

# **People with RA can be divided into subgroups, based upon their pain levels and inflammation.**

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## **Key findings and importance of the study**

This study challenged a popular viewpoint, that the inflammation in rheumatoid arthritis (RA) is fully responsible for the symptoms that are experienced. We examined measurements of symptoms, which were reported by people with RA, and also measures of their inflammation. In databases from 3 different studies we found that between 12% and 40% of people with RA had disproportionately worse pain, fatigue and psychological health scores compared to their inflammation levels. These people could possibly benefit from further pain management beyond their current treatments.

## **Background**

RA is a painful autoimmune condition. The immune system of a patient with RA responds in an abnormal way to attack the healthy cells in the body and commonly causes swelling and inflammation of the joints in the wrists, hands and feet. People with RA often feel a lot of fatigue and pain, and also suffer from depressed mood and anxiety. The current treatments for RA will manage the inflammation and joint swelling, and can produce impressive improvements. However, pain, fatigue and other symptoms still linger on in many people.

## **Aim of the study**

We aimed to find subgroups of people with RA that may have worse symptoms than we would expect from looking at their levels of inflammation. It is possible that the body may have become maladapted to be more sensitive to pain, prone to bouts of fatigue, and with worse psychological wellbeing.

## **How the study was carried out**

We examined databases from 3 studies of people with RA; (1) Early RA Network (ERAN), and the British Society for Rheumatology Biologics Register (BSRBR) (2) commencing TNF- $\alpha$  inhibitors or (3) using non-biologic drugs (for example, Methotrexate). The measurements were analysed using a technique called Latent Class Analysis which divided people into subgroups based on differences and similarities in their data. The subgroups were examined to compare levels of inflammation (blood markers and swelling) with measurements of symptoms (in this study, they were pain, fatigue and mood/anxiety).

## **What the study found**

Each of the 3 studies showed a similar pattern of subgroups. In each of the studies, either 4 or 5 subgroups were found using Latent Class Analysis. We found in each study that one subgroup relatively low average levels of inflammation but also reported high average levels of symptoms. This subgroup contained between 12% and 40% of the people in the studies, and in each study it contained more women than the other subgroups, and showed a worse average level of disability.

## **Significance of the study to Pain Centre's research**

This finding implies that the troublesome symptoms of RA may not be wholly explained by inflammation levels. It is possible that these people might gain added benefits from pain management strategies.