0.012~0.132, $P=0.018$) and trunk BF% ($\beta=0.152$, 95%CI 0.043~0.261, $P=0.007$), but not limb BF%, were positively correlated with sUA.

Figure 1 Clinical characteristics and body composition of gout patients

Characteristics	All patients (n=362)	Grouped by gender			Male patients grouped by overfat		
		Male (n=348)	Female (n=14)	P	Overfat (n=187)	Non-overfat (n=161)	P
Age, years	38(30, 52)	38(30, 50)	66(59, 72)	<0.001	38(30, 51)	37(30, 50)	0.969
Duration, years	3(2, 7)	3(2, 7)	3(1, 6)	0.423	4(2, 7)	3(1, 6)	0.163
Count of affecting joints	3(2, 4)	3(2, 4)	3(1, 5)	0.494	4(2, 6)	3(2, 5)	0.002
Family history, n (%)	130(35.9)	124(35.6)	6(42.9)	0.581	74(39.6)	56(31.1)	0.098
Tophi, n (%)	65(18.0)	64(18.4)	1(7.1)	0.472	36(19.3)	28(17.4)	0.655
Serum uric acid, mg/dl	9.232.2	9.232.2	9.232.5	0.957	9.622.1	8.722.2	<0.001
eGFR, ml/min/1.73m ²	83.8217.0	84.3216.9	70.4211.7	0.002	85.1118.2	83.5115.3	0.395
Urolithiasis, n (%)	88(24.3)	85(24.4)	3(21.4)	0.795	49(26.2)	36(22.4)	0.405
Hypertension, n (%)	139(36.7)	124(35.6)	9(64.3)	0.029	82(44.4)	41(25.5)	<0.001
Diabetes mellitus, n (%)	36(9.9)	33(9.5)	3(21.4)	0.313	23(12.3)	10(6.2)	0.053
Dyslipidemia, n (%)	228(63.0)	218(62.4)	10(71.4)	0.504	131(70.1)	87(54.0)	0.002
Body mass index, kg/m ²	25.513.6	25.513.6	25.733.1	0.882	27.453.3	23.323.6	<0.001
Obesity, n (%)	79(21.8)	77(22.1)	2(14.3)	0.392	78(42.3)	1(0.6)	<0.001
Waist circumference, cm	90.819.4	90.819.5	89.337.4	0.551	95.918.3	85.017.2	<0.001
Metabolic syndrome, n (%)	165(45.6)	158(45.4)	7(50.0)	0.735	114(61.0)	44(27.3)	<0.001
Fatty liver, n (%)	172(47.5)	165(47.4)	7(50.0)	0.849	100(53.5)	57(35.4)	<0.001
Coronary heart disease, n (%)	8(2.2)	4(1.1)	2(14.3)	0.027	3(1.6)	5(3.1)	0.100
BF%, %	25.826.4	25.562.2	35.025.0	<0.001	30.113.8	20.113.7	<0.001
Overfat, n (%)	194(53.6)	187(53.7)	7(50.0)	0.783	187(100)	0(0)	<0.001
Trunk BF%, %	13.313.7	13.113.6	17.922.8	<0.001	15.811.9	10.112.4	<0.001
Limb BF%, %	11.023.7	10.712.8	18.110.2	0.017	12.712.1	8.411.5	<0.001
Trunk/limb BF% ratio	1.2230.15	1.2230.14	1.1010.24	0.003	1.2350.11	1.1910.17	<0.001

eGFR: estimated glomerular filtration rate; BF%: body fat percentage; ASM: appendicular skeletal muscle index.

Conclusion: The characteristics of fat distribution in male gout patients is more in trunk and trunk BF% is positively correlated with sUA.

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SAT0416 ULTRASOUND EVALUATION IN FOLLOW-UP OF URATE-LOWERING THERAPY IN GOUT PHASE 2 (USEFUL-2): DURATION OF FLARE PROPHYLAXIS

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Background: Recent studies showed that ultrasonography (US) could be useful for managing urate-lowering therapy (ULT) in gouty patients. In the first phase of the present study (USEFUL-1), we suggested that US was an accurate tool to follow monosodium urate (MSU) crystal dissolution under efficient ULT.

For gout flare after starting ULT, prophylaxis is recommended during the first 6 months of ULT. The duration of gout flare prophylaxis over the 6 months is consensual with a grade B recommendation. However, little is known about the probability of relapse according to the urate load modification.

Objectives: To determine whether a modification of US features of MSU crystal deposition is associated with reduced number of flares after stopping gout flare prophylaxis.

Methods: We performed a 1-year multicentre prospective study including patients with proven gout and US features of gout. The first phase of the study was a 6-month US follow-up after starting (ULT) with gout flare prophylaxis. After 6 months of ULT, gout flare prophylaxis was stopped, followed by a clinical follow-up (month [M] 6 to 12). Outcomes were the proportion of patients with relapse between M6 and M12 according to the modification of US features of gout and determining a threshold decrease in tophus size according to the probability of relapse.

Results: We included 79 patients with gout (mean $\pm$ SD) age 61.8 ± 14 years, 91% males, disease duration 6.3 ± 6.1 years). Among the 49 completers at M12, 23 (47%) experienced relapse. Decrease in tophus size $\geq 50\%$ at M6 was more frequent without than with relapse (54% vs 26%, $P=0.049$). On ROC curve analysis, a threshold decrease of 50.8% in tophus size had the best sensitivity/specificity ratio to predict relapse. Probability of relapse was increased for patients with a decrease in

tophus size $<50\%$ between baseline and M6 (OR 3.35 [95% confidence interval 0.98; 11.44]).

Conclusion: A high reduction in US tophus size is associated with low probability of relapse after stopping gout prophylaxis. US follow-up may be useful for managing ULT and gout flare prophylaxis.

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SAT0417 HOW EFFECTIVE IS GOUT EDUCATION PROGRAMME TO IMPROVE GOUT KNOWLEDGE AMONG PRIMARY CARE DOCTORS?

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Background: Gout is a potentially curable disease with simple pharmacological treatment, although its management remained suboptimal.^{1, 2} A disconnection between primary care doctors who treat gout most frequently, and rheumatologists who lead the development of gout management guidelines, is one of the challenges in managing gout in primary care.³ A concerted effort is needed to improve the quality of care of patients with gout and this includes physician education.⁴

Objectives: To determine the effectiveness of gout educational programme in improving gout knowledge among primary care doctors.

Methods: A gout education programme consisted of five 20-minute presentations on gout (challenges in gout, principles of gout management, treat to target, disease burden and gout diet) and a session on case discussion of two gout cases was conducted for primary care doctors. Participants were invited to complete the same set of questions distributed before (pre-test) and after (post-test) the programme. A set of 10 true/false multiple choice questions (MCQ) based on a clinical scenario of a patient with gout was constructed and vetted by two rheumatologists. Comparison between the pre-test and post-test scores were analysed using paired t-test.

Results: Forty-four primary care doctors who attended gout educational programme, answered pre-test and post-tests and the scores are shown in Table 1. The scores for recall questions were higher than application questions. The mean scores for recall questions in post-test were significantly higher compared to pre-test (4.35 ± 0.73 vs 3.51 ± 0.47 , $p < 0.01$) but not significant for application questions (2.91 ± 0.71 vs 2.79 ± 0.62 , $p = 0.56$). Less than half of participants obtained correct answers for 13 out of 50 options in the pre-test mainly in questions 2, 3, 4, 6 and 7. (Table 1)

Table 1. The pre-test and post-test mean scores for all participants of gout education programme.

Question no	Question type	Areas of knowledge tested	Mean scores, n=30			p-value
			Post-test	Pre-test	Difference	
1	Application	Features of gout for diagnosis	3.47 ±0.97	3.53 ±1.11	-0.07±1.02	0.72
2	Application	Interpretation of investigation	2.73 ±0.79	2.3 ±1.12	0.433±0.73	<0.01
3	Application	Treatment of acute gout	1.97 ±0.85	2.27 ±0.74	-0.30±1.01	0.14
4	Application	Treatment of stable gout	3.47 ±1.22	3.07 ±1.05	0.40±1.52	0.16
5	Recall	Indication of urate lowering therapy	4.87 ±0.34	3.87 ±0.97	0.47±0.90	<0.01
6	Recall	Allopurinol mechanism	3.17 ±0.99	2.77 ±0.94	0.40±1.19	0.08
7	Recall	Allopurinol dose initiation	5.00 ±0.00	3.53 ±1.14	1.47±1.14	<0.01
8	Recall	Allopurinol side effects	4.97 ±0.18	4.1 ±0.89	0.87±0.9	<0.01
9	Recall	Non-pharmacological management	4.00 ±0.46	3.6 ±1.10	0.4±1.25	0.09
10	Recall	Medication which can aggravate gout	4.07 ±0.74	3.23 ±1.46	0.833±1.51	<0.01

Conclusion: Gout educational programme for primary care doctors was effective in improving recall knowledge but not in application knowledge. Some specific areas of deficiency in gout knowledge identified were features of gout and management of acute and stable gout.

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SAT0418 ASSOCIATION BETWEEN ANEMIA AND HYPERURICEMIA: KOREAN NATIONAL HEALTH AND NUTRITION SURVEY 2016

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Background: Hyperuricemia and anemia may be related in terms of sharing comorbidities such as chronic kidney disease and cardiovascular disease. However, to our knowledge, no studies have been conducted on the relationship between two conditions. For the association of gout and anemia, there was a previous cohort study showing that patients with anemia had a 2-fold higher risk of gout compared to patients without anemia. And the risk of gout was significantly higher after adjusting for serum urate levels and kidney function. However, there is a lack of data on the relationship between anemia and hyperuricemia.

Objectives: The purpose of this study was to investigate the association between hyperuricemia and anemia using data from Korean National Health and Nutrition Examination Survey (KNHANES VII; 2016), which is representative of the Korean population.

Methods: The present study included 5887 participants aged ≥ 19 years from KNHANES VII. Logistic regression was used to examine the

association between anemia and hyperuricemia. Subgroup analysis was performed to confirm whether the association between two conditions varies according to participant characteristics.

Results: In an adjusted model that corrected for body mass index, smoking, drinking, physical activity, income, and education levels, hyperuricemia was 1.4 times more than that those without anemia (HR 1.41, 95% CI 1.01-1.98). The association of anemia with hyperuricemia was not seen under 65 years of age (HR 2.68, 95% CI 1.60-4.48). In addition, this association was not clear in women, but was significant in men (HR 2.62, 95% CI 1.47-4.70). In the results of subgroup analysis according to comorbidities, the association of anemia with hyperuricemia was significant only in subgroups with chronic kidney disease, diabetes, hypertension, metabolic syndrome, and cardiovascular diseases. There was no association between anemia and hyperuricemia in obese subjects, but hyperuricemia risk was higher in non-obese subjects with anemia compared to those who did not have anemia.

Conclusion: In a Korean representative sample, the risk of hyperuricemia was higher for anemia. The association of anemia with hyperuricemia was more pronounced in subjects with older age, male population, and other comorbid conditions.

Disclosure of Interests: None declared

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SAT0419 HAS THE INTRODUCTION OF A PRIMARY CARE GOUT GUIDELINE RESULTED IN SERUM URIC ACID (SUA) TARGETS BEING ACHIEVED?

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Background: Gout is the most common inflammatory arthritis thought to affect 2.4% of the UK population. A local primary care audit in 2012 suggested suboptimal gout management. In an attempt to improve gout management we introduced a local guideline which was supported by an increase in gout education to our local primary care physicians.

Objectives: To assess the impact of a local primary care gout guideline (introduced in 2015) by comparing pre-guideline audit data (2012) to post guidelines audit data (2019). To identify if the introduction of this guideline translated into a reduction in secondary care referrals for advice on gout management.

Methods: Retrospective analysis of primary care data covering all patients with active diagnosis of gout since 2015 in a large primary care medical group (list size of 30,000 patients). This data was then compared to the results of a previous audit carried out prior to introduction of guideline (2012). As well as assessing primary care data, we carried out a secondary care audit pre and post guideline introduction.

Results: Out of a population list of 30,000 patients, 650 (2.1%) cases were coded as gout. 521 (80%) were male and 129(20%) were female. 429(66%) were on ULT. 407 (94.8%) were on Allopurinol. 21(4.8%) were on Febuxostat and only 1 patient on sulfinpyrazone.

Of those on Allopurinol, 24 (5.9%) had no documented monitoring of SUA levels. Out of the remaining 383 (94.1%), 179 (46.7%) achieved target sUA of <360, compared to 16.7% in the previous audit. 204 (53.3%) had not achieve the target SUA levels. 178 (46.4%) patients had had their SUA levels checked in the last year compared to 23.5% in the previous audit. 107 (28%) had SUA levels checked in last 3 years compared to 40% in the previous audit. SUA levels were not checked in the last 3 years in 98(25.6%) compared to 36.4% in the past.

Of those on febuxostat, 14 (67%) achieved target sUA levels. 7 (33%) did not achieve target sUA levels. 10 (47%) patients had their sUA levels checked in the last year. 7(33%) had their sUA levels checked within the last 3 years and 4 (20%) had not had their sUA levels checked within the last 3 years.

No patient was prescribed more than 300mg allopurinol daily by their primary care physician despite the recommended dose being up to 900mg daily.

We found a 70% reduction in the number of referrals to secondary care for gout management over the same period of time.

Conclusion: The introduction of a local primary care gout guideline and associated education appears to have improved the number of patients achieving target serum uric acid levels as well as leading to a reduction in secondary care referrals for gout.