Figure 1. Candidates for pharmacologic intervention by WHO criteria and FRAX criteria.

*P < 0.05. Statistical analysis was performed using McNemar's test. WHO, World Health Organization.

FRAX, Fracture risk assessment tool; OA, osteoarthritis; BMD, bone mineral density.

Abstract THU0437 – Figure 1

Conclusion: We demonstrated that knee OA patients have an increased risk of osteoporotic fracture according to FRAX criteria, but not WHO criteria. Our study suggests that FRAX supports clinical decision to reduce osteoporotic fracture in patients with knee OA.

Disclosure: All authors agree that there are no conflicts of interest (both personal and institutional) regarding scientific financial interests that are relevant to the work conducted or reported in this manuscript.

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THU0438

DO CORTICOSTEROIDS OR HYALURONIC ACID INTRA-ARTICULAR INJECTIONS IMPACT THE RISK OF TOTAL KNEE REPLACEMENT? REAL-LIFE DATA FROM THE KHOALA COHORT

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Background: Long-term structural outcomes of corticosteroids (CS) or hyaluronic acid (HA) intra-articular injections in knee osteoarthritis (KOA) are unclear. Whether HA injections delay the need for total knee replacement (TKR) remains controversial, and an increased risk of cartilage damage has been reported with repeated CS injections.

Objectives: We conducted this study to compare, in real-life setting, the risk of TKR in patients receiving CS or HA vs. in those who did not receive intra-articular injections.

Methods: Khoala cohort is a French nationwide population-based cohort of 878 patients with symptomatic hip or knee OA (ACR criteria), aged 40-75 years. This study included patients with baseline KOA only. Patients were followed annually by self-reported questionnaires and by clinical examination and radiography at baseline (year 0), years 3 and 5. The risk of incident TKR was compared between patients who had never received intra-articular injections vs. patients who received at least 1 CS or HA injection during follow-up.

We used a marginal structural model with inverse probability of treatment weighting to determine the causal relationship between treatment and the risk of incident TKR in the treated knee during the 5-year follow-up. This model allows the adjustment for time-varying confounding factors (i.e. pain, function and mental health scores) in addition to constant confounders (i.e. baseline age, sex, BMI, Kellgren-Lawrence grade).

Results: This study involved 656 patients (mean age 62.2 ± 8.5 years; 70.3% females) of which 91 (13.9%) underwent TKR during follow-up. CS or HA injections were performed in 143 (21.8%) and 191 (29.1%) patients, respectively, and 92 (14.0%) received both treatments. The 5-year relative risk of incident TKR in treated vs. untreated knee was 0.96 (95%CI 0.35 to 2.66; p=0.94) CS-treated knees and 0.38 (95%CI 0.15 to 1.03; p=0.06) in HA-treated knees.

Conclusion: In this study, CS injections for symptomatic KOA did not increase the 5-year risk of incident TKR. There was a non-significant trend for a reduced risk of TKR in HA-treated knees.

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THU0439

MEASUREMENT PROPERTIES OF PAIN CATASTROPHIZING SCALE IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Background: Up to 20% of patients with knee osteoarthritis (OA) do not respond well to knee replacement surgery (KR) despite surgical success. We hypothesize that pain catastrophizing among these patients may affect KR outcomes.

Objectives: To assess the validity and reliability of the Pain Catastrophizing Scale (PCS) in patients with knee osteoarthritis (OA) in Singapore.

Methods: We used cross-sectional data from 675 knee OA patients enlisted for knee replacement surgery (KR) in a Singapore tertiary referral hospital from May to September 2018. Data was collected 2 weeks prior to KR. Analyses were guided by the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) framework. Internal consistency was assessed using Cronbach's alpha. Construct validity was assessed through seven *a priori* hypotheses by correlation of overall PCS score with other patient-reported outcomes. Structural validity was evaluated via confirmatory factor analysis using maximum likelihood method. Measurement invariance across gender subgroups was assessed using multi-group confirmatory factor analysis.

Results: There were 675 patients (mean±SD age = 65.52±6.84 years, 70.37% female) with knee OA enlisted for KR (91.7% total, 8.3% unicompartmental). The mean±SD PCS score was 12.65±10.55, 0.14% and 8.63% ceiling and floor effects. PCS demonstrated high internal consistency (Cronbach's alpha=0.94). Construct validity was demonstrated by fulfillment of six out of seven (85%) *a priori* hypotheses. The PCS model showed good fit for a two-factor structure after accounting for appropriate modification indices (CFI=0.957, TLI=0.950, RMSEA=0.073, SRMR=0.043), demonstrating good structural validity. Measurement invariance across gender groups was demonstrated.

Conclusion: This study supports internal consistency, construct validity and structure validity of PCS as a measure of pain catastrophizing in knee OA patients in Singapore.

Abstract THU0448 –Table 1. Mean MDHAQ scores in patients with primary OA or RA at 1st visit, and 1 or 2 years later

Mean scores at...	1st visit			1-year later			2-years later			P Change in OAvsRA	
	OA	RA	P	OA	RA	P	OA	RA	P	1 year	2 years
# patients	101	175		101	175		45	113			
RAPID3 (0-30)	11.9	13.7	0.03	11.5	10.9	0.50	11.9	9.0	0.02	0.004	0.0004
Function (0-10)	0.63	0.78	0.03	0.61	0.66	0.43	0.72	0.53	0.046	0.119	0.009
Pain (0-10)	5.0	5.5	0.16	4.9	4.3	0.43	4.7	3.6	0.03	0.004	0.004
PATGL (0-10)	4.8	5.6	0.01	4.6	4.4	0.54	4.9	3.7	0.009	0.005	0.0001
Fatigue (0-10)	3.9	4.9	0.008	3.7	4.0	0.43	3.6	4.0	0.41	0.073	0.359
Self-report painful JC (0-48)	12.0	15.4	0.014	9.5	11.7	0.10	11.9	10.2	0.35	0.415	0.035

Abstract THU0439 – Table 1. Hypothesized and actual correlations for hypothesis testing

PCS total score	Hypothesized Correlations		Actual Correlation	Hypothesis met
	Magnitude	Direction	R (p-value)	
Internal resource				
Pain self-efficacy questionnaire	Moderate	-	-0.4186 **	Yes
Mental well-being				
HADS	Strong	+	0.5823 **	Yes
SF-36 mental health	Moderate	-	-0.3323 **	Yes
Physical well-being				
WOMAC physical function	Moderate	+	0.4767 **	Yes
WOMAC pain	Moderate	+	0.4671 **	Yes
SF-36 physical functioning	Moderate	-	-0.2632 **	No
Social well-being				
Lubben's social network score	Weak	+/-	-0.0486	Yes

** p < 0.001; HADS: Hospital Anxiety and Depression Scale

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THU0440 THE ASSOCIATION OF PLASMA FATTY ACIDS LEVELS WITH HAND AND KNEE OSTEOARTHRITIS

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Background: Obesity is one of the most important risk factors for osteoarthritis (OA). For long the association between obesity and OA was thought to be explained by increased mechanical loading. However, the role of systemic factors is increasingly recognized, especially in non-weightbearing joints. Obesity is strongly associated with increased levels of circulating fatty acids, which may result in lipotoxicity. However, our knowledge about the effect of different fatty acids on OA is sparse.

Objectives: To investigate the association of plasma saturated fatty acids (SFAs), monounsaturated fatty acid (MUFAs), polyunsaturated fatty acids (PUFAs), omega (n)-3 and n-6 PUFAs with clinically defined hand and knee OA.

Methods: In the population-based Netherlands Epidemiology of Obesity (NEO) study, a total of 6,671 middle-aged participants were recruited from the greater area of Leiden. Clinical hand and knee OA were defined by the ACR clinical classification criteria. Blood samples were obtained after an overnight fast and 150 minutes after consumption of a standardized liquid mixed meal containing 600kCal, with 16% of energy (En%) derived from protein, 50 En% from carbohydrates and 34 En% from fat. EDTA-plasma samples were used for a high-throughput proton nuclear magnetic resonance (NMR) metabolomics platform (Nightingale Health Ltd., Helsinki, Finland) to quantify 159 lipid and metabolite measures. For the present analyses the concentrations of fasting and postprandial total fatty acids, SFAs, MUFAs, PUFAs, n-6 PUFAs and n-3 PUFAs in mmol/l were used. Since we are in a postprandial state most

of the day, these samples were used for the primary analyses. All fatty acid concentrations were standardized (mean 0, SD 1), to ensure a similar interpretation of the estimated effect. We excluded participants who reported to have inflammatory rheumatic disease or fibromyalgia, with missing physical examination, who were non-fasting at baseline, or reported using lipid-lowering medication. Logistic regression analyses were used to investigate the association between fatty acids and clinical OA phenotypes. All analyses were stratified by sex and corrected for age, education, ethnicity and total body fat percentage. Data are presented as odds ratios (OR) with 95% confidence intervals (CI).

Results: In the current analysis 5,328 NEO participants were included, with a mean age of 56 years and 58% were women. Hand OA, knee OA and concurrent hand and knee OA were defined in 8%, 10% and 4% of participants, respectively. After correction for possible confounders, total fatty acids, SFA, total PUFA and omega-3 PUFA levels were positively associated with clinical hand OA in men, with OR (95% CI) of 1.24 (1.01; 1.53), 1.23 (1.00 – 1.50), 1.26 (1.00 – 1.58) and 1.24 (1.01 – 1.52), respectively. Although not significant, similar effect estimates were observed for men with concurrent hand and knee OA, but not for clinical knee OA alone. In women no associations were seen of any of the fatty acids with clinical hand or knee OA. Analyses of the association between fasting fatty acid levels and clinical hand and knee OA showed rather similar results, with slightly lowered ORs and wider confidence intervals.

Abstract THU0440 –Table 2.

Table 2. Association between postprandial plasma fatty acids and clinical OA phenotypes

		Hand OA OR (95% CI)	Knee OA OR (95% CI)	Hand and knee OA OR (95% CI)
Total FA	Men	1.24 (1.01; 1.53)	0.93 (0.78; 1.12)	1.21 (0.76; 1.90)
	Women	1.05 (0.85; 1.30)	0.88 (0.74; 1.05)	0.93 (0.61; 1.13)
SFA	Men	1.23 (1.00; 1.50)	0.99 (0.83; 1.19)	1.19 (0.80; 1.75)
	Women	1.05 (0.84; 1.31)	0.86 (0.72; 1.03)	0.76 (0.56; 1.04)
MUFA	Men	1.20 (0.96; 1.50)	0.92 (0.76; 1.12)	1.12 (0.64; 1.98)
	Women	0.98 (0.80; 1.20)	0.92 (0.78; 1.08)	0.81 (0.60; 1.10)
PUFA	Men	1.26 (1.00; 1.58)	0.90 (0.74; 1.09)	1.31 (0.84; 2.04)
	Women	1.13 (0.91; 1.41)	0.88 (0.73; 1.06)	0.86 (0.64; 1.14)
n-3 PUFA	Men	1.24 (1.01; 1.52)	1.06 (0.86; 1.29)	1.24 (0.83; 1.85)
	Women	1.13 (0.90; 1.40)	0.85 (0.70; 1.04)	0.96 (0.74; 1.26)
n-6 PUFA	Men	1.24 (0.98; 1.56)	0.87 (0.72; 1.06)	1.29 (0.85; 1.97)
	Women	1.12 (0.91; 1.39)	0.89 (0.74; 1.08)	0.85 (0.64; 1.13)

Fatty acid levels have been standardized (mean = 0, SD = 1). OR represents increased odds for every increase in SD. Analyses have been adjusted for age, fat percentage, education and ethnicity. Abbreviations: SFA= saturated fatty acid, MUFA= monounsaturated fatty acid, PUFA= polyunsaturated fatty acid, n= omega

Conclusion: Quantitatively measured plasma postprandial SFA and PUFA levels were significantly associated with hand OA in men. In women no associations were found. Intriguingly, although SFA and omega-3 PUFAs are deemed to have opposing effects on inflammation, both were positively associated with hand OA. Future research is warranted to replicate the association and determine whether there is a causal role for plasma fatty acid levels in hand OA.

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