

# DESCRIPTION OF URIC ACID LEVELS IN OLDER PEOPLE WHO FREQUENTLY ENGAGE IN SEWING ACTIVITIES IN TILONGKABILA DISTRICT, BONE BOLANGO REGENCY

Meysin Moha<sup>1)</sup>, Tri Sutriani Syam<sup>2)</sup>, Rachma<sup>3)</sup>  
<sup>1,2,3)</sup>Bina Mandiri University of Gorontalo

E-mail: meysinmoha19@gmail.com, sutrianitri86@gmail.com, rahmaanalis.ra@gmail.com

## ABSTRACT

Older people are a group at increased risk of elevated uric acid levels due to decreased kidney function, metabolic changes, and lifestyle factors such as a high-purine diet and low physical activity. Prolonged sewing activities performed in a static sitting position can slow the body's metabolism and lead to uric acid accumulation, thereby increasing the risk of hyperuricemia. This study aims to identify the profile of uric acid levels in older people who frequently engage in sewing activities in Tilongkabila District, Bone Bolango Regency. The research used a quantitative, descriptive, cross-sectional study design. Uric acid levels were examined using Point-of-Care Testing (POCT). This method uses strips and biosensor devices to detect the oxidation of uric acid in capillary blood samples, providing rapid results with minimal blood volume. Based on the research results and data analysis, it can be concluded that most elderly respondents in Tilongkabila District, Bone Bolango Regency, who engaged in sewing activities showed abnormal uric acid levels (73.3%), with an average of 7.297 mg/dL.

**Keywords:** Uric Acid, Elderly, Sewing

## INTRODUCTION

According to *the World Health Organization* (WHO), an elderly person is someone who has reached the age of 60 years and above [1]. The Central Statistics Agency (BPS) groups the elderly into three age groups, namely young elderly (age group 60-69 years), middle elderly (age group 70-79 years), and old elderly (age group 80 years and above) [2].

Aging or becoming older is a condition that occurs in human life. The aging process is a lifelong process, not just starting at a certain point, but starting from the beginning of life [3]. Aging is a natural process that means a person has gone through three stages of life: childhood, adulthood, and old age [4]

uric acid levels due to decreased kidney function that inhibits uric acid excretion, hormonal changes such as decreased estrogen in postmenopausal women, and the use of medications such as diuretics, which are commonly consumed in older age. Furthermore, a high-purine diet, a sedentary lifestyle, and comorbidities such as hypertension, obesity, and diabetes contribute to this condition. All of these factors cause uric acid accumulation in the blood, which can trigger gout attacks or acute gout in the elderly [4]

Based on data from *the National Centers for Health Statistics* under the auspices of WHO, an estimated 34.2% of gout arthritis cases occur in developing countries and 26.3% of *gout arthritis cases occur* in developed countries [5]. According

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to the 2020 Basic Health Research (Riskesdas), in Indonesia, joint disease has a prevalence of 713,783 million (7.30 %). Joint disease based on age 55-64 years is 15.55% or 79,919 million, age 65-74 years is 18.63% or 38,572 million and >75 years is 18.95% or 17,822 million sufferers. Based on these data, it can be concluded that most gout arthritis attacks elderly people [6]

In Bone Bolango Regency, the prevalence of gout cases shows an increasing trend, especially in the elderly group with a high purine consumption pattern. Research at Toto Kabila Regional Hospital found that individuals with an unbalanced diet have a 4.1 times greater risk of developing gouty arthritis compared to those who maintain a healthy diet (OR = 4.136;  $p = 0.04$ ) [7]

In Tilongkabila District (Bone Bolango), a 2020 nursing study in North Toto Village showed that gouty arthritis is a significant health problem among local elderly, although prevalence rates were not directly reported in the study. Clinical findings at Toto Kabila Regional Hospital, which also serves this area, showed that a high-purine diet increases the risk of gout by approximately 4.1 times. (OR = 4.136;  $p = 0.04$ )<sup>2</sup>. These data indicate that although there are no official prevalence figures per 100 or 1,000 population, gout cases are quite common—especially in the elderly with high-purine diet habits and less active lifestyles [8]

Elderly people are at risk of gout due to decreased kidney function, which disrupts uric acid excretion through urine, as well as metabolic and hormonal changes, such as decreased estrogen levels, which play a role in uric acid excretion. This condition is exacerbated by a sedentary lifestyle, as evidenced by sewing, which is often performed in a sitting position for long

periods. Sewing performed for hours without sufficient physical movement can slow the body's metabolism and blood circulation, which can lead to uric acid buildup in the joints, particularly in the hands and feet. Additionally, consuming high-purine snacks while sewing without adequate hydration can also exacerbate this condition. Elderly people who regularly sew without a healthy lifestyle are more susceptible to gout attacks due to the accumulation of urate crystals in the joints. [4]

This condition is exacerbated by a sedentary lifestyle, one example of which is sewing, which is often done in a sitting position for long periods. Sewing performed for hours without sufficient physical movement can slow the body's metabolism and blood circulation, which can lead to uric acid buildup in the joints, particularly in the hands and feet. Furthermore, consuming high-purine snacks while sewing without adequate hydration can also exacerbate this condition. Elderly people who regularly sew without a healthy lifestyle are more susceptible to gout attacks due to the accumulation of urate crystals in the joints [4]

A 2022 study in Salakkembang Village, Tulungagung, found that 83% of obese elderly women had hyperuricemia, indicating a significant association between obesity and uric acid levels ( $p = 0.001$ , Fisher's exact test)<sup>1</sup>. This obesity is often caused by a sedentary lifestyle, including activities such as sewing, which are typically performed in a sitting position for extended periods. These activities result in low energy expenditure, which contributes to body fat accumulation and increased uric acid levels.

Meanwhile, another study at the Maospati Community Health Center,

*Description of Uric Acid Levels in Older People Who Frequently Engage in Sewing Activities in Tilongkabila District, Bone Bolango Regency*

Magetan Regency (2020) involving 55 elderly people found that 85% of respondents aged >60 years had high uric acid levels. Elderly people who engage in static activities, such as prolonged sitting while sewing, are more susceptible to metabolic disorders, as the body has a harder time eliminating excess uric acid as they age. These two studies confirm that elderly people with minimal physical activity, including tailors, are at higher risk of developing hyperuricemia.

Based on this description, the researcher took the initiative to conduct a study entitled Description of Uric Acid Levels in Elderly People Who Often Do Sewing Activities in Tilongkabila District, Bone Bolango Regency.

**RESEARCH METHODS**

This study uses a quantitative approach with the aim of describing uric acid levels in elderly people (elderly) who frequently carry out sewing activities in Tilongkabila District, Bone Bolango Regency, Gorontalo Province.

This type of research uses a descriptive method aimed at describing uric acid levels in elderly people who frequently carry out sewing activities in Tilongkabila District, Bone Bolango Regency, Gorontalo Province.

This research has been carried out in June 2025. And Location The research was conducted in Tilongkabila District, Bone Bolango Regency, Gorontalo Province.

**RESEARCH RESULT**

**Table 4.1.** Distribution of respondents by gender

No	Gender	Frequenc y	Percentage (%)
1	Man	8	26.7

2	Woman	22	73.3
<b>Total</b>		30	100

(Source: Primary Research Data, 2025)

Based on table 4.1 it shows that of the 30 respondents Among the elderly who frequently carry out sewing activities in Tilongkabila District, Bone Bolango Regency, the majority were female, namely 22 people (73.3%), while the respondents who were male were 8 people (26.7%).

**Table 4.2.** Distribution of Respondents by Age

No	Age (Years)	Frequenc y	Percentage (%)
1	60	5	16.7
2	61	3	10.0
3	62	5	16.7
4	63	4	13.3
5	64	8	26.7
6	65	4	13.3
7	67	1	3.3
<b>Total</b>		30	100

(Source: Primary Research Data, 2025)

Based on table 4.2, it shows that the age of respondents in the elderly is starting from 60 years old as many as 5 people (16.7%), 61 years old as many as 3 people (10%), 62 years old as many as 16.7%), 63 years old as many as 4 people (13.3%), 64 years old as many as 8 people (26.7%), 65 years old as many as 4 people (13.3%), and 67 years old as many as 1 person (3.3%).

**Table 4.3.** Distribution of Respondents Based on Age with Uric Acid Examination Results.

No	Age (Years)	Uric Acid Examination Results				Total n	Total %
		Normal		Abnormal			
		n	%	n	%		
1	60	3	10	2	6.7	5	16.7
2	61	0	0	3	10	3	10
3	62	1	3.3	4	13.3	5	16.7
4	63	1	3.3	3	10	4	13.3
5	64	4	13.3	4	13.3	8	26.7
6	65	1	3.3	3	10	4	13.3
7	67	0	0	1	3.3	1	3.3
<b>Total</b>		<b>10</b>	<b>33.3</b>	<b>20</b>	<b>66.7</b>	<b>30</b>	<b>100</b>

(Source: Primary Research Data, 2025)

level test results based on the respondents' age. Of the 30 respondents, 10 (33.3 %) had normal uric acid levels, while 20 (66.7%) showed abnormal results.

**Table 4.4.** Distribution based on diet and physical activity on uric acid levels .

No	(Sewing Activity)	Category	Uric Acid Levels		Total
			Nor	Abnor	
			mal	mal	
1	Sewing Time (hours per day)	1-2	1	7	8
		2-4	9	13	22
		<b>Total</b>	<b>10</b>	<b>20</b>	<b>30</b>
2	Feeling Tired/Sore	Yes	4	13	17
		No	6	7	13
		<b>Total</b>	<b>10</b>	<b>20</b>	<b>30</b>
3	Eating Habits	Yes	1	9	10
		No	9	11	20
		<b>Total</b>	<b>10</b>	<b>20</b>	<b>30</b>

(Source: Primary Research Data, 2025)

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Based on Table 4.4, it shows the total distribution of uric acid levels based on several indicators in the sewing activity questionnaire, namely sewing time per day, complaints of fatigue/soreness, and eating habits.

1. Sewing Time (hours per day)

There were 8 respondents who sewed for 1–2 hours per day, with 1 person (3.3%) having normal uric acid levels and 7 people (23.3%) having abnormal uric acid levels. Meanwhile, there were 22 respondents who sewed for 2–4 hours per day, with 9 people (30%) having normal uric acid levels and 13 people (43.3%) having abnormal results. There were no respondents who sewed for more than 4 hours per day. Overall, these results indicate that abnormal uric acid levels were most commonly found in the group who sewed for 2–4 hours per day, although the proportion of normal levels was also higher in this group compared to other sewing time groups.

2. Feeling Tired or Sore While Sewing

Seventeen respondents ( 56.7 %) reported experiencing fatigue or soreness after sewing. Of these, four (13.3 %) had normal uric acid levels, and 13 (43.3%) had abnormal levels. Of the 13 respondents ( 43.3 %) who did not experience fatigue or soreness, six (20%) had normal levels, and seven (23.3%) had abnormal levels. These results indicate that fatigue or soreness is more common among respondents with

abnormal uric acid levels, which may be associated with joint disorders or inflammation due to hyperuricemia.

### 3. Eating Habits

Of the 11 respondents with specific dietary habits, 2 (6.7 %) had normal uric acid levels and 9 (30%) had abnormal levels. Of the 19 respondents without specific dietary habits, 8 (26.7 %) had normal levels and 11 (36.7%) had abnormal levels. These results indicate that certain dietary habits can potentially increase uric acid levels, although abnormal levels were also quite common in the group without specific dietary habits.

The results of the study showed that most respondents with high-purine dietary habits (e.g., consumption of red meat, seafood, and alcohol) experienced abnormal uric acid levels, namely 9 out of 10 respondents. This supports the theory that a high-purine diet significantly influences the increase in uric acid levels, because purine will be metabolized into uric acid, which if produced excessively can cause hyperuricemia. However, abnormal levels were also found in respondents who did not report specific dietary habits, indicating that other factors such as physical activity, age, kidney function, and metabolic conditions also influence variations in uric acid levels. This is in line with the results of descriptive statistics which showed a fairly high standard deviation (2.7621 mg /dL), indicating differences between individuals. Thus, it can be concluded that high-purine dietary habits have a large contribution to

uric acid levels, but are not the only causative factors. Individual variations such as activity habits, medical history, and other lifestyles also play an important role in determining a person's uric acid levels [9]

## DISCUSSION OF RESEARCH RESULTS

The study results showed that the majority of elderly respondents who sewed in Tilongkabila District, Bone Bolango Regency, had abnormal uric acid levels. The study involved 30 elderly respondents, consisting of 8 men and 22 women, aged between 60 and 67 years. Uric acid levels were examined to determine the relationship between sewing activities and habits and high uric acid levels in the elderly.

According to continuity theory and gender schema theory, older adults tend to maintain activities that have been part of their lives since a young age, while social and cultural roles also shape gender-specific activity preferences. In the Indonesian cultural context, sewing is generally associated with women's roles because this skill is related to precision, patience, and household chores, which are often carried out from a productive age. This is in line with the theory that activities that are in line with gender roles and previous life experiences are more likely to be maintained into old age [10]

Based on the results of the distribution of respondents based on gender, the majority of elderly respondents who frequently carry out sewing activities in Tilongkabila District, Bone Bolango Regency are female (73.3 %), while only 26.7% are male.

This finding is consistent with the fact that sewing is a skill more commonly performed by women, both as a household

chore and as a productive activity in later life. Sewing requires precise manual skills, patience, and habits that are generally more developed in women than in men [11]

According to the theoretical understanding of kidney aging, with increasing age there is a progressive decrease in the glomerular filtration rate (eGFR), accompanied by a reduction in the number of functioning nephrons, hemodynamic changes, and a decrease in the ability of the renal tubules to excrete metabolic waste products such as uric acid (urat).

Based on the distribution of respondents by gender, the majority of respondents were aged 64 years (26.7 %) and 60–62 years (16.7%, respectively). Advanced age is a risk factor for increased uric acid levels. As age increases, kidney function declines, thus reducing the body's ability to excrete uric acid [12].

Based on the results of age distribution with uric acid examination results, the results show that respondents with abnormal uric acid levels are more dominant (66.7 %) in almost all age groups, especially at the age of 64 years. According to the Indonesian Ministry of Health (2021), hyperuricemia in the elderly can trigger joint inflammation (gout) which interferes with daily activities, including handicrafts such as sewing [13]

This research is in line with the research of Nugraha et al. (2022) which states that decreased nephron function in the elderly contributes to the accumulation of uric acid in the blood, thereby increasing the risk of hyperuricemia, especially in the age group over 60 years [14]

Prolonged static sitting can reduce peripheral blood flow and contribute to joint stiffness. Apart from physical activity factors, dietary patterns are also an

important aspect that is studied. From the questionnaire distributed, it was found that 10 respondents had a habit of consuming foods high in purines, such as offal, red meat, nuts, and seafood.

levels can be influenced by high-purine diets, lack of physical activity, and comorbidities such as hypertension or chronic kidney disease. A study by Pratama & Lestari (2023) confirmed that elderly people with low physical activity tend to have higher uric acid levels than those who are physically active [15]

This examination indicated a high prevalence of hyperuricemia in the elderly group engaged in sewing activities. This activity is categorized as static work, meaning it involves minimal body movement. Prolonged sitting while sewing can slow blood flow and metabolism, thereby impairing uric acid excretion through the kidneys. This is consistent with the theory of Liu et al. (2020), who stated that a sedentary lifestyle is positively correlated with increased uric acid levels in the blood [16]

Based on interviews with respondents, most stated that sewing is part of their daily routine, averaging 2–4 hours per day. This activity is done either to fill spare time or as a supplementary job. Although it may seem light, repeated sewing activities every day can cause local muscle fatigue, particularly in the hands and shoulders. Respondents also reported experiencing joint aches and pains after sewing. Seventeen (56.7 %) reported frequent fatigue or soreness, 13 of whom had high uric acid levels.

Of this group, 9 respondents (90%) had high uric acid levels. According to [17], consumption of foods high in purines from animal sources contributes greatly to the

formation of uric acid, because purines are broken down into uric acid in the process.

The results of this study are in line with research conducted by Rahmawati and Lestari (2023) which stated that increased uric acid levels in the elderly can be influenced by excessive physical activity or carried out for a long time without sufficient rest, because this can increase metabolic stress and inhibit the process of uric acid excretion by the kidneys [12]

According to [4], muscle and joint pain are one of the early symptoms of gouty arthritis, which is joint inflammation caused by the buildup of uric acid crystals. This occurs when uric acid settles in the articular tissue, causing inflammation, swelling, and pain. This symptom is often ignored by the elderly because it is considered ordinary fatigue, even though it can be an early indicator of a more serious metabolic disorder.

Respondents also admitted that their water consumption was relatively low, averaging below 1 liter per day. In fact, according to the literature, consuming sufficient fluids can help the body eliminate excess uric acid through urine [18]. Low water intake also increases the risk of urate crystal formation in the kidneys, which can ultimately lead to kidney stones or chronic kidney failure.

Based on the results of descriptive statistical analysis, the uric acid levels in 30 respondents had the lowest (minimum) value of 3.4 mg/dL and the highest (maximum) value of 15.2 mg/dL. The average uric acid level was 7.297 mg/dL. mg/dL with a standard deviation of 2.7621 mg/dL. This average value is above the normal threshold in the general population, which is 3.5–7.2 mg /dL in men and 2.6–6.0 mg/dL in women [19]

The descriptive test results in this study showed a standard deviation of 2.7621, indicating significant variation among respondents in uric acid levels. A very high maximum value (15.2 mg/dL) is a condition that requires caution, as according to Poudel et al. (2021), uric acid levels above 10 mg/dL are considered critical, which can lead to kidney and joint complications.

The standard deviation of 2.7621 mg/dL indicates a significant variation between respondents, which may be due to differences in diet, physical activity, age, kidney function, and history of metabolic disease. According to [20], high consumption of purines (e.g., from red meat, organ meats, and seafood) and the habit of drinking alcoholic beverages can increase uric acid production. In addition, decreased kidney function due to aging or chronic disease can inhibit uric acid excretion, thereby increasing blood levels [20]

A maximum value of 15.2 mg /dL is considered well above the normal value and may indicate severe hyperuricemia, which carries the risk of complications such as gouty arthritis, uric acid nephrolithiasis, and impaired kidney function [4]. Meanwhile, a minimum value of 3.4 mg /dL is below the normal limit for men but still within the normal range for women. This suggests that a small proportion of respondents may have low uric acid levels, which may be influenced by a low-purine diet or increased excretion due to the use of certain diuretic drugs.

In this study, an analysis was also conducted on the sewing time variable. Respondents who sewed for 2–4 hours per day were the group with the highest percentage of abnormal uric acid levels. This can be explained by the theory of Zhao et al. (2021), which states that light physical activity performed repeatedly without

stretching or full body mobility can trigger an increase in local metabolism, but is not sufficient to increase uric acid excretion through the systemic circulation [18].

Uric acid can cause pain due to the accumulation of crystals. Monosodium urate crystals accumulate in the joints due to high uric acid levels in the blood (hyperuricemia). When uric acid levels exceed the normal solubility limit, these crystals precipitate in joint tissue and trigger an inflammatory response. Immune cells, such as neutrophils and macrophages, attack these crystals, producing inflammatory mediators such as cytokines (IL-1 $\beta$ , TNF- $\alpha$ ) and prostaglandins, which cause pain, swelling, and redness in the joints. This inflammatory process causes pressure and tissue damage around the joints, resulting in sharp, sudden pain, especially at night or after consuming foods high in purines. This condition is known as an acute gout attack, which is a clinical manifestation of chronically elevated uric acid levels in the body [4]

The analysis also showed that the elderly group who did not experience fatigue actually had a higher proportion of normal uric acid levels. This suggests that subjective symptoms such as fatigue and soreness can be early indicators of metabolic disorders, although they are not always directly related to the duration of activity.

Previous research by [21] also showed that elderly people with irregular eating patterns, high protein consumption, and low activity had a higher prevalence of hyperuricemia compared to the active elderly group and those with a balanced diet.

Research by [22] shows that controlling uric acid levels through a low-purine diet and regular physical activity can reduce the risk of complications such as

gout and cardiovascular disease in the elderly.

Overall, the findings in this study strengthen the view that uric acid levels are influenced by many factors, including age, sex gender, physical activity, diet, and hydration. Sewing activities in the elderly, even though they are considered light, if done statically and for hours, can contribute to metabolic disorders if not accompanied by light exercise and a healthy lifestyle.

Pharmacists as health professionals have an important role in educating the public about the safe use of herbal medicines. However, studies show that many pharmacists face challenges in carrying out this task. These challenges include lack of time for consultation, limited knowledge about herbal medicines, and patient distrust of pharmacists. Therefore, an in-depth analysis is needed to evaluate the role of pharmacists in improving public understanding of the risks of herbal and prescription drug interactions [23]

## CONCLUSION

Based on the results of the research and data analysis that has been carried out, it can be concluded that the majority of elderly respondents who carry out sewing activities in Tilongkabila District, Bone Bolango Regency, showed abnormal uric acid levels (66.7 %) with an average value reaching 7.297 mg/dL.

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