TAHUN 2024 *[MANUJU: MALAHAYATI NURSING JOURNAL, ISSN CETAK: 2655-2728 ISSN ONLINE: 2655-4712, VOLUME 6 NOMOR 11 TAHUN 2024] HAL 4655-4663*

THE EFFECTIVENESS OF ALKALINE WATER CONSUMPTION AND WALKING EXERCISE ON THE QUALITY OF LIFE OF DIABETES MELLITUS PATIENTS AT THE PRATAMA YAKRI CLINIC

Malik Ibrahim[1*], Tri Mochartini[2]

[1-2]Sekolah Tinggi Ilmu Kesehatan Abdi Nusantara

Email Korespondensi: aceibrahim92@gmail.com

Disubmit: 09 Februari 2024 Diterima: 29 Oktober 2024 Diterbitkan: 01 November 2024
Doi: https://doi.org/10.33024/mnj.v6i11.14252

ABSTRACT

In 2022, the International Diabetes Federation (IDF) recorded that 537 million adults (aged 20-79 years) or 1 in 10 people live with diabetes worldwide. Diabetes also causes 6.7 million deaths or 1 every 5 seconds. China is the country with the largest number of diabetes sufferers in the world, 140.87 million people. Furthermore, India is recorded as having 74.19 million people with diabetes, Pakistan 32.96 million, and the United States 32.22 million. Indonesia is in fifth position with the number of diabetes sufferers of 19.47 million. A person suffering from Diabetes Mellitus will have a disrupted quality of life. Apart from walking, non-pharmacological treatment that can be done by type 2 diabetes mellitus sufferers is by consuming alkaline water with a PH > 8. To determine the effectiveness of consuming alkaline water and walking exercise on the quality of life of diabetes mellitus patients. Quasi experiment with a posttest group design. The sample in this study was all 40 diabetes mellitus patients at the Pratama Yakri Clinic in Jakarta in December 2023. The sampling technique uses total sampling. The majority of respondents in the intervention group had good quality of life (70.0%), in the majority group their quality of life was very poor (75.0%). Alkaline water consumption and walking exercise are effective in improving the quality of life of diabetes mellitus patients (p value 0.000). Consuming alkaline water and walking exercise are effective in improving the quality of life of diabetes mellitus patients. It is hoped that diabetes mellitus sufferers will carry out activities such as walking and consuming alkaline water to improve their quality of life.

Keywords: Walking Exercise, Alkaline Water, Diabetes Mellitus, Quality Life

INTRODUCTION

Diabetes is a chronic metabolic disease characterized by elevated blood glucose (or blood sugar) levels, which over time causes serious damage to the heart, blood vessels, eyes, kidneys and nerves. The most common is type 2 diabetes, usually occurring in adults, which occurs when the body becomes resistant to insulin or does not produce enough insulin. In the last 3 decades, the prevalence of type 2 diabetes has increased dramatically in countries at all income levels. Type 1 diabetes, formerly known as juvenile diabetes or insulin-dependent diabetes, is a chronic condition in which the pancreas produces little or no insulin. Approximately 422 million

people worldwide suffer from diabetes, the majority living in low- and middle-income countries, and 1.5 million deaths are caused directly by diabetes each year. The number of cases and prevalence of diabetes has continued to increase over the last few decades (WHO, 2022).

In 2022, the International Diabetes Federation (IDF) recorded that 537 million adults (aged 20-79 years) or 1 in 10 people live with diabetes worldwide. Diabetes also causes 6.7 million deaths or 1 every 5 seconds. China is the country with the largest number of adults with diabetes in the world, with 140.87 million Chinese people living with diabetes in 2022. Furthermore, India is recorded as having 74.19 million people with diabetes, Pakistan 32.96 million, and the United States 32.22 million . Indonesia is in fifth position with the number of diabetes sufferers of 19.47 million. With a population of 179.72 million, this means the prevalence of diabetes in Indonesia is 10.6%. IDF notes that 4 out of 5 people with diabetes (81%) live in low and middle income countries. This also makes the IDF estimate that there are still 44% of adults with diabetes who have not been diagnosed (IDF, 2022).

Based on the International Diabetes Federation (IDF) report, the number of type 1 diabetes sufferers in Indonesia will reach 41,817 people in 2022. This number places Indonesia at the top of ASEAN. The majority of type 1 diabetes sufferers in Indonesia are aged between 20-59 years, as many as 26,781 people. After that, there were 13,311 sufferers aged under 20 years and 1,721 sufferers aged 60 years and over. The second place in ASEAN is the Philippines. The number of people suffering from type 1 diabetes in this country reached 16,443 people, with a predominance of ages 20-59 years. Then, third place is occupied by Vietnam with the number of people suffering from type 1 diabetes as many as 14,780 people. Then, followed by Thailand with 11,408 people suffering from type 1 diabetes. Meanwhile, the smallest number of type 1 diabetes sufferers in ASEAN is in Brunei Darussalam, namely only 98 people. Its position is followed by Timor Leste with a total of 199 people suffering from type 1 diabetes (Annur, 2023).

Based on 2018 Ministry of Health Basic Health Research (Riskesdas) data, the province with the highest prevalence of diabetes mellitus in Indonesia is DKI Jakarta, namely 3.4%. The next largest prevalence of diabetes mellitus was found in East Kalimantan, DI Yogyakarta, North Sulawesi, East Java, Bangka Belitung Islands, Gorontalo, Aceh, Banten and Central Sulawesi as shown in the graph (Ahdiat, 2022). A person suffering from Diabetes Mellitus will have a disrupted quality of life. Patients with type 2 DM generally feel disturbed physically, psychologically, in social relationships and in the environment, which are dimensions of quality of life. Diabetes sufferers who have been diagnosed for more than 5 years will feel bored and depressed because they have to undergo repeated treatment but their health does not immediately improve (Andri et al., 2021).

Apart from walking, non-pharmacological treatment that can be done by type 2 diabetes mellitus sufferers is by consuming alkaline water with a PH > 8. Alkaline water or hydrogen-rich water is currently a trend in medical practice in Indonesia. The basis used in this therapy is that the hydrogen contained in water will enter the

body and bind various dangerous substances such as free radicals. Ionized alkaline water is known as an anti-oxidant because it can prevent oxidative stress from body cells due to daily exposure to oxidants, which can lead to damage at various cellular levels (Agustanti, 2020).

Data obtained from the Pratama Yakri Clinic Jakarta, in the last three years diabetes mellitus patients have continued to increase, namely in 2020 there were 315 diabetes mellitus patients, in 2021 there were 327 patients and in 2022 there were 355 patients. Based on a preliminary study that was carried out through interviews with 6 patients suffering from diabetes mellitus, they said that the drinking water they drink every day is ordinary mineral water and they do not routinely exercise by walking every day. From the above phenomenon, researchers are interested in conducting research entitled "Effectiveness of alkaline water consumption and walking exercise on the quality of life of diabetes mellitus patients at the Pratama Yakri Clinic, Jakarta in 2023."

LITERATURE REVIEW

Quality of Life Concept

Quality of life or Quality of Life is an individual's perception of position in society in the context of values and culture related to local customs and related to desires and hopes which is a multidimensional view, which is not limited only to the physical but also to the psychological aspect.

Factors that influence the quality of life Factors that influence the quality of life according to Moons, Marquet, Budst, & de Geest (in Salsabila, 2012) in the conceptualization they put forward are as follows:

1. Gender Moons, Marquet, Budst, and de Geest (2004) say that gender is one of the factors that influences the quality of life.
2. Age Moons, Marquet, Budst, and de Geest (2004) and Dalkey (2002) say that age is one of the factors that influences quality of life. Research conducted by Wagner, Abbot, & Lett (2004) found age-related differences in aspects of life that are important to individuals.
3. Education Moons, Marquet, Budst, and de Geest (2004) and Baxter (1998) say that the level of education is one of the factors that can influence subjective quality of life
4. Occupation Moons, Marquet, Budst, and de Geest (2004) say that there are differences in the quality of life between residents who are students, residents who work, residents who do not work (or are looking for work), and residents who are unable to work (or have certain disabilities).
5. Marital status Moons, Marquet, Budst, and de Geest (2004) say that there are differences in the quality of life between individuals who are not married, individuals who are divorced or widowed, and individuals who are married or cohabiting. i. Physical health Cantika (2012) said that psoriasis is a chronic, recurrent disease that has an impact on the sufferer's quality of life, causing

sufferers to feel depressed and even commit suicide.

Diabetes Mellitus Concept

Diabetes Mellitus is a disease caused by hormonal disorders that result in cells in the body being unable to absorb glucose in the blood. This disease occurs when there is not enough insulin in the blood or when the body's cells cannot react to insulin in the blood normally. Diabetes Mellitus is usually characterized by an increase in blood glucose levels or blood sugar content that exceeds normal and tends to be high (>200 mg/dL) which is called hyperglycemia (Masi, 2018).

Classification of Diabetes Mellitus 1. Type I Diabetes Mellitus This type of diabetes occurs due to damage to pancreatic ß cells in the islets of Langerhans, causing absolute insulin deficiency. 2. Diabetes Mellitus Type II This type of diabetes occurs due to progressive insulin secretion disorders which underlie insulin resistance. In this case, insulin is available in sufficient quantities but cannot work optimally causing blood sugar levels to increase. 3. Gestational Diabetes Gestational diabetes mellitus (GDM) is a condition of glucose intolerance in pregnant women who have not previously been diagnosed with diabetes mellitus, resulting in an increase in blood sugar levels during pregnancy (El-Qahar, 2020).

RESEARCH METHODS

Quasi experimental with a one Quasi experimental design with a posttest group design. The sample in this study was all 40 diabetes mellitus patients at the Pratama Yakri Clinic in Jakarta in December 2023. The sampling technique uses total sampling. The analytical method used is univariate and bivariate analysis with the Anova test.

RESEARCH RESULT

Table 1. Frequency Distribution of Quality of Life for Diabetes Mellitus Patients in the Intervention Group and Control Group

No	Quality of Life	Intervention Group		Control Group	
		F	%	F	%
1	Very less	0	0,0	15	75,0
2	Not enough	0	0,0	5	25,0
3	Good	14	70,0	0	0,0
4	Very good	6	30,0	0	0,0
	Total	**20**	**100,0**	**20**	**100,0**

Based on the table above, it can be seen that of the 20 respondents in the intervention group, the majority of respondents with good quality of life were 14 people (70.0%), very good quality of life was 6 people (30.0%), quality of life was poor and very poor. not found (0%). In the control group of 20 respondents, the majority of patients' quality of life was very poor, 15 people (75.0%), the quality of life was poor, 5 people (25.0%), there were no good or very good quality of life (0%).

Table 2. Effectiveness Of Alkaline Water Consumption And Walking Exercise On The Quality Of Life Of Diabetes Mellitus Patients

ANOVA					
Quality of Life					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7562.500	1	7562.500	92.303	.000
Within Groups	3113.400	38	81.932		
Total	10675.900	39			

Based on the Anova test results table above, it can be seen that the p-value is 0.000 or smaller than alpha 5%. Thus, the test decision is that H0 is rejected, that is, there is one treatment group that has a different average value of quality of life compared to the control group or it could be said that there is a significant difference in the average value of quality of life between the intervention group and the control group. So it can be concluded that consumption of alkaline water and walking exercise are effective in improving the quality of life of diabetes mellitus patients

DISCUSSION

Frequency Distribution of Quality of Life for Diabetes Mellitus Patients in the Intervention Group and Control Group

From the results it can be seen that of the 20 respondents in the intervention group, the majority of respondents with a good quality of life were 14 people (70.0%), a very good quality of life was 6 people (30.0%), a poor quality of life and very poor neither found (0%). In the control group of 20 respondents, the majority of patients' quality of life was very poor, 15 people (75.0%), the quality of life was poor, 5 people (25.0%), there were no good or very good quality of life (0%).

Quality of life is an assessment of well-being or not which includes all emotional, social and physical aspects of an individual's life. In health care, quality of life is an assessment of how an individual's well-being over time may be affected by disease, disability, or disorder. According to Ekasari et al. (2018), quality of life is the level of satisfaction or dissatisfaction felt by individuals regarding aspects of their life. The aspects in question can be independence, choice, respect, privacy and freedom of action. Quality of life (QOL) is an important aspect of human life and is related to the culture and value system in which individuals live as well as their goals and expectations (Tamornpark et al., 2022).

According to researchers' assumptions, from the results of research conducted at the Pratama Yakri Clinic in Jakarta, it was found that diabetes mellitus patients who carried out walking activities and drank alkaline water each showed a good quality of life, there were even some respondents with a very good quality of life, this was due to walking sports activities. feet and drinking alkaline water is very good for diabetes mellitus sufferers to

improve blood circulation because walking exercise can increase insulin binding to receptors on muscle cell membranes. Where insulin is actually a modulator of glucose transport during exercise and exercise which magnifies its effects. It is when these changes occur in insulin and glucogan concentrations that prevent a decrease in blood glucose levels during exercise, initially by stimulating hepatic glycogenolysis and then by increasing hepatic gluconeogenesis. There are several factors involved in the mechanism of increased glucose absorption during and after exercise, thereby increasing the rate of blood flow to the muscles, namely exercise, changes in the energy status of the muscles and increased insulin binding as well as cellular signaling mechanisms which also play a role in stimulating the glucose transporter. Meanwhile, alkaline water can help regulate the absorption of blood sugar into the body through the work of the pancreas. For diabetes mellitus patients who do not walk, the majority of their quality of life is very poor, this is because diabetes mellitus patients who do not carry out activities make blood flow not smooth so they experience a buildup of glucose in the blood.

During searches in journals, researchers have never found similar research on the effectiveness of alkaline water consumption and walking exercise on the quality of life in diabetes mellitus patients, but in Dwi Agustanti's (2020) research entitled the effectiveness of alkaline water consumption on reducing blood sugar levels in diabetes mellitus patients obtained results that alkaline water with a pH of 9 was more effective in reducing blood glucose levels in DM patients. research results by M. Zainul Abidin (2023) entitled "The effect of walking on reducing blood sugar levels in people with type II diabetes mellitus in Bangilan District, Tuban Regency" with research results that blood sugar levels before being given walking treatment (pre-test) were 60 minutes 3 times a week with a minimum value of 113 mg/dl, a maximum value of 342 mg/dl, an average of 214.40 mg/dl, and a standard deviation of 55,955. while blood sugar levels after treatment (post-test) had a minimum value of 106 mg/dl, a maximum value of 295 mg/dl, an average value of 163.80 mg/dl, and a standard deviation of 47,803.

Effectiveness of Alkaline Water Consumption and Walking Exercise on the Quality of Life of Diabetes Mellitus Patients

From the results of the Anova test, it is stated that the p-value is 0.000 or smaller than alpha 5%. Thus, the test decision is that H0 is rejected, that is, there is one treatment group that has a different average value of quality of life compared to the control group or it could be said that there is a significant difference in the average value of quality of life between the intervention group and the control group.

Alkaline water is a type of drinking water that has an acidity level (pH) above 8, so it is also called water with a pH of 8+ or alkaline water. This is different from drinking water in general which has a neutral pH of 7. Experts believe that drinking alkaline pH water can affect the body's pH. The higher the body's pH (alkaline), the better. In addition, water with a pH of 8+ usually contains alkaline minerals and negative ORP. ORP (oxidation reduction potential) is

the ability of water to work as an antioxidant. The more negative the ORP value, the more antioxidant content in the drinking water. Drinking reasonable amounts of alkaline water is generally considered safe for most people. However, it is important to remember that the human body actually naturally has an effective pH regulation mechanism. Consuming excessively alkaline pH water can potentially disrupt the body's natural pH balance and cause alkalosis, a condition when the body is too alkaline. Therefore, it is best to drink high pH water in reasonable amounts and not replace mineral water completely (Upahita, 2022).

Walking is the cheapest sport with many invaluable benefits. Walking is a physical activity that uses muscles, especially leg muscles, to move from one place or another. The body movements carried out when walking are dominated by footsteps, although movements of the hands and other body parts are also needed, but the movement of the feet is the main movement. Walking is a safe, easy and cheap exercise that also has many benefits for the body.

According to the researchers' assumptions, from the results of research conducted at the Pratama Yakri Clinic in Jakarta, it was found that the p-value was 0.000, which means that walking and drinking alkaline water are effective in improving the quality of life and can also be interpreted that the average quality of life is different. compared to the control group or it could be said that there is a significant difference in the average value of quality of life between the intervention group and the control group. This is because diabetes mellitus patients who do walking exercise can stabilize or reduce blood sugar levels so that with stable or normal blood sugar levels, diabetes mellitus patients have a good quality of life.

Likewise, alkaline water, namely mineral water with a pH level above 8 which is alkaline/alkaline, is useful for balancing the body's excessive acidity level caused by an unbalanced diet. PH 8.0 alkaline water is produced from an ionization process to break down a series of water molecules so that it is more easily absorbed by body cells. The higher the number of water molecules that the body can absorb, the higher the opportunity for the human body to meet the water molecules it needs every day. Apart from that, the antioxidant content of alkaline water can help the body ward off free radicals. Alkaline water with a PH of 8.0 is basically water that is high in oxidants and is able to help the body in the process of increasing the body's immunity. From the results of the research above, it can be concluded that walking and drinking alkaline water are very good for improving the quality of life of diabetes mellitus patients.

During searches in nursing journals, researchers did not find the same research, namely the effectiveness of alkaline water consumption and walking exercise on the quality of life of diabetes mellitus patients, but there was research by Indirwan Hasanuddin (2020) entitled “Effectiveness of walking exercise on blood sugar levels in elderly people with diabetes mellitus type II”. The research results showed that the average blood sugar level decreased with a regular exercise program. Dwi Agustanti’s research (2020) entitled the effect of consuming alkaline water on blood glucose levels in diabetes mellitus patients

with research results that alkaline water is more effective in lowering blood glucose levels. From the two research results above, it can be concluded that walking and drinking alkaline water can improve the quality of life in diabetes mellitus patients.

CONCLUSION

The majority of respondents in the intervention group had good quality of life (70.0%), in the majority group their quality of life was very poor (75.0%). Alkaline water consumption and walking exercise are effective in improving the quality of life of diabetes mellitus patients (p value 0.000)

BIBLIOGRAPHY

Ahdiat Adi, (2022). Jakarta Punya Prevalensi Diabetes Tertinggi Nasional.https://databoks.katadata.co.id/datapublish/2022/09/28/jakartapunyaprevalensi-diabetes-tertinggi-nasional

Aini, N., & Aridiana, L. M. (2016). Asuhan Keperawatan pada Sistem Endrokin dengan Pendekatan Nanda Nic Noc (A. Suslia, Ed.; Vol. 1). Salemba Medika: Jakarta

Andri, J., Sartika, A., Bagus Andrianto, M., Pematang Tiga, P., & Muhammadiyah Bengkulu, U. (2021). Kualitas Hidup Pasien Diabetes Mellitus Tipe 2. Jurnal Kesmas Asclepius 3(2). https://doi.org/10.31539 /jka.v3i2.3149

Annur Mutia C, (2023). Ada 41 Ribu Penderita Diabetes Tipe 1 di Indonesia pada 2022, Terbanyak di ASEAN. https://databoks.katadata.co.id/datapublish/2023/04/18/ada-41-ribu-penderitadiabetes-tipe-1-di-indonesia-pada-2022-terbanyak-di-asean

Arisman, (2018). Diabetes Mellitus. Dalam: Arisman, ed. Buku Ajar Ilmu Gizi Obesitas, Diabetes Mellitus dan Dislipidemia. Jakarta: EGC.

Brunner dan Suddarth. (2018). Buku Ajar Keperawatan Medical Bedah. Jakarta: EGC

Clevo, Rendy, & Margareth ,T.H. (2015). Asuhan Keperawatan Medikal Bedah dan Penyakit Dalam. Yogyakarta: Nuha Medika.

Dayaningsih, D., Astuti, Y., Tri Yuwinda, N., & Dwi Rahayu, N. (2021). Jurnal Keperawatan Sisthana Gambaran Pengetahuan Dan Perilaku Lansia Dengan Diabetes Mellitus Tipe II di Wilayah Kota Semarang Description Of Knowledge And Behavior Of Elderly With Diabetes Mellitus Type Ii In The City Of Semarang. 6(2).

Dwi Agustanti, (2020). Pengaruh Konsumsi Air Alkali Terhadap Kadar Glukosa Darah Pada Pasien Diabetes Mellitus. Jurnal Ilmiah Keperawatan Sai Betik,Volume16, No.2,Oktober 2020. P-ISSN 1907 - 0357 E-ISSN 2655 – 2310

Ekasari, M. F., Riasmini, N. M., & Hartini, T. (2018). Meningkatkan Kualitas Hidup Lansia Konsep Dan Berbagai Intervensi. Wineka Media.

El Qahar, H. A. (2020). Pengaruh lidah buaya menurunkan kadar glukosa darah pada diabetes melitus tipe 2. *Jurnal Ilmiah Kesehatan Sandi Husada*, *12*(2), 798-805.

IDF, I. D. F. (2022). IDF Diabetes Atlas, 10th Edition. In Journal of Experimental Biology. https://doi.org/10.1242/jeb.64.3. 665

Indirwan Hasanuddin, (2020). Efektifitas olahraga jalan kaki terhadap kadar gula darah pada lansia dengan diabetes mellitus tipe II . Holistik Jurnal Kesehatan, Volume 14, No.1, Maret 2020: 38-45

Jessica Caroline, (2019). Air Alkali, Antara Fakta dan Manfaatnya. https://sardjito.co.id/2019/07/10/air-alkali-antara-fakta-dan-manfaatnya/

Kemenkes RI. (2020). Ifodatin Diabetes Melitus. Retrieved December08,2021,fromhttps://pusdatin.kemkes.go.id

Lestari, Zulkarnain, & Sijid. (2021). Diabetes Melitus: Review Etiologi, Patofisiologi, Gejala, Penyebab, Cara Pemeriksaan, Cara Pengobatan dan Cara Pencegahan.JurnalUINAlauddin Lyndon. S, 2016. Kapita Selekta. Kedokteran Klinik. Jakarta: Binarupa Aksara

M. Zainul Abidin, (2023). Pengaruh Aktivitas Jalan Kaki Terhadap Penurunan Kadar Gula Darah Pada Penderita Diabetes Melitus Tipe II di Kecamatan Bangilan Kabupaten Tuban. Jurnal Kesehatan Olahraga Vol. 11. No. 03, December 2023, pp 9 - 16

Masi, G., & Oroh, W. (2018). Hubungan Obesitas Dengan Kejadian Diabetes Melitus Di Wilayah Kerja Puskesmas Ranomut Kota Manado. *Jurnal Keperawatan*, *6*(1).

Nanda (2018). International nursing diagnosis : Defenitions and Classifications 2018-2020. Jakarta : EGC.

Notoatmodjo, S. (2018). Metodologi penelitian Kesehatan. Jakarta: PT Rineka Cipta.

PB. Parkeni. (2019). Buku Pedoman dan Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 Dewasa di Indonesia Tahun 2019. Tim Penyusun Buku Pedoman dan Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia 2019.

Rehmaitamalem, (2021). Pengaruh Jalan Kaki Terhadap Penurunan Kadar Gula Darah Pada Pasien Diabetes Mellitus. Jurnal Keperawatan Sriwijaya, Volume 8 Nomor 1, Januari

Saputri, R. D. (2021). Komplikasi Sistemik Pada Pasien Diabetes Melitus Tipe 2. Jurnal Ilmiah safitriKesehatan Sandi Husada, 11 2021, p-ISSN 2355-5459, e-ISSN 2684-9712

Tamornpark, R., Utsaha, S., Apidechkul, T., Panklang, D., Yeemard, F., & Srichan, P. (2022). Quality of life and factors associated with a good quality of life among diabetes mellitus patients in northern Thailand. Health and Quality of Life Outcomes .

Tarwoto dan Wartonah, (2015). Kebutuhan Dasar Manusia dan Proses Keperawatan . Edisi :4 .Jakarta

Upahita Damar, (2022). 5 Manfaat Air Alkali bagi Kesehatan yang SayangDilewatkanhttps://hellosehat.com/nutrisi/fakta-gizi/manfaat-air-alkali-air-ph-basa/

WHO, (2022). Diabetes. https://www-who-int.translate.goog/?_x_tr_sl=en&_x_tr_tl=id&_x_tr_hl=id&_x_tr_pto=tc&_x_tr_hist=true#tab=tab_1

Widiasari, K. R., Made, I., Wijaya, K., & Suputra, P. A. (2021). Tatalaksana. In Ganesha Medicina Journal (Vol. 1).