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## Eating pattern and low-purine diet adherence among patients with gout arthritis

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### Abstract

**Background:** Eating pattern of gout arthritis patients will determine the amount of uric acid levels in their body. Adherence to a purine diet is one of the efforts made to prevent recurrence or assist healing on gout arthritis patients.

**Purpose:** To determine the relationship between eating pattern based on type of food and adherence to purines diet in gout arthritis patients and the relationship between eating patterns based on eating frequency and adherence to purines diet in gout arthritis patients.

**Method:** This descriptive analytic study with a cross sectional approach. The population in this study about 40 patients and the sample was taken using accidental sampling technique. The sample size was calculated by using the Yamane Taro formula so that the results were 36 participants. Questionnaires were used for data collection and the data were analyzed by using Pearson correlation with 95% confidence level (CI) with p value <0.05.

**Results:** base on the statistical analysis, the result of this study is that there is no relationship between eating pattern based on diet based on type of food and adherence to purines diet in gout arthritis patients with p value 0.381 (> 0.05) and there is a relationship between eating pattern based on eating frequency and adherence to purines diet in gout arthritis patients with p value 0.002 (< 0.05).

**Conclusion:** There is no relationship between eating pattern based on type of food and adherence to purines diet in gout arthritis patients and there is a relationship between eating patterns based on eating frequency and adherence to purines diet in gout arthritis patients.

**Keywords:** Eating pattern; Low-purine diet; Adherence; Patients; Gout arthritis

### INTRODUCTION

Gout arthritis is a joint disease caused by high uric acid in the blood. This buildup of uric acid is what makes joints sore, painful, and inflamed. In severe cases, patients cannot walk, the joints feel very painful when they move, suffer damage to the joints and are disabled (Susanto, 2018). The prevalence of gout in Australia is very high, about 1.5% - 10% (Philip, 2016). In Indonesia, the prevalence of joint disease in the population aged

15 years is 7.3% of the total population. In North Sumatra, the prevalence of joint disease in the population aged  $15 \geq$  years is 5.4% of the total population (Ministry of Health Republic of Indonesia, 2018). Gout arthritis is the result of the body's metabolism by one of the proteins, purines and kidneys. In this regard, the kidneys function to regulate the stability of uric acid levels in the body where some of the remaining uric acid is excreted

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through urine. However, if the uric acid is excessive and the kidneys are no longer able to regulate its stability.

Food intake and uric acid are related to the purines content in the food we consume (Susanto 2018). Therefore, patients must control the food they eat or avoid foods that contain lots of purines (Maryanto 2010). Purine substances produced by the body amount to 85%. To reach 100%, the human body only requires an intake of purines from outside the body (food) by 15%. When intake of purine substances more than 15 % than the uric acid levels in their body will increase. Sukarmin (2015) stated that there is a relationship between purine diet and uric acid levels. An ounce of prevention is worth a pound of cure. It is better to avoid getting sick than to experience it. One effective way to prevent disease is to know the various causes of disease, meaning we have held a map that tells which direction to avoid, so with gout, the causes of gout to allow us to control our dieting pattern or even adhere to the purine diet for gout arthritis sufferers.

Purines diet is given to gout arthritis patients to prevent the accumulation of monosodium uric crystals in or around the joints (Susanto, 2018). Adherence is a way of carrying out treatment and behavior that is given in the form of therapy, diet, exercise and the desire to change their eating patterns from a regular to a planned diet (Pratita, 2012). Gout arthritis is now not only suffered by the elderly, but also young people. Prihantini (2016) was found that there was an age relationship in the group of people with gout at risk age 25 years, there were 30 (43.5%) inappropriate people. Meanwhile, among patients with gout at the age not at risk of 25 years, there were 14 (20.3%) people who did not adherence. Gender in the group of gout sufferers with male sex there are 29 people (42.0%) non-adherent people while among female gout sufferers there are 15 people (21.7%) who are not adhere. and also the level of education with low-purine diet compliance people with low education level 3,437 do not adhere to low-purine diet compared with people who have a higher

education level. Various characteristics of gout arthritis patients with adherence to purine diet. Handayani (2017) found the respondent in her study that respondents who did not adhere to purines diet (88%) while those who adhered (12%). This is due to the factors of age, gender, level of education, and dietary factors. Sukarmin (2015) found in his study that (82.9%) the respondents were adhered to purines diet. To prevent recurrence in gout arthritis patients, need to maintain a eating pattern by consume purines diet (Susanto, 2018).

Base on survey of gout arthritis patients at the Munte Health Center in Karo Regency Indonesia were an average of 40 people in 2020. Most of the community worked as farmers. Some of them said that during the COVID-19 outbreak, their economic situation was getting more difficult, they consume vegetables found in their fields such as sweet potato leaves and papaya leaves and long beans. It is known that consuming large amounts of potato leaves, papaya leaves, and nuts can trigger an increase in uric acid in the blood, thus triggering the onset of gout arthritis.

## RESEARCH METHOD

The design of this study is a descriptive analytic with a cross sectional approach, to determine the relationship between eating pattern and purines diet adherence in gout arthritis patients. This study was conducted at Munte Health Center, Karo Regency, North Sumatra. The study was conducted in November – December 2021. The population of this study were 40 patients. The sample is a part or representative of the population to be studied. The sampling technique in this study used probability sampling, namely accidental sampling. The sample size was calculated by using the Yamane Taro formula so that the results were 36 people.

Data collection used questionnaire, the diet questionnaire was obtained from the research of Kudha et al. (2017) with a reliability test with Cronbach's alpha 0.70 for the type of food and 0.68 for the frequency of eating. The purine diet

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adherence questionnaire was obtained from Evi alpha 0.87.  
Lestari (2015) for a reliability test with Cronbach's

**RESULTS****Table 1. Distribution of Demographic Characteristics N=36**

Characteristic of Respondent	f	%
<b>Gender</b>		
Male	12	30.80
Female	24	61.50
<b>Level of Education</b>		
Primary School	4	10.30
Junior High School	4	10.30
Senior High School	23	59.00
Bachelor Degree	5	12.80
<b>The current work</b>		
Civil servants	6	15.40
Farmer	30	76.90

Based on the data above, it can be seen that the majority of respondents' characteristics based on gender are 24 women (61.5%), high school education 23 responden (59%), and working as farmers 30 responden (76.9%). Eating pattern and adherence to purines dietary in gout arthritis patients. Based on the statistical test in table 2 below, it can be seen that the relationship between eating patterns based on food type and adherence to purines diet with p-value is 0.381( > 0.05), which means that there is no significant relationship between eating pattern based on type of food and adherence to purines dietary in gout arthritis patients. For the relationship between eating patterns based on eating frequency and adherence to a purine diet, with p-value is 0.002 (< 0.05), which means that there is a significant relationship between eating patterns based on eating frequency and adherence to a purines diet in gout arthritis patients.

**Table 2. Eating Pattern and Low-Purine Diet Adherence**

	Eating Pattern and low-purine diet adherence	
	r	p-value
<b>Eating pattern base on type of food</b>	0.150	0.381
<b>Eating pattern base on eating frequency</b>	0.496	0.002

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## DISCUSSION

In this study it was found that the majority of respondents were women (61.5%), this is similar to the research conducted by Putra, Kambayana, Indrawan (2017), and Kudha, A, K. (2017). Estrogen hormonal status will affect the increase in uric acid secretion in the kidneys. In menopausal age women with a decrease in the production of the hormone estrogen will result in a decrease in the secretion of uric acid in the kidneys, resulting in hyperuricemia (Bulu, 2019). Sulistyoningsih (2011) states that eating patterns are the characteristics of activities that repeatedly eat individuals or each person eats to meet their food needs. Types of food eaten every day consumed by a person can consist of staple foods, animal side dishes, vegetable side dishes, vegetables and fruit consumed every day. Food regulation is also aimed at controlling body weight and uric acid levels (Ramayulis, 2016).

Adherence is like obeying orders, obeying orders, while adherence is behavior according to rules and discipline. In this study, it can be seen that there is no significant relationship between eating patterns based on the type of food and compliance with gout arthritis sufferers. Education can increase adherence as long as it is an active education. Where through education, a person will learn to control himself, to keep following a predetermined diet. As it is known that: the majority of respondents' occupations are farmers where in providing the type of food they consume is limited in the variety of food. Farmers will consume more types of vegetables from their own gardening and rarely consume foods such as shellfish, brain, liver, heart, lungs, kidney offal, goose meat, bird meat, duck meat, fish eggs, sardines, mussels, herring, yeast and preserved foods which are foods that are high in purines. In addition, in the Covid-19 pandemic situation where food prices increase, it is difficult for them to easily obtain these types of food.

There is a significant relationship between eating patterns based on eating frequency and adherence to purines diet in gout arthritis patients.

Frequency of eating is the number of times a person eats a day including breakfast, lunch, dinner and snacks (Ministry of Health Republic of Indonesia, 2013). As is known, the Munte sub-district where the respondents live is an area with low temperatures and the majority of the population works as farmers. This situation makes them easy to be hungry. The frequency of eating often will have an impact on the occurrence of weight gain. As it is known that obesity can lead to increased production of uric acid by the body. Increased uric acid in the body causes hyperuricemia which triggers gout arthritis. Rau, Ongkowijaya, and Kawengian (2015) in their research found that the mean in the obese group was significantly higher than the non-obese group. Damayanti (2012) found the purine diet also limits fat, because fat also tends to limit uric acid expenditure.

## CONCLUSION

This research found that the relationship between eating pattern and adherence to purines diet in gout arthritis patients, the researchers drew the following conclusions: there is no relationship between eating patterns based on food type and adherence to purines diet in gout arthritis patients and there is a relationship between eating patterns based on eating frequency and adherence to purines diet in gout arthritis patients.

## SUGGESTION

It is need to control the eating frequency of gout arthritis sufferers so as to avoid the occurrence of gout arthritis.

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