Correlation between waist and Hip Ratio

by Ardiana Ekawanti

Correlation Between Waist/Hip Ratio And Lipid Profile Of Lactovegetarian Community In West Lombok

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Abstract

Central obesity and dyslipidemia are the risks of metabolic syndrome. Waist and Hip (W/H) ratio is early screening to diagnose of central obesity. Vegetarian diet decreased the risks of metabolic syndrome. Aim of this study was to find out the correlation of waist and hip ratio and lipid profile of lactovegetarian community in west Lombok. This research design was cross sectional study involving all community of lactovegetarian in west Lombok. There were 29 member of lactovegetarian community involved in this study. Antrophometric assessment conducted to find out W/H ratio and blood sample taken to assess lipid profile. Correlation of W/H ratio and lipid profile analysed by using Pearson correlation. The result for correlation of W/H ratio and lipid profile W/H ratio and cholesterol did not correlated (p 0.887) W/H ratio and triglyceride (p 0.632) W/H ratio and HDL (p 0.978) and W/H and LDL (p 0.862). That result can be concluded that W/H ratio did not correlated with lipid profile of lactovegetarian community.

Keywords: vegetarian, antrophometric, waist/hip ratio, lipid profile

1. Introduction

Vegetarian diet tends to be more popular all over the words, including Indonesia. In 1997, 1 % of American population were vegetarians, and in 2006 they were increased to 23 % of all population [1]. In India, more than 50% of population were vegetarian in 2003 [2]. Indonesia Vegetarian Society (IVS) documented that there are 5000 vegetarian in 1998 and these number were raised in 2007 to be 70.000 of vegetarian participants. In West Nusa Tenggara (WNT) vegetarians did not well-documented, IVS noted that most of vegetarian in WNT were lacto-vegetarian and lacto-ovo vegetarian [3].

Vegetarian diet has decreased the risk of some diseases such as hypertension, type 2-diabetes mellitus, cancer and metabolic syndrome [4] [5] [6]. Metabolic syndrome was syndrome which was including obesity, dyslipidemia, hyperglycemia and hypertension. This syndrome increased the risk of type 2- diabetes mellitus and cardiovascular disease [7]. Prevalent rate of metabolic syndrome was 15-30 % all over the world and the highest was in developing country [8] .

Diet is one factor that affected the risk of metabolic syndrome [9] [10]. Study conducted by Adventist Health Study in America and Canada showed that vegetarian diet decreased risk of metabolic syndrome [5]. Study conducted by Diah [11]on vegetarian in Yogyakarta, Semarang and Surabaya indicated that the risk of metabolic syndrome of vegetarian vegan was not different significantly to difference vegetarian non vegan.

Some studies showed that metabolic syndrome increased by central obesity, while metabolic syndrome consist of dyslipidemia. Since the lactovegetarian has restricted in animal product diet, so that they consumed low containing fat. This condition would affected lipid profile of this community. The aimed of this study was to find out the correlation between WHR and lipid profile in lactovegetarian community.

2. Material and Method

2.1. Study Design

This research was an observasional research using cross sectional study design. All parameters namely interview, antrophometric measurement (waist circumference and hip circumference) and lipid profile assessment conducted in one period of time. Dependent variable of this study was lipid profile, while independent variable was waist/hip ratio This study were taken place in lacto vegetarian community in Gerung district in July and August 2015.

2.2. Research Participants

Participants in this study were the member of lacto vegetarian community which fulfill inclusion and exclusion criteria. Inclusion criteria were: member of lacto vegetarian community, agree to participate by signing informed consent, aged 18-64 year old. Exclusion criteria were: active smoker, alcohol consumption, pregnant, refuse to participate. Minimal sample size calculation by using proportion formulation found that number of minimal sample was 30. From 45 member of lactovegetarian community 30 member were enrolled and one person was excluded because of the age was under 18 year old.

2.3. Research procedure

Following the signing of informed consent, participants underwent research procedure. Waist circumference was measured by using WHO antrophometric guideline, that was in the midle of the line between arcus costae and crista iliaca and hip circumference was on m. gluteus maximus. Ratio of waist circumference and hip circumference then categorize into central obesity or not. Afterwards, 5 ml of blood sample were taken from v. mediana cubiti then spill out from disposable spuit into plain sample tube (non-EDTA tube) to got blood serum. Serum then assessed for lipid profile by using automatic hemoanalyzer and the value was stated in mg/dL.

3. Result and Discussion

The result of this study was as follows:

Table 1. Participants characteristic of W/H ratio and lipid profile

Characterictic of participants	Value (mean±SD)
Waist to hip ratio	
- Male	0.84±0.05
- Female	0.85±0.06
Lipid profile	
Triglyceride	0.83±0.05
- Male	176±128 mg/dL
- Female	201±157 mg/dL
Cholesterol	156±100 mg/dL
- Male	165±38 mg/dL
- Female	164±39 mg/dL
HDL	167±39 mg/dL
- Male	
- Female	
LDL	
- Male	
- Female	

41±12 mg/dL
39±12 mg/dL
42±14 mg/dL
92±35 mg/dL
84±46 mg/dL

The participants features from table showed that mean of W/H ratio was in normal limit, either male or female were not suffered from central obesity (male <90 cm and female <85 cm). Triglyceride value for male was higher than normal value. HDL value either male dan female were lower than normal value, while LDL and cholesterol within normal limit. Since data were normal distribution statistically, so that appropriate statistical analysis for correlation testing was Pearson's correlation test. The Pearson's test result as below:

Table 2. Correlation between W/H ratio and lipid profile
Pearson's Correlation (p,ρ)
Triglyceride Cholesterol HDL LDL
WHR
0.289;0.204 0.352; 0.179 0.583;0.106 0.999;0.000

Table 2 demonstrated that W/H ratio was not correlated significantly to triglyceride, cholesterol, HDL and LDL in lactovegetarian community. Waist/Hip ratio is one parameter which is useful to describe central or abdominal obesity in the population. Compare to all anthopometric measurement, W/H ratio was a sensitive parameter to assess the risk of cardiovascular diseases [12]. Based on the result of W/H ratio (WHR)of lactovegetarian population in West Lombok, founded that the risk of cardiovascular disease was lower than normal population since WHR value was lower than normal population, male <90 and female <85 (WHO, 2011). Regarding to this reference value 92 % of the lactovegetarian population had normal WHR, that meant this population has mild cardiovascular risk [12] (WHO, 2008). Study by Czernichow, et al (2011) [13] demonstrated that WHR was the best predictor of cardiovascular risk compared to other antropometric parameter in diabetes mellitus population and it could describe value of VLDL and LDL, the larger of WHR and the larger of VLDL and LDL value. The result of this research was different from Czernichow. Life style and underlying disease of the population affected lipid profile of the population.
Lipid profile which consist of triglyceride, total cholesterol, LDL and HDL in this study were not correlated to waist and hip ratio in lactovegetarian population. This result was the same as found by Gandhi, et al, 2014[4]; Chaudri et, al. 2013 [15]; Jian et al, 2014 [16]; Verma, et at. 2015 [17]; Huang, 2014 [18].

4. Conclusion
Conclusion of this study was WHR in lactovegetarian community in West Lombok was normal and also most of lipid profile within normal limit, except HDL value was lower than reference value. WHR did not correlated to lipid profile in lactovegetarian community in West Lombok.

Correlation between waist and Hip Ratio

PRIMARY SOURCES

1   Mohite Rajsinh, Mohite Vashali, Mohamad Fathni Bin Fadzli, Mohamad Izzat Shafiq Azizan et al. "Waist: Hip ratio is a more reliable risk assessment tool for acute myocardial infarction: A hospital based case – control study among rural Maharashtra, India", Asian Journal of Medical Sciences, 2017
Publication   **1**%

2   Fenger, M.. "Variance decomposition of apolipoproteins and lipids in Danish twins", Atherosclerosis, 200703
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