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Community gout management program for adults in the rural area

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ABSTRACT Gout is one of the non-communicable diseases that can affect the quality of life. The high prevalence of gout is apparent in Indonesian research and records in primary health services. However, adult people's needs regarding gout management programs were barely explored. The study aimed to identify the association between the character of demographics, food consumption, and prevalence of gout in the rural areas in The Sleman Regency. This study is a quantitative study using a cross-sectional approach. Samples consisting of 109 adult people were chosen by purposive sampling with inclusion criteria: 1) residents of The Jaranan sub-village, Cangkringan, Sleman, D.I. Yogyakarta Province and 2) age over 25 years old. Data was collected through a survey using questionnaires adapted from the Indonesian Basic Health Survey Questionnaire, Gout Knowledge Questionnaire (GKQ) and Gout Assessment Questionnaire (GAQ), and food frequency form. Association between gout, food consumption, and knowledge were analyzed using the chi-square test. As a result, the prevalence of gout in adult people in rural areas was 18.35%. They have limited knowledge regarding gout diagnosis, treatment, and prevention (66,97%). Half of the respondents reported consuming food with medium content of purine such as tempeh (56%) and tofu (52%), and were not well-hydrated (63.3%). There was a significant relationship between gout and hypertension and meat consumption. Respondents reported they worried about the progress of gout (>70%) they will experience. In conclusion, the prevalence of gout is high in adult people in rural areas. The adult people who did not have formal education, hypertension, and meat consumption have a significant association with gout diseases. There is a need for a gout prevention program to maintain a healthy lifestyle and healthy diet, improve gout-related knowledge and control the progress of gout disease.

1. Introduction

Gout is one of the non-communicable diseases that can affect the quality of life and cause morbidity.[1,2] Gout or high uric acid in the blood is a progressive disease due to the precipitation of monosodium urate crystals (MSU) in the joints, kidneys, and other connective tissue as a result of chronic hyperuricemia.[3] Findings from the current study confirm that gout disease induces low-level health-related quality of life (HRQoL), moderate disability (21.1%), as well as a higher cost of emergency visits.[2,4] In the US population-based cohort, older adults with gout, were more likely to have poor lower extremity function, consistent with the most common localization of affected joints. Older adults with gout were 1.18-times more likely to have poor SPPB (Short Physical Performance Battery) scores and 1.19-times more likely to have poor walking speed.[5] In addition, gout also takes effect on elevated risk on several diseases includes cardiovascular disease, chronic disease, erectile dysfunction, atrial fibrillation, obstructive sleep apnea, osteoporosis, and venous thromboembolism.[1,6]

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Gout prevalence increased in either primary care and specialist practice.[7] Unfortunately, the gout prevalence in Indonesia is unstated.[8] The Indonesian Basic Health Survey reported that the prevalence of joint pain in Indonesia has decreased trend between 2007, 2013, and 2018 from 30.3%, 24.7%, and 7.30%.[9,10] However, a recent study in various provinces in Indonesia showed the prevalence of hyperuricemia remained high, approximately 18.6%; 36.36%; 37.5%; 47.6%.[8,11–13] Uncontrolled hyperuricemia causes acute arthritis attacks and manifests to chronic gout conditions, resulting in decreased kidney function and decreased quality of life.[14]

The older adults are a group that was prone to experiencing gout. The prevalence of gout increases according to age, with a mean of 7% in men aged > 5 years and 3% in women> 85 years.[7] Gout in the older adults needs special attention because it can increase the risk of disability and death associated with comorbidities. Finding cases as early as possible with appropriate care measures in the community is the primary goal of managing gout.[15,16]

Lifestyle changes are essential for people with high uric acid levels.[14] The interventions program aims to increase public understanding of gout might help improve people's adherence to medical advice and patient self-management towards maintaining a healthy lifestyle. Using various technology-based media that intend to provide trusted information about gout can maximize the effectiveness of interventions. However, these media must be adjusted to the needs and conditions of the target community. The use of various technology-based media such as websites and applications as well as print in providing information about gout can increase the effectiveness of interventions. However, this information needs to be adjusted to the needs and conditions of the target community.[17,18]

The study aimed to identify the association between the character of demographics, food consumption, and prevalence of gout in the rural areas in The Sleman Regency. The finding of this research may contribute to encouraging community awareness, improving self-management for gout, and maintaining a healthy lifestyle.

2. Method

2.1 Study design & setting

This study was cross-sectional which nested research in Sleman Health and Demographic Surveillance System (Sleman HDSS) program as part of community service to improve health service and health status in Sleman Regency, Daerah Istimewa Yogyakarta Province, Indonesia.[19] The Jaranan sub-village, Cangkringan District, Sleman Regency, Daerah Istimewa Yogyakarta Province is one of the Sleman HDSS rural working areas with a high proportion of older people.[20] Data collection is conducted in November 2020 during the COVID-19 pandemic when most of the community-based non-communicable disease programs were halted.

2.2 Participants and sample

The population of this study was adult people. Adult people were defined as someone who was age 25 or older based on early adult criteria by United Nations.[21] The total number of adult people who met the inclusion criteria: 1) aged over 25 years old and 2) resident of the Jaranan sub-village were around 250 people. However, only 109 people available in the village and agree to fill the questionnaire.

2.3 Variables

There were five variables explored in this study. Gout in this study was defined as participant's statements regarding the history of gout diagnosis by a medical doctor. We explored other variables known to be gout risk factors, including demographic characteristics, comorbidity, gout-related knowledge, food consumption pattern, and attitude towards gout concern. Comorbidity was assessed using the 2018 Indonesian Basic Health Survey Questionnaire in the non-communicable disease section. Gout related to knowledge is determined using eight questions adapted from Gout Knowledge Questionnaire (GKQ).[22] Food consumption pattern estimated using food frequency form, that asked the respondent's eating habit, mainly the frequency of consuming food with high and medium content of purine in the past week. The form contains 18 types of foods that have the potential to increase purines in the body.

Attitude towards gout concern was asked using an adaptation of the Gout Assessment Questionnaire (GAQ) questionnaire in the gout concern section and gout meeting treatment needs.[23]

2.4 Data collection

The data collection process was conducted during the COVID-19 pandemic. Researchers tried to limit the time spent in the field by asking community cadres to help with data collection. Before data collection, researchers conducted feasibility tests by asking cadres to fill the form using Google form. However, cadres faced difficulties in filling the form and understanding some questions. Researchers then revised the questions and conducted a paper-based survey with the help of community health cadres. Researchers gave guidelines to cadres for conduct and applied health protocol during data collection process. Researchers also provided a discussion forum using Group Chat in WhatsApp Application to enable cadres to consult about data collection. In the final process, the participants filled the questionnaires form distributed by cadres.

2.5 Data analysis

Data were analyzed descriptively to explore participants' characteristics and attitudes towards gout. A Chi-square test was conducted to explore the association between gout and the risk factors.

2.6 Ethical consideration

This research is approved by the Medical and Health Research Ethics Committee (MHREC) of Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada - Dr. Sardjito General Hospital (KE/FK/0893/EC/2020).

3. Result

Table 1 shows the characteristic of respondents. Most of our respondents were female with the highest level of education in senior high school. Homemakers and farmers were two of the most common occupations in this area.

The prevalence of gout in our study is 18.35%. Descriptive analysis shows that the prevalence of gout is higher in females, elderly group, no formal education, and having hypertension problems. Food consumption patterns showed respondents consumed medium content purine frequently, such as tempeh (56%) and tofu (52%). Our data also show that most of the respondents (63.3%) were not well-hydrated. Most of our respondents (67%) also have poor gout-related knowledge. However, our bivariate analysis showed that only hypertension and meat consumption were significantly associated with gout. The details of the bivariate analysis are presented in Table 2.

Table 1. The demographic characteristics of study participants (n=109)

Demographic Characteristics	n	%
Sex		
Male	43	39.45
Female	66	60.55
Age (years)		
Productive (< 45 years)	20	18.35
Pre Elderly (45 – 59 years)	48	44.04
Elderly (>59 years)	41	37.61
Highest Education		
Elementary school	23	21.10
Junior high school	21	19.27
Senior high school	45	41.28
Diploma or bachelor's degree	12	11.01
No formal education	8	7.34
Occupation		
Civil servant or military	8	7.34
General employees	6	5.50
Entrepreneur	5	4.59
Housewife	43	39.45
Pensionary	7	6.42
Farmer/laborer	37	33.94
Others	3	2.75

Table 3. shows the gout patients' concerns regarding their conditions. More than 70% of respondents are concerned with the progress and impact of their illness on their daily life. Most respondents are also confident in controlling gout, even though they stated that sometimes gout hinders their activities.

4. Discussion

This study found that the prevalence of gout is high (18.3%) in adult people in rural areas. A gout

Table 2. The gout prevalence according to demographic characteristics, knowledge, and food consumption (n=109)

Characteristics		Gout (n:20)		Non-Gout (n: 89)		p-value
		n	%	n	%	
Sex	Male	6	13.95	37	86.05	0.339
	Female	14	21.21	52	78.79	
Age	Productive (<45 y.o)	4	20.00	16	80.00	0.345
	Pre-elderly (45-59 y.o)	6	12.50	42	87.50	
	Elderly (>59 y.o)	10	24.39	31	75.61	
Education	Elementary School	5	21.74	18	78.26	0.067
	Junior High School	0	0.00	21	100.00	
	Senior High School	11	24.44	34	75.56	
	Diploma/Bachelor's degree	1	8.33	11	91.67	
	No formal education	3	37.50	5	62.50	
Gout related knowledge	Good	8	22.22	28	77.78	0.463
	Poor	12	16.44	61	83.56	
Hypertension	Yes	10	40.00	15	60.00	0.001
	No	10	11.90	74	88.10	
Diabetes Mellitus	Yes	3	37.50	5	62.50	0.146
	No	17	16.83	84	83.17	
Consumption of						
MSG	Rarely	12	18.75	52	81.25	0.897
	Frequently	8	17.78	37	82.22	
Meat	Rarely	17	16.50	86	83.50	0.039
	Frequently	3	50.00	3	50.00	
Fish	Rarely	18	17.14	87	82.86	0.096
	Frequently	2	50.00	2	50.00	
Chicken	Rarely	14	16.09	73	83.91	0.226
	Frequently	6	27.27	16	72.73	
Tofu	Rarely	9	17.31	43	82.69	0.789
	Frequently	11	19.30	46	80.70	
Tempeh	Rarely	9	18.75	39	81.25	0.923
	Frequently	11	18.03	50	81.97	
Coconut milk	Rarely	18	22.22	63	77.78	0.076
	Frequently	2	7.14	26	92.86	

prevention program is needed to maintain a healthy lifestyle and healthy diet, improve gout-related knowledge, and control the progress of gout disease. Our study added to the growing number of evidence on the high prevalence of gout among adults and the elderly in Indonesia, especially in rural areas.[7,8,24] Gout and hyperuricemia are known to be associated with geographical regions and other demographic characteristics such as sex and socioeconomic level.[25,26] A survey conducted in the rural area of Java in 1992 also showed that genetic and racial disposition might cause the high prevalence of gout and hyperuricemia in Java.[27] However, our study did not find any association between gout prevalence and demographic characteristics of the participants. This study may be caused by the limited sample, lack of comparison group, and limited gout diagnosis in the community. A study found that physicians tend to overlook or pay little attention to the chronic joint problems in female patients because they are the oldest and frequently have chronic diseases.[28]

Genetics, lifestyle, and diet are susceptible factors contributing to gout. Moreover, diet is the most modifiable factor.[29,30] The current research showed dietary patterns related to raised serum urate levels. In one study, the 'animal products' dietary pattern was positively correlated with gout, characterized by high intake of fish, fresh meat, animal giblets, and wheat products correlated with increased prevalence of gout in the Yi ethnic group of China.[31] Studies also

Table 3. Respondents' views regarding gout concern (n=20)

No.	Statement	Agreed	
		n	%
1.	I am worried that I will have a gout attack within the next year	15	75
2.	I am afraid that my gout will get worse over time	14	70
3.	I feel anxious that my gout will interfere with my future activities	15	75
4.	I worry that I will not be able to continue to enjoy my leisure activities as a result of my gout	15	75
5.	I am bothered by side effects from my gout medications	10	50
6.	I am mad when I experience a gout attack	10	50
7.	It is difficult to plan for events or activities as a result of my gout	8	40
8.	I feel depressed when I experienced a gout attack	2	10
9.	My current medications are effective for treating a gout attack when I have one	12	60
10.	I miss planned or important activities when I have a gout attack	9	45
11.	I worry about long terms effects of gout medication	10	50
12.	My current medications do not work well to prevent gout attacks from happening	5	25
13.	I have control over my gout	15	75

found that soy food consumption has a protective effect on hyperuricemia levels[32,33], and consumption of red meat is known to be associated significantly with higher levels of uric acid serum.[34–36] Our result showed respondents consumed medium-content purine such as tofu and tempeh frequently, but only meat consumption was associated significantly with gout prevalence. Healthy dietary patterns such as changing meat and seafood consumption with soy products will reduce uric acid production and should be adopted by respondents as a strategy for managing and preventing gout.[37]

Present of comorbidities must be considered during gout prevention and management. Individuals with gout also encounter certain conditions that might worsen their condition, such as hypertension, chronic kidney disease, obesity, diabetes, nephrolithiasis, myocardial infarction, heart failure, and stroke.[38] Our study found that comorbidities become the problems among respondents, especially for respondents with hypertension. Gout management, including a low protein diet, can lead to escalating high fat and high carbohydrate diets, which increase the prevalence of comorbidities.[39] A recent study recommends addressing comorbid treatment along with gout management, for instance, applying a Dietary Approaches to Stop Hypertension (DASH) diet on gout management. DASH diet comprises limiting sodium intake, sweetened beverages, red meat, and processed meats, increasing fruit, vegetables, nuts, legumes, low-fat dairy products, and whole grains.[40]

Gout admitted affecting the quality of life, especially when the patients had comorbidities.[41] Our adaptation of the Gout Assessment Questionnaire (GAQ) showed that most respondents faced difficulty performing tasks during gout attacks. Moreover, our respondents were also concerned about their disease progress and the impact of gout on their lives. A study in Semarang, Indonesia, showed that gout patients used self-medication to control their gout and worsen the symptoms.[42] Systematic reviews also showed that gout disease progress could lead to depression, anxiety, and other mental health problems.[43] Therefore, gout management and control intervention are needed to prevent the worse impact of gout and help gout patients to cope with their illness.

The intervention of gout management was essential to control uric acid levels and maintain a healthy lifestyle of gout patients.[14] Our research showed that gout management programs were needed to maintain a healthy lifestyle and healthy diet, improve gout-related knowledge and control the progress of gout disease, including alleviating the concern regarding gout progress. Intervention in New Zealand showed that community workers could be empowered to support and educate

gout patients and provide links between gout patients in the community and health providers.[44] Moreover, community-based intervention that was led by a health professional and developed with a collaborative and engaging approach is also known to be effective in improving the ability of gout patients in implementing self-management.[7,45,46]

Our study had some limitations in the form of a limited sample and comparison group. We also did not assess participants' physical activity routine as one of the risk factors of gout. However, our study gave some insight into gout problems and the need for gout management programs in rural areas in Indonesia. Further study is needed to explore the practice of gout self-management and the effectiveness of the collaborative community-based intervention in gout management programs.

5. Conclusion

The prevalence of gout is high in adult people in rural areas. The adult people who did not have formal education, hypertension, and meat consumption have a significant association with gout diseases. There is a need for a gout prevention program to maintain a healthy lifestyle and healthy diet, improve gout-related knowledge and control the progress of gout disease. In the rural areas, the involvement of community health workers is essential as human health resources to regular health check people around their community. These activities shall increase the awareness of people about the gout status.

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Conflict of interests

No conflict of interest to declare.

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