

## Effect of Smoking Cigarette in Albumin Creatinine Ratio in Khartoum State

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### Abstract:

**Background:** *In recent years, it has become apparent that smoking has a negative impact on renal function, being one of the most important remediable renal risk factors. It has been shown clearly that the risk for high-normal urinary albumin excretion and microalbuminuria is increased in smoking compared with nonsmoking subjects of the general population. There are numerous harmful substances found in tobacco and tobacco smoke. Nicotine is one of these substances that may be acquired through active and passive smoking. In human nicotine is commonly consumed via smoking cigarette. many studies made many trail to elucidate effect cigarette on body. The aim of this study was to elucidate whether smoking has effects on albumin/ creatinine ratio in Sudanese males.*

**Methodology:** *total of 100 Sudanese males were included in this study. they were divided into two groups, 50 non-smoker were used as control, and 50 smoker. members were within the age range of 19–55 years..albumin/ creatinine ratio(ACR) was measured for all subjects from urine spot samples. Immuneturbidity method was used by cobas instrument.*

**Results:** *The results revealed that the levels of albumin creatinine ratio was found significantly higher ( $P < 0.05$ ), in smoker*

*people compared with non smoker. And increase number of cigarette increase effect of cigarette on albumin creatinine ratio(ACR).*

**Conclusion:** *The study concluded that, Smokers are at greater risk for kidney disease, which indicated by urine albumin creatinine ratio in smoker and non smoker people.*

**Key words:** nicotine, smoking, cigarette, albumin/ creatinine ratio

## **INTRODUCTION**

Smoking has numerous health effects on the brain and on the renal respiratory, cardiovascular, gastrointestinal, immune and metabolic system while these effects do not all produce noticeable symptoms, there are numerous harmful substances found in cigarette smoke. Nicotine is one of these substance that may be acquired through active and passive smoking(1). The kidneys play a major role in the control of the consistency of the internal environment, the blood passing through the kidneys is first filtrated (glomerular filtration) so that all the constituents, except blood cells and plasma proteins, go into the microtubular systems. In the kidneys the useful substances are quickly reabsorbed but unwanted substances escape filtration and are actively excreted in urine (1). Aim of my study about effect of smoking cigarette on kidney among smokers that by measure albumin/ creatinine ratio(ACR) in random spot samples ,a test to detect damage in nephrones of kidney and predicted cardiovascular and nonrenal cardiovascular death(2). There are many studies about the effect of cigarette smoking on kidney the result of one studies revealed that the levels of creatinine and urea were found significantly higher ( $P < 0.05$ ) in smoker group when compared with the control(1). Other studies showed autopsy plasia of small arteries was twice as high in ever-smokers as studies in individuals without kidney disease showed correlation between nicotine abuse and thickening of the walls of arterioles and small arteries in

various organs include kidney(3,4). Additional information is available from a retrospective case-control study that analyzed data obtained in 4142 non diabetic elderly subjects , who had measurements of serum-creatinine ; the number of cigarettes smoked was highly associated with an increase in serum-creatinine  $\geq 27$ mmol/L (6). This assumption is in line with the observation in a sample of 455 adults in Wadena, Minnesota in whom the decrease in creatinine clearance was greater in smokers than in nonsmokers(7)

## **MATERIAL AND METHOD**

A total of 100 Sudanese male who live Khartoum state were included in this study. Fifty non-smoker were used as control, fifty smoker members were within the age range of 19 – 55 years. The criteria of the selection of subjects either smoking or nonsmoking was that no one should have any medical complication such as hypertension, ischemic heart disease, stroke, diabetes or renal problem and kidney disorder. The smokers in this study were those smoking 8-20 cigarettes/ day with an average of 14 cigarettes/ day; and duration of the smoking habit was 1-30 years. Urine samples were collected from the controls and the smokers in clean dry containers and kept at 4°C until analyzed for albumin creatinine used immuneturbidity method for urine albumin and jaffee method for urine creatinine then ratio was calculated, the data was collected and analyzed statistically using ssps, in which p value < 0.05

## **RESULT:**

The result of albumin / creatinine ratio(ACR), in control and smoker group were shown in Table(1). The results revealed that the level of albumin creatinine ratio and in smoker was found significantly higher ( $p < 0.05$ ) than the control.

**Table (1).**

	Mean±SD
Non smoker	19.58±3.9
Smoker	42.22±33.9
P value	< 0.05

Result of correlation studies which showed in table 2 explain there no correlation between study groups and age, duration. There correlation between study groups and number of cigarette per days has significant value that mean increase number of cigarette per day lead to increase effect of cigarette on albumin creatinine ratio.

**Table (2)**

**Correlation studies**

**Correlation between smoking effect and duration ,number of cigarette per day.**

	correlation	Significant
Smoker and age	<b>.211</b>	<b>.142</b>
Smoker duration	<b>.068</b>	<b>.640</b>
Smoker and number of cig per day	.411	.003

## **DISCUSSION**

This study shows the effect of cigarette smoking on renal function, indicated by urine albumin/ creatinine ratio(ACR) mean increase in smoker 42.22±33.9 compared with non smoker which mean value 19.58±3.9 .That agree with studies that showed effect of smoking cigarette in renal function one of this studies explained The results revealed that the smokers had significant higher urinary albumin and albumin creatinine ratio(ACR) (52.84±46.42mg/l,93.98±78.68Mg/mg)than non smokers(19,25±7.77mg/l,18,99 ± 6.65Mg/mg) R. K. Gupta, and M. Mawliya (10)

Other study showed that creatinine and urea in smoker were found significantly higher ( $p < 0.05$ ) than the control (1).

Other study showed there rise to a glomerular type proteinuria(8). In this study showed there significant when correlated between (ACR) and number of cigarette per day Value < 0.05.

## CONCLUSION

The result of study showed increase in albumin/ creatinine ratio in smoker more non smoker, and significant in number of cigarette, and no significant in duration.

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