



Giving Cucumber Juice (Cucumis Sativus L) To Reduce Pain In Clients With Hypertension

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ABSTRACT

Purpose: This case study aims to describe the effectiveness of giving cucumber juice to reduce pain in clients with hypertension

Methods: This study used a case study design with a specialist care approach which included assessment, diagnosis, intervention, implementation and evaluation. This case study was carried out in the community around the Pamarican Health Center. The research started in June 2023 from June 5-7 2023 with the intervention of giving cucumber juice which was carried out for 3 days. the focus of nursing intervention for the main problem of pain is to give cucumber juice. Objective data and subjective data are used as a reference periodically to get results when interventions are carried out.

Results: In this case study is supported by subjective data and objective data. The subjective data obtained was that the patient said that after being given the intervention of consuming cucumber juice for three days, the pain in the head to the back of the neck had decreased. While the objective data obtained is that the pain scale is reduced from a scale of 4 (0-10) to a scale of 2 (0-10).

Conclusion: Intervention of giving cucumber juice is effective for reducing pain and effective for reducing blood pressure in clients with hypertension. evidenced by a change in the pain scale that decreases gradually every day. Optimal improvement occurred on the third day from a pain scale of 3 to a pain scale of 2 (0-10) and blood pressure within normal limits, namely 120/80 mmHg.

Keywords: acute pain, cucumber juice, hypertension

Introduction

Hypertension is a condition in which blood flow consistently has high pressure on the artery walls. The WHO (World Health Organization) limit for a person's blood pressure is said to be hypertension if the systolic pressure is ≥ 140 mmHg and the diastolic pressure is ≥ 90 mmHg (Firdanisa et al., 2021).

Data from the World Health Organization (WHO) in 2011 showed that one billion people in the world suffer from hypertension, 2/3 of them are in developing countries with low to moderate income. The prevalence of hypertension will continue to increase sharply and it is predicted that by 2025 there will be as many as 29% of people. adults worldwide suffer from hypertension. Hypertension has resulted in the death of around 8 million people each year, of which 1.5 million deaths occur in Southeast Asia, where 1/3 of the population suffers from hypertension, which can lead to an increase in the burden of health costs. 2015 National Health Insurance (JKN) Financing (Carolin et al., 2023).

Hypertension is caused by changes in the structure of the blood vessels so that the blood vessels become narrow and the walls of the blood vessels become stiff. Stiffness of the blood vessels is accompanied by narrowing and the possibility of enlargement of the plague vessels which can inhibit blood circulation, resulting in increased blood pressure in the circulatory system (Fatonah, 2019). Symptoms felt by people with hypertension are headaches, blurred vision, irritability, difficulty sleeping, chest pain, dizziness, strong and fast heart rate (Barus et al., 2019).

Around the world there are 1 billion people suffering from hypertension. Two-thirds of hypertension is mostly found in developing countries. In 2015 it is estimated that there will be 1.56 billion people with hypertension. Hypertension causes 8 million people to die each year. 1.5 million people died from the effects of hypertension in Southeast Asia (Kharisna et al., 2012). Hypertension is the number 3 cause of death after stroke (15.4%) and tuberculosis (7.5%), with hypertension itself reaching 6.8% of the population mortality rate in Indonesia (Adegita & Lismayanti, 2022).

In general, blood pressure increases slowly with age. The risk for hypertensive patients in the 55-year-old population includes more men suffering from hypertension than women. From the ages of 55-74 years, slightly more women than men suffer from hypertension and every year hypertension increases with age (Septiara & Rudy Alfiyansah, 2022). As you get older, hypertension increases and has distinctive signs of the appearance of the disease, even though this is not the case, but instead has no complaints and distinctive signs, that's why it is called a silent killer. Facts also prove that one in four people with hypertension do not know if they have hypertension. Because of this, this disease is quite life-threatening which can cause heart failure, heart attack, angina, and stroke (Holiq et al., 2016).

High blood pressure is blood pressure which is defined as systolic pressure over 140 mmHg and diastolic pressure over 90 mmHg (Firdanisa, 2021). Hypertension at an increasing age is because the arteries experience a decrease in elasticity or stiffness, so that the response of the blood vessels to enlarge/shrink becomes reduced. Impaired elasticity of blood vessels can also result in increased systolic blood pressure, therefore reduced aortic blood volume which ultimately causes diastolic blood pressure to decrease. And a series of arteries and veins that transport blood, arteries carry oxygen-rich blood, while veins carry oxygen-rich blood. it has been taken back to the heart (Sari, 2022). The heart contains many muscles that are responsible for pumping blood. The heart consists of 4 parts that are

covered by layers of muscle. During the heartbeat, the heart muscle contracts and the four chambers of the heart are compressed like a hand clenching. This event pushes blood from the atria to the ventricles and from the ventricles it is circulated throughout the body. The simple pumping work and the obstacles that the pumping ventricles contain are in a closed circulatory system resulting in high blood pressure (SRI, 2018).

If blood pressure is not controlled, it can cause complications such as: heart failure, heart attack, stroke and eye damage. Heart failure is a condition in which progressively the heart cannot pump blood throughout the body efficiently and its function worsens, resulting in leakage of fluid from the capillaries of the lungs. A heart attack can be interpreted as a condition in which the attack is triggered by a blood clot that forms in the arteries. Angina, namely chest pain, usually occurs when the flow of blood and oxygen to the heart muscle is blocked or interrupted. Stroke itself is divided into 2, namely ischemic and hemorrhagic. heart attack. Hemorrhagic occurs when blood vessels in the brain or near the brain rupture (ANDRIYANI et al., 2020).

Ministry of Health of the Republic of Indonesia (2019) according to the 2014 Indonesian Sample Registration System (SRS) data, Hypertension with complications (5.3%) is the number 5 (five) cause of death at all ages. Meanwhile, based on data from the 2017 International Health Metrics Monitoring and Evaluation (IHME) in Indonesia, the cause of death in the first place is caused by stroke, followed by ischemic heart disease, diabetes, tuberculosis, cirrhosis, diarrhea, COPD, Alzheimer's, lower respiratory tract infections and disorders. neonatal and traffic accidents. Based on the 2018 Riskesdas the prevalence of hypertension based on the results of measurements in residents aged 18 years was 34.1%, the highest was in South Kalimantan (44.1%), while the lowest was in Papua (22.2%). Hypertension occurs in the age group 31-44 years (31.6%), age 45-54 years (45.3%), age 55-64 years (55.2%). Of the prevalence of hypertension of 34.1%, it is known that 8.8% were diagnosed with hypertension and 13.3% of people diagnosed with hypertension did not take medication and 32.3% did not take medication regularly. This shows that most people with hypertension do not know that they have hypertension so they do not get treatment. The reasons for hypertensive patients not taking medication include those with hypertension feeling healthy (59.8%), irregular visits to health facilities (31.3%), taking traditional medicine (14.5%), using other therapies (12.5%) , forgot to take medication (11.5%), could not afford to buy medication (8.1%), had drug side effects (4.5%), and hypertension medication was not available at the health facility (2%) (Suhartini & Nuraeni, 2022).

The Ministry of Health of the Republic of Indonesia, West Java province, the prevalence of hypertension in 2020. The indicator achievement is 39.8% where the total calculation of the prevalence of hypertension in 2020 is obtained from the 2018 Riskesdas data where the prevalence rate for West Java Province has increased from 34.5% (2013 Riskesdas data) to 39.6 %. The increasing prevalence of hypertension is associated with behavior and lifestyle. Riskesdas data (2018) also shows that for residents aged 15 years and over, data on risk factors is obtained, such as the proportion of people who eat less vegetables and fruit by 95.5%, the proportion lacking physical activity is 35.5%, the

proportion smoking is 29.3%, the proportion is obese central 31% and the proportion of general obesity 21.8% (Carolin et al., 2023).

To avoid the bad condition of the emergence of complications, a medical therapy is needed. Treatment consists of 2 ways, namely pharmacology and non-pharmacology. Pharmacological treatment is medical treatment, while non-pharmacological treatment is treatment without the use of chemicals. Anti-hypertensive drugs have been proven to be effective for controlling blood pressure, but plant-based natural resources are also able to play an important role and can be used to control blood pressure. Non-pharmacological actions using plant-based natural resources can also be used to control blood pressure. Resources that can be used to control blood pressure, namely fruits and vegetables that are rich in vitamins and minerals (contain a lot of water), one of which is cucumber (Adegita & Lismayanti, 2022).

(Firdanisa, 2021) proved that cucumber fruit can lower blood pressure because of its potassium content which causes inhibition of the Renin-Angiotensin System which also causes a decrease in aldosterone secretion. This research was conducted at the Demak Posyandu with a sample of 40 elderly for a week twice a day (morning & evening) and using 200 grams (150 ml) of cucumber and the result was a p value of 0.000 ($p < 0.05$). Research by Lovindy (2014) cucumber juice can also reduce blood pressure. In the study that was conducted in Semarang, the research subjects were divided into 2 groups (control and treatment groups) which were carried out for 7 days and used 100 grams (150 ml) of cucumber. The research results revealed that there was a decrease in systolic pressure of 12% ($p=0.000$) and 10.4% ($p=0.000$). Research from Cerry (2015) also proved that cucumber juice can be used to lower blood pressure. 200 grams. The results of his research are the p value of 0.000 ($p < 0.05$).

Cucumber fruit can help lower blood pressure because the content of cucumbers including potassium, magnesium, and phosphorus effectively treat hypertension. Potassium is the main intracellular electrolyte, 98% of the body's potassium is inside the cells, the remaining 2% is outside the cells for neuromuscular functions, potassium affects the activity of the heart muscle (Brunner & Suddarth, 2013). Cucumber also has diuretic properties which consist of 90% water, so it can remove salt content in the body. Rich minerals in cucumbers are able to bind salt and be excreted through urine (Kholish, 2014, in Cerry, 2014). It is known that the normal value for potassium consumption by adults is 47 grams (4700 mg). Meanwhile, the potassium content in every 100 grams of cucumber contains 147 mg of potassium (SRI, 2018).

Cucumber fruit is very good in consumption for people with hypertension. A food is said to be healthy food for blood vessels and heart, where the food contains potassium which is the main intracellular electrolyte, in fact, 98% of the body's potassium is inside the cells, the remaining 2% is outside the cells, what is important is this 2%. for neuromuscular function (Dendy Kharisna et al., 2019). Dari latar belakang diatas penulis tertarik untuk mengambil studi kasus dengan judul "Giving Cucumber Juice (Cucumis Sativus L) To Reduce Pain In Clients With Hypertension".

Objective

This case study aims to describe the effectiveness of giving cucumber juice to reduce pain in clients with hypertension.

Method

The type of design used by the writer in this research is descriptive qualitative with case study research and how to collect data starting from assessment, determining diagnosis, planning, implementing action and evaluation. In this case study, one client was diagnosed with hypertension with acute pain problems.

This case study was carried out in the community around the Pamarican Health Center. The research started in June 2023 from June 5-7 2023 with the intervention of giving cucumber juice which was carried out for 3 days. The data used are primary data obtained directly from respondents directly using observation sheets of pain measurement scales before and after intervention using a numerical rating scale (NRS). The focus of the intervention used was giving cucumber juice which was consumed twice a day.

The data collection method used in this case study was by interviewing the respondents directly, observation by carrying out a physical examination (inspection, palpation, percussion, auscultation of the whole body) and data collection by means of documentation studies (medical records, literature, diagnostic examinations, number and data indicating otherwise). Based on data collected by means of interviews, observation and documentation studies. Furthermore, these data were compared with existing theories as material to be recommended for interventions. The results of the data collected in the form of field notes were combined in the form of transcripts and grouped into subjective and objective data to support the determination of nursing problems. Data analysis in the case study used the PES approach (Problem, Etiology and Symptoms) which was outlined in the form of a chart while the applied approach used descriptive analysis.

Results

Assesment

The study was conducted on Mr.A with a medical diagnosis of hypertension who is 73 years old from Pamarican. At the time of assessment, Mr. A complained of headaches like being overwritten by a heavy burden with a scale of 4 (0-10) pain felt from the head to the nape of the neck, the pain felt intermittent, the client looked grinning and looked anxious, being protective to protect the head and neck. holding head and nape more often, pain increases with activity and decreases with rest Vital signs in Mr. A are blood pressure: 155/100 mmHg, temperature: 36.5°C, pulse: 84 x/minute, and respiration : 20 x/minute. The general condition of the client looks mildly ill, composmentis awareness Eye: 4, Motor: 6, Verbal: 5, warm acral, strong pulse, crt < 2 seconds, vascular heart sounds. This pain assessment is a major problem for patients with the interpretation of severe pain as evidenced by the patient's facial expression that looks grimacing and the level of pain scale.

Diagnosis

Table 1. Nursing Diagnosis

Nursing diagnoses	Etiologi	Problem	Diagnostic Code	Page
<p>Subjective data : The client says that the headache extends to the nape of the neck, there is high blood pressure, pain like being forged by a heavy object in the head radiating to the nape of the neck, the pain feels intermittent</p> <p>Objective Data :</p> <ol style="list-style-type: none"> 1. The client looks grinning 2. The client looks restless 3. The client is protective to protect the painful part (nape of the neck) 4. Pain scale : 4 5. Vital signs: BP : 155/100 mmhg T: 36.5°C P: 84x/minute R : 20x/minute 	Physiological injury agent	Acute Pain	(D.0077)	172

From the table above it can be concluded that the nursing problem that arises is acute pain related to physiological injury agents as evidenced by the client saying pain in the head and nape of the neck, the client's face looks grimacing and restless.

Intervention

Tabel 2. Nursing Intervention

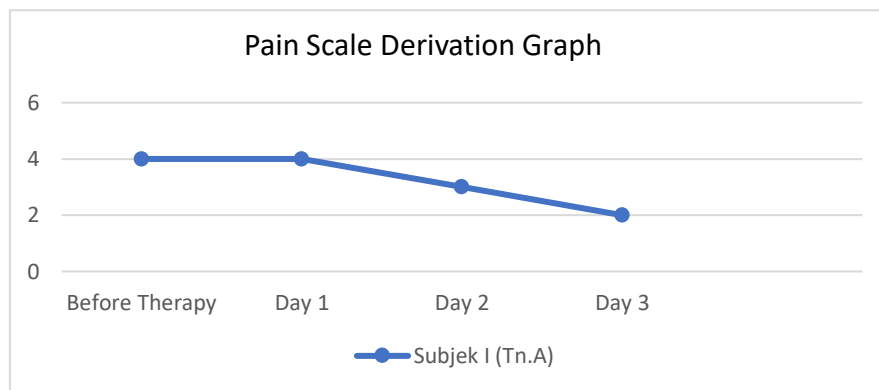
Diagnosis, Goals of nursing	Intervention Nursing	Rational
<p>Acute pain related to physiological agents of injury. After carrying out nursing actions during 3x home visits it is hoped that the family will be able to care for the client so that pain can be reduced, with the outcome criteria:</p> <ol style="list-style-type: none"> 1. The level of pain is reduced 2. Complaints of pain decreased 3. The grinning face relaxes 4. The face becomes restless 5. Blood pressure within normal limits. 	<ol style="list-style-type: none"> 1. Identify the location, characteristics, duration, frequency, quality of pain 2. Observation of vital signs 3. Identify the pain scale 4. Identify knowledge and beliefs about pain 5. Provide non-pharmacological techniques to reduce and control pain 6. Give cucumber juice 	<ol style="list-style-type: none"> 1. Understand location, characteristics, duration, frequency, quality 2. Observing vital signs 3. Determine the intervention to be carried out 4. Knowing the intervention that will be carried out 5. Teaches pain control techniques 6. Provide pain control techniques

Implementation

The researcher said that the implementation given to the patient was to identify the location, characteristics, scale, frequency, pain intensity, observe TTV, identify the factors that cause pain, non-verbal pain responses, factors that aggravate and relieve pain, provide non-pharmacological techniques to reduce pain breathing relaxation techniques inside, Control the environment that aggravates the pain, Facilitate rest and sleep, Explain the causes, periods, and triggers of pain, strategies to relieve pain, suggest monitoring pain independently and intervention offering cucumber juice.

Evaluation

Nursing evaluation of the diagnosis of acute pain related to physiological injury agents can be seen in the following graph :



Graph 1. Implementation of Giving Cucumber Juice to Pain

Graph 1. shows the implementation of giving cucumber juice to reducing pain scale in hypertensive clients. The pain scale decreased gradually every day, optimal improvement occurred on day three from a pain scale of 3 to a pain scale of 2 (0-10) and an increase in blood pressure, namely 120/80 mmHg. This means that the intervention of giving cucumber juice is effective for relieving headache in hypertensive patients.

Discussion

Assessment is a stage where nurses collect data characterized by continuous information gathering. Data collection comes from several sources such as interviews, observations, and owned housing facilities. In accordance with the theory described above, the authors conducted an assessment on Mr.A using the individual KMB assessment format through interviews, observation, and physical examination to add the necessary data.

When the study was carried out on June 5, 2023 the client named Mr. A, who is 53 years old, male, shows that he is experiencing health problems, namely where the client looks grinning because there is pain in the head to the nape of the neck due to hypertension experienced with a pain scale of 4, and the results of a physical examination:

blood pressure: 155/100 mmHg, temperature : 36.5°C, pulse : 84x/minute, and RR : 20x/minute.

Mr.A said he had no history of hereditary hypertension, but the client and his family said they did not really understand the health problems experienced by Mr.A so that this could worsen Mr.A's health condition. The results of the research are in accordance with the theory or there is no gap between the results of case reports and theory. Hypertension can cause headaches to the nape. This occurs due to increased pressure on the walls of the blood vessels around the neck, increased pressure on the blood vessels to the brain resulting in an emphasis on the neck muscle fibers (Sari, 2022).

Based on the research results, the researcher found a problem which was then formulated into a nursing diagnosis. The primary diagnosis in the patient is Acute Pain (D.0077) associated with a physiological injurious agent. Thus the research results are in accordance with the theory or there is no gap between the results of case reports and theory. This is in line with research (Adegita & Lismayanti, 2022) which says that acute pain is usually followed by activity of the sympathetic nervous system which can then cause symptoms such as increased breathing, blood pressure, heart rate and pupil dilation.

Perencanaan keperawatan meliputi penetapan tujuan dan kriteria hasil, serta preparation for nursing interventions (Firdanisa, 2021). At this stage, planning is carried out with the patient and family according to the problems obtained, abilities, situations and conditions as well as existing facilities and infrastructure. Nursing planning is carried out according to theory, namely: identification of location, characteristics, scale, frequency, pain intensity, observation of TTV, identification of factors that cause pain, provide a comfortable position and teach deep breathing relaxation techniques. In this study, the researchers added the cucumber juice intervention and focused more on this intervention to reduce pain. There are no gaps in the intervention, because the action plan to be carried out is in accordance with the literature review based on SIKI PPNI, 2018.

Evaluation of the nursing process includes activities to measure the achievement of client goals and determine decisions by comparing the data collected with the goals and achievement of goals (Adegita & Lismayanti, 2022). In this case the evaluation was carried out in operational SOAP mode. Subjective (S) are things that are subjectively found in the family after nursing interventions are carried out. Objectives (O) are things that are found by nurses objectively after nursing interventions are carried out. Analysis (A) is an analysis of the results that have been achieved with reference to the goals associated with the diagnosis. Planning (P) is future planning after seeing the family's response at the evaluation stage (Sari, 2022).

Developments that emerged during the evaluation of Mr. A said that the headache to the back of the neck had reduced with the pain scale, the client seemed relaxed, the client seemed not anxious, the client and family were able to practice how to control and reduce pain again, the pain scale was reduced from the pain scale 4 to a pain scale of 2 (0-10), the client looks calmer than before,

(Kharisna et al., 2012) states that cucumber fruit has ingredients such as potassium, magnesium and phosphorus which can treat hypertension. Cucumber also has a uretic content and water content which can also lower blood pressure in people with hypertension, the contents of this cucumber fruit can cause a decrease in blood pressure in people with hypertension.

According to (Septiara & Rudy Alfiyansah, 2022) cucumber contains nutrients (nutrients) in every 100g cucumber contains 12.0 calories, 0.7g protein, 0.1g fat, 2.7g carbohydrates, 10.0mg calcium, 21 phosphorus. 0 mg, iron 0.3 mg, vitamin B1 0.03 mg, vitamin C 8.0 mg, water 96.1 g, and the edible portion of 70.0% is beneficial to health, consuming cucumber which is a diuretic can launch urination (urine) in patients with hypertension thereby reducing the amount of fluid circulating in the bloodstream can ultimately reduce the workload of the heart.

According to (Holiq et al., 2016) states that there is a significant effect of cucumber juice on blood pressure in women of reproductive age in the Telaga Biru Health Center Work Area with a p value of 0.00 (p causes vasodilation as a result of hyperpolarization of vascular smooth muscle cells that occur due to potassium stimulation of the sodium (Na+)/potassium (K+) pump and also activating kir channels. Potassium ions are also released by endothelial cells in response to neurohumoral mediators and physical stress, the result will be endothelial relaxation. Potassium contained in cucumber also prevents the occurrence of sodium retention thus has a lowering effect on blood pressure. Potassium can also prevent the formation of angiotensin II which is a strong vasoconstrictor that causes an increase in blood pressure. Potassium reduces the release of aldosterone from the zona glomerulosa of the adrenal glands, which results in a further increase in blood pressure associated with sodium and water retention.

The results obtained are in line with research conducted by (Adegita & Lismayanti, 2022) that consuming cucumber juice 2-3 times a day can reduce blood pressure. The same results were obtained from research by Ilma Dzulchilda & Wirawanni, t.t. that consuming 100 grams of cucumber which is equivalent to 147 mg and 13 mg of potassium and magnesium for 7 days can reduce systolic and diastolic blood pressure by 15.85 ± 7.77 and 8.455 ± 6.19 cucumber 2 times a day for a week can effectively reduce blood pressure in pregnant women at the Sukatani Health Center.

Conclusion

Intervention of giving cucumber juice is effective for reducing pain and effective for reducing blood pressure in clients with hypertension. evidenced by a change in the pain scale that decreases gradually every day. Optimal improvement occurred on the third day from a pain scale of 3 to a pain scale of 2 (0-10) and blood pressure within normal limits, namely 120/80 mmHg.

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