A Relationship between Smoking and Triglyceride Levels at USU Engineering Students

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Abstract: As time went along with their own tobacco human civilization known to man. On cigarettes have been found around 4000 types of toxic chemicals including nicotine and tar in which the nicotine contained in cigarette smoke can affect blood lipid profile one triglyceride so that smokers had higher triglyceride levels than nonsmokers. This study was to determine whether there is a relationship between smoking and blood triglyceride levels with the design of the study conducted using an analytic study of 58 people with the USU engineering students to take blood samples of smokers. The relationship between the variables of smoking with blood triglyceride levels are determined based on data collected from interviews and take measurements of blood triglyceride levels, measurements were performed one at a time without a follow-up observation. The result showed there were 13 respondents (22.4%) who have triglyceride levels above normal. There is a relationship between smoking and blood triglyceride levels (p = 0.001). There are differences in average blood triglyceride levels among light smokers with heavy smokers (p = 0.000) and between smokers moderately heavy smokers (p = 0.045). but there is no difference between the average blood triglyceride levels among light smokers with moderate smokers (p = 0,053).

1 INTRODUCTION

Tobacco consumed by humans in many ways and the most common is consumed as a tobacco cigarette. Smoking prolonged will affect the incidence of health problems such as cancer, raised his cardiovascular disease and disease of lungs (Setiati S, Alwi I, Sudoyo AW, 2014). Smoking is one of the causes of atherosclerosis and diabetes mellitus (DM). Smoking also affects the physiological factors, pathologic, hematologic and metabolic respectively. From the results of previous studies have reported that smokers had higher levels of serum triglycerides (TG), high blood glucose concentration and levels of high-density lipoprotein cholesterol (HDL-C) were lower than non-smokers (Niemiec P, Nowak T, Iwanicki T, 2015). Plasma lipids consist of triacylglycerol (6%), phospholipids (30%), cholesterol (14%), and esters cholesteryl (36%) and slightly fatty acids long-chain non-esterified (4%). Most of the fats and oils in nature consists of 98-99% of triglycerides. Triglyceride is a glycerol ester, an alcohol and a fatty acid trihydrate correctly called triacylglycerol (Almatsier S. Prinsipdasarilmugizi, 2010).. During digestion, two of the three fatty acid molecules are leaving one of monoglycerides, one molecule of glycerol with a fatty acid molecule attached to it (mono means "one"). Lipoprotein metabolism disorders cause various hypo- or hyperproteinemia. The most common is diabetes mellitus; this disease occurs in insulin deficiency caused excessive Free fatty acid (FFA) mobilization coupled low utilization of chylomicrons and Very low density Lipoprotein (VLDL) causing hypertriglyceridemia. Most other pathological conditions regarding fat transport because congenital abnormalities can cause hiperkolestrolemia and premature atherosclerosis. Smoking among college students has become a daily habit, and even become a staple. Therefore, the authors are interested in looking for the relationship between smoking behavior and increased blood triglyceride levels in students of mechanical Engineering faculty of Universitas Sumatera Utara (Murray RK, Granner DK,Rodwell VW, 2009).

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2 METHOD

Samples were students of the Faculty of Engineering 2013-2016 USU force another active as a student and the samples taken are the subject of the selected populations and have met the inclusion and exclusion criteria. The sampling technique in this research is by consecutive sampling.

1. Criteria for inclusion:

a. Male students who smoke at the engeneering faculty of the Universitas Sumatera Utara

b. Willing to become respondents to sign a consent form.

2. Exclusion criteria:

a. Diabetes mellitus

b. Suffering from coronary heart disease (CHD)

c. dyslipidemia

d. obesity

e. Vegetarian

3 RESULT AND DISCUSSION

Table 1: Distribution subject frequency based on the degree of smokers

Smoking Degree	Frequeny	Percentage
Light	32	55,2 %
Medium	19	32,8 %
Heavy	7	12,1 %
Total	58	100 %

Based on the number of cigarettes smoked each day, the smokers were divided into three, namely light smokers, moderate, and severe. Subject of the study were 32 people (55.2%) were light smokers, while 19 subjects (32.8%) are moderate smokers. while the remaining 7 (12.1%) were heavy smokers. From this data it can be concluded that the subject was light smokers more than moderate smokers and heavy.

Table 2: Correlation Degree Smokers Blood Triglyceride Levels.

Triglyceride Levels							
Smoking Degree	Normal		High		Jumlah		*p*Value
	N	(%)	N	(%)	N	(%)	
Light	30	66,7	2	15,4	32	55,2	0,001
Medium	13	28,9	6	46,2	19	23,8	
Heavy	2	4,4	5	38,5	7	12,1	
Total	45	100	13	100	58	100	

Fisher on Chi Square test produces p-value of 0.001 ($p < 0.05$) for the degree of relationship of smoking with blood triglyceride levels. This indicates that the degree of smoking had a relationship with blood triglyceride levels. This is according to research obtained by Widea Rossi concluded that hypertriglyceridemia increased risk in those who smoked more than 20 cigarettes each day (Desvita WR, 2014}

Table 3. Test Results Post Hoc Test (Tukey)

Group I	GroupII	*P* value
Light Smoker	Medium Smoker	0,053
	Heavy Smoker	0,000
Medium Smoker	Light Smoker	0,053
	Heavy Smoker	0,045
Heavy Smoker	Light Smoker	0,000
	Heavy Smoker	0,045

From the results of Anova test showed that there were significant differences in the average blood triglyceride levels among light smokers with heavy smokers. Furthermore, to find a group that has a significant value of the test post hoc test (Tukey). Obtained the result that there are differences in average blood triglyceride levels among light smokers with heavy smokers ($p = 0.000$) and between smokers moderately heavy smokers ($p = 0.045$). but there is no difference between the average blood triglyceride levels among light smokers with moderate smokers ($p = 0,053$). this is according to research conducted by (Ioannis Mammas N., 2013) that smoking is associated with high triglycerides and serum levels of HDL-cholesterol is low. As well as the levels of LDL cholesterol, total cholesterol level that is strongly associated with smoking rates (Mammas IN, 2013)

4 CONCLUSION

There is a relationship between smoking and blood triglyceride levels ($p<0,001$).

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