CHAPTER I

INTRODUCTION

1.1 Background of the Problems

World Health Organization (WHO) estimated that there will be an increase in the number of deaths at the global level; the cause is a non-communicable disease that 71% of deaths occur in the world because a non-communicable diseases (WHO, 2018). The problem often found and caused the death in the world was cardiovascular disease, it was mention by The Institute for Health Metrics and Evaluation that the world's most frequent deaths were caused by disease that related to the heart and blood vessels (IHME, 2016).

There were around 38.1% of people who suffer from non-communicable disease in Indonesia (Ministry of Health, 2018). The information come from the data of health in East Java Province (2013) that the prevalence of non-communicable disease case was 88.7% with the highest case was heart disease and blood vessels (Ministry of Health, 2018). The morbidity profile in the Semarang area of Central Java mentioned that the problem of health caused by non-communicable diseases in 2017 run into 2,000 cases (Semarang City Health Service, 2016).

The causal factors of cardiovascular disease and blood vessels were mentioned in many research that was age, sex, total cholesterol levels, triglyceride levels, hypertension and diabetes mellitus (Zahrawardani et al., 2013). Other research conducted, the factors that cause a cardiovascular disease were food consumption and physical activity (Waloya et al., 2013).

The factors cause a cardiovascular disease known was cholesterol levels (Zahrawardani et al., 2013). The cholestero would cause cardiovascular disease if the cholesterol levels above 200 mg/dl which that often referred as hypercholesterolemia (Ruslianti, 2014). Factors that include the risk cause cholesterol problems are obesity, cholesterol intake, low fiber intake, high

fat intake, low activity, changes in social conditions, stress and smoking (Lestari and Utari, 2017).

With the emergence of hypercholesterolemia problem, several solutions were deployed to fix this problem, that was therapeutic lifestyle changes which consisted of a decrease in saturated fat and cholesterol intake, the selection of food ingredients that could reduce LDL levels, weight loss, and increase physical activity (Yani, 2015). The solution is to change dietary patterns such as reducing fat intake and increasing the other nutrients intake that as antihypercholesterolemic, such food fiber (Yoentafara and Martini, 2017). Besides fiber, there is vitamin E which as an antioxidant can reduce low-density lipoprotein (LDL) cholesterol levels in the blood.

Vitamin E is an antioxidant to prevent LDL oxidation. Vitamin E can play a role in protecting atherosclerosis and inhibition to oxidation small LDL. In Krisnansari research (2011), it vitamin E supplementation effect with 400 IU dose/day in 30 days have good influence on total cholesterol and LDL cholesterol. Vitamin C is a water-soluble vitamin that as a protective antioxidant, important for LDL and also reduce arterial stiffness and prevents the tendency of platelets to settle in blood vessels (Sandjaja et al., 2010). The study conducted by Bhatt et al. (2012) mentioned that vitamin C can maintain LDL cholesterol from oxidation as a function of vitamin C. In Rachmawati's study (2016), there were insignificant results regarding the relationship of vitamin C and vitamin E with total cholesterol because the influence of cholesterol-lowering drugs that patients consume. From the background mentioned, researcher will conduct research on correlation of vitamin E and vitamin C intake in hypercholesterolemia patients with total cholesterol levels.

1.2 The Statement of the Problems

1. How is vitamin E intake in hypercholesterolemic patients in Tlogosari Kulon health center?
2. How is vitamin C intake in hypercholesterolemic patients in Tlogosari Kulon health center?
3. How is the correlation between vitamin E intake and total cholesterol levels in hypercholesterolemic patients in Tlogosari Kulon health center?
4. How is the correlation between vitamin C intake and total cholesterol levels in hypercholesterolemic patients in Tlogosari Kulon health center?

1.3 The Objective of the Research

1.3.1 General Objective

To know the correlation of vitamin E intake and vitamin C with total cholesterol levels in hypercholesterolemic patients.

1.3.2 Specific Objective

1. To know vitamin E intake in hypercholesterolemic patients in Tlogosari Kulon health center
2. To know vitamin C intake in hypercholesterolemic patients in Tlogosari Kulon health center
3. To know total cholesterol levels in hypercholesterolemic patients in Tlogosari Kulon health center
4. To know the correlation between vitamin E intake and total cholesterol levels in Tlogosari Kulon health center
5. To know the correlation between vitamin C intake and total cholesterol levels in Tlogosari Kulon health center

4

1.4 The Benefit of the Research

1.4.1 Benefit for Community

This research expected to provide solutions to hypercholesterolemic patients to choose foods that can help to decrease cholesterol levels

1.4.2 Benefit for Institution

This research expected to provide advice on diet modification that can given to hypercholesterolemic patients

This research supposed to be able to add a reference in terms of cholesterol and vitamin E

1.4.3 Benefit for Researcher

This research is expected to add insight for researchers in researching in the community and it can apply the knowledge already acquired.

1.5 The Authenticity of the Research

Table 1. The Authenticity of the Research

Tittle	Desain	Variable	Result	Difference
Hubungan Asupan Lemak dan Asupan Kolesterol dengan Kadar Kolesterol Total pada Penderita Jantung Koroner Rawat Jalan di RSUD Tugurejo Semarang (Filandita et al., 2013)	Descriptive analytic cross-sectional	Dependent variable: total cholesterol level Independent variable: Fat and cholesterol intake	There was a correlation of fat intake $p = 0.026$ and cholesterol intake $p=0.000$ with total cholesterol	This research use variable independent fat and cholesterol intake
Hubungan Asupan Serat dan Vitamin E dengan Kadar Kolesterol Total pada Penderita Penyakit Jantung Koroner Rawat Jalan di RSUD Dr. Moewardi (Nurani, 2016)	Observasional cross-sectional	Dependent variable: total cholesterol level Independent variable: Fiber and vitamin E intake	There was no correlation for fibert $p=0.655$ And vitamin E $p=0.615$	This research use independent variable fiber intake

Hubungan antara Konsumsi Pangan dan Aktivitas Fisik dengan Kadar Kolesterol Total Darah pada Pria dan Wanita Dewasa di Bogor (Waloya et al., 2013)	Cross-sectional	Dependent variable: total cholesterol level Independent variable: food intake and physical activity	Physical activity level and gender $p=0.05$ correlated with total cholesterol and fiberintake and fat intake $p=0.10$ correlated with cholesterol	This research use food intake and physical activity for the independent variable
Hubungan Indeks Massa Tubuh Dengan Kadar Kolesterol Total Pada Guru dan Karyawan SMA Muhammadiyah 1 dan 2 Surakarta (Nugraha Aziz, 2014)	The analytic observational, cross-sectional design	Dependent variable: total cholesterol level Independent variable: BMI	There was no correlation $p=0.773$	This research use BMI for the independent variable
Hubungan Asupan Vitamin C dan Vitamin E dengan Kadar LDL (low density lipoprotein) pada penderita Penyakit Jantung Koroner di Instalasi Rawat Jalan RSUD Dr. Moewardi (Rachmawati, 2016)	Observational cross-sectional	Dependent variable: LDL level Independent variable: vitamin E and vitamin C	Vitamin C $p=0.11$ there was no correlation, vitamin E $p=0.506$ there was no correlation	This research use LDL level for the dependent variable