Incidence of Diabetes in Smokers: Our Hospital Results

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ABSTRACT

Objective: To demonstrate the relationship of smoking with type- 2 diabetes mellitus.

Patients and methods: This study was conducted at Department of Medicine, Bilawal Medical College LUMHS Jamshoro, and Pakistan from January 2021 to June 2021. Researchers included 100 smokers older than 35 years of either gender who had smoked less than five years and the control group had 100 non-cross-sectional individuals in the same age range. In addition to the age of beginning smoking, the number of cigarettes smoked on a daily basis, whether the patient is currently a smoker or an ex-smoker, and the total duration of smoking was taken from the patients. Patients with type-2 diabetes were asked about their age at diagnosis, the medication used, and whether the disease was controlled. The pathology laboratory or glucometer was used to test the patient's blood glucose levels. Other routine investigations were also performed as needed if needed. In this six-month study, 200 individuals were observed closely for diabetes mellitus (100 smokers and 100 non-smokers). There was a predominance of male gender among smokers and non-smokers with a mean age of 50.98*7.86 and 48.84*8.63. Of the smokers, 68 (68%) cases were identified as being diabetic, while of the non-smokers, 24 (24%) were identified as diabetic. Diabetic mellitus type 2 is directly associated with the number and duration of cigarettes smoked.

Results: This was a study of six months comprising of two hundred people (hundred smokers and hundred non-smokers) were seen and evaluated thoroughly for diabetes mellitus. The average age ± SD for total smoker and non-smokers was approximately 50.98 ± 7.86 and 48.84 ± 8.63 with a clear predominance of male gender. In case of smoker group a total of diabetic individuals were 68 (68%) while in case of non-smokers the total number of diabetes was 24 (24%) individuals. The proportionality is directly related to the total number of cigarette smoked and the total duration of smoking.

Conclusion: The risk of diabetes mellitus type-2 is independent of gender, depending mainly on the duration of smoking. Higher is the risk of type 2 diabetes mellitus in individuals with a longer duration of smoking.

Key words: Smoking, Type 2 diabetes mellitus, Diabetes mellitus

INTRODUCTION

Chronic Hyperglycemia is a main feature of diabetes taking place as a result of insulin deficiency, insulin resistance, or both simultaneously. Currently, the same has become a major health issue [1] and is not less than a pandemic.

According to insulin secretion and insulin resistance, diabetes mellitus is classified into types 1 and 2.

Recent studies [2-5] have found that smoking tobacco is individually responsible acting as a great risk factor for type-2 diabetes.

We based our study [3] heavily on this hypothesis, as smoking is considered to be a major cause of mortality and morbidity mostly in developed countries. Approximately 400,000 deaths result directly from smoking cigarettes in the United States each year [6].

The cause of heart and lung disease as well as a major moral issue in Pakistan is smoking. Currently [5], smoking cigarettes leads to a reduced ability to perform daily activities, bedridden, and certain disabilities caused by chronic abuse and absence from work and responsibilities. Active smoking has been linked to many of the same deadly health effects as passive smoking. Among diabetics, smoking is the only factor causing a great increase in macro as well as micro vascular disorders ten times as compared to anything else. Several studies have suggested that cigarette smoking may contribute to type 2 diabetes mellitus [5-9].

Researchers reported that smokers who have 20-25 cigarettes a day are at a 1.5 to 3.5 times greater risk [10] for diabetes mellitus than non-smokers.

There is a direct correlation between the number of cigarettes smoked in a day and the number of pack years. In this study [11-13], we have carefully examined the relationship between type-2 diabetes mellitus and smoking in tertiary care hospitals.

PATIENTS AND METHODS

This study was conducted at Department of Medicine, Bilawal Medical College LUMHS Jamshoro, Pakistan from January 2021 to June 2021. It consisted of a comparative cross-sectional study of six months. This study included one hundred smokers between the ages of 35 and 65, comprising either gender, and with a history of smoking for more than 5 years. A control group of one hundred people of the same age group was also taken. In order to carry out the study, every participant signed an informed consent form, and there was a detailed clinical history, examination, and relevant investigations. Researchers

excluded patients who had type-1 diabetes, secondary diabetes, or those taking corticosteroids, nicotinic acids, thyroid hormones, cyclosporine or thiazide diuretics, or those who were pregnant having gestational diabetes. Detailed information was obtained regarding the age at which the smoker started smoking, the number of cigarettes smoked each day, whether the smoker is currently smoking or has smoked previously, and the length of time the smoker has smoked.

Patients who were known to have type-2 diabetes had a detailed history regarding their age at diagnosis, the drugs they were taking and whether the condition was controlled or not.

Those who were not diabetics in the study were presented in lab where their blood glucose was measured and their diabetes was diagnosed as per WHO criteria. Diabetes and smoking were linked with one another together for both diabetics and non-diabetics.

Pathology labs and glucometers were used to measure blood glucose, and a few routine tests were also performed if necessary. Predesigned proforma were used to store the data, and SPSS 16 was used to analyze it. For numerical variables, calculation of frequency, percentage, and mean * SD was precisely done.

RESULTS

Two hundred individuals (one hundred smokers and one hundred nonsmokers) were diagnosed with diabetes mellitus during this six-month study. Smokers and non-smokers were 50.98*7.86 and 48.84*8.63, respectively having majority of men. Detailed results for the same are presented in Tables 1-4.

Table 1: Age distribution of smokers and non-smokers.

Ages (In Years)	Smoker's Data	Non Smoker's Data	Grand sum for each
35 to 39	20	30	50
40 to 49	30	20	50
50 to 59	20	40	60
60+	30	10	40
Final Sum	100	100	200

Table 2: Gender distribution of smokers with respect to diabetes mellitus.

Genders	Diabetes mellitus		
	Yes	No	Sum
Males	46	24	70
	67.60%	75%	70.00%
Female	22	8	30
	32.40%	25%	30.00%
SUM	68	32	100
	100.00%	100.00%	100.00%

Table 3: Gender distribution of non-smokers with respect to diabetes mellitus.

Gender	Diabetes mellitus		
	Yes	No	Sum
Male	16	54	70
	66.70%	71.10%	70.00%
Female	8	22	30
	33.30%	28.90%	30.00%
Total	24	76	100
	100.00%	100.00%	100.00%

Table 4: Smoking habits in smokers.

Total cigarettes smoked/day	Number of smokers	Diabetes mellitus
≤10	44	24
>10	56	44
Duration of smoking (Years)	total	Diabetes mellitus
5-10	30	20
11-19	60	34
20+	10	14
Smoking status	Grand total	Diabetes mellitus
Current Status	74	58
Past Status	26	10

DISCUSSION

The studies show that cigarette smoking is a major risk factor for type-2 diabetes and that smokers are more likely to develop type 2 diabetes than non-smokers. Its main limitations are the fact that it was done on a number of different patients with different illnesses, and it didn't actually show the probability of smoking and type-2 diabetes mellitus in the general population. The answer depends on the patient's history, and patients, mainly women, often fail to provide a complete history, particularly regarding their smoking habits. The cause of type 2 diabetes has been studied in numerous studies.

A study was conducted in Japan regarding men who smoked over 20 cigarettes a day, showing they were more likely to develop diabetes type-2 than those who did not smoke8. Our results are similar. Numerous studies have also confirmed such findings, revealing that the incidence of type-2 diabetes is significantly higher in smokers than in non-smokers, and that the incidence is directly related to the number of cigarettes smoked in a day [14-20].

Previously, a study was conducted in which 21068 male participants were healthy and had smoked cigarettes for at least 10 years previously. 770 new cases of type 2 diabetes mellitus were diagnosed through follow-up of these cases, with a dependent dependence on smoking rates, i.e. the number of cigarettes smoked per day. We found [11] that males were more affected by cigarette smoking than females in our study. A former study reported a similar observation and, like the former study, the number of total cigarettes smoked and duration of smoking were similar.

There was another study in which 110,000 women without diabetes who were smokers were followed up for 12 years. Results showed that 2000 subjects were diagnosed as diabetics14. Diabetes mellitus type 2 is more prevalent in current smokers than in ex-smokers, according to the study. Similar findings have also been found in the latest studies [20,21].

Therefore, increased public awareness about the health hazards associated with smoking is essential, as well as proper education about the advantages of quitting. Tobacco advertising in the media should not be permitted. It should be unlawful to smoke in public places. For the benefit of the family as well as the country, all kinds of efforts should be made in order to stop people from smoking.

CONCLUSION

Type-2 DM is not caused directly by cigarette smoking; however it is a risk factor for the disease. This means that the cigarette smokers are more likely to develop type-2 diabetes mellitus and it also depends upon the duration of time they smoke. Smokers who have smoked for more than 20 years, or have increased their cigarette

consumption during a specific period of time are more prone to develop type 2 diabetes.

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