The Relation of Alcohol Consumption and Blood Cholesterol Level

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Abstract: Coronary Heart Disease is usually caused by atherosclerosis. Atherosclerosis can be developed because of the increase of blood cholesterol level. According to *World Health Organization* (WHO) in 2012 heart and vascular disease caused 17.5 million equal to 31% death around the world and 7.4 million was caused by Coronary Heart Disease. Center of health research/Riset kesehatan dasar (Riskesdas) shows in 2007 there are largest numbers of male alcohol drinkers aged 15 years old and older; 31.1% in North Sulawesi suburban area and 32.9% in countryside. General objective is to determine the relation between alcohol inkae with blood cholesterol level with specific aim to study the relation between duration and volume of daily alcohol intake with cholesterol level. This research is observational analysis with cross sectional study. The subjects are 51 male students of Faculty of Engineering of Sam Ratulangi University aged 19 – 22 year old. Normal cholesterol level is 200 mg/dL The result is there is a significant association between the duration of alcohol intake with cholesterol level ($p<0.05$) and there is also a significant relation between the average daily intake ($p<0.05$) with cholesterol level. Alcohol intake can influence blood cholesterol level.
Keywords: Alcohol intake, blood cholesterol.

INTRODUCTION

Coronary Heart Disease (CHD) is usually caused by atherosclerosis. Atherosclerosis can be caused by the increase of cholesterol level and results in pathologic accumulation in blood vessels [1]. High level of total blood cholesterol causes increasing in morbidity and mortality rates of cardiovascular disorders.

Based on prevalence men with high cholesterol level have higher risk to develop cardiovascular diseases. Accoding to *World Health Organization* (WHO), in 2012 there are 17.5 million equal to 31 % deaths worldwide caused by. Cardiovascular diseases and 7.4 millions of it caused by CHD. Based on doctor's diagnosis the prevalence of CHD in Indonesia in 2013 on the age of $\geq$ 15 year old is 0, 5% equal with 883.447 people, while based on symptoms is 1, 5% or about 2.650.340 people. Based on doctors diagnosis the largest number of people with CHD is in West Jawa province 160.812 orang (0, 5%). North Sulawesi has 11.892 cases (0.7%) based on doctor diagnosis and 28.880 cases (1, 7%) based on symptoms [3].

Nowadays alcohol consumption is becoming trending issue in several areas in Indonesia. Center of health research/Riset kesehatan dasar (Riskesdas) shows in 2007 there are largest numbers of male alcohol drinkers aged 15 years old and older; 31.1% in North Sulawesi suburban area and 32.9% in countryside [4].

In the global era when lifestyle and eating pattern are changing, the level of of blood cholesterol becomes higher in productive aged people as well as in late teenage aged 17-25 tahun [5]. Therefore it is necessary for the author to determine the effect of alcohol intake on blood cholesterol levels on university students.

MATERIALS AND METHODS

This research is a 10 months observasional study with a cross sectional design. The subjects are 51 male students aged 19 – 22 years old of Faculty of Engineering Sam Ratulangi University badge 2015 and 2016 who already signed the informed consent. Blood were obtained from each subject and analysed for cholesterol levels with normal reference of 200 mg/dL. After that the association were determined by statistic analysis.

RESULTS AND DISCUSSION

Table-1: The correlation beetwen alcohol consumption and cholesterol level

Duration alcohol consumption	Cholesterol Level				ρ
	Normal		Hypercholesterol		
	n	%	n	%	
< 3 year	29	74.4	8	66.7	0,023
≥ 3 year	10	25.6	4	33.3	
Total	39	100	12	100	

Based on table 1 there is a connection between alcohol intake duration and cholesterol levels ($\rho < 0,05$).

Table 2 shows a connection between the average daily intake and cholesterol levels ($\rho < 0.05$).

The subjects on this study are university students year 3 and year 4 aged 19 – 22 years old which categorized as late teenage [4]. This certain age environmental factor is strongly influence the behavior of alcohol consumption. A study of Wijaya I.P.A on male teenagers in Bali stated there is a significant relation between alcohol intake and the social behavior between those teenagers [6]. There is also a similar study by Adiputra and Saputro with the similar result [7, 8].

Table-2: The correlation beetwen the average daily intake (volume in mL) and cholesterol level

The average daily intake (volume in mL)	Cholesterol Level				P
	Normal		Hypercholesterol		
	n	%	n	%	
< 90 mL	18	46.2	0	35.3	0,010
≥ 90 mL	21	53.8	12	64.7	
Total	39	100	12	100	

Research by De Oliveira e Silva ER *et al* in 2000 stated that alcohol consumption increases cholesterol levels [9] also a study from Wakabayashi I, in 2010 and Yoon Y S *et al.* in 2004 found a significant relationship between alcohol consumption and cholesterol levels[10,11]. Research by Huang *et al.* in 2017 moderate alcohol consumption lowers blood cholesterol [12] as well as research conducted by Vu. Khanh *et al.* in 2016 alcohol consumption low to moderate can significantly increase HDL and reduce triglycerides, total cholesterol and LDL [13].

CONCLUSION
Alcohol consumption can influence blood cholesterol levels.

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