Supplementary Figure 1 The change of prevalence of rheumatoid arthritis with age

Data source: All data in CKB baseline data.
Supplementary Figure 2 The estimated cohort age and period specific effect.
Supplementary Text: Age–period–cohort model

Method:

Age–period–cohort models were fitted using the Stata apcspline command using the corresponding population size as the log offset and default knots at quartile cut-points for each of the natural cubic regression spline bases for the age, period, and cohort effects. Three-year age groups (2-4, 5-7, 8-10, 11-13, ..., 71-73, 74-76) and three-year period groups (1945-1947, 1948-1950, 1951-1953, 1954-1956, ..., 2005-2007, 2008-2010) were recoded as a single integer using the median of the age group (e.g., 35 for ages 34–36) and period group (e.g., 2000 for periods 1999–2001). Partially overlapped birth cohort was then estimated by subtracting age from calendar year (1924-1928, 1927-1931, ..., 1978-1982) and also recoded as the midpoint. When calculating the estimated age, period, and cohort effects, we constrained the constant (it is included in age) and the linear components by centering period at the mean year and by centering cohort at the weighted mean year of birth, with weights proportional to the observed counts at each year of birth. The estimated age, period, cohort specific effects of RA by sex were shown in supplementary figure 2.

Results:

Supplementary Figure 2 displays the RA trend by sex over the three different time scales. Age effects are displayed as age-specific incidence rates per 100,000 person-years in the reference cohort after controlling for period effects. In line with expectations, there is a fairly strong age effect that increases as age increases, especially for females. Cohort effects are reported a rate ratio with respect to the reference cohort.
For cohorts born during or right before the famine (1959-61), there is a significant increase in the rate ratio of RA, which verifies the main results in our paper that the early-life famine exposure is associated with the increased odds of RA, after controlling the age and period effect.

Reference