CHAPTER I

INTRODUCTION OF THE STUDY

1.1. Background

Diabetes Mellitus (DM) is a metabolic disease that has the characteristics of hyperglycemia that caused by abnormalities of insulin secretion or insulin action. Chronic hyperglycemia in diabetes is closely related to long-term damage, dysfunction or failure of several organs, especially the eyes, kidneys, nerves, heart, and blood vessels (Suyono, 2015). According to Suyono (2015), the risk factors for diabetes mellitus will be accompanied by hypertension, obesity, dyslipidemia, microalbuminuria, coagulation abnormalities, stroke, myocardial infarction and diabetes mellitus in type 1 DM and type 2 DM.

Various studies have been shown an increase in the incidence and prevalence rates of DM disease, type 2 diabetes mellitus which has the highest prevalence compared to other types of diabetes. According to World Health The Organization (WHO) the increasing of the number of people with DM in Indonesia from 8.4 million in 2000 became around 21.3 million in 2030. While International Diabetes Federation (IDF) in 2013, predicted an increase in the number of people with DM from 9.1 million in 2014 to 14.1 million in 2035 (PERKENI, 2015). The Ministry of Health stated that type 2 DM in Indonesia has a prevalence of 90% in 2014. According to Riskerdas in 2013, health profile the prevalence of type 2 DM in Central Java Province in 2009-2013 was 165,459 cases. According Surakarta Health Office, Surakarta has a very significant prevalence of type 2 DM in the past five years, especially type 2 DM from 5,223 cases in 2016 reached 6,579 in 2017 (Dinkes Surakarta, 2017).

According to Midlov *et al*., (2009) There were several have been efforts to treat type 2 diabetes mellitus namely pharmacological therapy by using drugs. Pharmacotherapy, can improve the patient's condition,

however, it can cause problems that should be more than antidiabetic drugs worsen complications in hypertension, or antihypertensive drugs increase a patient's blood glucose level if not done properly. There are 50% of people with type 2 diabetes mellitus experiencing complications of hypertension. The occurrence of type 2 diabetes mellitus complicated by hypertension is caused by hyperglycemia in diabetes mellitus which can increase angiotensin II so that it can cause hypertension.

Angiotensin II is a microvascular inhibitor of blood flow in the body which results in hypertension. Patients with type 2 diabetes mellitus complicated by hypertension can increase the risk of microvascular complications such as retinopathy, neuropathy, and nephropathy while macrovascular complications such as coronary heart disease, diabetic nephropathy, and diabetic retinopathy (Novitasari, 2011). Aksnes *et al*., (2010) state that hypertensive patients with diabetes mellitus having more isolated systolic pressure and also due to neuropathy, patients often have difficulty decreasing blood pressure. Heart rate in diabetic patients tends to be higher compared to patients without diabetes.

According to Waspadji (2009) it there is no adequate treatment of the two diseases it will end up with the same complications, namely cardiocerebrovascular death, and kidney failure.

The existence of complications can lead to the occurrence of Drug Related Problems (DRPs), is that diabetes drugs can worsen the condition of hypertension in the other hand, hypertension drugs can increase the patient's blood glucose levels (Waspadji, 2009). According to the Pharmaceutical Care Network Europe year 2010, Drug Related Problems (DRPs) is a condition where drug therapy can actually or potentially interfere with the desired therapy results. Ruspandi (2015) stated that treatment in type 2 diabetes patients with hypertension complications was showing the percentage of drug interactions which has 39.58%, medication has 14.58%, dosage has too high at 14.58%, therapy requiring additional drugs has 12,50%, too low dose of 10.42%, and drug therapy without indication of 8.33%.

As is known, the drug is a certain form of drug ingredients used to prevent and to cure a disease. However, drugs are poisons if their use is excessive, causing an increase in Drug Related Problems (DRPs) (Anief, 2010). Indeed Allah SWT does not like excessive things, contained in His words in the Qur'an QS Al Maidah verse 77:

قل يأهل الكتب لا تغلوا في دينكم غير الحق ولا تتبعوا أهواء قوم قد ضلوا من قبل وأضلوا كثير وضلوا عن سواء السبيل

> *"Say the prophet Muhammad: "O scribes! Do not overdo it in a way that is not true in your religion. And do not follow the lusts of those who have gone astray and (have) misled many (men), and they have gone astray from the straight path."*

Based on RSUP Dr. Soeradji Tirtonegoro Klaten 2018, the number of DM patients undergoing outpatient care at the Internal Medicine Polyclinic of Dr. RSUP Soeradji Tirtonegoro Klaten was 8th with 848 patients per year. The incidence showed significant increase during 2018 which was identified as suffering from type 2 diabetes mellitus complications of hypertension. This research conducted at Soeradji Tirtonegoro Klaten Hospital as one of the referral health facilities for people with type 2 diabetes mellitus complicated by hypertension. The occurrence of Drug Related Problems (DRPs) identified in this study expected to be a benchmark for the success of Drug Related Problems (DRPs). That prevention programs and as information that helps health workers in providing appropriate, safe treatment and treatment of type 2 complications of type 2 diabetes mellitus patients, and effective.

According to this, it is necessary to do a potential identification of Drug Related Problems (DRPs) category of inaccurate drug selection which includes effective but unsafe drugs, ineffective drugs and improper combination drugs for patients with type 2 diabetes mellitus complications of hypertension and the accuracy of drug dosages in patients with type 2 diabetes mellitus complicated by hypertension

1.2. Formulation of The Problem

1. What is the incidence of drug Related Problems (DRPs) in the category of inaccurate drug selection for patients with type 2 diabetes mellitus with complications of hypertension at RSUP Soeradji Tirtonegoro Klatenin 2018?

2. What is the incidence of drug Related Problems (DRPs) in the category of dose accuracy for patients with type 2 diabetes mellitus with complications of hypertension at RSUP Soeradji Tirtonegoro Klaten 2018?

1.3. Research Purposes

1. Knowing the incidence of drug Related Problems (DRPs) category inaccurate selection for type 2 diabetes mellitus patients with complications of hypertension atRSUP Soeradji Tirtonegoro Klaten In 2018.

2. Knowing the incidence of Drug Related Problems (DRPs) in the category of dose accuracy for patients with type 2 diabetes mellitus with complications of hypertension atRSUP Soeradji Tirtonegoro Klaten in 2018.

1.4. Benefits of Research

1.4.1. Theoretical Benefits

This study can add the scientific data regarding cases of type 2 complications of diabetes mellitus that can be used as a source of information to support Drug Related Problems (DRPs) prevention programs, to gain learning experience through case studies and to improve knowledge because knowledge will continue to develop and to progress in accordance with the times.

1.4.2. Practical Benefits

1. As basic data in the form of the occurrence of drug Related Problems (DRPs) in the category of inaccurate drug selection and

dosage in patients with type 2 diabetes mellitus with complications of hypertension.

2. As consideration in conducting prevention efforts in overcoming Drug Related Problems (DRPs) in patients with type 2 diabetes mellitus with complications of hypertension.

3. To prove actual information for health workers related to Drug Related Problems(DRPs) for type 2 diabetes mellitus hypertensive complications.

4. To prove information and knowledge for pharmacists in identifying, preventing, and solving Drug Related Problems (DRPs) in patients with type 2 diabetes mellitus with complications of hypertension.