

Smoking, A Risk Factor for COPDs in Patient Visiting Shree Bhawani Hospital and Research Center

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Abstract: *Chronic obstructive pulmonary disease (COPDs) is rapidly becoming a global public health problem with smoking being recognized as its most important causative factor. The purpose of the study was to find out whether smoking is a risk factor for COPDs or not. Case control was the method of study where the source of case was hospitalized patients and the source of control was general population. Simple random technique was used as a method of sampling in which certain COPDs patients of 40-70 Years age group irrespective of their sex were taken under the study. The sample size was 35 and Odd Ratio was used for the estimation of risk of disease associated with exposure. Smokers showed a risk of having COPDs 9.75 times than that of nonsmokers. Thus Smoking can be considered as a major risk factor for COPDs.*

Keywords: COPDs, Smoking, Risk factor

1. Introduction

Chronic obstructive pulmonary disease (COPD) is rapidly becoming a global public health crisis with smoking being recognized as its most important causative factor. According to the World Health Organization (WHO), one hundred million deaths were caused by tobacco in the 20th century, and if current trends continue, there will be up to one billion deaths attributed to tobacco use in the 21st century. There are more than one billion smokers in the world, and globally the use of tobacco products is increasing with the epidemic shifting to the developing world. More than 80% of the world's smokers live in low and middle income countries. It is estimated that tobacco use kills 5.4 million people a year and accounts for 10% of adult deaths worldwide, with up to 50% of smokers dying from a tobacco-use related disease. Unchecked, tobacco-related deaths will increase to more than eight million a year by 2030, and 80% of those deaths will occur in developing countries. Tobacco use is a risk factor for six of the eight leading causes of deaths in the world including respiratory and cardiovascular diseases, stroke and several malignant diseases. Chronic obstructive pulmonary disease (COPD) is a major and growing cause of morbidity and mortality in countries at all levels of economic development with smoking being recognized as its most important causative factor.

According to the WHO estimates, 80 million people in the world have moderate to severe COPD. More than 3 million people died of COPD in 2005, which corresponds to 5% of all adult deaths globally and it is estimated that by 2020 it will become the third leading cause of death worldwide; this chronic disease is however, barely even acknowledged in the health statistics of many countries. Many patients remain undiagnosed, experience high levels of symptoms, their quality of life is often poor and they usually die prematurely of it or its complications.

Although cigarette smoking is the most commonly encountered tobacco-related risk factor for COPD, other types of tobacco smoking popular in various countries are

also risk factors for COPD and air pollution resulting from the burning of wood and other biomass fuels, has also been identified as a COPD risk factor. Passive exposure to cigarette smoke may also contribute to the development of COPD by increasing the lung total burden of inhaled particles and gases. (Mannino, DM; Buist, AS. Global burden of COPD: risk factors, prevalence, and future trends. *Lancet* 2007, 370, 765–773.

Individuals suffering from COPD have either chronic bronchitis, emphysema, or both. Chronic bronchitis is caused by inflamed and narrowed breathing tubes in the lungs which cause mucus buildup. The result is a chronic cough and an increased risk of bacterial lung infections. Emphysema occurs when air sacs in the lungs lose elasticity, inhibiting airflow. Cigarette smoke contains harmful toxins that affect lung functionality. Toxins that are inhaled directly into the lungs over prolonged periods of time can lead to high levels of abnormal lung irritation, causing the onset of COPD. As long-term exposure to cigarette smoke continues, the lungs are more prone to damage, including lung inflammation, and breakdown of the lung's filter system. In the early stages of COPD, there may be no symptoms, or we may only have mild symptoms, such as:

- A nagging cough (often called "smoker's cough")
- Shortness of breath, especially with physical activity
- Wheezing (a whistling sound when you breathe.
- Tightness in the chest

As the disease gets worse, symptoms may include:

- Having trouble catching your breath or talking
- Blue or gray lips and/or fingernails (a sign of low oxygen levels in your blood)
- Trouble with mental alertness
- A very fast heartbeat
- Swelling in the feet and ankles
- Weight loss

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2. Methodology

Case control was the method of study where the source of case was hospitalized patients and the source of control was general population. Simple random technique was the method of sampling. Odd Ratio was used for the estimation of risk of disease associated with exposure. After data was collected from the survey, we found that 60 COPDs patients were having history of smoking in average. The population mean is within 10 unit interval that is 60+/-10.

Assuming that the distribution of the sample was approximately normal, the following formula was used to calculate the size of the sample= $z^2 \cdot s^2/d^2$ where N=size of the sample, z= z statistics for desired level of confidence. S= population standard deviation, d=half width of desired interval. For 95% confidence, z=1.96, let the interval be =50-70 so d=10. Assuming standard deviation to be 30. So using above formula we got sample size to be 35.

3. Result

(a)Exposure rate among the cases and control:

	Cases(with COPDs)	Control(without COPDs)
Smokers	15(a)	20(b)
Nonsmokers	1(c)	13(d)
Total	16(a+c)	33(b+d)

Exposure rate among cases:-a/(a+c)=93.75%

Exposure rate among control:-b/(b+d)=60.6% .

So the frequency rate of COPD is definitely higher among smokers than among non- smokers.

P value is less than 0.5 so the null.

Hypothesis can be neglected and alternate hypothesis "smoking is risk factor for COPDs" can be accepted.

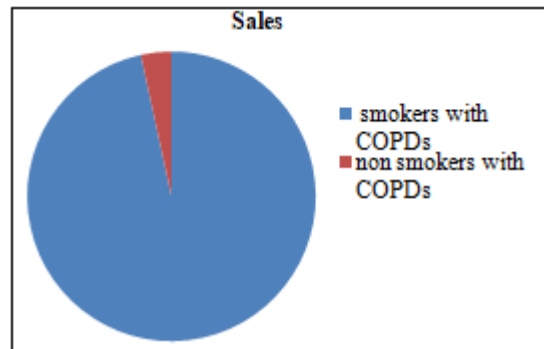
(b)Estimation of disease risk associated exposure (odd ratio).

	COPDs(YES)	COPDs(NO)
Exposed (smokers)	15(a)	20(b)
Non exposed (nonsmokers)	1(c)	13(d)

Odd ratio:-ad/bc=9.75

Thus smokers showed a risk of having COPD 9.75 times than that of nonsmokers

Smokers showed a risk of having COPDs 9.75 times than that of nonsmokers. The frequency rate of COPDs is definitely higher among smokers than among non -smokers.



4. Discussion

According to WHO 2010, the prevalence rate of COPD in male is 5%,and 2.7%in female. M:F::16:1. COPD affects 210 million people worldwide and causes 3 million deaths annually (5% of all death worlds wide).It is predicted to become 3rd leading cause of global mortality by 2030.According to Panday et .al, (1984), a cross sectional study of 2826 adults in rural hilly region of Nepal was done and found that the prevalence of COPD was 18.3% similar in men and women. According to hospital data of TUTH, Bir hospital, Patan hospital, COPD in Kathmandu valley has increased definitely by more than 70%.In the fiscal year 2061/2062, COPD was the 8th common cause for OPD visit .7th common cause for hospitalization. The highest mortality and morbidity among the hospitalized patients in Bir hospital was from COPD. In the FY 2062/2063,COPD was still the leading cause of mortality in Bir hospital .The rate of incidence in Nepal of COPD is highest in the world and estimated 79% of Nepali men and 58% of Nepali women smokers(Jan 2013,Rising Nepal).

According to a research (krefting Research centre, institute of medicine, university of Gothenberg, Sweden), prevalence of COPD among never smokers was found to be 3- 7.7%.

However according to this research there is close relation between smoking and COPDs. Out of other factors responsible for development of COPDs, Smoking can be considered as one of the major factors. This study has not only showed smoking, a risk factor for COPDs but also by how many times COPDs is common in smokers than that of nonsmokers regardless of sex.

5. Conclusion

Smoking can be considered as a major risk factor for COPDs. A Chronic obstructive pulmonary disease (COPD) is rapidly becoming a global public health crisis with smoking being recognized as its most important causative factor

6. Acknowledgement

I would like to thank Dr. Rajendra Prashad Sah, Dr. Roshan Kurmi, Dr. Nizam and Shree Bhawani Hospital and Research Centre who supported me for this research activity and to NHRC for the approval of my research proposal.

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