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Combination of Traditional Medicine and Synthesis Medicine Therapy for Hypertension and Diabetic Patients

Kombinasi Pengobatan Tradisional dan Terapi Pengobatan Sintesis untuk Penderita Hipertensi dan Diabetik

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ABSTRACT

Hypertension and diabetic are interrelated diseases affect atherosclerosis. This study aims to analyze the combination of traditional medicines and synthetic medicine with a job background for patients with hypertension and diabetic. Case-control study method retrieves patient data with medical records. Sampling was done with a purposive sampling technique of 30 respondents conducted in March-June at Labuhan Lombok Health Center. The results showed the percentage of diabetic patients was 26.67% for men and 73.33% for women with a background of 60% of traders, 20% of farmers, 13.3% of fishermen, and housewives of 6.7%. Furthermore, for hypertension patients, the percentage was 13.33% for men and 86.67% for women with a background of 40% of traders, 53.3% for farmers, 6.7% for fishermen. For traditional medicine used are *Moringa oleifera* L., *Cucumis sativus* L., *jamu gendong*, *Averrhoa bilimbi* L., *Curcuma longa* L., and *Artocarpus camansi* Blanco. Based on this, the risk factors for women are more generous than for men, and the use of a combination of drugs gives positive results in improving health.

Keywords: a combination of therapy, traditional medicine, synthetic medicine, work background

ABSTRAK

Hipertensi dan diabetes merupakan penyakit yang saling terkait mempengaruhi aterosklerosis. Penelitian ini bertujuan untuk menganalisis kombinasi obat tradisional dan obat sintetik dengan latar belakang pekerjaan pada pasien hipertensi dan diabetes. Metode case control mengambil data pasien dengan rekam medis. Pengambilan sampel dilakukan dengan teknik purposive sampling dengan 30 responden, yang dilakukan

pada bulan Maret-Juni di Puskesmas Labuhan Lombok. Hasil penelitian menunjukkan persentase penderita diabetes adalah 26,67% pada laki-laki dan 73,33% pada perempuan dengan latar belakang pedagang sebanyak 60%, petani sebanyak 20%, nelayan sebanyak 13,3%, dan ibu rumah tangga sebanyak 6,7%. Selanjutnya, untuk penderita hipertensi persentasenya adalah 13,33% pada laki-laki dan 86,67% pada perempuan dengan latar belakang pedagang sebanyak 40%, petani sebanyak 53,3%, dan nelayan sebanyak 6,7%. Obat tradisional yang digunakan adalah daun kelor, ketimun, jamu gendong, belimbing wuluh, temulawak, kunyit, dan daun keluwih. Berdasarkan hal tersebut, faktor risiko pada wanita lebih besar dibandingkan pria, dan penggunaan kombinasi obat memberikan hasil yang positif dalam peningkatan kesehatan.

***Kata kunci**: kombinasi terapi, latar belakang pekerjaan, pengobatan sintetik, pengobatan tradisional*

Introduction

Diabetes mellitus type 2 and hypertension are the common diseases appearing with an increase of age and trigger to a heart attack (Ferrannini and Cushman, 2012). They have been pandemic disease in the world. A billion people suffered from them and caused 7,1 million of fatality a year. The estimated number of people in 2030 reaches 366 million patients. The increasing number of the disease closely related to ageing, obesity, salt intake, lifestyle and social, economic alteration (Wei et al., 2011). Various attempts had been taken to decrease of death caused by diabetes mellitus type 2 and hypertension, ranging from preventive and curative effort using available drugs. However, the high mortality rate caused by them needs to conduct an innovation by herbal medicine to reduce it.

Indonesia is a country that produces medicinal plants and high biodiversity. Indonesia's tropical forests grow around 3,689 species in which are medicinal plants. That of medicinal plants, only 283 species of medicinal plants have been used in the traditional medicine industry (Djauhariya and Hernani, 2004). Every society group have been utilized the plants for their life as herbal medicine, housewifery, wicker crafts and basic needs (Tamin and Arbain, 1995).

According to Zhuo Chen *et al*., 2015 entitled *Chinese Herbal Medicine Combined with Conventional Therapy for Blood Pressure Variability in Hypertension Patient: A Systematic Review of Randomized Controlled Trials* suggested that combination usage of herbs with conventional medicine has shown a beneficial effect on reducing the blood pressure to patients (Chen et al., 2015). Based on Cecil Boston et al., 2019, in "*Comparison and Effectiveness of Complementary and Alternative Medicine as against Conventional Medicine in the Treatment and Management of Type 2 Diabetes*" suggested that people using herbs as an

adjunct therapy found controlled and better glycemic rates (Boston et al., 2019).

Method

Design

This research design is conducted by case-control, and sampling is taken with medical records and patient interviews.

Participants

Exclusion criteria are outpatients at Labuhan Lombok Public Health Centre in March-June 2020. the inclusion criteria are diabetes outpatient and hypertension patients at Labuhan Lombok public health centre in March-June 2020. The number of patients is 36 patients included 15 diabetes outpatients and 15 hypertension patients as inclusion criteria with a range of age 38-80 years old.

Data Collection

Data is collected by using medical record data of outpatients at Labuhan Lombok Public Health Centre, and is interviewed the use of companion drugs.

Data Analysis

Data analysis is used based on the type of therapy, gender and occupation..

Results and Discussion

This research used a non-experimental design with a case-control method and a total of 30 diagnosed adult and elderly patients diagnosed with hypertension and diabetes mellitus (DM) at Labuhan Lombok public health centre. Sampling is conducted for 3 months from March to June 2020 by collecting medical data records and interviewing patients. Hypertension and diabetes mellitus patients are grouped based on.

The group of hypertension and diabetes mellitus patients used in the experiment were 15 subjects each of an initial diagnosis of stage 1 hypertension evidenced by the blood pressure value and measurement of time blood sugar levels at the time of the initial examination.

From the results of the research, it was shown that in hypertension and DM patient groups, respectively, the incidence rate was highest in female patients, namely 73% and 67%, this can be seen in Figure 1.

The WHO data shows that the incidence of hypertension and diabetes mellitus occurs in the lower-middle-income group or the lower and middle-income group. Indonesia is a developing country which consists of many islands. Therefore, the types of livelihoods are quite diverse, starting from government employees, fishermen, farmers/farm labourers, or entrepreneurs. 53% of patients in the Hypertension group had their livelihoods as farmers. In the diabetes mellitus group, 60% worked as traders. Livelihood data or activities carried out by the Hypertension and diabetes mellitus patient groups are shown in Figure 2.

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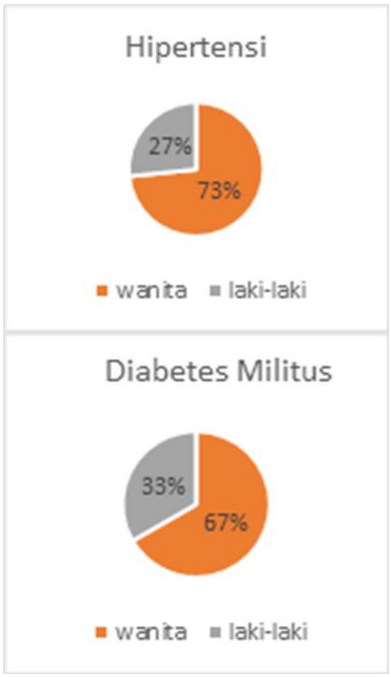

Figure 1. Prevalence of incidence of hypertension and DM based on gender

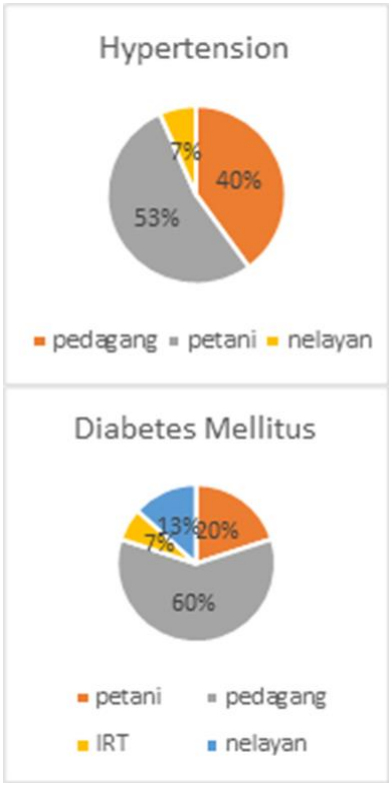

Figure 2. Livelihood data of patients

In the hypertensive group, the patient received an Angiotensin-converting enzyme inhibitor (ACE I) or Calcium Channel Blocker (CCB) drug. Eighty percent (80%) of doctors prescribed Captopril as a hypertension therapy. Therapy data can be seen in Figure 3. From the patient's age data and the value of the patient's initial blood pressure data show that the drug selection given is correct, namely the choice of single therapy or a combination of the diuretic thiazide drug class, or consider the ACEI, ARB, beta-blocker, CCB or combination hypertension drugs for patients with diagnosis stage 1 hypertension (JNC 7, 2003). The ACE inhibitor class of drugs controls blood pressure by inhibiting the angiotensin-converting enzyme, which converts Angiotensin I to Angiotensin II, this inhibition will result in inhibition of the formation of angiotensin II which results in vasodilation. The presence of angiotensin II commonly affects AT receptor activity. AT activity will cause the release of the hormone aldosterone, and vascular smooth muscle will cause vasoconstriction (Hadyanto, 200). In comparison, the CCB class of drugs is a drug that is recommended for elderly patients. The mechanism of this group is to inhibit the influx of calcium ions on calcium canal in the heart muscle and blood vessels (Endro, 2012).

In the diabetes mellitus group, patients received quite a variety of treatments, some patients received single treatment and also received 2 drugs combination therapy. Types of

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therapy for DM patients are shown in Figure 4. Forty percent (40%) of patients received combination therapy of 2 drugs, namely metformin and glimepiride. Metformin is a biguanide anti-diabetic drug category. The biguanide group has the activity to reduce blood sugar levels by improving sensitivity in the periphery. Still, this drug class is not as strong as other groups so that its administration is often given in combination with different drug classes. The high percentage of use of metformin-glimepiride variety is associated with a better control effect on lowering blood sugar levels with lower hypoglycemic effects (González-Ortiz et al., 2008). Also, administration of the glimepiride-metformin combination is more effective in controlling blood sugar levels than metformin titration (Kim et al., 2014).

In treating patients who received hypertension and diabetes mellitus therapy, doctor controlled routinely at the public health centre before their medicine runs out. Besides, interview results conducted to patients, information was obtained that patients routinely use medicinal plants as combination/companion therapy. Generally, hypertensive patients consume bilimbi, cucumber, moringa leaves, and folk medicine with a frequency of three times a day. Whereas for diabetes mellitus patients drink kluwih leaf or breadfruit leaf decoction and squeeze of grated turmeric water with a frequency of use three times a day. The companion therapy carried out by the community is expected to have a beneficial effect in controlling blood pressure levels and blood sugar levels of patients—this therapy due to the presence of beneficial compounds in every herbal plant employed.

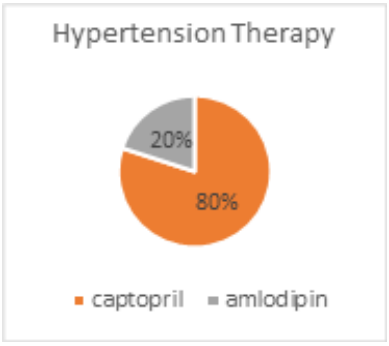

Figure 3. Types of hypertension therapy received by patients

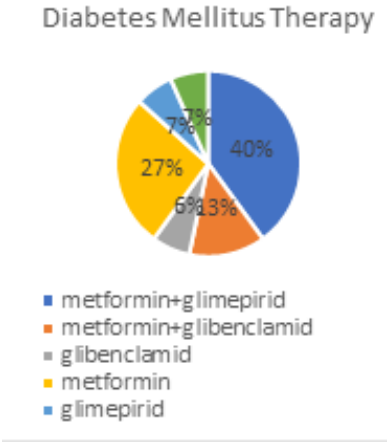

Figure 4. Types of diabetes mellitus therapy received by patients

Cucumber is believed to able to lower blood pressure. The study conducted by Kharisna (2012) suggested that cucumbers contain potassium and calcium. Potassium plays a role to stabilize electrolyte in the body through pumping sodium and potassium (Dendy, 2012). Low levels of potassium in the blood will disturb the stability of

potassium-sodium and increase sodium levels. Enhancement levels of sodium in the blood will lead to calcium deposition in bones and joints, thereby increasing the workload of the heart and collecting sodium in the blood vessels. This deposition will cause the walls of blood vessels to be eroded and peeled off, leading blockage of blood flow and increasing the risk of hypertension, so that by consuming cucumber, it can be avoided. Research conducted by Mardiati Barus (2019) concluded that there were differences in the mean blood pressure of hypertensive patients before and after given cucumber juice therapy. It suggested that cucumber is effective in lowering blood pressure in hypertensive patients (Dendy, 2012). Another plant that is believed to be able to lower blood pressure is bilimbi. The investigation conducted by Retno Safitri (2015) concluded that giving bilimbi juice at a dose of 2 ml/200gram of the bodyweight of the rats for 14 days. It was able to significantly reduce systolic blood pressure (Safitri and Candra, 2015) Another plant that can be used by people in lowering blood pressure is Moringa leaves.

Moringa leaves are a plant that is often consumed by Indonesian people as a daily vegetable. Based on the results of an investigation conducted by Etri Yanti (2018), there are differences in systolic blood pressure before and after treated with moringa leaf boiled water. The average systolic blood pressure before moringa leaf decoction was 153.40 mmHg, and the systolic blood pressure after moringa leaf boiled water was 129.56 mmHg (Yanti and Nofia, 2018).

Kluwih leaves contain flavonoid compounds, namely artocarpin which has a hypoglycemic effect on the mechanism of action to repair pancreatic β cells (Eryuda and Soleha, 2016) and grated turmeric can reduce blood sugar levels but not as good as glibenclamide (Setiawan et al., 2012) and folk medicine with tamarind pulp-turmeric can repair islet of Langerhans pancreatic in mice (Andrie et al., 2014).

Conclusion

Traditional medicinal plants used as companion therapy for hypertension patients at Labuhan Lombok public health centre are cucumber, starfruit, moringa leaves and jamu gendong. In contrast, diabetes patients used companion therapy, such as kluwih leaves and turmeric rhizome. The use of those medicinal plants as additional therapy is effective in lowering blood pressure and controlling the patient's blood sugar levels.

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Reference

Ferrannini E and Cushman WC, "Diabetes and hypertension: the

bad companions," *Lancet*, vol. 380, pp. 601–610, 2012.

G. S. Wei *et al.*, "Blood pressure and the risk of developing diabetes in African Americans and Whites: Aric, Cardia, and the Framingham Heart Study," *Sch. Med. Sch. Public Heal.*, vol. 34, no. 4, pp. 873–879, 2011.

E. Djauhariya and Hernani, *Gulma Berkhasiat Obat*. Jakarta: Seri Agrisehat, 2004.

R. Tamin and D. Arbain, "Biodiversity dan Survey Etnobotani. Makalah LokaKarya Isolasi Senyawa Berkhasiat," Padang, 1995.

Z. Chen, L. Wang, G. Yang, H. Xu, and J. Liu, "Chinese Herbal Medicine Combined with Conventional Therapy for Blood Pressure Variability in Hypertension Patients: A Systematic Review of Randomized Controlled Trials: Evidence-based Complementary and Alternative Medicine," 2015.

C. Boston *et al.*, "Effectiveness of Complementary and Alternative Medicine as against Conventional Medicine in the Treatment and Management of Type 2 Diabetes," *J. Complement. Altern. Med. Res.*, vol. 7, no. 2, pp. 1–8, 2019.

L. Hadyanto, *Farmakologi Kardiovaskular Mekanisme dan Aplikasi Klinis Edisi 2*. PT Sofmedia, 2009.

N. A. Endro, *Farmakologi Obat-obat penting dalam Pembelajaran Ilmu Frmasi dan Dunia Kesehatan*. Pustaka Pelajar, 2012.

M. González-Ortiz, F. Guerrero-Romero, R. Violante-Ortiz, and N. Wacher-Rodarte, "Efficacy of glimepiride/metformin combination versus glibenclamide/metformin in patients with uncontrolled type 2 diabetes mellitus," *J. Diabetes Complications*, vol. 23, no. 6, pp. 376–9, 2008.

H. Kim *et al.*, "Efficacy of glimepiride/metformin fixed-dose combination vs metformin up-titration in type 2 diabetic patients inadequately controlled on low-dose metformin monotherapy: A randomized, open-label, parallel-group, multicenter study in Korea," *J Diabetes Investig*, vol. 5, no. 6, pp. 701–708, 2014.

K. and Dendy, "Efektifitas Konsumsi Jus Mentimun terhadap Penurunan Tekanan Darah pada Pasien Hipertensi," *J. Mutiara Ners*, 2012.

R. Safitri and A. Candra, "Pengaruh Pemberian Sari buah Belimbing Wuluh (*Averrhoa bilimbi* L) Terhadap Tekanan Darah Sistolik Tikus Sprague Dawley," *J. Nutr. Coll.*, vol. 4, no. 2, pp. 541–546, 2015.

E. Yanti and V. R. Nofia, "Pemberian Rebusan Daun Kelor (*Moringa olifiera*) Terhadap Tekanan Darah pada Penderita Hipertensi," *J. ilmu Kesehat.*, vol. 3, no. 1, 2018.

F. Eryuda and T. U. Soleha, "Ekstrak Daun Kluwih (*Artocarpus camansi*) Dalam Menurunkan Kadar Glukosa Darah Pada Penderita Diabetes Melitus," *MAJORITY*, vol. 5, no. 4, pp. 71–75, 2016.

S. Setiawan, E. Yulinah, I. K. Adnyana, H. Permana, and P. Sudjana, “Efek Antidiabetes Kombinasi Ekstrak Bawang Putih (*Allium sativum* Linn.) dan Rimpang Kunyit (*Curcumma domestica* Val.) dengan Pembanding Glibenklamid pada Penderita Diabetes Melitus Tipe 2,” *MKB*, vol. 43, no. 1, 2011.

M. Andrie, W. Taurinaand, and R. Ayunda, "Activities test of 'jamu gendong kunyit asam' (*Curcuma domestica* Val.; *Tamarindus indica* L.) as an anti-diabetic in streptozotocin-induced rats," *Tradit. Med. J.*, vol. 19, no. 2, pp. 95–102, 2014.