

# بسم الله الرحمن الرحيم

قال الله تعالى

لَا يُكَلِّفُ اللَّهُ نَفْسًا إِلَّا وُسْعَهَا ۚ لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ ۗ  
رَبَّنَا لَا تُؤَاخِذْنَا إِنْ سَيِّئًا أَوْ أَخْطَأْنَا ۚ رَبَّنَا وَلَا تَحْمِلْ عَلَيْنَا إَصْرًا كَمَا حَمَلْتَهُ  
عَلَى الَّذِينَ مِنْ قَبْلُنَا ۚ رَبَّنَا وَلَا تُحَمِّلْنَا مَا لَا طَاقَةَ لَنَا بِهِ ۖ وَاعْفُ عَنَّا وَاعْفِرْ لَنَا  
وَأْمُرْ حَمَنَّا ۚ أَنْتَ مَوْلَانَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ

صدق الله العظيم

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# **Dedication**

To my parents and all family members

To my teachers

To my friends

To smokers

To any person who love me

I dedicate this work

## **Acknowledgment**

Above all, I thank the almighty God, the architect of my life who has made this to happen, and I ask him to bless me all.

I would never have been able to finish my dissertation alone.

The contribution of many different people, in different ways, have make this possible. I would like to extend my appreciation especially to the following:

Deepest gratitude to my supervisor Dr. Mariam Abbas Ibrahim for her excellent guidance, supervision, time, patience, effort, care, advices and support.

Great thanks to my family, they are always supporting and encouraging me with their best wishes.

We need to thank especially my brother Osman Mohammedahmed and I cannot find word to express my gratitude.

Thank to volunteers who were enrolled in this study, Also I would like to thank who contributed to or participated with me in this research.

A great thanks to laboratory staff of alrebat hospital, Dr.Mousab for kind help.

My thanks must go also to my associate friends for their great help and support (Khalid aabedien and hajer tajalsir).

## **Abstract**

Cigarette smoking is wildly spread throughout the world and the effects of smoking on human health are serious.

This is a case control study was done in Khartoum area during March-June 2015, to evaluate serum iron and total iron binding capacity levels in smokers.

Seventy smokers were selected as test group and fifty non smokers as control group (age was matched), blood specimen were collected from both groups and serum iron and serum TIBC concentration were determined by using auto analyzer (Cobas).

Statistical analysis was done by using SPSS, the results showed a significant increase in mean of serum iron and a significant decrease in mean of serum TIBC concentrations in smoker when compared to non smoker (control) group. P. value = (0.000), (0.000) respectively.

The results also showed a significant positive correlation between number of cigarettes per day and serum iron concentration, and a significant negative correlation between number of cigarettes per day and serum TIBC concentration (serum iron concentration  $P=0.000$ ,  $r=0.604$ ), (serum TIBC  $P=0.000$ ,  $r= - 0.499$ ).

Statistical analysis also showed a significant positive correlation between duration of cigarettes per year and serum iron concentration, and a significant negative correlation between duration of cigarettes per year and serum TIBC concentration (serum iron p. value = 0.000,  $r=0.797$ ), (serum TIBC p. value = 0.000,  $r= - 0.410$ ).

The study Results revealed that smoking habit lead to significant elevation of serum iron and significant decreasing in serum TIBC compared to non

smokers. Increase in serum iron is proportional with duration of smoking per years and number of cigarettes smoked per day, also the serum iron concentration is significant positive correlation with duration of smoking per years and number of cigarettes smoked per day. Decrease in serum total iron binding capacity is inversely relation with duration of smoking per years and number of cigarettes smoked per day, also the serum total iron binding capacity concentration is significant negative correlation with duration of smoking per years and number of cigarettes smoked per day.

## المستخلص

تدخين السجائر ينتشر على نطاق واسع في جميع أنحاء العالم وله آثار خطيرة على صحة الإنسان. أجريت هذه الدراسة المقطعية في منطقة الخرطوم في الفترة ما بين مارس إلى يونيو 2015 لتقويم مستوى الحديد و المقدره الكليه لارتباط الحديد بين المدخنين .

تم اختبار 70 شخص من المدخنين (كمجموعه إختبار) و50 شخص غير مدخن (كمجموعه ضابطة) تم جمع عينات الدم من كلا المجموعتين وتم قياس تركيز الحديد وتركيز المقدره الكليه لارتباط الحديد باستخدام جهاز cobas.

أجري التحليل الإحصائي بإستخدام SPSS. اظهرت النتائج إلى أن هناك زيادة ذات دلالة إحصائية في متوسط تركيز الحديد ونقصان ذا دلالة احصائية في متوسط تركيز المقدره الكليه لارتباط الحديد لدي المدخنين مقارنة مع المجموعه الضابطة القيمة المعنويه (0.000) و(0.000) علي التوالي

ايضا اظهرت النتائج ان هناك علاقة ايجابية ذات دلالة احصائية بين عدد السجارات في اليوم وتركيز الحديد (معامل بيرسون للارتباط = 0.604) (مستوى المعنوية = 0.000) وان هناك علاقة سلبية ذات دلالة احصائية بين عدد السجارات في اليوم وتركيز المقدره الكليه لارتباط الحديد (معامل بيرسون للارتباط = -0.499) (مستوى المعنوية = 0.000)

وايضا اظهر التحليل الاحصائي وجود علاقة ايجابية ذات دلالة احصائية بين مدة التدخين بالسنوات مع تركيز الحديد (معامل بيرسون للارتباط = 0.797) (مستوى المعنوية = 0.000)

وان هناك علاقة سلبية ذات دلالة احصائية بين مدة التدخين بالسنوات مع تركيز المقدره الكليه لارتباط الحديد (معامل بيرسون للارتباط = -0.410) (مستوى المعنوية = 0.000)

أظهرت نتائج الدراسة ان عاده التدخين تسبب ارتفاع في تركيز الحديد وإنخفاض في تركيز المقدره الكليه لارتباط الحديد بين المدخنين وغير المدخنين. الزيادة في تركيز الحديد تتناسب طرديا مع مده التدخين بالسنوات وعدد السجائر في اليوم ، وايضا اظهرت وجود علاقة إيجابية بين تركيز الحديد ومدة التدخين بالسنوات وعدد السجائر في اليوم. النقصان في تركيز المقدره الكليه لارتباط الحديد يتناسب عكسيا مع مدة التدخين بالسنوات وعدد السجائر في اليوم ، وأيضا أظهرت وجود علاقة سلبية بين تركيز المقدره الكليه لارتباط الحديد ومدة التدخين بالسنوات وعدد السجائر في اليوم .

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## **Abbreviation**

ATP : Adenosine Triphosphate

CHC : Chronic Hepatitis C

CLD : Chronic Liver Disease

HBV : Hepatitis B Virus

HCC : Hepatocellular Carcinoma

HCV: Hepatitis C Virus

HH : Hereditary Hemochromatosis

IL : Interleukin

RBCs : Red Blood Cells

TIBC : Total Iron Binding Capacity

TNF :Tumer Necrosis Factor

UIBC : Unsaturated Iron Binding Capacity