

Author, year	Selection			Comparability		Outcome			Overall risk of bias
	Respre- sentative- ness of the exposed cohort	Repre- sentative- ness of non- exposed	Ascertain- ment of exposure	Determ- ination that outcome is not present initially	Study Controls for age, sex	Assess- ment of outcome	Length of Follow- up	Adequ- acy of follow- up	
Wilson et al, 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Buckley et al, 2010	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Medium
Mok et al, 2011	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Medium
Ogdie et al, 2014	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Medium
Juneblad et al, 2016	No	No	Yes	No	Yes	Yes	Yes	No	Medium
Lee et al, 2017	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Dai et al, 2018	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Skov et al, 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Elahouf et al, 2020	Yes	No	Yes	No	Yes	Yes	Yes	No	Medium
Colaco et al, 2020	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Medium
Karmacharya et al., 2021	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low

Supplementary File 2A. Risk of bias of the included psoriatic arthritis studies based on New-Castle Ottawa scale for observational studies

Author, year	Selection			Comparability		Outcome			Overall risk of bias
	Representativeness of the exposed cohort	Representativeness of non-exposed	Ascertainment of exposure	Determination that outcome is not present initially	Study Controls for age, sex	Assessment of outcome	Length of Follow-up	Adequacy of follow-up	
Mok et al., 2011	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Medium
Bakland et al., 2011	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Wright et al., 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Haroon et al., 2015	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Exarchou et al., 2016	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Low
Dregan et al., 2017	Yes	Yes	Yes	No	Yes	Yes	No	No	Medium
Prati et al., 2017	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes?	Low
Bae et al., 2019	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Medium

Supplementary File 2B. Risk of bias of the included ankylosing spondylitis studies based on New-Castle Ottawa scale for observational studies

No of studies	Certainty assessment					Effect	Certainty
	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	RR (95% CI)	
<b>Psoriatic arthritis all-cause mortality</b>							
10	observational studies	serious <sup>a</sup>	very serious <sup>b</sup>	not serious	not serious	RR 1.12 (0.96 to 1.30)	⊕⊕○○ LOW
<b>Ankylosing spondylitis all-cause mortality</b>							
6	observational studies	serious <sup>a</sup>	Not serious	not serious	not serious	RR 1.64 (1.49 to 1.80)	⊕⊕○○ LOW

RR: relative risk, CI: Confidence interval

#### Explanations

- a. Observational studies, did not adjust mortality estimates or used administrative codes to make PsA diagnosis in some studies
- b. Variable results across studies, high I squared value (86%)
- c. Actual events not provided for all studies

Supplementary File 2C. GRADE certainty of evidence assessment of mortality in psoriatic arthritis and ankylosing spondylitis