive pattern.

PFT done by spirometry in asympomatic smokers is an important screening test to diagnose COPD as it can be detected as early as possible.

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