transit, chronic diarrhoea, chronic constipation, and alternation between diarrhoea and constipation.

The risk of incident RA was estimated using an age-adjusted Cox model that considers smoking status as a time-dependent variable.

Results: 70598 women from the E3N study were included in the study. A total of 1239 patients reported an incidental RA, of which 350 cases were included in the study (and 280 in the analysis of intestinal transit disorders). Non-ascertained cases were excluded from the analyses. The age at inclusion in the study was 49.0 years ($\pm$ 6.4). The mean duration of follow-up was 21.2 ($\pm$ 1.3) years.

Passive smoking exposure during childhood increased the association between the RA risk active and adult active smoking. In ever smokers who had childhood passive exposure to smoke, the HR was 1.73 [1.20; 2.50] as compared with non-smokers who were not exposed during childhood, while it was 1.37 [1.08; 1.73] in active smokers who were not exposed during childhood.

A history of chronic diarrhea was associated with increased RA risk (HR =2.32 [1.41, 3.81]), while chronic constipation or alternation between diarrhoea and constipation did not.

Smoking status	Controls (%) N=70248	RA (%) N=350	HR [95% CI]
Non smoker			
No passive smoking in childhood	32440 (46,18)	137 (39,14)	Reference
Non smoker + Passive smoking in childhood	5010 (7,13)	30 (8,57)	1,43 [0,97; 2,13]
Ever smoker			
No passive smoking in childhood	27394 (39,00)	147 (42,00)	1,37 [1,08; 1,73]
Ever smoker + Passive smoking in childhood	5404 (7,69)	36 (10,29)	1,73 [1,20; 2,50]
Normal transit	44254 (71,48)	187 (66,79)	Reference
Chronic diarrhea	1707 (2,76)	17 (6,07)	2.32 [1,41; 3,81]
Constipation	8661 (13,99)	43 (15,36)	1.16 [0,84; 1,62]
Alternating diarrhea - constipation	7291 (11,78)	33 (11,79)	1.07 [0,74; 1,55]

Conclusions: This study confirms the link between active smoking and the risk of RA. It suggests for the first time that in smokers, exposure to tobacco early in life, through passive smoking in childhood significantly increases this risk. Our study highlights the importance of avoiding any tobacco environment in children, especially in those with a family history of RA. Also, it shows for the first time an association between a history of chronic diarrhoea and the risk of developing RA. The association supports the hypothesis of dysbiosis (microbiota abnormality) as a risk factor for the emergence of autoimmunity. These data perfectly fit with the preclinical scheme of RA where an external event occurs at an early stage to promote emergence of auto-immunity, followed years after by clinical RA.

Disclosure of Interest: None declared

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HPR move to improve

OP0254-HPR

HAND EXERCISE FOR WOMEN WITH RHEUMATOID ARTHRITIS AND DECREASED ADL ABILITY: AN EXPLORATORY RANDOMISED CONTROLLED TRIAL

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Background: Decreased strength and range of motion in the hand are often seen in rheumatoid arthritis (RA). Positive effects on hand function in RA patients after hand exercise and individual education in joint projection including coping strategies (ADL education) is shown (1;2). However, it is unknown if a combination of both will further improve hand performance.

Objectives: To investigate the effect on ADL ability of a hand exercise program as add on to an ADL education program in women with RA.

Methods: Women with RA involving the hand on stable medication for at least three months were recruited.

At baseline participants were examined by a rheumatologist who assessed joints of the hand and ruled out contraindications for participation e.g. massive malalignment of the joints. Inflammatory markers of the blood, hand pain and grip strength were also measured. The ADL motor ability was assessed using the observation-based Assessment of Motor and Process Skills (AMPS). After baseline examination randomized to ADL education + hand exercises (intervention; IG) or only ADL education (control; CG) was made.

All participants received three to four sessions with an occupational therapist learning how to perform ADL tasks overcome their specific hand problems. The

intervention group also received a hand exercise program, to be conducted four times a week, for eight weeks, containing exercises for improving range of motion and strength; once a week the exercise program was supervised by a physiotherapist, to correct and prevent overload and to increase load if possible. Primary outcome measure was change in observed ability to perform ADL tasks (AMPS) at week 8. Secondary outcomes include grip strength, pain, joint count, inflammatory markers and self-reported function.

After eight weeks, all baseline measures were repeated and changes from baseline were calculated based on the Intention To Treat (ITT) population.

Clinicaltrials.gov Identifier: (NCT02140866)

Results: Fifty five patients were randomised to IG (n=28) or CG (n=27); 22 and 25 patients, respectively, completed the trial. The ITT-populations mean age was 63.8 (12.8) years, mean disease duration was 12.4 (11.0) years. Baseline tender and swollen joint count was 5.07 (4.85) and 1.37 (1.72) respectively, the hand pain was 41.95mm (right) and 35.78mm (left) (VAS) and hand grip strength was 18.25 kg (right) and 17.46 kg (left). Baseline AMPS ADL motor measure was 1.36 (0.46). As judged by the 95% confidence intervals, no difference in change from baseline was seen between the groups (see table).

Change from baseline in and between groups (ITT analysis)	Intervention group (n=28)	Control group (n=27)	Difference between groups	p-value
AMPS motor	0.24 (0.09-0.39)	0.20 (0.05-0.35)	0.04 (-0.17-0.25)	0.70
Tender joint count (28 joints)	-0.57 (-1.86-0.73)	0.35 (-0.95-1.64)	-0.92 (-2.77-0.93)	0.32
Swollen joint count (28 joints)	0.25 (-0.23-0.73)	0.16 (-0.32-0.64)	0.10 (-0.59-0.77)	0.78
CRP	-0.70 (-2.41-1.02)	1.77 (-0.09-3.63)	-2.45 (-5.0-0.06)	0.06
HAQ	-0.07 (-0.17-0.03)	0.01 (-0.09-0.12)	-0.08 (-0.23-0.06)	0.24
Hand pain activity (VASmm)	-1.17 (-7.82-5.48)	0.55 (-6.23-7.31)	-1.71 (-11.20-7.79)	0.72
Right:left	-3.43 (-11.07-4.20)	-0.81 (-8.59-6.97)	-2.62 (-13.62-8.38)	0.64
Hand strength (kg)	1.43 (0.40-2.45)	0.18 (-0.86-1.23)	1.24 (-0.23-2.71)	0.10
Right:left	1.00 (-0.47-2.47)	-0.36 (-1.83-1.11)	1.36 (-0.71-3.44)	0.19

Conclusions: A hand exercise program as add on to an ADL education did not improve ADL ability more than ADL education alone in women with RA experiencing decreased ADL ability involving the hands.

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AN ADD-ON PROGRAMME IMPROVED THE SHORT-TERM, BUT NOT THE LONG-TERM EFFECT OF REHABILITATION IN PATIENTS WITH RHEUMATIC DISEASES: RESULTS FROM A PRAGMATIC MULTI-CENTRE STEPPED-WEDGE CLUSTER RANDOMIZED CONTROLLED TRIAL

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Background: Multidisciplinary rehabilitation is widely used alongside medical treatment of patients with rheumatic diseases. Although beneficial effects of such rehabilitation have been demonstrated, patients are mostly back to their initial health status 6 to 12 months after discharge.

Objectives: To evaluate an add-on rehabilitation programme designed to enhance and prolong the effect of rehabilitation in adult patients with rheumatic diseases.

Methods: We conducted a pragmatic multi-centre stepped-wedge cluster randomized controlled trial in six rehabilitation centres in Norway. All centres started simultaneously to include patients in the control phase (traditional rehabilitation),