No significant differences were observed in the clinical manifestations of BD patients in ever smokers and never smokers. However, disease activity, at disease presentation and last visit in ever smokers was significantly more than never smokers.

Conclusions: Our data suggest that smoking is a significant risk factor for BD and genetic factors may play an important role in the developing of BD in smokers. We also show a particularly strong relationship between smoking with BD activity and response to treatment.

Conflict of interest: We have no potential conflict of interest.

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SAT0680

THE DEVELOPMENT AND VALIDATION OF INTERSTITIAL LUNG DISEASE PREDICTION MODELS IN THREE INTERNATIONAL MIXED CONNECTIVE TISSUE DISEASE COHORTS: THE NORWEGIAN MCTD COHORT, THE HUNGARIAN MCTD COHORT AND THE MCTD COHORT FROM MINNESOTA, US

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Background: Mixed Connective Tissue Disease (MCTD) is characterised by the presence of anti-RNP antibodies with clinical features also found in SSc, SLE and IIM. There is an ongoing debate of MCTD's position as a CTD. A substantial proportion of MCTD patients develop Interstitial Lung Disease (ILD).

Objectives: This study was conducted with the aims to explore the value of MCTD diagnosis and risk assessment by developing and validating ILD prediction models.

Methods: Multivariable logistic regression analyses were performed in 3 international MCTD cohorts. ILD prediction model development from clinical and laboratory parameters was performed in the Norwegian MCTD cohort (n=119). External validation of the models were performed in the Hungarian MCTD cohort (n=196) and the MCTD cohort from Minnesota, US (n=50). ILD was diagnosed by chest CT examination.

Results: The cohort characteristics are presented in table 1. An ILD prediction model including Pulmonary Function Test (PFT) results (table 2) and excluding PFT results was developed. The Hosmer-Lemeshow goodness of fit test (HL test) was .31 and .71 and the ROC was .83 and .78 respectively. The ILD prediction model including DLCO <60% was validated in the Hungarian MCTD cohort and showed good calibration and discrimination (HL test=0.95 and ROC=0.82). The ILD prediction model excluding PFT results showed good calibration and discrimination in both the Hungarian MCTD cohort (HL test=0.72 and ROC=0.80) and the MCTD cohort from Minnesota (HL test=0.96 and ROC=0.67).

Abstract SAT0680 – Table 1. Characteristics of the three MCTD cohorts

Characteristics	Norwegian MCTD cohort (n=119)	Hungarian MCTD cohort (n=196)	Minnesota MCTD cohort (n=50)	P- value
Male sex, N (%)	32 ⁽²⁴⁾	10 (5)	8 (16)	p<0.001
Age at diagnosis, yrs	34 (10)	36 (9)	48 (16)	p<0.001
Age at CT, yrs	44 (14)	41 (11)	48 (14)	p=0.001
ILD, N(%)	52 ⁽³⁹⁾	116(59)	14 ⁽²⁸⁾	p<0.001
DLCO<60% pred	28 (23)	67 (35)	NA	p=0.025
FVC<75% pred	18 (14)	97 (49)	NA	p<0.001

Abstract SAT0680 – Table 2. ILD prediction model including PFT results

	Univariable			Multivariable		
	HR	95% CI	P value	HR	95% CI	P value
Sclerodactily	2.0	0.94–4.0	0.071			
RNP>200	3.0	1.5–7.1	0.003	4.4	1.7–11.1	0.002
SR>30	2.3	1.0–5.0	0.043			
Male sex	1.6	0.71–3.5	0.268			
Never arthritis	5.4	2.1–13.6	<0.001	4.1	1.4–11.6	0.008
Pericarditis	2.2	0.8–6.1	0.117			
Agegroup at CT						
<25 years						
26–35 years	1.0	0.2–4.5	0.953	1.8	0.3–9.8	0.504
36–45 years	2.6	0.6–	0.213	4.8	0.9–25.5	0.065
46–55 years	1.7	11.7.	0.513	2.9	0.5–14.7	0.210
56–65 years	2.3	4–7.4.	0.289	3.7	0.6–23.9	0.167
>65 years	6.0	5–10.8	0.048	13.0	1.6–	0.017
		1.0–35.4			107.3	

Conclusions: The cohorts have different characteristics. Despite these differences the ILD prediction models developed in the Norwegian MCTD cohort have shown external validity when assessed in the Hungarian MCTD cohort and the MCTD cohort from Minnesota. Risk factors of ILD in MCTD patients are high levels of anti-U1 RNP antibodies, absence of arthritis and increasing age. The successive ILD prediction across different MCTD cohorts strengthens the value of MCTD diagnosis and anti-RNP antibody detection in clinical practice.

Disclosure of Interest: None declared

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SAT0681

THE CAUSAL ASSOCIATION BETWEEN CHILDHOOD AND ADULTHOOD BODY MASS INDEX AND OSTEOARTHRITIS: A MENDELIAN RANDOMIZATION STUDY

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Background: Childhood obesity is a strong predictor of adult obesity. Body mass index (BMI) has been associated with a dose-response increase in risk of osteoarthritis. However, studying causality in this association is difficult due to confounding factors

Objectives: To study the causal association of childhood and adult BMI on the risk of developing osteoarthritis using Mendelian Randomization (MR) methods

Methods: A two-step MR analysis was conducted. Exposures were determined by reviewing data from two genome-wide association study (GWAS) from >47,000 children describing 15 SNPs associated with childhood BMI, and another GWAS describing 97 SNPs related to BMI within 3 39 224 adults. For the

outcomes, data gathered from a GWAS analysing 3 37 000 unrelated individuals in the UK BioBank was used to assess the association between the SNPs of interest and self-reported osteoarthritis and ICD10 linked hospital data: knee, hip and first carpo-metacarpal joint osteoarthritis. Traumatic eye injury from the same cohort was used as a negative control. An inverse variance weighted meta-analysis estimator was used to test for association. In presence of heterogeneity, a weighted median approach was used and, when necessary, pleiotropy was controlled for using the MR Egger method. All analyses were performed using the TwoSampleMR package in R

Results: 14 and 91 SNPs associated with BMI in the childhood and adulthood were identified in the UK BioBank GWAS respectively. Association between childhood BMI and adult OA was seen for self-reported and hip and knee OA. Adult BMI also appeared associated with them [figure 1]. Conversely, no associations were found between BMI (either childhood or adult) and Hand OA risk. Finally, no relationship was seen between BMI and traumatic eye injury (negative control)

	Adult BMI		Child BMI	
	OR	95% CI	OR	95% CI
S-R OA	1.027	1.019–1.036	1.017	1.011–1.023
Hip OA	1.005	1.002–1.007	1.006	1.002–1.010
Knee OA	1.012	1.010–1.015	1.006	1.003–1.009
Hand OA	1.001	0.999–1.001	1.000	0.999–1.001
Eye Injury	0.999	0.994–1.003	0.999	0.993–1.004

Conclusions: Higher BMI in both childhood and adulthood overweight/obesity cause an excess in risk of knee and hip osteoarthritis. Whilst the effect of adult BMI seems stronger on knees, childhood BMI might impact both knee and hip osteoarthritis risk similarly. Age-specific associations should be treated with caution given significant overlap between loci associated with BMI across age ranges. In contrast, our findings contradict previous cohorts that found an association between overweight/obesity and hand osteoarthritis, which could be explained by confounding factors such as manual work or related socio-economic factors. The association between increased BMI and knee or hip osteoarthritis adds further impetus to strategies for the prevention of childhood and adult obesity in order to reduce subsequent disability.

Disclosure of Interest: None declared

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SAT0682

"INCIDENCE AND REGIONAL VARIATION OF ANKYLOSING SPONDYLITIS AND SPONDYLOARTHRITIS 2000–2013: A NATIONWIDE COHORT STUDY"

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Background: Spondyloarthritis is a group of inflammatory rheumatic diseases with Ankylosing Spondylitis (AS) as the major subgroup. Only a few studies worldwide have reported incidences of AS and their trend over time.

Objectives: To describe the incidences of Ankylosing Spondylitis (AS) and spondyloarthritis (SpA) in the Danish population in 2000–2013, at both national and regional level. To establish if there is a trend in incident cases over time and test if such a trend may be explained by use of MRI scans for diagnostic evaluation.

Methods: In the Danish National Patient Registry, we identified all patients with a valid Danish civil registration number who received an AS (ICD10:DM45) or SpA (ICD10:DM46) diagnosis during the time period from 1 January 2000 until 31 December 2013. Incident cases were identified and incidence rates described as rates per 1/100.000 of AS and SpA were calculated for each year. Variation among the five Danish regions were evaluated and correlated to the diagnostic use of MRI.

Results: We identified 3620 incident cases (AS: 2116, SpA: 1504). Males are overrepresented among AS incidents (58%–80%), both nationwide and regionally. The percentages of males with an AS diagnosis are stable throughout the time period (65%–69%). Females are overrepresented among SpA incidents nationwide and in most regions. In the Region of Southern Denmark, there is a small overrepresentation of males for both SpA and AS diagnoses (58%).

The number of nationwide AS incident cases increases between 2005 and 2009 from 534 (rate: 0.52) to 828 cases (0.82). During 2010–2013 the AS incidence decreased to 754 (0.94).

The number of SpA incident cases increased from 220 (0.21) in 2009 to 430 (0.43) in 2009 with an additional increase in incidence to 854 (1.06) in 2010–2013. The trend is the same throughout the five regions.

MRI was used for diagnostic purposes in only 10%–15% of the patients in 2002. In 2013 the number had increased to 95.0% of male patients and 94.3% of female patients diagnosed with AS and 98.5/98.1% of patients diagnosed with SpA.

Conclusions: In this Danish nationwide cohort, the incidence of AS increased during the years 2000–2004 and stabilised in 2005–2013 which is in line with previous studies exploring the trends of AS incidence.

The SpA incidence increased significantly during the years 2000 to 2013. This might be caused by the implementation of the ASA criteria in 2009, which included the "imaging arm", and by increased access to MRI for diagnostic evaluation in patients with low back pain. This might lead to overestimation and/or misdiagnosis