

ORIGINAL RESEARCH

Physical activity, dietary patterns, and uric acid among menopausal women living on the mountainsideRetno Anggita Pratiwi , Sumarno Adi Subrata**Author information**

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12/10/2025**Abstract**

High-altitude environments can impact uric acid levels due to factors like lower oxygen levels, dietary habits, and lifestyle changes. This phenomenon made it essential to investigate these dynamics in mountainous regions. Women living on mountainsides may have unique risk factors for hyperuricemia and related health issues. However, studies on this topic were limited in the literature. This study aimed to investigate the relationship between physical activity, dietary patterns, and blood uric acid levels in menopausal women. Employing a descriptive analytic approach with a correlational design, data was collected using a cross-sectional method from a sample of 60 women living on the mountainside in Temanggung, Central Java, Indonesia. The collected data was analysed using multiple linear regression and chi-square tests. The multiple linear regression analysis, examining physical activity and dietary patterns in relation to blood uric acid levels obtained a statistically significant ($p < 0.05$). This finding indicates a significant relationship between both physical activity and dietary patterns and blood uric acid levels in among menopausal women. Community healthcare workers need to pay particular attention to those living on the mountainside, as these residents are often geographically distant from essential healthcare facilities.

Keywords: Community health, dietary patterns, menopausal women, mountainside population, physical activity, uric acid**Introduction**

Non-communicable diseases (NCDs) are chronic, long-lasting conditions that develop gradually and are not transmitted from person to person (Piovani et al., 2022). One common non-communicable disease is joint inflammation, particularly gout, which is characterized by the accumulation of uric acid crystals in the joints—most often affecting areas like the big toe, knees, or ankles, rather than the muscles (Parisa et al., 2023). Gout results from the breakdown of purines, substances found in certain foods and cells, which are metabolized into uric acid and normally excreted by the body (Asghari et al., 2024). Elevated levels of uric acid in the blood (hyperuricemia) can lead to degenerative joint conditions such as gout as uric acid crystals accumulate and cause inflammation and pain (Ahn & So, 2025). Data from various study including those referencing the WHO's Global Burden of Disease (GBD) database, show that North America has a higher prevalence (around 2.7% to 3.9%) (Punjwani et al., 2024). In Indonesia, joint diseases are the most prevalent NCDs affecting 30.3% of the population—higher than hypertension (29.8%), stroke (8.3%), asthma (3.5%), heart disease (3.2%), tumors (4.3%), and diabetes (1.1%) (Sulistianingsih et al., 2018). Their prevalence increases significantly with age 45.0% among individuals aged 55–64, 51.9% in those aged 65–74, and 54.8% in people aged 75 and older. Among the elderly, gout arthritis, osteoarthritis, and rheumatoid arthritis are the most commonly experienced joint conditions (Butarbutar et al., 2024).

Excessively high levels of uric acid can raise from two main causes either the body produces too much uric acid or it fails to excrete it efficiently (Timsans et al., 2024). Overproduction of uric acid can be influenced by factors such as diet—particularly the consumption of purine-rich foods (**Figure 1**)—alcohol intake, and obesity (Mustafa et al., 2025). Conversely, impaired excretion of uric acid can be influenced by factors such as the use of certain medications like diuretics, as well as underlying conditions like kidney disease or exposure to toxins. Several factors influence uric acid levels in the body, with physical activity being a significant contributor. A person's level of physical activity directly affects the concentration of uric acid in their blood (Zhang et al., 2024). Activities such as exercise or even routine movements like household chores can reduce the excretion of uric acid while simultaneously increasing the production of lactic acid in the body (Cai et al., 2024). The more strenuous and prolonged the physical activity, the higher the production of lactic acid.

Another key factor influencing uric acid levels is diet. Unhealthy and unbalanced eating patterns can contribute to elevated uric acid levels (Wen et al., 2024). This occurs because diet affects the intake of exogenous purines—compounds that are metabolized into uric acid. Purines are components of nucleic acids found in cell nuclei and can be sourced from both plants, such as legumes, and animals, including offal and shrimp (Décout et al., 2025). Although gout can affect individuals of any gender, women generally face a heightened risk of elevated uric acid levels after menopause. Prior to menopause, estrogen plays a protective role by enhancing the kidneys' ability to excrete uric acid through reduced reabsorption (Ioannou & Boyko, 2013). However, following menopause, the decline in estrogen levels diminishes this effect, leading to an increase in uric acid concentration.

Thus, menopause can increase the risk of gout in women (Hak et al., 2010). However, not all menopausal women will develop gout solely due to declining estrogen levels, as various factors contribute to fluctuations in blood uric acid (Eun et al., 2021). Maintaining a balanced daily diet and engaging in appropriate physical activity are essential strategies for managing uric acid levels (Zhang et al., 2022). If elevated uric acid persists over time, it may lead to serious kidney complications (Johnson et al., 2022). It is important to note that physical activities on a mountainside—such as hiking, climbing, or trekking—can influence uric acid levels and potentially affect individuals with gout. The combination of strenuous exertion and high-altitude conditions may lead to increased lactic acid production. Additionally, dehydration, which is common during prolonged activity at elevation can further concentrate uric acid in the blood. For individuals predisposed to gout, these factors may trigger acute flare-ups. Therefore, while mountainside activities offer cardiovascular and musculoskeletal benefits, they should be approached with caution and proper hydration especially by those managing hyperuricemia or gout. However, studies on investigating that impact was limited particularly in Indonesia. Numerous diseases can arise from elevated uric acid. Preventive measures are beneficial for gout sufferers to prevent their condition from worsening. This, of course, must be accompanied by medication prescribed by a doctor. To avoid gout complications, individuals should maintain a normal or healthy weight, reduce excessive physical activity which can increase blood uric acid, and adhere to a diet low in purines (Cheng-Yuan & Jian-Gang, 2023).

A study in Indonesia explained the significant correlation among physical activity and uric acid levels (Saputri, 2020). According to a study by Atikah (2020), an examination of 70 samples at the Mampang Prapatan District Community Health Center showed that uric acid levels were elevated in the majority of menopausal women (36 individuals or 51%), while 34 individuals (49%) had normal levels. The study concluded that elevated uric acid levels were dominant among menopausal women at this health center compared to normal levels. A literature review indicated that the average uric acid levels in menopausal women tend to increase. This is attributed to many respondents not maintaining their diet and consuming high-purine foods. Furthermore, the local community's diet often includes vegetables and legumes from their gardens, some of which contain high levels of purines, such as spinach, asparagus, and cauliflower. Based on the aforementioned context, the researcher is interested in observation of physical activities, dietary patterns with blood uric acid levels in menopausal women. A preliminary survey conducted by the researcher indicates that there has been no prior research on the relationship between diet and physical activity and blood uric acid levels in menopausal women in this specific area. Additionally, the nearest health services or community health centers in the region do not offer routine uric acid testing. This observational study is important because it addresses a significant, yet under-researched, intersection of health factors critical to a vulnerable demographic of menopausal women living in a specific geographical setting (mountainside). Clarifying these relationships in this specific environmental and physiological context can inform effective public health interventions for rural and mountainous communities that moving to the generalized recommendations.

Method

The study employed a descriptive analytic research design with a correlational approach to examine the relationships between variables. Analytic research aims to understand how and why a phenomenon occurs through statistical analysis,



Figure 1. Illustration of food leading uric acid in human body (Generated by AI).

such as establishing correlations between cause and effect, or risk factors and their effects (Aggarwal & Ranganathan, 2019). The study employed a cross-sectional design that examining the correlation between risk factors (independent variables) and outcomes (dependent variables). Data on both risk factors and outcomes were collected simultaneously at a single point in time (Capili, 2021). Specifically, the researchers measured blood uric acid levels (dependent variable) and observed physical activity and dietary patterns (independent variables) concurrently. The population in research refers to the entire group of subjects that the researcher intends to study. The Indonesian Ministry of Health estimated that the Indonesian population reached 262.6 million in 2020, with approximately 30.3 million women living in menopause, averaging 49 years of age at menopause onset. The proportion of women aged 30-49 experiencing menopause increases with age: 17% for women aged 44-45, and 43% for women aged 48-49. Based on that information, the study population consisted of all women aged 49 years and older in Bansari Village, Temanggung, Central Java, Indonesia, totaling 90 postmenopausal women as of December 2024. A sample of 60 women was selected through a screening process of secondary data, applying specific inclusion and exclusion criteria. Thirty individuals were excluded due to pre-existing conditions like hypertension and diabetes or because they had not yet reached menopause despite being 49 or older. The final sample included 60 women who met the study's eligibility criteria (**Figure 2**).



Figure 2. Data collection process (Documented by authors).

The Global Physical Activity Questionnaire (GPAQ), developed by the World Health Organization (WHO), is a standardized tool used to assess an individual's physical activity levels (Keating et al., 2019). The tool comprises 16 straightforward questions that capture activities performed over the previous week, categorized into four domains: work-related physical activity, travel-related activity, recreational activity, and sedentary behavior. The GPAQ quantifies these activities using Metabolic Equivalent of Task (MET), a physiological metric that reflects the intensity of physical activity. One MET represents the energy expenditure at rest. Since different activities have distinct MET values, physical activity levels are evaluated based on criteria derived from these measurements. Nutrition was assessed using a dietary pattern questionnaire that included two components: types of food consumed and meal frequency. The food type section consisted of seven positively framed questions, each scored on a scale from 1 to 4—where a

score of 4 indicated "always," 3 "often," 2 "sometimes," and 1 "never." A total score above 28 was categorized as a good dietary pattern, while a score of 28 or below indicated a poor dietary pattern. The meal frequency section comprised nine positively framed questions, scored as follows: 3 points for frequent consumption (4–6 times per week), 2 points for infrequent consumption (1–3 times per week), and 1 point for never. Meal frequency was considered good if the total score was 11 or below, and poor if the score exceeded 11. Face validity was used to assess the validity of the questionnaire, as it is the most accessible and commonly applied form of validity. The reliability test yielded a Cronbach's alpha of 7.13 for the food type component and 6.81 for the meal frequency component. For this study, primary data were collected directly from respondents living with gout in Bansari Village, Temanggung Regency, during the research period.

Data collection was conducted through two main methods such as administering structured questionnaires and performing direct measurements of uric acid levels using the Easy Touch GCU device (Routinely calibrated). Participation in the study was entirely voluntary, and all respondents were provided with informed consent prior to data collection. The data collection process was conducted from December 2024 to January 2025. In general, questionnaires are a widely preferred method for data collection in research, serving as an essential tool for gathering information—particularly in studies addressing issues of public interest. This method involves distributing a standardized set of written questions to a group of subjects in order to elicit their responses, insights, or relevant information. Descriptive statistics and multiple linear regression analysis were performed using SPSS to examine the relationship between independent variables and the dependent variable. Prior to regression analysis, several assumptions were tested, including normality, heteroscedasticity, multicollinearity, and autocorrelation, to ensure the data met the necessary prerequisites for valid inference. A

significance level of 0.05 was used to test the hypothesis. This study received ethical approval from the Ethics Committee of the Faculty of Health Sciences, Muhammadiyah University of Magelang, Indonesia (Number: 048/KEPK.FIKES/II.3.AU).

Results

All respondents in this study were female, totaling 60 individuals (100%). The majority of them were between 55 and 65 years old, accounting for 36 respondents (60%). Furthermore, most participants had completed only primary education, with 45 individuals (75%) falling into this category. In terms of occupation, all respondents worked as farmers (100%). Regarding health status, uric acid measurements revealed that 41 out of 60 respondents (68.3%) had abnormal uric acid levels. On average, the uric acid concentration among all participants was recorded at 6.2 mg/dL. In terms of physical activity, a significant portion of respondents—42 individuals (70%)—were classified as having a moderate level of activity. This classification was based on the Global Physical Activity Questionnaire (GPAQ) developed by the World Health Organization (WHO), which defines moderate activity as spending approximately 40% of time sitting or standing and 60% engaged in work-related physical tasks, with a physical activity score of ≥ 600 MET. Dietary patterns also played a notable role. Most respondents—41 individuals (68.3%)—had a diet characterized by high-purine food intake. Commonly consumed purine-rich foods included legumes, water spinach, cabbage, and joint fir (*melinjo*). Additionally, 42 respondents (70%) reported a high frequency of purine-rich food consumption over the past week (**Table 1**).

Table 1. Demographic profile of the participants.

Variables	Frequency (n)	Percentage (%)
Sex		
Female	60	100
Age		
45-54 years	11	18.3
55-65 years	36	60
66-74 years	9	15
75-90 years	4	6.7
Education		
Elementary School	45	75
Junior High School	25	25
Work		
Farmer	60	100
Uric acid		
Abnormal	41	68.3
Normal	19	31.7
Physical activities		
Low	18	30
Moderate	42	70
Eat pattern		
High purine	41	68.3
Low purine	19	31.7
Eat frequency with high-purine food		
4-6x/week	42	70
1-3x/week	18	30

The results of the chi-square analysis examining the relationship between physical activity and uric acid levels showed a p-value of 0.00, which is less than the significance level $\alpha=0.05$. Therefore, it can be statistically concluded that there is a significant relationship between physical activity and uric acid levels. Similarly, the relationship between dietary patterns (types of food) and uric acid levels also indicated a statistically significant association ($p<0.05$). Furthermore, the analysis of meal frequency and uric acid levels showed a significant relationship ($p<0.05$) (**Table 2**). These findings suggest that physical activity and dietary patterns, including meal frequency, are important factors influencing uric acid levels. The significant relationships observed in this study highlight the importance of lifestyle modifications in managing uric acid

levels. Healthcare providers can use these results to educate patients about the benefits of regular physical activity and a balanced diet in preventing hyperuricemia.

Table 2. Analysis among variables.

Variables	<i>p</i> *	Interpretation
Uric acid*physical activities	0.00	Significant correlation
Uric acid*eat pattern	0.00	Significant correlation
Uric acid*eat frequency with high-purine food	0.00	Significant correlation

*=significant at 0.05 levels.

The correlation coefficient (R) was found to be 0.665, indicating a moderate to strong relationship (**Table 3**). The percentage of influence from physical activity and dietary patterns on uric acid levels was 44.2%. Based on the statistical table, the significance value was 0.000, which is less than the threshold of $\alpha = 0.05$. Therefore, it can be concluded that physical activity and dietary patterns among postmenopausal women are significantly associated with uric acid levels when considered simultaneously (**Table 4**). Furthermore, the results of the multiple linear regression analysis examining the relationship between physical activity and dietary patterns with uric acid levels in postmenopausal women also showed a significance value ($p < 0.05$). This confirms a statistically significant relationship between these variables. The correlation coefficient (R) remained at 0.665, and the coefficient of determination (R^2) was 0.442. Thus, physical activity and dietary patterns collectively account for 44.2% of the variation in uric acid levels, while the remaining 55.8% is influenced by other factors outside the scope of this study (**Table 5**).

Table 3. Coefficient determination.

Model	R	R square	Adjusted R square	Standard error
1	0.665	0.442	0.410	0.28830

*=significant at 0.05 levels.

Table 4. Simultaneous analysis.

Model	Sum of squares	df	Mean square	Frequency (n)	<i>p</i> *
Regression	3.430	3	1.1143	13.755	0.000
Residual	4.322	52	0.083		
Total	7.752	55			

*=significant at 0.05 levels.

Table 5. Regression analysis.

Model	Unstandardized B	Coefficient standard error	Standardized coefficient beta	T	<i>p</i> *
1 (constant)	0.429	0.706		0.608	0.546
Physical activities	0.469	0.140	0.593	3.348	0.002
Eat pattern	-0.005	0.014	-0.062	-0.330	0.743
Eat frequency with high-purine food	0.004	0.027	0.029	0.150	0.882

*=significant at 0.05 levels.

Discussion

The findings of this study are consistent with research conducted to examine the relationship between physical activity and uric acid levels among elderly individuals in the service area of the Al-Kautsar Foundation Nursing Home in Palu. That study employed a quantitative approach with descriptive-analytic methods using a cross-sectional design. The sampling technique used was purposive sampling, involving 36 elderly participants. Data were collected through questionnaires and uric acid level testing devices. Based on the chi-square test, the study reported a p-value of 0.000 ($p < 0.05$), indicating a statistically significant relationship between physical activity and uric acid levels among the elderly in that setting (Ali et al., 2024). Furthermore, nurses play a vital role in controlling uric acid levels in the community through promotive, preventive, curative, and rehabilitative approaches, in collaboration with local village officials and community members. This role includes encouraging appropriate physical activity to help regulate uric acid levels in the body. In addition, nurses

contribute to early prevention and detection by identifying individuals with unhealthy lifestyle habits and providing necessary interventions particularly to those living on the mountainside (**Figure 3**).

According to the researcher, there is a relationship between food type and uric acid levels among 41 respondents who frequently consumed purine-rich foods. These respondents tended to eat foods high in purines such as legumes, cassava leaves, spinach, water spinach, and others. These food items were commonly consumed because they are easily accessible and often come from the respondents' own harvests, as most of them work as farmers. Additionally, respondents reported that tofu and *tempe* were favored for their pleasant taste and relatively low cost. According to Kudha et al (2017), tofu and tempeh contain essential nutrients such as protein, calcium, carbohydrates, phosphorus, iron, vitamins A, B, and C, and water. The proteins in tofu and tempeh consist of amino acids, many of which are metabolized into purines. A study conducted by Harto et al (2023) employed a quantitative method with a cross-sectional approach and included a sample of 50 participants. The analysis revealed that among the 50 respondents, 22 individuals (64.7%) who frequently consumed purine-rich foods had elevated uric acid levels, while 16 respondents (100%) who rarely consumed such foods had controlled uric acid levels. The Chi-square test obtained a p-value of 0.000, indicating a statistically significant relationship between high-purine food consumption and gout. The study concluded that managing low-purine intake can be achieved by limiting purine-rich foods, reducing high-fat foods, maintaining an ideal body weight, engaging in regular physical activity, drinking sufficient water daily, and getting adequate sleep. The role of community nurses begins with providing care services through the assessment of nursing problems, planning appropriate interventions, and evaluating the care delivered to individuals, families, groups, and communities. Secondly, nurses act as educators and consultants that facilitating behavioral changes aimed at achieving optimal health outcomes. Thirdly, nurses serve as role models by demonstrating healthy practices in their professional conduct. In rehabilitative efforts, nurses contribute to the recovery of individuals with gout by promoting the reduction of purine-rich food intake.

There is a significant relationship between meal frequency and blood uric acid levels in postmenopausal women. The purine content in food is categorized into three levels: high purine content (150–180 mg/100 grams), found in organ meats, duck meat, and seafood, which should be avoided; moderate purine content (50–150 mg/100 grams), found in beef, chicken, tofu, *tempe*, cauliflower, green beans, legumes, spinach, and water spinach, which may be consumed in limited amounts; and low purine content (below 50 mg/100 grams), found in rice, sweet potatoes, cassava, corn, bread, and noodles, which can be consumed daily. This indicates that not all foods contribute to the development of gout—only certain foods need to be avoided, while others are safe for regular consumption (Kudha et al., 2017). Dietary patterns and food consumption behavior refer to the arrangement of food types and quantities consumed by an individual or group at a given time (Stock et al., 2018). Eating patterns reflect the behaviors or practices adopted by individuals or groups in selecting and utilizing food ingredients in their daily nutritional intake (Bailey, 2021). The patterns include the types of food, portion sizes, and meal frequency, and are influenced by the sociocultural context in which they live. The role of community nurses as educators is carried out by teaching the public how to adopt healthy lifestyles. Healthcare professionals are responsible for providing education to the community in the form of health promotion, with the aim of improving public knowledge and habits. Through active engagement, they help promote behavioral changes that support healthy lifestyle.

Based on statistical analysis using multiple regression tests, a significant relationship was found between physical activity and dietary patterns with blood uric acid levels in postmenopausal women. Nurses play a strategic role in helping postmenopausal women manage uric acid levels through approaches focused on physical activity and nutrition. This includes providing education about the physiological changes during menopause that may increase the risk of elevated uric acid, such as metabolic shifts and declining estrogen levels. Nurses also emphasize the importance of regular physical activity and healthy eating habits in controlling uric acid levels, along with conducting routine screening and early



Figure 3. Illustration of people living on the mountainside (Generated by AI).



Figure 4. Illustration of hospital on the mountainside (Generated by AI).

physical exertion with adequate hydration and rest, helping them understand how strenuous activity may affect their metabolic processes. With conducting regular health screenings and promoting moderate, sustainable physical activity, nurses can help prevent gout flare-ups and other complications associated with hyperuricemia. Dietary habits in mountainous regions are often shaped by local agricultural practices and limited access to diverse food sources. Nurses must assess the nutritional intake of menopausal women, particularly their consumption of purine-rich foods such as legumes, leafy greens like water spinach, and traditional ingredients like *melinjo*. Through counseling, healthcare professionals can guide women toward dietary modifications that reduce purine intake without compromising nutritional adequacy (Danve et al., 2021). This includes promoting alternative protein sources, encouraging balanced meal planning, and collaborating with local food suppliers or community leaders to improve access to healthier options. Nurses need to dispelling myths and misconceptions about food and gout to ensure that dietary advice is evidence-based approach to individual needs.

In addition to physical and dietary considerations, nurses must address the broader health context of menopausal women living in remote mountainous areas. These women may face barriers to healthcare access, such as transportation difficulties, limited medical infrastructure, and low health literacy. Nurses and healthcare teams can mitigate these challenges by implementing mobile health clinics, community-based education programs, and partnerships with local organizations (Ngo et al., 2021; Fang et al., 2014). Preventive care becomes especially vital in these settings, where early detection of elevated uric acid levels can prevent long-term complications like kidney damage. Healthcare professionals must also advocate for policy changes that address the unique needs of mountainous populations, such as subsidized access to uric acid testing devices or nutritional supplements. In doing so, nurses improve individual health outcomes and contribute to the resilience and well-being of entire communities living on the mountainside. In this study, several limitations may have influenced the results. First, the dietary pattern questionnaire relied on respondents' memory to report the types and frequency of food consumed over the past week, which introduces the potential for recall bias during data collection. Second, the data collection process required respondents to be taught how to complete the questionnaire, which was time-consuming. Additionally, the short duration of the study was insufficient to observe significant changes in uric acid levels resulting from dietary or physical activity modifications. Lastly, methodological limitations were present due to the small sample size, which restricts the generalizability of the findings to a broader population.

Conclusion

Most postmenopausal women in mountainside have sufficient physical activity and a diet high in purine-rich foods and frequency. However, they have abnormal uric acid levels during observation. There is a significant relationship between physical activity and diet with uric acid levels in the blood of postmenopausal women, as evidenced by statistical analysis results. For the community, it is necessary to maintain a healthy diet, especially by limiting purine-rich foods that can increase uric acid levels in the blood, reducing strenuous physical activity, and undergoing regular health checks. Additionally, adopting a healthy lifestyle is recommended. It is expected for future research that they can expand the research location with a larger population and add more variables to be studied, thereby producing more accurate results.

detection through periodic monitoring (Mustafa et al., 2025). As health educators, nurses optimize knowledge and promote behavioral changes that support maintaining uric acid levels within a normal range. This is achieved through lifestyle modifications with consideration the needs of postmenopausal women. Caring for menopausal women living on the mountainside presents unique challenges and opportunities for nurses and healthcare professionals, particularly in managing uric acid levels influenced by physical activity and dietary patterns in hospital in that setting (**Figure 4**). The mountainous terrain often encourages physically demanding lifestyles, such as farming, trekking, or manual labor, which can elevate lactic acid production and potentially reduce uric acid excretion. Nurses play a critical role in educating these women about balancing

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AI statements

This study did not use AI for data analysis or manuscript writing for publication. However, the authors only used AI to create the illustration in Figure 1 & 3.

Author declaration

The lead author was responsible for conceptualizing the study, identifying knowledge gaps, and collecting data. The second author conducted verification of the research process to ensure its suitability for publication.

Availability of data and materials

All data generated during the study are available in the corresponding author's archive. Although the data forms are in Bahasa, they can be requested for reasonable purposes.

Competing interests

None.

Ethical clearance

This study received ethical approval from the Ethics Committee of the Faculty of Health Sciences, Muhammadiyah University of Magelang, Indonesia (Number: 048/KEPK.FIKES/II.3.AU).

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Publishers and journal's note

This study is intriguing because it involves postmenopausal women living on mountainsides. The sampling process was likely complicated by the geographical terrain, yet the results show that these women are still susceptible to uric acid issues, despite their regular physical activity on challenging terrain.

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Authors' perspective

Innovation points

- Regular physical activity can help reduce uric acid levels and reduce menopausal symptoms in women living on mountainsides.
- A balanced diet with adequate hydration, fruits, and vegetables can help manage uric acid levels, though a diet high in purines and sugars may exacerbate the issue.
- Menopause is associated with increased uric acid levels, and lifestyle interventions such as physical activity and dietary changes can be instrumental in managing this condition.

Potential areas of interest

- How does physical activity impact uric acid levels in menopausal women residing in high-altitude mountainous regions?
- What dietary patterns are most effective in managing uric acid levels among menopausal women living on mountainsides?
- Are there any specific lifestyle interventions that can help mitigate the effects of menopause on uric acid levels in women living in high-altitude areas?

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