

THE EFFECT OF TURMERIC STEW TOWARD GLUCOSE BLOOD LEVEL OF DIABETES MELLITUS CLIENTS

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Abstract

Diabetes Mellitus has become a public health problem which is steadily increasing from year to year in Indonesia. Increased prevalence of diabetes occurs because of the effects of unhealthy lifestyles and diets. Diabetes Mellitus has a poor prognosis if it is not treated immediately. It can lead to worse complications. One way of controlling diabetes that patients maintain their quality of life is done with non-pharmacological therapy, namely turmeric therapy. This study aimed to determine the effect of turmeric stew of therapy on blood sugar level of DM patients. The study design was quasy experiment with non-equivalent control group design. Respondents are divided into 2 groups, 16 for experimental group and 16 for control group (total sample: 32 respondents). The experimental group took turmeric stew once in a day for 7 days consecutively. Univariate analysis is used to describe characteristics of respondents and bivariate is used paired and pooled t-test. The results showed that the majority of respondents were female (75%), elderly (81.4%), high school education (46.8%), ethnic Minang (78.2%), and a housewife (56, 2%). The results of the bivariate analysis showed a difference in mean blood glucose levels between before and after the treatment in the experimental group (p value 0.00). Mean while, there was no difference in mean blood glucose level were between the experimental group and the control group (p value 0.051). It is suggested to health public centers to introduce herbal development program such as turmeric stew for DM clients in the community.

Keywords: blood glucose, Diabetes Mellitus, turmeric stew

BACKGROUND

Along with the increasing prosperity of the people in developing countries, the incidence of degenerative disease is also increasing, one of which is Diabetes Mellitus (DM). The increasing prevalence of diabetes in developing countries is getting more attention, especially among health practitioners. It is estimated that in 2010 there were 221 million people worldwide who suffer for Diabetes Mellitus (Soegondo, et al, 2007).

According to the World Health Organization (WHO), patients with DM in Indonesia was the fourth after the United States, India, and China. Diabetes Mellitus

(DM) is a national problem for degenerative disease, which is a chronic disease that is recognized by the government of Indonesia as a health problem (Dipiro, et al, 2005). The prevalence of DM in Indonesia, in 1993-2007 ranged between 1.5 to 2.3%. The results of epidemiological studies in several provinces in Indonesia showed that an increase in prevalence from year to year. International Diabetes Federation (2007) stated that more than 20 years the population of Indonesia is 125 million and the assumption of the prevalence of diabetes of 4.6%. Along with the present population, estimated in 2020 there

will be some 178 million and the assumption of 4.6% prevalence of DM will be 8.2 million DM client (Soegondo, et al, 2007).

Diabetes Mellitus (DM) is a chronic disease that can not be cured and suffered for a lifetime. DM progression will continue to run even can cause death due to complications of either acute or chronic. Death can be caused by acute ketoacidosis and hypoglycemia while chronic complications such as macrovascular and microvascular complications so that it is important treatment on controlling blood sugar levels and prevent is the complications that can be done by means of pharmacological and non-pharmacological (Kartikasari, 2010).

Pharmacological treatment is the management of diabetes mellitus using chemical drugs such as addicted insulin, whereas the non pharmacological treatment is the right choice overcome DM because it does no harmful side effects to health, non-pharmacological treatment of this kind does not need costly expensive and easy to do. Widjadja (2009) stated that non-pharmacological treatment using traditional crops called medicinal plant families (TOGA). One of the plants that can be used in the treatment of diabetes mellitus is turmeric (*Curcuma domestica*).

Data according to IOT (Traditional Medicine Industries) and IKOT (Small Industries in Traditional Medicine) from 4.187 there are 40% people use turmeric as a

treatment (Leli, Rahmawati & Atik, 2011). The content of turmeric as a medicine called curcuminoid consisting of curcumin, desmetoksikumin bisdesmetoksikurkumin 10% and as much as 1-5%. Usefulness of turmeric is mostly done by the people of Indonesia, among others, as breast milk stimulant, bruises medications, diabetes mellitus, rheumatoid arthritis, as anti-inflammatory, hepatitis, anti-seizure drugs and external injuries. The plant has a bitter taste (except the sweet fruit flesh), neutral, anti-diarrhea, anti-pyretic, can stimulate the glands, and anti-diabetic. Besides, it is also useful as analgesic, anti-inflammatory, antioxidant, antimicrobial, cancer prevention, and lower levels of blood fats and cholesterol, as well as a blood purifier (Sina, 2012).

Pekanbaru City Health Department (2012) reported that Diabetes Mellitus is a chronic disease which are prevalent in the city of Pekanbaru. Based on a preliminary survey conducted by researchers by interviewing health workers in Puskesmas Sidomulyo that patients come for treatment or are patients who complain of hunger, thirst and more rapid urination. After a medical examination, known high blood glucose levels (Diabetes Mellitus experience). Based on the reported practice of family nursing profession in 2013 in Puskesmas Sidomulyo showed that the incidence of Diabetes Mellitus families is quite high, even to the extent of complications of hypertension and renal failure. According to

interviews with several families with Diabetes Mellitus in one of RW, it is known that they are not one of the people with Diabetes Mellitus who use decoction of turmeric as an alternative traditional medicines to control blood glucose levels.

Based on the above phenomenon, the question formula of this study is "Is there effectiveness Stew Turmeric In Decreased Blood Glucose Diabetes Mellitus Client?" as one way of the other nonpharmacological alternative treatment for patients with diabetes mellitus to ease the burden both in terms of side effects of drugs pharmacology and in economic terms.

The purpose of this study is to determine the effectiveness of therapy turmeric stew in a decrease in blood sugar levels Diabetes Mellitus clients in Puskesmas Sidomulyo.

METHODS

The study design is a form of design used in conducting the research procedure (Hidayat, 2007). This research is a quantitative research design used was a quasi-experimental model.. This design aims to determine the effect of an intervention to a group of clients DM. In this design, the experimental group were given intervention that begins with the measurement before intervention (pretest) and after the intervention (post-test) (Burn & Grove, 2009).

The number of respondents were 32 client who has DM. The research ethics guidelines that anonimity, beneficence and maleficence, respect for human dignity, and justice (Burn & Grove, 2009). Analysis of the data using univariate and bivariate test is independent simple t test. Data processing includes the steps of editing, coding, processing and cleaning.

RESULTS**Characteristics of Respondents**

Table 1.
Characteristics of respondents based on age, ethnic, gender, education, job, therapy of DM and Length of DM

Characteristics	Case Group		Control Group		Total	
	N	%	N	%	N	%
Age						
1. Adults	3	18,8	3	18,8	6	18,8
2. Elderly	13	81,2	13	81,2	26	81,2
Total	16	100	16	100	32	100
Ethnic						
1. Minang	13	81,2	12	75	25	78,15
2. Jawa	3	18,8	2	12,5	5	21,9
3. Melayu	0	0	2	12,5	2	12,5
Total	16	100	16	100	32	100
Gender						
1. Men	3	18,8	5	31,3	8	25
2. Woman	13	81,2	11	68,8	24	75
Total	32	100	32	100	32	100
Education						
1. Not in school	2	12,5	0	0	2	6,25
2. Primary School	6	37,5	6	37,5	12	37,5
3. Yunior High School	0	0	3	18,8	3	9,37
4. Senior High School	8	50	6	37,5	14	43,7
5. Bachelor	0	0	1	6,3	1	3,12
Total	16	100	16	100	32	100
Job						
1. Officer	1	6,3	0	0	1	3,12
2. Labour	0	0	4	25	4	12,5
3. Employment	5	31,3	4	25	9	28,12
4. Housewife	10	62,5	8	50	18	56,26
Total	16	100	16	100	32	100
Therapy of DM						
1. No	12	75	9	56,3	21	65,62
2. Yes	4	25	7	43,8	11	34,38
Total	16	100	16	100	32	100
Length of DM						
1. Newer	6	37,5	6	37,5	12	37,5
2. > 1 tahun	10	62,5	10	62,5	20	62,5
Total	16	100	16	100	32	100

Table 1 showed that the majority of respondents in the age distribution was 81.2% elderly, the majority of respondents (78.15%) were Minang ethnic, most gender respondents

were 75% female, education level of respondents mean that most of the high school is 43.7%, the majority of respondents worked as housewife 56.25%, the majority of

respondents to the treatment of diabetes treatment is never done as much as 65.62%, based on the length of DM were 37.5% .

Bivariate Analysis

Table 2

Mean distribution of respondents who had not taking intervention (control group) about turmeric stew (n = 16)

Control Group	Mean	SD	SE	P value	N
Pre	248,1	63,28	15,82	0,051	16
Post	275,6	64,57	16,14		

Mean distribution of respondents who had not taking turmeric stew intervention is about 248.13 g % with a standard deviation of 63.28 g% on before test. At the post intervention, mean of level blood sugar was 275.69 g% with a standard deviation of 64.57 g%. The values statistic is 0.051, it can be concluded there was no significant difference between level of the blood sugar in the control group between pre and post intervention.

Table 3

Mean distribution of respondents who taking intervention (case group) about turmeric stew (n = 16)

Case group	Mean	SD	SE	P value	N
Pre	256,13	73,5	18,37	0,000	16
post	188,69	57,02	14,25		

Mean distribution of respondents who before taking turmeric stew intervention is about 256.13 g % with a standard deviation of 73.5g% on before test. At the second measurement (post intervention), mean of level blood sugar was 188.69 g% with a standard deviation of 57.02g%. The values

statistic is 0.000, it can be concluded there was significant difference between level of the blood sugar in the control group between pre and post intervention.

Table 4.

Mean distribution of respondents who taking intervention (case group) about turmeric stew (n = 16)

Group	Mean	SD	SE	P value	N
Case	256,1	73,5	18,37	0,744	16
Control	248,1	63,28	15,82		

Based on table 4, the values statistic of case group and control group is 0.744, it can be concluded there was no significant difference between level of the blood sugar in the control and case group between pre and post intervention.

DISCUSSION

The results of this study about age of respondents who have DM was elderly (81.3%). This age has an influence of degraded physical, biological, and mentally. According to Nugroho (2008) explained that people with DM decreased pancreas to secrete insulin functioning.

The most sex of the respondents are women (75%). According to Meijer and Ametov et al (2010), diabetes mellitus with neuropathy is more common in females. DM clients with neuropathy are more women, the incidence of diabetic neuropathy rise with increasing age.

Based on the characteristics of the respondents, the majority of respondents had a high school education level for 14 people (43.7%). The education level of respondents did not affect the incidence of diabetes mellitus and education are not included as one that affects the development of diabetes mellitus (Yuntari, 2011).

Majority job of respondents was a housewives (56.26%). It is closely related to the sex of the respondents mostly women and is also one of the factors or healthy lifestyle habits are still lacking.

The results of the treatment characteristics of the respondents found the majority of DM client never treated as 65.62% (21 people). This is caused by the lack of understanding of the DM client and will be an important treatment for patients with diabetes to prevent further complications. Complications of DM can occur acutely and chronically, which occur several months or several years after suffering from Diabetes Mellitus and will also affect the functional status of the DM client (Yuntari, 2011)

Characteristics of respondents by the majority of the old client suffering from diabetes for 1 year as much as 37.5%. The age factor is one of the causes of problems that can affect DM decreased function of the body is lacking both physical, biological psychology.

DM client who never seek treatment and learned that a client suffering from

diabetes shows bahwas many do not're aware he suffered from a disease that is often called diabetes or diabetes. It is caused by several factors, including the level of knowledge, level of education, behavior, eating habits, proximity and exposure to resources. One of the most important for people with diabetes is controlling blood sugar levels, it is necessary to understand about the things that affect the control of blood sugar levels (Raudhati, 2013).

From the research, test T-test showed that in the case group were given a DM client herb turmeric in a decrease in blood glucose levels of diabetes mellitus client is no significant difference between the blood sugar levels in a group of cases the first measurement (pre) with a second measurement (post). Hadi et al (2011) stated that can be used to lower blood sugar levels (diabetes mellitus) is turmeric as much as 3 grams, 3 grams of leaf meniran etc. Where turmeric contains curcumin which can reduce insulin resistance. Because of these conditions, the content of glucose in the blood can be controlled so as to reduce the risk for diabetes.

According to the Journal of the American Chemical Society, turmeric contains a variety of antioxidants, antiviral, antibacterial, antifungal, anticarcinogenic, antimutagenic and anti-inflammatory. Turmeric also contains some nutrients such as, full of protein, fiber, niacin, vitamin C, vitamin E, vitamin K, sodium, potassium, calcium, copper, iron, magnesium and zinc.

Because of the nutritional content, which makes turmeric has many health benefits and is often used for the treatment of various diseases. In a 2008 study the researchers also found that turmeric may also help the inflammation associated with obesity causes or risk of type 2 DM client.

According Katno (2008) in a study of Ahmad (2012) Excess use of medicinal plants and traditional medicine among other side effects are relatively small when digunakan precisely, the components in the support material has side effects, on the medicinal plants have several pharmacological effects, as well as more appropriate for degenerative metabolic diseases. Weaknesses in its use among other pharmacological effects are weak, the raw material has not been standardized and is hygroscopic and volumines, clinical trials have not been performed and easily contaminated with various types of micro-organisms.

CONCLUSION

This study showed that the majority of respondents in the age distribution was 81.2% elderly, the majority of respondents (78.15%) were Minang ethnic, most gender respondents were 75% female, education level of respondents mean that most of the high school is 43.7%, the majority of respondents worked as housewife 56.25%, the majority of respondents to the treatment of diabetes treatment is never done as much as 65.62%,

based on the length of DM were 37.5% . there was no significant difference between level of the blood sugar in the control and case group between pre and post intervention.

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