Jurnal Ilmu dan Teknologi Kesehatan
https://ejurnal.poltekkesjakarta3.ac.id/index.php/jitek/
Volume 13, Issue 2, Page 105 – 111 DOI: 10.32668/jitek.v13i2.1770
e-ISSN: 2338-9109

The Effectiveness of Nutritional Counseling Media in Gout Patients

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Keywords:
Gout
Counseling
Booklet
Video

Abstract

To enhance public awareness in adopting a healthier lifestyle, it is essential to provide support and information through nutritional counseling. This approach allows for the development and application of knowledge in daily life. The objective of this study is to evaluate the effectiveness of nutrition counseling using booklets and videos on knowledge, nutrient intake, purine intake, and uric acid levels in gout patients. The research method employed is an experimental design with a pre-experimental two-group pre-test post-test design. The study sample consists of gout patients residing in the Social Health Center (Puskesmas Sosial) Palembang area, with purposive sampling used to select a total of 40 gout patients divided into 2 groups. Each group, whether receiving booklets or videos, was given 2 counseling sessions per week for 4 weeks. An analysis was conducted to compare changes in knowledge, nutrient intake, purine intake, and uric acid levels before and after the intervention. For data with normal distribution, a paired samples t-test was applied, whereas non-normally distributed data were assessed using the Wilcoxon signed-rank test. The findings demonstrated that nutrition counseling delivered through booklet and video media significantly improved participants' knowledge, purine intake, and uric acid levels ($p < 0.05$). In contrast, no statistically significant change was observed in overall nutrient intake ($p > 0.05$).

Received: 29 August 2024
Accepted: 28 Mar 2026
Published: 30 Mar 2026

INTRODUCTION

Gout is a metabolic disease caused by the accumulation of monosodium urate crystals within the joints. Elevated levels of uric acid beyond normal thresholds can trigger the formation of uric acid crystals (1). State that gout is a common type of rheumatic disease in the community, and it is caused by high levels of uric acid in the blood (2).

Based on data from the World Health Organization (WHO) in 2018, the global prevalence of gout arthritis was reported at 33.3%. In Indonesia, the 2018 Riskesdas report indicated that 7.3% of individuals aged 15 years and older had been diagnosed with joint disease by a physician. The prevalence increases with age, reaching 18.9% among those aged 75 years and above. Additionally, the condition is more prevalent in women (8.5%) than in men (6.1%).

The prevalence of joint disease based on physician diagnosis in South Sumatra Province among individuals aged 15 years and older is 6.48%. When examining the prevalence by gender, joint disease is more common among women (7.43%) compared to men (5.55%). In Palembang City, the prevalence of joint disease based on physician diagnosis among individuals aged 15 years and older is 5.02% (3). The prevalence of hyperuricemia at the Puskesmas Sosial Palembang in 2016 was 25.2% (4). In 2019, the prevalence of gout at the Puskesmas Sosial Palembang was 22.8%.

Gout is commonly experienced in the joints of the human body and is caused by the breakdown of purines or nucleic substances, which are converted into uric acid as a final metabolic product in the human body. If a person consumes foods high in purines, such as meat, organ meats, crab, shrimp, legumes, and cheese, it can lead to an increase in the amount of uric acid in the body (5).

Nutritional counseling is an approach in nutritional care that helps individuals and families better understand themselves and the issues they face. After counseling, it is hoped that they will be able to take steps to address their nutritional problems, including making dietary changes and addressing nutrition-related issues towards healthier habits. Counseling plays a crucial role in improving respondents knowledge, attitudes, and practices, particularly in managing a healthy diet. (6).

Providing counseling through various methods, such as face-to-face interactions, education sessions, or using different educational media, has the potential to help lower uric acid levels (7). Several media can be used in nutritional counseling, including print media, digital media, visual, and audiovisual formats. A booklet is one such medium used in health promotion, designed attractively with both text and images to convey health messages in book form (8).

Video media is a format that can be seen and heard, helping to stimulate both the visual and auditory senses during the message reception process. An engagingly packaged video makes the message more easily understood by viewers (9).

Considering the issues described above, this study seeks to examine the effectiveness of nutritional counseling using booklet and video media on knowledge, nutrient intake, purine intake, and uric acid levels among gout patients in the Puskesmas Sosial Palembang area.

METHODS

This study was conducted in the working area of Puskesmas Sosial from December 14, 2023, to March 9, 2024. A pre-experimental design with a two-group pre-test and post-test approach was employed. The population consists of all gout patients within the area served by Puskesmas Sosial Palembang with the following inclusion criteria: 1) Patients have not previously received counseling, 2) Can communicate effectively, 3) Do not suffer from complications, 4) Are not on regular medication. Sampling was done using purposive sampling based on specific criteria. Based on the calculations, 20 respondents were selected for each group, resulting in a total sample size of 40 respondents for this study. The booklet group, participants received counseling using booklet media to assess knowledge, nutrient intake, purine intake, and uric acid levels. This was done twice a week for 4 weeks. In the video group, participants received counseling using video media to evaluate knowledge, nutrient intake, purine intake, and uric acid levels. This was also done twice a week for 4 weeks.

Nutritional counseling was provided twice a week for 4 weeks, with each counseling session lasting 20-30 minutes. Before the intervention began, respondents had their uric acid levels checked using a blood uric acid monitoring system. They were also asked to complete a knowledge questionnaire (pre-test) and undergo a 24-hour food recall interview. In the second week, the counseling evaluation included a 24-hour food recall interview. In the fourth week, after completing the counseling sessions, respondents' uric acid levels were rechecked using the blood uric acid monitoring system. They were also asked to fill out a knowledge questionnaire (post-test), undergo another 24-hour food recall interview, and each group was provided with booklet and video media.

The dependent variables in this study are knowledge, nutrient intake, purine intake, and uric acid levels, which are influenced by the independent variable, namely nutritional counseling using booklet and video media. Data processing methods involve tabulation and descriptive analysis.

RESULTS AND DISCUSSION

Univariate Analysis

Table 1. Respondent Characteristics

Variable		Booklet Group		Video Group	
		n	%	n	%
Age (years)	17-25	0	0	1	5
	26-35	0	0	2	10
	36-45	1	5	8	40
	46-55	3	15	9	45
	56-65	13	65	0	0
	>65	3	15	0	0
Gender	Man	7	35	6	30
	Women	13	65	14	70
Total		**20**	**100**	**20**	**100**

From Table 1, there are 40 respondents with gout: 20 respondents in the booklet media group and 20 respondents in the video media group. In the booklet group, the majority of gout patients are aged 56-65 years (65%), while in the video group, most are aged 46-55 years (45%). The highest number of females is found in the booklet group (65%) and the video group (70%).

Gout is a condition frequently suffered by the elderly. Although it is commonly believed that gout only affects older adults, young people and adolescents are also at risk if they do not follow a healthy diet (10). Uric acid levels in both males and females are generally low from birth through adolescence. After puberty, uric acid levels increase in males, making middle-aged men more vulnerable to higher levels compared to women. Women typically have lower uric acid levels, which tend to rise after menopause due to the reduction in estrogen, a hormone that usually aids in the excretion of uric acid through urine.

Bivariate Analysis

Table 2. Difference in Average Knowledge Scores of Respondents Before and After Intervention

Group	Mean ± SD		Difference	P-value
	Before	After		
Booklet	6.10 ± 0.912	8.7± 0.657	2.60	0.000
Video	5.95 ± 1.572	8.7 ± 0.801	2.75	0.000

As shown in Table 2, the mean knowledge score increased by 2.60 points in the booklet group following the intervention. This improvement was slightly lower than that observed in the video group, which showed an increase of 2.75 points, with a difference of 0.15 between the two groups. Statistical analysis using the paired samples *t*-test revealed

significant differences in knowledge before and after the intervention in both groups ($p < 0.05$). These findings indicate that nutrition counseling delivered through both booklet and video media effectively improved respondents knowledge.

The increase in the average scores for respondents in both the booklet and video groups indicates a positive outcome, suggesting that both booklet and video media used in the nutritional counseling process facilitate the acquisition of new knowledge or information.

Reported that analysis using the paired samples *t*-test showed a significant improvement in knowledge regarding a low-purine diet ($p < 0.05$). This finding indicates that education delivered through booklet media can effectively enhance knowledge among patients with gout arthritis in the Puskesmas Pasundan area (11). Which demonstrated that nutritional counseling using video media significantly improved the knowledge of elderly individuals about gout in the area served by Puskesmas Rukun Lima, Ende District, in 2021 (12).

Table 3. Difference in Average Nutrient Intake Before and After Intervention

Group	Nutrient Intake	Mean ± SD		P-value
		Before	After	
Booklet	Energy	1575.6±292.2	1531.9±355.1	0.452
	Proteins	53.9±23.5	49.7±19.2	0.091
	Fat	54.6±23.5	54.7±28.3	0.986
	Carbohydrate	228.7±48.8	217.9±60.9	0.364
Video	Energy	1766.7±410	1710.8±349.6	0.515
	Proteins	63.5±27.2	50.8±13.1	0.020
	Fat	67.8±23.8	58.4±18.1	0.091
	Carbohydrate	227.8±56.2	243.5±65.6	0.296

As presented in Table 3, analysis using the paired samples *t*-test showed no significant changes in energy, fat, and carbohydrate intake following the nutritional counseling intervention ($p > 0.05$). However, a significant difference in protein intake was observed in the video group, suggesting that video-based counseling may have a greater influence on protein consumption compared to booklet media.

According to the study conducted by Verawati, Yanto and Rahayu (2020), the chi-square statistical test results showed a p-value of 0.024, indicating a significant relationship (p-value < 0.05) between protein consumption and the incidence of gout (13). This contrasts with the findings of Tomastola, Djendra and Tadjimo (2015), where analysis using Fisher's exact test showed no statistically significant relationship between protein intake and increased uric acid levels (p-value > 0.05). However, cross-tabulation indicated that respondents with protein intake exceeding the recommended dietary allowance were more likely to experience elevated uric acid levels. In other words, respondents with elevated uric acid levels were twice as likely to have protein intake above the recommended levels compared to those with adequate protein intake (14).

Purine intake is related to uric acid levels because uric acid is the end product of purine metabolism. Purines are commonly found in protein-rich foods, both animal and plant-based. Sources of protein that contain purines are often associated with the occurrence of hyperuricemia, affecting both plant-based and an9imal-based proteins.

Table 4. Difference in Average Purine Intake of Respondents Before and After Intervention

Group	Mean ± SD		Difference	P-value
	Before	After		
Booklet	327.7±104.7	147.8±39.1	179,9	0.000
Video	290.1±140.4	140.4±63.6	149,7	0.000

As shown in Table 4, purine intake decreased by 179.9 mg in the booklet group following the intervention. This reduction was greater than that observed in the video group, which showed a decrease of 149.7 mg, with a difference of 30.2 mg between the two groups. Analysis using the Wilcoxon signed-rank test indicated statistically significant differences in purine intake before and after the intervention in both groups ($p < 0.05$). These findings suggest that nutrition counseling delivered through both booklet and video media effectively reduced purine intake among the participants.

Previous research by Karsono et al., (2023) reported that the Wilcoxon test analysis of purine intake yielded a significant result ($p < 0.05$), indicating that low-purine dietary education delivered through booklet media had a measurable effect on purine intake among patients with gout arthritis in the Puskesmas Pasundan area. The use of booklet media, which combines visual and textual elements, was also found to enhance respondents' interest in reading (11).

The results of the 24-hour food recall conducted before nutritional counseling with either booklet or video media showed that respondents consumed foods high in purines such as intestines, chicken liver, shrimp, squid, beef, canned sardines, tofu, tempeh, peanuts, long beans, cassava leaves, water spinach, green beans, and melinjo chips. In contrast, the results of the 24-hour food recall conducted after receiving nutritional counseling with either booklet or video media revealed that respondents consumed foods low in purines such as cassava, bread, chicken, tilapia, catfish, chicken eggs, eggplant, Chinese cabbage, cucumber, chayote, and various fruits.

The change in patients consumption after receiving nutritional counseling is attributed to the information about high-purine foods provided through either booklet or video media. The difference in purine intake following the nutritional counseling aligns with the findings of Tamboto, Sahelangi and Robert (2016), which showed an effect of counseling education on high-purine food consumption before and after counseling. This was demonstrated by statistical analysis using the Wilcoxon test, which resulted in a p-value < 0.05 (P=0.000) (15).

Both groups received the same treatment with different media. Respondents were given time to carefully read and pay attention to the information presented by the researcher through either the booklet or the video.

Table 5. Difference in Average Uric Acid Levels of Respondents Before and After Intervention

Group	Mean ± SD		Difference	P-value
	Before	After		
Booklet	7.6±1.06	5.8±0.69	1.8	0.000
Video	7.4±1.53	5.7±0.93	1,7	0.000

As presented in Table 5, the paired samples *t*-test analysis showed a statistically significant difference in uric acid levels before and after the intervention in both the booklet and video groups ($p < 0.05$). This finding indicates that nutrition counseling delivered through both media effectively reduced uric acid levels among the participants.

The reduction observed in both groups suggests that the intervention had a meaningful impact, regardless of the media used. The mean decrease in uric acid levels was 5.9 in the booklet group and 5.8 in the video group, reflecting a comparable improvement following the counseling sessions. These results highlight the potential of both booklet and video media as effective tools for supporting dietary management in patients with gout.

Both groups received the same treatment with different media. Respondents were given time to carefully read and pay attention to the information presented by the researcher through either the booklet or the video. This is evidenced by the average reduction in uric acid levels: 5.9 in the booklet group and 5.8 in the video group. The average reduction in uric acid levels in both the booklet and video groups indicates a positive outcome, suggesting that the media used in the nutritional counseling process effectively helped reduce uric acid levels.

Conditions that can lead to an increase in blood uric acid levels include high purine production and low uric acid excretion, which disrupts the purine balance in the body (16). Uric acid levels in the body are produced from the breakdown of purines, which are components of nucleic acids. The accumulation of crystals in the joints is caused by elevated uric acid levels in the blood, ranging from 0.5 to 0.75 g/ml (17).

The results of comparing the effectiveness of nutritional counseling on uric acid levels using booklet and video media, through an independent sample t-test, yielded a p-value of 0.722. This indicates that there is no significant difference in the impact of nutritional counseling on uric acid levels between the booklet and video media after the intervention. During the study, the counseling material provided was based on the media used with the respondents.

The difference in uric acid levels after nutritional counseling aligns with the findings of the study by Tamboto et al. (2016), which showed an effect of nutritional counseling on uric acid levels before and after the counseling. This was demonstrated by statistical analysis using the Wilcoxon test, which yielded a p-value < 0.05 (P = 0.000).

CONCLUSION

In conclusion, nutrition counseling delivered through both booklet and video media significantly improved knowledge, purine intake, and uric acid levels among gout patients. However, no significant changes were observed in overall energy, fat, and carbohydrate intake.

While video media appeared to be more effective in enhancing knowledge, booklet media showed greater impact on reducing purine intake and uric acid levels. These findings suggest that both media can be utilized as effective tools in nutritional counseling, depending on the targeted outcomes.

ACKNOWLEDGEMENT

The authors would like to express their sincere gratitude to Poltekkes Kemenkes Palembang, Puskesmas Sosial Palembang, and all respondents who participated in this study. Appreciation is also extended to colleagues who provided valuable support throughout the research process.

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