The Effect of Providing Health Education on Knowledge About Cinnamon for Reducing Blood Sugar Levels in Diabetes Mellitus Sufferers in Sumengko Village Sukomoro District Nganjuk Regency

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ABSTRACT

Diabetes Mellitus is a chronic disease characterized by excessive blood sugar levels which can result in long-term complications. One non-pharmacological treatment with herbal plants is cinnamon. In general, many people do not know how to understand the use of medicinal plants as anti-diabetics. This research aims to determine the effect of providing health education on knowledge about cinnamon for reducing blood sugar levels in diabetes mellitus sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency.

The design of this research was pre-experimental with a pre-posttest design with one group (One Group Pre-Post Test Design) which was carried out on September 5 2023 in Sumengko Village, Sukomoro District, Nganjuk Regency. Population of 68 people suffering from Diabetes Mellitus, purposive sampling technique. The sample in this study was 54 respondents. The independent variable is Health Education about cinnamon which is measured using SAP Knowledge about cinnamon for reducing blood sugar levels. The dependent variable is knowledge about cinnamon for reducing sugar levels in diabetes mellitus sufferers using the Cinnamon Knowledge questionnaire. Statistical tests use Wilcoxon ρ-value = 0.000, ρ-value $\leq$ a (0.05).

The results obtained from 54 respondents before providing Health Education, almost all of it had insufficient knowledge, 44 respondents (81.5%). After being given Health Education, the majority had good knowledge, 32 respondents (59.3%). Wilcoxon statistical test results ρ-value = 0.000, ρ-value $\leq$ a (0.05). So that Ha is accepted and there is an effect of providing Health Education on Knowledge about Cinnamon for Reducing Blood Sugar Levels in Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency.
Providing health education can increase the knowledge of Diabetes Mellitus sufferers about the use of cinnamon to control blood glucose levels.

Keywords : Cinnamon, Diabetes Mellitus, Health Education and Knowledge

INTRODUCTION

Diabetes merupakan penyakit kronis yang ditandai dengan kadar gula darah berlebih yang dapat

mengakibatkan komplikasi jangka panjang. Diabetes melitus bisa diatasi dengan pengobatan alami dengan tanaman berkhasiat obat (Wijayakusuma H, 2008). Salah satu tanaman herbal yang memiliki khasiat menurunkan kadar glukosa darah atau antidiabetes adalah kayu manis dengan bahasa latin *Cinnamomum burmanni* (Sari et al., 2023). Terdapat berbagai kandungan senyawa pada tanaman kayu manis. Salah satu golongan senyawa yang terdapat pada kayu manis adalah flavonoid. Flavonoid merupakan senyawa organik alami yang terdapat pada akar, daun, kulit kayu, benang sari, bunga, buah dan biji buah tanaman (Nugrahaningtyas,.dkk,2005). Cara kerja senyawa flavonoid telah terbukti memberikan efek menguntungkan dalam melawan penyakit Diabetes mellitus, baik melalui kemampuan mengontrol kadar gula darah serta mengoptimalkan kerja organ pankreas dengan meningkatkan sensitifitas sel beta pankreas agar dapat menghasilkan hormon insulin yang dibutuhkan untuk mengatur kadar glukosa darah dalam tubuh (Indrawati,.dkk, 2013).

Organisasi Internasional Diabetes memperkirakan setidaknya terdapat 463 juta orang pada usia 20-79 tahun di dunia menderita diabetes pada tahun 2019 atau setara dengan angka prevalensi sebesar 9,3% dari total penduduk pada usia yang sama. Prevalensi diabetes melitus menurut hasil pemeriksaan gula darah meningkat dari 6,9% pada 2013 menjadi 8,5% pada tahun 2018. Angka ini menunjukkan bahwa baru sekitar 25% penderita diabetes yang mengetahui bahwa dirinya menderita diabetes. Jawa Timur berada pada urutan kelima provinsi di Indonesia dengan prevalensi diabetes mellitus tertinggi mencapai 2,6% di tahun 2018 meningkat dari tahun 2013 sebesar 2,1%. Sedangkan di Jawa Timur, prevalensi diabetes mellitus berada pada kisaran 1,25% dari seluruh jumlah penduduk. Data dari Riskesdas Jawa timur jumlah prevalensi penderita DM di Nganjuk sebesar 1,7% dari total penduduk 1,046 juta jiwa di kab. Nganjuk (M.Taukhid, E. N. Aini, 2018).

Pengetahuan atau kognitif merupakan domain yang sangat penting dalam membentuk tindakan seseorang (Notoatmodjo, 2012). Menurut Budiman dan Riyanto (2013) Kurangnya pengetahuan dipengaruhi oleh tingkat pendidikan,infomasi/media,sosial budaya,ekonomi,lingkungan, pengalaman serta usia. Pada umumnya banyak Masyarakat yang belum mengetahui bagaimana pemahaman tentang pemanfaatan tanaman obat sebagai antidiabetes (Ida Nusfaroh, 2020). Hal ini di dasarkan pada pengetahuan umum masyarakat tentang penggunaan tumbuhan sebagai alternatif pengobatan yang sesuai karena di yakini tidak memiliki efek samping dan sudah di gunakan secara turun temurun (Mukminah & Bayu Indradi 2021). Menggunakan obat herbal memiliki banyak keunggulan. Salah satu jenis tanaman obat yang efektif sebagai terapi pengobatan diabetes dalam Formularium Ramuan Obat Tradisional Indonesia (FROTI) yakni kayu manis (Ida Nusfaroh, 2020).

METHODS

Penelitian ini menggunakan desain penelitian *Pra eksperimental* dengan rancangan *pra-pascates* dalam satu kelompok (*one-group pre-post test design)* yaitu mengungkapkan hubungan sebab akibat dengan cara melibatkan satu kelompok subjek. Kelompok subjek diobservasi sebelum dilakukan intervensi, kemudian diobservasi lagi setelah intervensi. Dalam penelitian ini akan dibandingkan pengetahuan tentang kayu manis untuk penurunan kadar gula darah pada penderita Diabetes Mellitus di Desa Sumengko Kecamatan Sukomoro Kabupaten Nganjuk.

RESULTS

Table 1. Characteristics of respondents based on gender in diabetes mellitus respondents

No	Category	Frequency	Percentage
1	Male	9	17
2	Female	45	83
	Amount	**54**	**100**

Based on table 1, it shows that of the 54 respondents, the majority of respondents werefemale, 45 respondents (83%)

Table 2. Characteristics of respondents based on age in diabetes mellitus respondents

No	Category	Frequency	Percentage
1	20 - 30 year	3	5,5
2	31 - 40 year	25	46,3
3	> 41 year	26	48,2
	Amount	**54**	**100**

Based on table 2, it shows that of the 54 respondents, almost half of the respondents were aged > 41 years, with 26 respondents (48,2%).

Table 3. Characteristics of respondents based on education in diabetes mellitus respondents

No	Category	Frequency	Percentage
1	Elementary school	10	18,5
2	Junior high school	18	33,3
3	Senior high school	19	35,2
4	Undergraduate	7	13
	Amount	**54**	**100**

Based on table 3, it shows that of the 97 respondents, almost half of the respondents had a high school education, 42 respondents (43%).

Table 4. Frequency Distribution of Knowledge About Cinnamon for Reducing Blood Sugar Levels Before Providing Health Education to Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency

No.	Knowledge	Frequency	Percentage
1.	Not enough	44	81.5

2.	Enough	5	9.3
3.	Good	5	9.3
	Amount	**54**	**100**

The table above shows that of the 54 respondents, almost all of them had insufficient knowledge, 44 respondents (81.5%).

Table 5. Frequency Distribution of Knowledge About Cinnamon for Reducing Blood Sugar Levels After Providing Health Education to Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency

No.	Knowledge	Frekuensi (*f*)	Persentase (*%*)
1.	Not enough	0	0
2.	Enough	22	40,7
3.	Good	32	59,3
	Amount	**54**	**100**

The table above shows that of the 54 respondents, the majority had good knowledge, 32 respondents (59.3%).

Table 6. Cross Tabulation of the Effect of Health Education on Knowledge About Cinnamon for Reducing Blood Sugar Levels in Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency

No	Pengetahuan Tentang Kayu Manis Untuk Penurunan Kadar Gula Darah	Sebelum Pemberian *Health Education*		Setelah Pemberian *Health Education*	
		f	%	*f*	%
1.	Not enough	44	81.5	8	14.8
2.	Enough	5	9.3	14	25.9
3.	Good	5	9.3	32	59.3
	Amount	**54**	**100**	**54**	**100**
ρ (value) = 0.001, ρ (value) $\leq \alpha = 0.05$					

Based on the known results of the Wilcoxon Signed Ranks Test statistical test, it was found that ρ (value) = 0.001 $\leq$ α = 0.05, which means H_a was accepted and there was an influence of health education on knowledge about cinnamon for reducing blood sugar levels in diabetes mellitus sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency.

DISCUSSION

1. **Knowledge about Cinnamon for Reducing Blood Sugar Levels Before Providing Health Education to Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency**

    Based on the research results in table 4.1, it shows that knowledge about cinnamon for reducing blood sugar levels before providing health education to diabetes mellitus sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency, of the 54 respondents, almost all of them had low knowledge, 44 respondents (81.5%). Of the 44 respondents who had less knowledge, almost half had junior high school education, namely 17 respondents (38.6%) (p value = 0.000) and almost half had suffered from diabetes mellitus for 1 year, namely 19 respondents (43.1%) (p value = 0.025). So that knowledge about cinnamon for reducing blood sugar levels before providing health education to diabetes mellitus sufferers is significantly influenced by education and the length of time they suffer from diabetes mellitus.

    Knowledge or cognitive is a very important domain in shaping a person's actions (Notoatmodjo, 2012). Lack of knowledge is influenced by level of education and length of time suffering from diabetes mellitus. The higher the level of education pursued, the faster the individual will receive and understand the information obtained (Budiman and A., 2013). Patients who suffer from DM for longer will be better able to understand the conditions they feel, both in terms of physical, psychological, social relationships and the environment. This understanding arises because the patient already knows and has more experience with the disease, so it will encourage the patient to be better able to anticipate emergencies or things that might happen to the patient someday (Irfan and Wibowo, 2015) in (Permana, 2017).

    The explanation above is in harmony between facts and theory. Facts in the field show that almost half of them have junior high school education and almost half have a duration of suffering from diabetes mellitus of 1 year with low knowledge. Someone who has a lower level of education also has lower knowledge, including knowledge in health aspects, namely the use of cinnamon to lower blood sugar levels. Most human knowledge is obtained from experience, in this study, namely the length or duration of suffering from diabetes mellitus. This is possible because respondents who have suffered from diabetes mellitus for 1 year do not yet have a better way of coping or adapting mechanisms to the condition of their disease.

2. **Knowledge about Cinnamon for Reducing Blood Sugar Levels After Providing Health Education to Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency**

    Based on the research results in table 4.2, it shows that knowledge about cinnamon for reducing blood sugar levels after providing health education to diabetes mellitus sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency, of the 54 respondents, the majority had high knowledge, 32 respondents (59.3%). Of the 32 respondents who had good knowledge, almost half had junior high school education, namely 14 respondents (43.6%) (p value = 0.014), most of them had hereditary diabetes mellitus, namely 20 respondents (62.5%) (p value = 0.004), and almost half 18 respondents (56.2%) had a long history of suffering from diabetes mellitus (p value = 0.000). So that knowledge about cinnamon for reducing blood sugar levels after providing health education to diabetes mellitus sufferers is significantly influenced by education, hereditary diabetes mellitus, and length of time suffering from diabetes mellitus.

    This education influences a person's way of thinking, acting and making decisions when carrying out an action. This is in accordance with the opinion expressed by Fatmiyati (2019) who stated that the more often someone receives information, the higher the person's level of knowledge about that information. Notoatmodjo (2014) states that the factor that has the biggest influence on

knowledge is education, because people with higher education can provide a more rational response to the information they receive and will think about the extent of the benefits a person gives to the development of others in achieving certain goals. . Diabetes is also related to hereditary factors. Talking about heredity (genetics), genes are factors that determine the inheritance of certain traits from a person to their offspring. However, the increased risk does not mean that the person will definitely suffer from diabetes. Heredity is a causal factor in the risk of Diabetes Mellitus, this condition will be exacerbated by a bad lifestyle (Sutanto, 2015). The severity of Diabetes is a factor that greatly influences the occurrence of complications in Diabetes Mellitus from the duration of the disease or the length of suffering. However, if long suffering is balanced with a healthy lifestyle, a good quality of life will be created, so that long-term complications can be prevented or postponed (Nur Lailatul L. 2017). The duration of suffering from diabetes mellitus is closely related to knowledge. Because diabetes mellitus sufferers tend to look for information about the disease, how to reduce the risk, and how to lower their sugar levels (Kilkenny et al., 2017).

The explanation above is in harmony between facts and theory. Facts in the field show that the majority have hereditary diabetes mellitus and almost half of them have a duration of suffering from diabetes mellitus ≥ 3 years with high knowledge. This is possible if the respondent has experience and is able to adapt better to the condition of the disease. In the description above, there is also a lack of harmony between facts and theory, a lack of harmony between facts and theory. Facts in the field show that junior high school education is in the good knowledge category and in theory it is stated that the more often someone receives information, the higher the level of someone's knowledge about the information. This is possible because researchers have provided health education about cinnamon for reducing blood sugar levels, given once for 30 minutes, which can change respondents' knowledge for the better.

3. **The Effect of Health Education on Knowledge About Cinnamon for Reducing Blood Sugar Levels in Diabetes Mellitus Sufferers in Sumengko Village, Sukomoro District, Nganjuk Regency**

Based on table 4.3, the results of the Wilcoxon Signed Ranks Test statistical test show that ρ (value) = $0.000 \leq \alpha = 0.05$, which means H_a is accepted and there is an influence of health education on knowledge about cinnamon for reducing blood sugar levels in diabetes mellitus sufferers in Sumengko Village, Sukomoro District, Regency. Nganjuk.

Education is very important to increase one's knowledge. In the management of diabetes mellitus there are five pillars including diet, exercise, monitoring, therapy and education. Education is the most important thing to be able to add information for someone to act. Health education is a process of change in humans that is related to achieving individual or community health goals. Education can increase a person's knowledge which can be used to change attitudes or simply increase insight. Knowledge is closely related to education, where education is one of the basic needs for self-development. According to WHO (1954), the aim of health education is to change the behavior of people or society from unhealthy behavior to healthy behavior. So it can be concluded that health education can change a person's level of knowledge. Knowledge is the result of "knowing" which occurs after someone senses a particular object. These senses include sight, hearing, smell, taste and touch. Knowledge is important to shape behavior. Likewise, preventing diabetes mellitus requires knowledge about cinnamon to reduce blood sugar levels in the form of understanding cinnamon, benefits of cinnamon, uses of cinnamon, understanding (comprehension), special contents of cinnamon, and side effects of consuming cinnamon. One source of knowledge can be obtained through health promotion. In general, many people do not know how to understand the use of medicinal plants as anti-diabetics (Ida Musfaroh 2020). This is based on general public knowledge about the use of plants as suitable alternative treatments because they are believed to have no side effects and have been used for generations (Mukminah & Bayu Indradi 2021). Using herbal medicine has many advantages. One type

of medicinal plant that is effective as a diabetes treatment therapy in the Indonesian Traditional Medicine Formulary (FROTI) is cinnamon (Ida Musfaroh 2020).

The description above shows that providing health education can increase patient knowledge about healthy lifestyles and efforts to control blood glucose levels. The more often a person receives information, the higher the person's level of knowledge about that information. Knowledge is a very important domain for the formation of a person's behavior.

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