

# PREVALENCE OF DIABETES IN ACTIVE AND PASSIVE SMOKERS IN HAIL CITY OF SAUDI ARABIA

Khan Uzma Aftab<sup>1\*</sup> Ghaliyah Al Rashidi<sup>2</sup>

<sup>1,2</sup>, Department of Clinical Laboratory Sciences, College of Applied Medical Sciences University of Ha'il, Ha'il, Kingdom of Saudi Arabia

## Abstract

This article reports on the relationship between cigarette smoking, and the glucose concentration in active and passive smoker. The data obtained on 20 male participants, active smoker (n=10) and passive smoker (n=10) aged between 20–50 yrs, working in Maternity hospital , Hail, Saudi Arabia. It was depicted from the results that it's not only active smoker whose sugar level increases but the passive smoker equally get effected sometimes more than the active smoker ,because nicotine deteriorate glucose metabolism which is likely triggered by certain surrounding conditions that concentrate the nicotine,

**Key words:** Tobacco, Smoking, Diabetes, Insulin

## 1. INTRODUCTION

Smoking and diabetes adds the risk of developing complications include heart disease, stroke and circulation problems. [12,13] .The evidence that smoking is an independent risk factor for the development of diabetes is still considered preliminary [3] recent studies have identified a positive association between smoking and incidence of diabetes.

Smoking is harmful not only to the diabetic person but to those who are non diabetics ,.Being diabetic, and adding smoking to the picture, raise the risk for health complications [6] .

Recent research suggests that not only does smoking raise blood sugar, but it also weakens to the body's ability to respond to insulin. There are several evidences proposing that smoking is one of the factors linked to increased sugar level [ 4,6,9,10] Uncontrolled blood sugar can lead to serious diabetic complications, such as problems with the kidneys, heart, and blood vessels.

Glucose metabolism deteriorate due to smoking There is also some evidence which suggests that smoking increases diabetes risk through a body mass index independent mechanism.[2,7]

## 2. METHODOLOGY

In the present study we enrolled total of 20 male member aged between 20–50 yrs, working in Maternity hospital , Hail, Saudi Arabia. We divide them equally into two groups. One group subjected as active smoker (n= 10) and the other group as passive smoker (n=10)

according to the information received. Written parental consent was obtained from all study participants and the study was approved by ethical committee of the university, Prior to the start of study. After being informed in detail of the study purpose and procedures, all subjects answered a questionnaire about their medical history, and detailed smoking habits (both active and passive).the enrolled subjects did not had any serious health problems, no history of drug usage.

### 1.1 Laboratory test

### 1.2 Collection of Blood sample

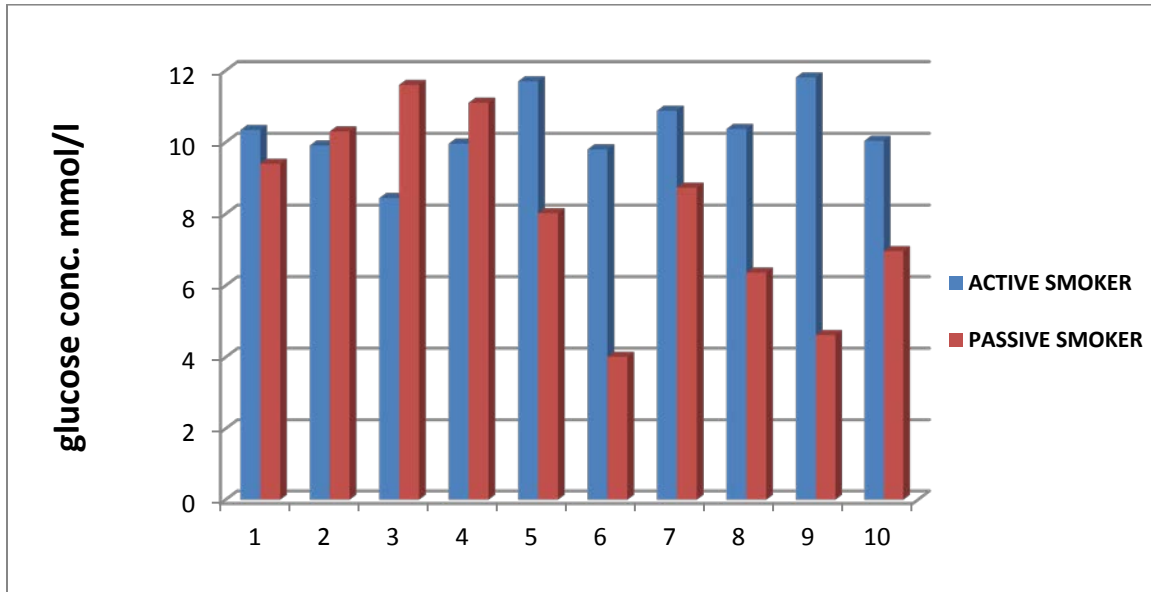
Venous blood samples were drawn in red capped tubes (anti coagulant) and mixed gently. Blood glucose level was checked randomly and measured within 1-2 hours of blood sampling by using Cobas 6000 HITACHI(Roche) in Clinical chemistry lab in Maternity Hospital.

## 3. RESULTS AND DISCUSSION

### 3.1 RESULTS

**Table 1. General characteristic of Active and Passive smokers**

No. of male subjected to study	Frequency of smoking (per day)		Period of smoking (years)		Medical history for any disease		Smoking member in the family	
	Active Smokers	Passive smokers	Active Smokers	Passive smokers	Active Smokers	Passive smokers	Active Smokers	Passive smokers
1	30	0	11	0	NO	NO	YES	NO
2	3	0	7	0	NO	NO	YES	NO
3	20-30	0	16	0	NO	NO	YES	NO
4	20	0	1	0	NO	NO	NO	NO
5	4	0	3	0	NO	NO	NO	NO
6	6	0	4	0	NO	NO	NO	NO
7	10	0	5	0	NO	NO	NO	NO
8	30	0	6	0	NO	NO	YES	YES
9	15	0	15	0	NO	NO	NO	NO
10	5	0	5	0	NO	NO	NO	NO



**Fig:1 Glucose concentration of active and passive smokers**

### Active smokers

It was depicted from the results that the highest glucose concentration among active and passive smokers was found in participant number 9, the active smoker (11.81 mmole /L). His smoking rate include 30 cigarette per day , and he has smoking history in his family .

The lowest result in diluted ratio glucose between smokers samples was observed in sample No 3 , and it was 8.44 mmole /L. We observe that , the smoking rate 10 cigarette per day), and he has smoked for 5 years and has a smoking members of his family. The estimated results for smokers samples No. 2 , 3 , 4 and 5 was 9.91 , 8.44 , 9.96 11.7 mmole /L respectively ,

### Passive-smokers

The highest result in diluted ratio glucose among passive smokers observed in sample No 3 , (11.6 mmole /L). The lowest result was observed in sample No 6 , (4.01 mmole /L).

## 4. DISCUSSION

In our findings we estimated that smoking and passive tobacco smoking are associated with great risk of developing glucose intolerance. These effects were robust to multivariate adjustment. Use of pack years of smoking showed a consistent dose-response effect of increasing risk with increasing exposure to tobacco.

Passive smoke contains similar toxins to active smoke but is produced at different temperatures and different reducing conditions, so some toxic substances are even more concentrated in passive smoke. [1,8] If one of these concentrated toxins is related to the hypothesised pancreatic toxicity, this might explain the increased risk in passive smokers, although they have less overall exposure than active smokers..

[5] Smoking may also be marker for other unhealthy behaviors such as a high fat, high calorie diet, which may also predispose to diabetes.[11] Smoking has also been shown to deteriorate glucose metabolism which may lead to the onset of diabetes.

## 5. CONCLUSION

This study concludes that both active and passive Smoking has been identified as a possible risk factor for insulin resistance a precursor for diabetes. Smoking has also been shown to deteriorate glucose metabolism which may lead to the onset of diabetes.

## 6. ACKNOWLEDGEMENT

The author is sincerely thankful to the University of Hail, for providing the help and support to conduct the research work smoothly

## 7. REFERENCES

1. Chan-Yeung M, Dimich-Ward H. Respiratory health effects of exposure to environmental tobacco smoke. *Respirology* 2003;8: 131-9.
2. Cullen MW, Ebbert JO, Vierkant RA *et al.* No interaction of body mass index and smoking on diabetes mellitus risk in elderly women. *Preventative Medicine*, 2009. 48.1: 74-78
3. Fiore C, Bailey W, Cohen S. Treating tobacco use and dependence. Rockville, MD: US Department of Health and Human Services, Public Health Service, 2000
4. Hsin-Chieh Y, Bruce D, Schmidt MA *et al.* Smoking, smoking cessation and risk for type 2 diabetes mellitus. *Annals of Internal Medicine*, 2010. 152. 1: 10-17.
5. Kiefe CI, Williams OD, Lewis CE, Allison JJ, Sekar P, Wagenknecht LE. Ten-year changes in smoking among young adults: are racial differences explained by socioeconomic factors in the CARDIA study? *Am J Public Health* 2001;91: 213-8. [PMC free article]
6. Ko G & Cockram C. Cause as well as effect: smoking and diabetes. *Diabetes Voice: Smoking and diabetes special issue*, 2005; 50: 19-22.
7. Nagaya T, Yoshida H, Takahashi H *et al.* Heavy smoking raises risk for type\_2 diabetes mellitus; in obese men; but, light smoking reduces the risk in lean men: a follow up study in Japan. *Annals of Epidemiology* 2008. 18. 2: 113-8.
8. National Cancer Institute. Health effects of exposure to environmental tobacco smoke: the report of the California Environmental Protection Agency. Bethesda, MD: National

Institutes of Health, National Cancer Institute, US Department of Health and Human Services, 1999: 12-3.

9. Radzeviciene L, Ostrauskas R. Smoking habits and the risk of type 2 diabetes: a case control study. *Diabetes and Metabolism*, 2009. 35. 3:192-7.
10. Rimm E, Chan J, Stampfer M et al. Prospective study of cigarette smoking, alcohol use, and the risk of diabetes in men, *British Medical Journal*, 1995 310: 555–559.
11. Van Dam RM, Rimm EB, Willett WC, Stampfer MJ, Hu FB. Dietary patterns and risk for type 2 diabetes mellitus in U.S. men. *Ann Intern Med* 2002;136: 201-9.
12. Wannamethee SG, Shaper AG, Perry IJ. Smoking as a modifiable risk factor for type 2 diabetes in middle-aged men. *Diabetes Care* 2001;24: 1590-5.
13. Will JC, Galuska DA, Ford ES, Mokdad A, Calle EE. Cigarette smoking and diabetes mellitus: evidence of a positive association from a large prospective cohort study. *Int J Epidemiol* 2001;30: 540-6. [PubMed]