Pro Index | Journal of Science in Medicine and Life

Volume: 2 Issue: 6 Year: 2024

http://journals.proindex.uz

Studying the Role of Certain Levels of Blood Fats in Smokers

Ruaa Saad Hussein, Furqan Shaker Mahmoud, Nesreen Younes Mahdi, Malak Haider Hussein

Department of pathological analyses, College of Applied Medical Sciences, University of Karbala

Abstract: One of the biggest risks to one's present and future health, smoking is currently spreading quickly throughout the developing globe and is thought to be the cause of 1.17 million deaths annually. Smoking poses a significant risk for cancer, peripheral vascular disease, stroke, and atherosclerosis. For the purpose of the study, samples were taken from 15 different students who were smokers and 15 students who were not smokers. The following laboratory tests were carried out: blood examinations Analysis of total cholesterol and triglycerides (HDL, LDL, T-CHO, TRIGLYCERIDES) was part of this.

According to the study's findings, there was a minor variation in the percentage of all analyses that included T-CHO, HDL, and LDL. Smokers have a reduced proportion of it in their blood serum (0.4–10.1) compared to non-smokers, which poses health hazards.

Key points: smokers, Studying, Blood Fats.

Currently, smoking is one of the biggest risks to one's present and future health, contributing to an estimated 1.17 million deaths worldwide. It is also spreading quickly throughout the developing globe. [1] Atherosclerosis, peripheral vascular disease, stroke, and cancer are all significantly increased by smoking. Additionally, it is closely linked to metabolic syndrome, periodontal disease, and stomach ulcers. In [2] Among the poisons found in tobacco smoke is nicotine [3]. Lipoprotein abnormalities in plasma are thought to be the primary risk factor for the common occurrence of atherosclerosis.In [4][5] Smokers are often found to have a one-to three-fold increased risk of myocardial infarction. The main underlying risk factor for the frequent onset of atherosclerotic vascular disease is thought to be abnormalities in plasma lipoprotein levels. A clear dose-response association has been observed between the quantity of cigarettes smoked and the duration of smoking, and the majority of research show a clear correlation between smoking and lipid profile alteration [6]. Changes in lipid metabolism may result in dyslipidemia, which could increase smokers' morbidity and mortality by acting as a risk factor for atherosclerosis and ischemic heart disease. [7] In the world, smoking is the second most common cause of death. Smoking is a contributing factor to around 20% of heart disease deaths[8]. The specific section or parts of the lipid profile that are primarily changed as a result of smoking cigarettes remain up for debate, despite the availability of this knowledge. This study compares the lipid profiles of healthy smokers and non-smokers in the same age group in an effort to determine the impact of smoking[9].

The study's objective: to examine how smoking affects blood parameters and compare the outcomes for smokers and non-smokers.

PRIOR Research on This Subject Cigarette smoking has been shown to change lipoprotein levels. Triglycerides (TG), low-density lipoprotein (LDL), and blood total cholesterol (TC) are all increased by smoking, whereas high-density lipoprotein (HDL), or good cholesterol, is decreased. 22]

IMPACT OF SECOND-HANDSMOKE Even secondhand smoke from other people is harmful to your health.Most of the smoke from cigarettes doesn't enter the smoker's lungs. It disperses into the atmosphere for everyone in the vicinity to breathe.It is illegal to smoke in many public areas.

However, a lot of people—especially kids who live with smoker parents—are still exposed to secondhand smoke. Even those who make an effort to be cautious about where they light up might not be able to keep others safe. [23]

Second-Hand Cigarette It may originate from a cigar or cigarette. Of the over 4,000 chemical components included in tobacco smoke, at least 250 are recognized to be harmful. In addition to being harmful to your heart and causing emphysema, secondhand smoke exposure can increase the risk of lung cancer and many other cancers in people by up to 30%. Smoking destroys the lining of your blood vessels, increases your "bad" LDL cholesterol, and thickens your blood. You may eventually become more susceptible to a heart attack or stroke as a result of these changes. [24]

The effects of smoking on the body Smoking increases your risk of stroke by over three times. A stroke is a blood clot in the brain that can cause a variety of issues, such as difficulty walking, facial paralysis, impaired eyesight, and occasionally even death. Additionally, you have a higher chance of having high blood pressure, which raises the risk of brain aneurysm.[25] Smokers' blood contains carbon monoxide, which hinders oxygen's ability to reach their muscles and organs. Highly reactive substances known as oxidizing agents can harm a smoker's blood vessels and heart muscles.[26]

THE IMPACT OF ADDICTION TO NICOTINE In the body and mind, nicotine produces pleasurable sensations. The feel-good neurotransmitter dopamine is one of the neurotransmitters released by tobacco usage. A fleeting sense of satisfaction and pleasure is produced by this. However, smokeless tobacco and tobacco cigarettes also include a number of additional dangerous chemicals and agents that cause cancer in addition to nicotine. Tobacco contains around 4,000 compounds, all of which have negative consequences on the body, mind, and soul. The usage of tobacco products puts users at danger of addiction. Steering clear of tobacco is the greatest approach to prevent addiction.Addiction risk may be raised by a few things. For instance, those who have a family history of nicotine addiction and those who are raised in homes where tobacco is used have an increased risk of beginning to smoke and becoming addicted.[27]

CAN A NICOTINE BURN OUT OF MY SYSTEM? Shortly after you lit up, your blood starts to contain more nicotine. However, the amount depends on both how much you inhale and how much nicotine is in the cigarette. Genetics can also affect how an individual processes nicotine. 28]

WHAT IS THE WORKING OF THE NICOTINE TEST? There are two methods for testing for the presence of nicotine and cotinine, the byproduct produced when nicotine enters the body: Qualitative assessment: It merely determines whether nicotine is present in your body. Testing quantitatively: It genuinely gauges your body's nicotine or cotinine content. It provides more details about your tobacco use patterns. It can determine if you have recently stopped smoking or if you are an active smoker. It is able to determine whether or not you have been inhaling a lot of tobacco smoke even if you do not smoke.28]

HOW IS DNA DAMAGED BY SMOKING? The carcinogens included in tobacco smoke play a significant role in immune cell genome modification, either by causing irreversible genetic damage or introducing chemical adducts into cellular DNA. [30]

ARE MEDICINES USING TOBACCO? Applying tobacco leaves to cuts serves as both an antibacterial and a hemostatic agent. For therapeutic and ceremonial uses, ground tobacco leaves were also employed as "snuff," which was inhaled through the nostrils. Sometimes, earplugs with tobacco smoke are used to cure earaches. 32

CIGARETTE SMOKING'S IMPACT ON BLOOD PROTEINS? Compared to control subjects, cigarette smokers in this study showed a significant drop in serum protein levels. Excessive smoking has been linked to lower levels of total protein, lower concentrations of albumin, and higher levels of globulins.(35)CAN YOU QUIT TOBACCO? Both FDA-approved medications and behavioral therapies are effective treatments that assist in quitting smoking. Along with bupropion and varenicline, FDA-approved pharmacotherapies include several forms of nicotine replacement therapy. 36]

Materials and method of work::

We used the following tools:-

1. syringe
2. cotton
3. Tornica
4. Gel Tube
5. Plan Tube
6. Sanitizer (alcohol)
7. Micropipette

1. We tied the tourniquet around the patient's arm and then sterilized the place with alcohol and cotton.
2. We drew 5 ml of blood from the person and put it in a Gel tube.
3. Then we put the gel tube in Centrifuge and separated the serum from the rest of the ingredients.
4. We pulled the serum by Micropipette and put it on Plan Tube.
5. We put the serum in the bs-200 automatic analyzer device and extracted the results of the analyzes.

Results and interpretation

Smokers	ت	No-smokers	ت
محمد علي حسين	1	فاروق هاشم اسعد	1
غيث كامل حسن	2	عيدان حمو ناهي	2
يوسف محمد علي	3	عبد الله حسن احمد	3
عباس صلاح مهدي	4	محمد عبد القادر	4
اوس كريم يوسف	5	فضل الله كاظم حسين	5
ياسر عباس حسن	6	عباس نعمه احمد	6
محمد علي ستار	7	عباس شلال الجبر	7
احمد زياد عمر	8	محمد حسن مجيد	8
عقيل عباس درب	9	مروان كريم احمد	9
حسام علي حسام	10	مصطفى عامر حامد	10
احمد محمد عبيس	11	إبراهيم باسم عبد	11
كاظم سلمان جواد	12	ماهر صالح	12
نصير عبد علي	13	علي نصير عبد	13
عبد الحسين كاظم	14	مهيمن محمد فراس	14
احمد خضير	15	علي عبود عباس	15

T-cholesterol ::

smokers	No-smokers
160mg/dl	170mg/dl

	Smokers	No-smokers
1	209	175
2	130	199
3	192	159
4	231	135
5	92	198
6	155	116
7	105	143
8	230	182
9	226	194
10	109	120
11	83	131
12	130	125
13	117	171
14	222	170
15	165	160

Table 1 the value of T-CHOL. In serum.

Triglyceride :

Smokers	No-smokers
145mg/dl	138.9mg/dl

	smokers	No-smokers
1	302	219
2	67	111
3	165	109
4	99	125
5	42	188
6	35	155
7	220	144
8	265	192
9	125	100
10	92	210
11	390	226
12	255	295
13	321	37
14	91	49
15	87	176

Table2: The Value of Triglyceride in the Serum of smokers and non-smokers

HDL :

smokers	No-sm0kers
35.90mg/dl	40.22mg/dl

	smokers	No-smokers
1	27	40.2
2	43.9	31.9
3	33.1	44
4	41	36
5	44.2	42.6
6	28.4	50.2
7	30.1	37.8
8	29.5	33.9
9	48	29.7
10	25	44.6
11	33.7	52
12	21.9	39
13	432	47.2
14	37	36.9
15	26.4	45.7

Table 3 the Value of HDL in the Serum of Smokers and Non-Smokers

LDL :

Smokers	No-smokers
93.09mg/dl	96.88mg/dl

	Smokers	No-smokers
1	53	81.9
2	71.8	74.1
3	44.9	113
4	133.1	93.6
5	90.2	85
6	87.1	71.9
7	64.2	133
8	54.5	84.1
9	37.9	90.6
10	111	77.2
11	129.6	142
12	80.2	72.6
13	45.1	136.5
14	77	113.9
15	105	83.6

Table 4:the Value of Ldl in the Serum of Smokers and Non-Smokers

Age in years	N.smokers	N.no-smokers
19-30	11	9
30-39	7	7
40-49	1	1
50-60	2	1
L.P.	**smokers**	**No-smokers**
T.CH.	152.55	170.58
TRY.	134.09	134.95
HDL	34.90	96.98
LDL	25.08	29.46

T-cho Total-CHO was found to be lower in smokers (158.52 mg/dl) than in non-smokers (169.59 mg/dl). It should be noted that samples were not taken from fasting individuals and that some healthy individuals had higher BMDs (body mass indices) than smokers. These findings are consistent with those of other Indian research that looked at smokers (191.96)[37], (19192.96)[38], (1844.45)[39] and non-smokers (161.18)[37], (160.29)[38], (161.56)[39].

Triglycerides (TG) Our findings on triglycerides were consistent with those of other studies conducted in various nations across the globe, involving smokers (164.29) [37], (165.29) [38], (164.26) [39], and non-smokers (103.58)[37], (105.61)[38], (116.14)[39]. These studies revealed that triglyceride levels were higher in smokers (144.08 mg/dl) than in non-smokers (138.95 mg/dl).

HDL Regarding HDL, our findings were consistent with those of other studies conducted in various nations across the globe, which included smokers (44.72) [37], (44.62) [38], (39.26) [39], and non-smokers (49.58) [37], (48.91) [38], (47.38) [39]. These studies revealed that non-smokers had higher HDL levels (40.26 mg/dl) than smokers (35.90 mg/dl).

LDL. LDL was lower in smokers (92.08 mg/dl) than in non-smokers (96.88 mg/dl). It should be noted that some healthy individuals with high BMDs (body mass index) were included in the sample pool alongside smokers, and that the samples were not taken from fasting individuals. These findings are consistent with those of other Indian research, which found that smokers (103.08) [37], non-smokers (82.34) [37], smokers (104.09) [38], smokers (112.45) [39] etc.

Smokers of all ages showed a drop in low-density lipoproteins and a rise in triglycerides alone, but not in total cholesterol. As was previously indicated in the chapter discussing the results, the random sampling procedure is to blame for this, even when the proteins demonstrated an inverse association between HDL and other variables. While there is an inverse link with HDL, there is a direct relationship with the intensity of smoking and increases in triglycerides, total cholesterol, and LDL levels. The alterations mentioned above in the lipid profile put asymptomatic smokers at risk of coronary artery disease.

1. Demonstrating the risks of smoking and the illnesses it brings on, namely heart disease, cancer, and clogged arteries.
2. Working with the World Health Organization to organize programs encouraging people to give up smoking and switch to medicinal nicotine replacements instead of tobacco.
3. Looking out the causes of young people's early smoking and eradicating this prevalent social issue among them.
4. Smoking and other harmful habits can be avoided by exercising, being active, staying focused, and practicing self-development.

5. The duty to observe the anti-smoking legislation enacted by the House of Representatives in compliance with the terms of Article 61, Clause 1, and Article 73, Clause 3.

REFERENCES

1. Ezzati M, Henley SJ, Thun MJ, Lopez AD. Role of smoking in global and regional cardiovascular mortality. Circulation 2005;112:489-97
2. K. Park. Principles of epidemiology and epidemiological methods. Chapter-3, Park's textbook of preventive and solid medicine. 18th Edn, M/s Banarasidas Bhanot Publishers, 2000, p. 73-74.
3. Stedmen RL. Chemical composition of tobacco and tobacco smoke. Chem. Rev. 1968; 68(2): 153-207.
4. Fagerström K. The epidemiology of smoking: Health consequences and benefits of cessation. Drugs 2002:62 Suppl 2:1-9.
5. Pyrgakis VN. Smoking and cardiovascular disease. Hell J Cardiol 2009:50:231-4.
6. NS Neki. Lipid profile in chronic smokers A clinical study. Journal of Indian Academy of Clinical Medicine, 2002 JanMar; 3:51-54.
7. Nelson RH. Hyperlipidemia as a Risk Factor for Cardiovascular Disease. Primary care. 2013;40(1):195-211.doi:10.1016/j.pop.2012.11.003.
8. American Heart Association. Heart Disease and Stroke Statistics-2009 Update. Dallas, TX: Am Heart Association: 2009.
9. Heitzer J, Meinertz T. Prevention of coronary artery disease. Smoking Pub Med, 2005; 94(3:11): 30-42
10. Gossett LK, Johnson HM, Piper ME, Fiore MC, Baker TB, Stein JH. Smoking intensity and lipoprotein abnormalities in active smokers. J Clin Lipidol 2009:3:372-8.
11. Campbell SC, Moffatt RJ, Stamford BA. Smoking and smoking cessation-the relationship between cardiovascular disease and lipoprotein metabolism: A review. Atherosclerosis 2008;201-225-35.
12. Craig WY, Palomaki GE, Haddow JE. Cigarette smoking and serum lipid and lipoprotein concentrations: An analysis of published data. BMJ 1989,298:784-8.
13. Gepner AD, Piper ME, Johnson HM, Fiore MC, Baker TB, Stein JH. Effects of smoking and smoking cessation on lipids and lipoproteins: Outcomes from a randomized clinical trial. Am Heart J 2011:161:145-51.
14. Austin MA. Plasma triglyceride and coronary heart disease. Arterioscler Thromb 1991:11:2-14.
15. Ambrose JA, Barua RS. The pathophysiology of cigarette smoking and cardiovascular disease: An update. J Am Coll Cardiol 2004:43:1731-7.
16. Kavita SG, Meeta GN, Priyanka MG, Gonsa RN. Effects of smoking on lipid profile. J Clin Res Rep 2013;5:36-42
17. Muscat JE, Harris RE, Haley NJ, Wynder EL. Cigarette smoking and plasma cholesterol. Am Heart J 1991:121:141-7. effects of nicotine and cigarette smoke. Trends
18. Tweed JD, Hsia SH, Lutfy K, Friedman TC. The endocrine in Endocrinology and Metabolism. 2012;23(7):334-342.
19. Mizobe F. Livett BG. Nicotine stimulates secretion of both catecholamines and acetylcholinesterase from cultured adrenal chromaffin cells. J Neurosci. 1983 Apr;3(4):871-6. 20. Arnaldi G, Scandali VM, Trementino L, Cardinaletti M, Appolloni G, Boscaro M. Pathophysiology of dyslipidemia in Cushing's syndrome. Neuroendocrinology. 2010;92 Suppl 1:86-90.

20. Arner P. Catecholamine-induced lipolysis in obesity. Int J Obes Relat Metab Disord. 1999;23 Suppl 1:10- 22. Department of Physiology, Gandhi Medical College, Hyderabad, Telangana, India March 07, 2020; Accepted: May 09, 2020
21. MEDICALLY REVIEWED BY SABRINA FELSON, MD ON OCTOBER 19, 2020 BY STEPHANIE WATSON
22. Medically Reviewed by Nayana Ambardekar, MD on July 28, 2021
23. Medically Reviewed by Brunilda Nazario, MD on January 21, 2022 https://www.betterhealth.vic.gov.au/health/healthyliving/smoking-effects-on-your-body
24. Medically reviewed by University of Illinois Written by Amber Erickson Gabbey - Updated on May 16, 2018
25. Medically Reviewed by Carol DerSarkissian, MD on November 09, 2020
26. Medically reviewed by Deborah Weatherspoon, Ph.D., R.N., CRNA-Written by Adam Felman on January 11, 2018
27. Alexandrov LB, Ju YS, Haase K, et al. Mutational signatures associated with tobacco smoking in human cancer. Science 2016:354:618-22, 10.1126/science.aag0299 [PMC free article] [PubMed] [CrossRef] [Google Scholar]