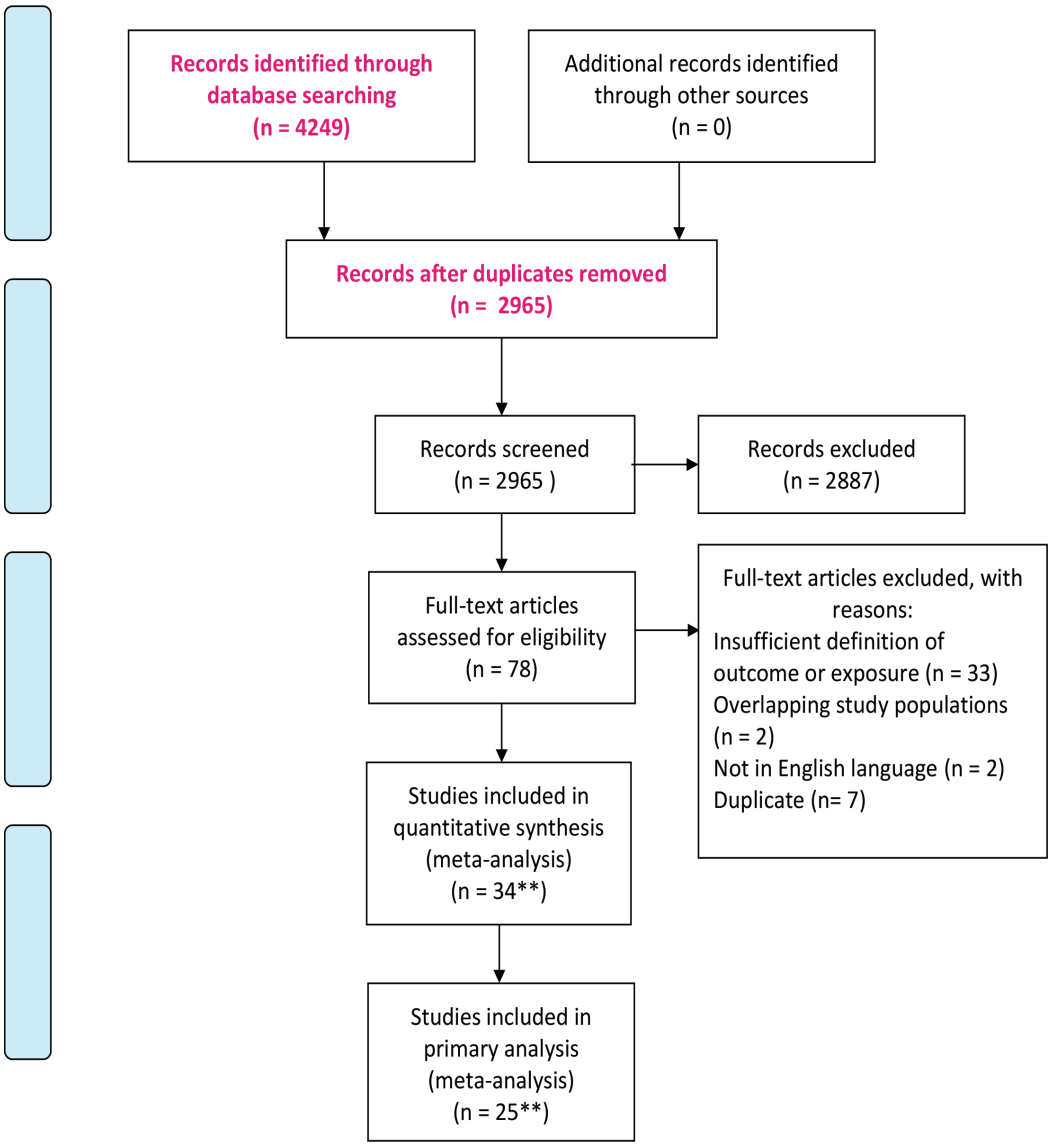
PRISMA 2009 Flow Diagram*



* From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009): Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097.
** Two studies contained data on coeliac disease in both rheumatoid arthritis and juvenile idiopathic arthritis, thus included in the analysis of coeliac disease in both these diseases.

Supplementary Table S1. Quality assessment of included studies according to the Newcastle-Ottawa quality assessment scale.*

Author, year	Selection¥ (Max 4 points)	Comparability§ (Max 2 points)	Outcome‖ (Max 3 points)	Total
Al-Mayouf, 2003	3	0	3	6
AlEnzi, 2020	2	0	3	5
Atzeni, 2008	2	0	3	5
Bizzaro, 2003	3	0	2	5
Caio, 2018	2	0	2	4
Castillo-Ortiz, 2011	2	0	2	4
Chang, 2018	2	0	3	5
Coaccioli, 2010	2	0	3	5
Elhami, 2018	3	0	3	6
Francis, 2002	2	0	3	5
George, 1996	3	0	3	6
Gheita, 2012	3	0	2	5
Gheith, 2017	4	1	2	7
Goeldner, 2011	3	1	2	6
Lepore, 1993	3	1	3	7
Lepore, 1996	2	0	3	5
Liao, 2013	3	1	2	6
Luft, 2003	2	0	2	4
Moghtaderi, 2016	2	0	3	5
Naddei, 2022	2	0	3	5
Nishihara, 2007	4	0	3	7
Nishihara, 2017	2	0	3	5
Pelligrini, 1991	2	0	3	5
Pohjankoski, 2010	2	0	3	5
Robazzi, 2013	3	1	3	7
Sadeghi, 2021	3	0	3	6
Sahin, 2019	2	0	3	5
Schulz, 2022	2	0	2	4
Skrabl-Baumgartner, 2017	3	1	3	7
Stagi, 2005	3	1	3	7
Taneja, 2017	3	1	2	6
Torres-Fernandez, 2022	2	0	3	5
Tronconi, 2017	2	0	3	5
Zayeni, 2014	2	0	3	5

*Wells GA SB, O'Connell D, Peterson J, et al. The Newcastle-Ottawa Scale (NOS) for assessing the quality of non-randomized studies in meta-analyses. The Ottawa Hospital Research Institute, 2009. https://www.ohri.ca/Programs/clinical_epidemiology/oxford.asp (Cited December 6, 2022).

¥ Includes the following items: i) Representativeness of the exposed cohort, ii) Selection of the non-exposed cohort, iii) Ascertainment of exposure and iv) Demonstration that outcome of interest was not present at start of study.

§ Includes the following item: Comparability of cohorts on the basis of the design or analysis.

‖ Includes the following items: i) Assessment of outcome, ii) Was follow-up time long enough for outcomes to occur, and iii) Adequacy of follow-up of cohorts.

1. Medline

Interface: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily Date of Search: 2021-10-28 and updated search 2022-10-31 Number of hits: **741** Comment: In Ovid, two or more words are automatically searched as phrases; i.e. no quotation marks are needed	Field labels • exp/ = exploded MeSH term • / = non exploded MeSH term • .ti,ab,kf. = title, abstract and author keywords • adjx = within x words, regardless of order • * = truncation of word for alternate endings

1. exp Arthritis, Rheumatoid/
2. exp Arthritis, Juvenile/
3. (art?riti* OR oligoart?riti* OR polyart?riti*).ab,kf,ti.
4. (r?eum* OR juvenile OR idiopat?ic).ab,kf,ti.
5. 3 AND 4
6. 1 OR 2 OR 5
7. (anti-mutant citrulline vimentin OR anti-MCV).ab,kf,ti.
8. (anti-cyclic citrulline polypeptide OR anti-CCP).ab,kf,ti.
9. r?eumatoid factor*.ab,kf,ti.
10. 6 OR 7 OR 8 OR 9
11. Celiac Disease/
12. exp Glutens/
13. exp Transglutaminases/
14. (celiac* OR celiak* OR coeliac* OR coeliak* OR 'non-tropical sprue' OR 'nontropical sprue').ab,ti,kw
15. (Gluten* OR gliadin* OR wheat).ab,kf,ti.
16. (endomys* OR antiendomys* OR ema OR aea OR transglutamin* OR anti-transglutamin* OR trans glutamin* OR ttg OR tta).ti,ab,kf.
17. ((villus OR villous) adj3 atroph*).ti,ab,kf.
18. 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17
19. 10 AND 18
20. limit 19 to yr="1990 -Current"

2. Embase

Interface: embase.com Date of Search: 2021-10-28 and updated search 2022-10-31 Number of hits: **2357** Comment: Emtree is the controlled vocabulary in Embase	Field labels • /exp = exploded Emtree term • /de = non exploded Emtree term • ti,ab = title and abstract • NEAR/x = within x words, regardless of order • * = truncation of word for alternate endings

1. 'rheumatoid arthritis'
2. 'juvenile rheumatoid arthritis'
3. 'arthritis' OR 'polyarthritis'
4. 'rheumatic disease' OR 'juvenile' OR 'idiopathic'
5. #3 AND #4
6. #1 OR #2 OR #5
7. 'cyclic citrullinated peptide antibody' OR 'rheumatoid factor'
8. #6 OR #7
9. 'celiac disease'/de
10. 'gluten'/de
11. 'gliadin'/de
12. 'protein glutamine gamma glutamyltransferase'/de
13. 'protein glutamine gamma glutamyltransferase 2'/de
14. 'endomysium antibody'
15. 'endomysium'
16. celiac*:ti,ab,kw OR celiak*:ti,ab,kw OR coeliac*:ti,ab,kw OR coeliak*:ti,ab,kw OR 'non-tropical sprue':ti,ab,kw OR 'nontropical sprue':ti,ab,kw
17. gluten*:ti,ab,kw OR gliadin*:ti,ab,kw
18. endomys*:ti,ab,kw OR antiendomys*:ti,ab,kw OR ema:ti,ab,kw OR aea:ti,ab,kw OR transglutamin*:ti,ab,kw OR 'anti transglutamin*':ti,ab,kw OR 'trans glutamin*':ti,ab,kw OR ttg:ti,ab,kw OR tga:ti,ab,kw
19. ((villus OR villous) NEAR/3 atroph*):ti,ab,kw
20. #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19
21. #8 AND #20
22. #8 AND #20 AND [1990-2021]/py

3. Cochrane Library

Interface: Wiley Date of Search: 2021-10-28 and updated search 2022-10-31 Number of hits: **77**	Field labels • ti,ab,kw = title, abstract and author keywords • NEAR/x = within x words, regardless of order • * = truncation of word for alternate endings • [ ] = MeSH descriptor, explode all trees

1. [Arthritis, Rheumatoid]
2. [Arthritis, Juvenile]
3. (art?riti* OR oligoart?riti* OR polyart?riti*):ti,ab,kw
4. (r?eum* OR juvenile OR idiopat?ic):ti,ab,kw
5. #3 AND #4
6. #1 OR #2 OR #5
7. ("anti-mutant citrulline vimentin" OR anti-MCV):ti,ab,kw
8. ("anti-cyclic citrulline polypeptide" OR anti-CCP):ti,ab,kw
9. [Rheumatoid Factor]
10. #6 OR #7 OR #8 OR #9
11. [Celiac Disease]
12. [Glutens]
13. [Transglutaminases]
14. ((celiac* OR celiak* OR coeliac* OR coeliak* OR 'non-tropical sprue' OR 'nontropical sprue'):ti,ab,kw
15. (gluten* OR gliadin*):ti,ab,kw
16. (endomys* OR antiendomys* OR ema OR aea OR transglutamin* OR anti-transglutamin* OR gliadin OR trans glutamin* OR ttg OR tta):ti,ab,kw
17. ((villus or villous) NEAR/3 atroph*):ti,ab,kw
18. #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17
19. #10 AND #18

with Cochrane Library publication date from Jan 1990 to Oct 2021 and an updated search to Oct 2022

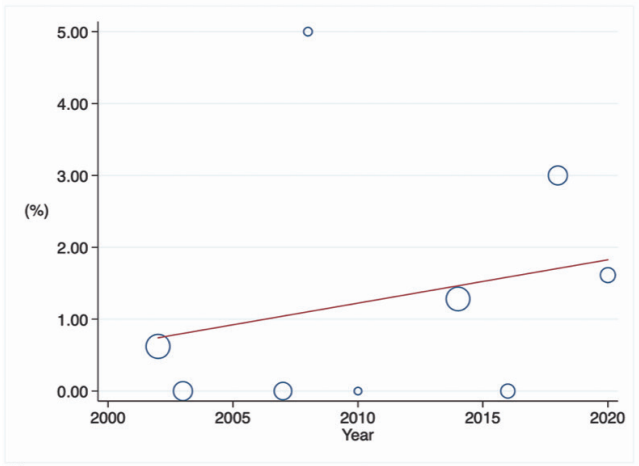
4. Web of Science Core Collection

Interface: Clarivate Analytics Date of Search: 2021-10-28 and updated search 2022-10-31 Number of hits: **1074**	Field labels • TS/Topic = title, abstract, author keywords and Keywords Plus • NEAR/x = within x words, regardless of order • * = truncation of word for alternate endings Note: sometimes "quotation marks" are needed for single search terms to avoid automatic term mapping (lemmatization).

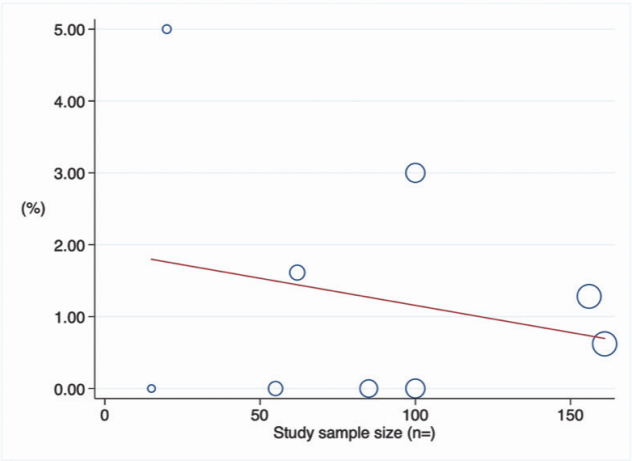
1. TOPIC: ("R*eumatoid art*ritis")
2. TOPIC: ("Juvenile arthritis")
3. TOPIC: (("anti-mutant citrulline vimentin" OR anti-MCV))
4. TOPIC: (("anti-cyclic citrulline polypeptide" OR anti-CCP))
5. TOPIC: (R*eumatoid factor*)
6. #1 OR #2 OR #3 OR #4 OR #5
7. TOPIC: ((celiac* OR celiak* OR coeliac* OR coeliak* OR 'non-tropical sprue' OR 'nontropical sprue'))
8. TOPIC: ((gluten* OR gliadin*))
9. TOPIC: ((endomys* OR antiendomys* OR ema OR aea OR transglutamin* OR anti-transglutamin* OR "trans glutamin*" OR ttg OR tta))
10. TOPIC: (((villus OR villous) NEAR/3 atroph*))
11. #7 OR #8 OR #9 OR #10
12. #6 AND #11

Limited to publication date: 1990-01-01 – 2021-10-28 and an updated search to 22-10-31

Supplementary Fig. S1. PRISMA Flow Diagram and search strategies for Medline, Embase, Cochrane Library, and Web of Science Core Collection.



A)



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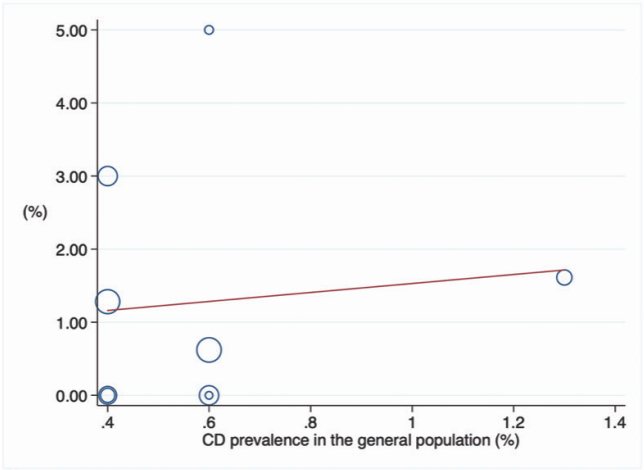

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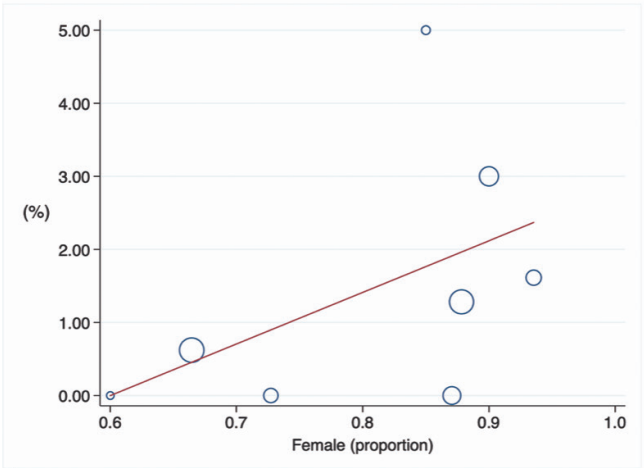
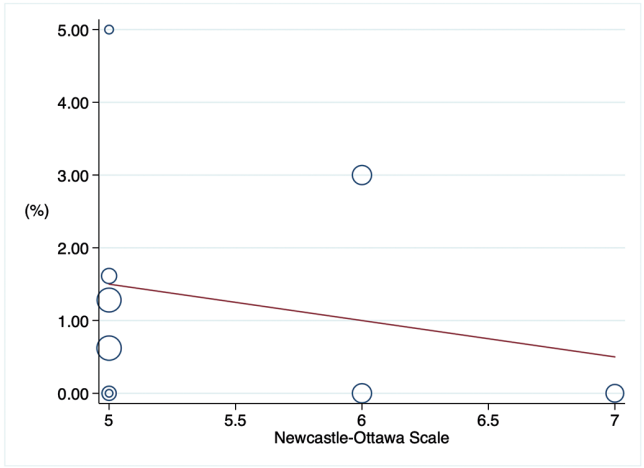


D)

Supplementary Figure S2. **A**: Meta-regression of relation between year of publication and prevalence of coeliac disease (CD) in rheumatoid arthritis. Y-axis shows proportion CD in patients with rheumatoid arthritis. X-axis displays the year of publication for each study.
B: Meta-regression of relation between sample size and prevalence of CD in rheumatoid arthritis. Y-axis shows proportion CD in patients with rheumatoid arthritis. X-axis displays the sample size for each study.
C: Meta-regression of relation between the prevalence of CD in the general population and the prevalence of CD in rheumatoid arthritis. Y-axis shows proportion CD in patients with rheumatoid arthritis. X-axis displays the prevalence of CD in the general population.
D: Meta-regression of relation between the proportion of females and the prevalence of CD in rheumatoid arthritis. Y-axis shows proportion CD in patients with rheumatoid arthritis. X-axis displays the proportion of females in each study.
E: Meta-regression of relation between the Newcastle-Ottawa Scale assessment and the prevalence of CD in rheumatoid arthritis. Y-axis shows proportion CD in patients with rheumatoid arthritis. X-axis displays the Newcastle-Ottawa Scale scores for each study.



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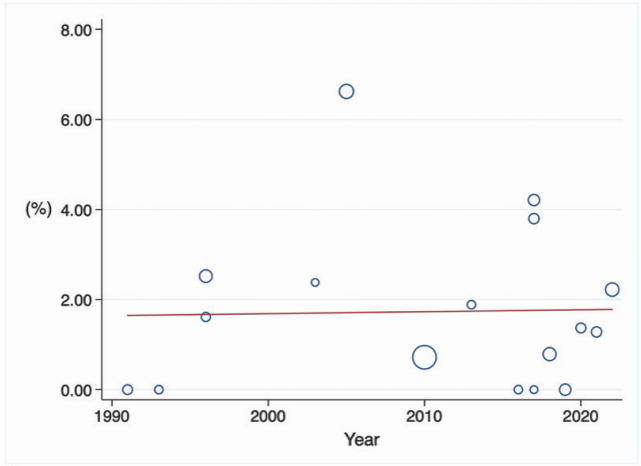
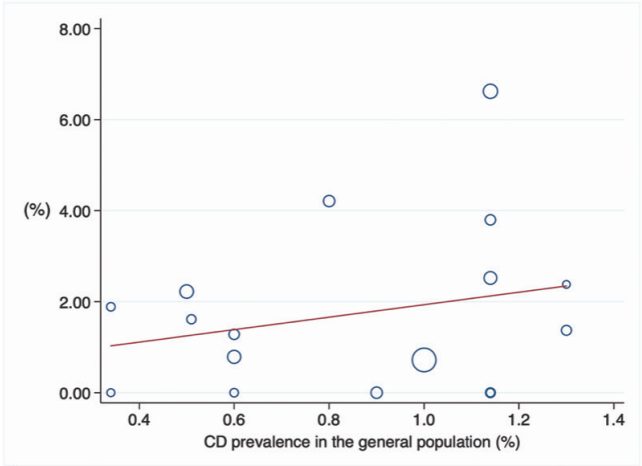


A



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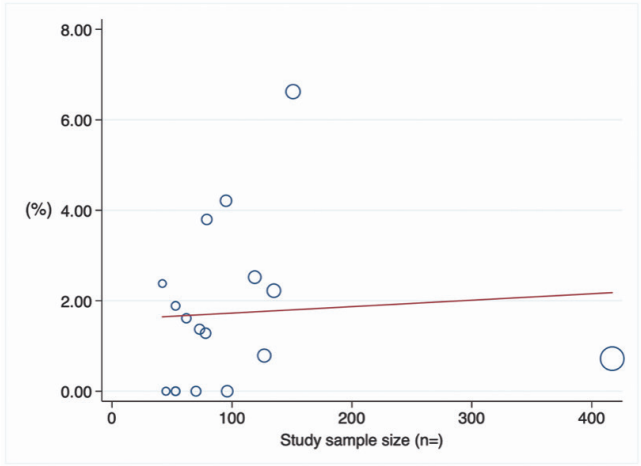

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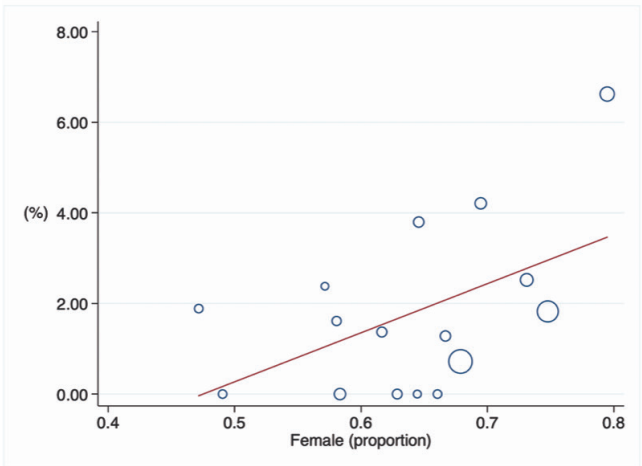
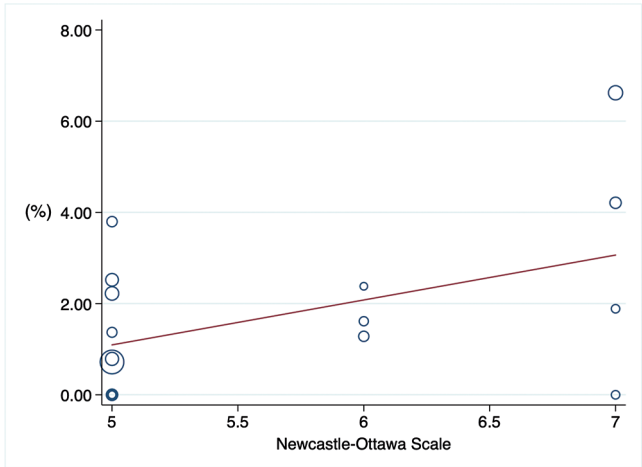
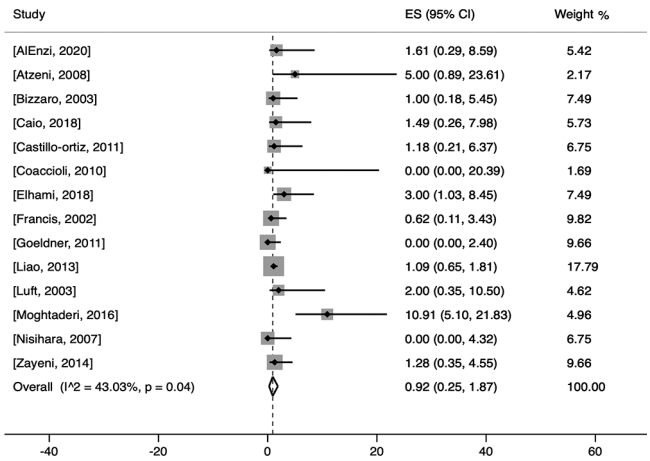


D

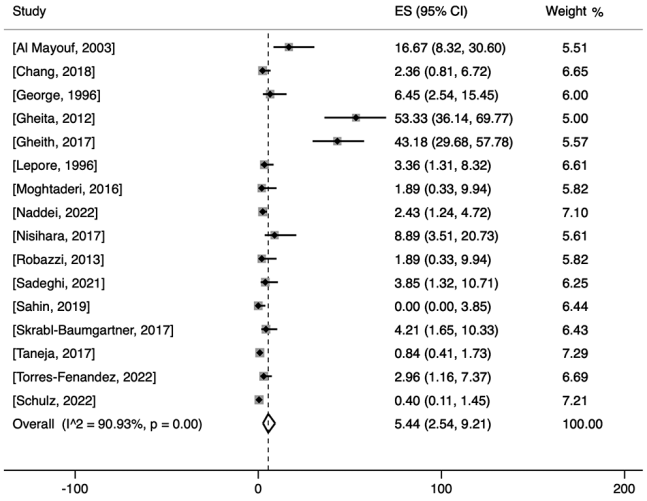


E

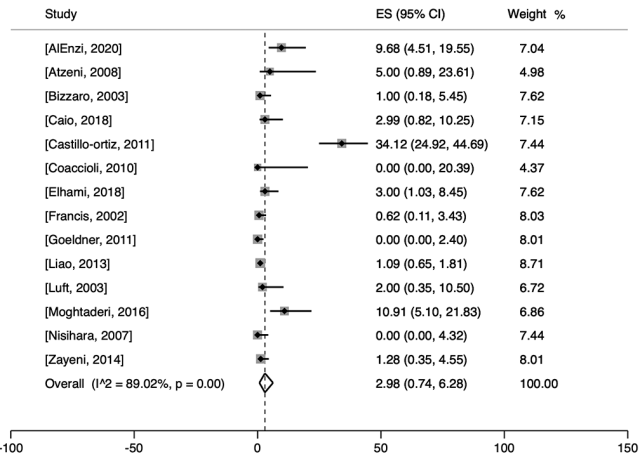
Supplementary Fig. S3. **A**: Meta-regression of relation between year of publication and prevalence of coeliac disease (CD) in juvenile idiopathic arthritis. Y-axis shows proportion CD in patients with juvenile idiopathic arthritis. X-axis displays the year of publication for each study.
B: Meta-regression of relation between sample size and prevalence of CD in juvenile idiopathic arthritis. Y-axis shows proportion CD in patients with juvenile idiopathic arthritis. X-axis displays the sample size for each study.
C: Meta-regression of relation between the prevalence of CD in the general population and the prevalence of CD in juvenile idiopathic arthritis. Y-axis shows proportion CD in patients with juvenile idiopathic arthritis. X-axis displays the prevalence of CD in the general population.
D: Meta-regression of relation between the proportion of females and the prevalence of CD in juvenile idiopathic arthritis. Y-axis shows proportion CD in patients with juvenile idiopathic arthritis. X-axis displays the proportion of females in each study.
E: Meta-regression of relation between the Newcastle-Ottawa Scale assessment score and the prevalence of CD in juvenile idiopathic arthritis. Y-axis shows proportion CD in patients with juvenile idiopathic arthritis. X-axis displays the Newcastle-Ottawa scores for each study.



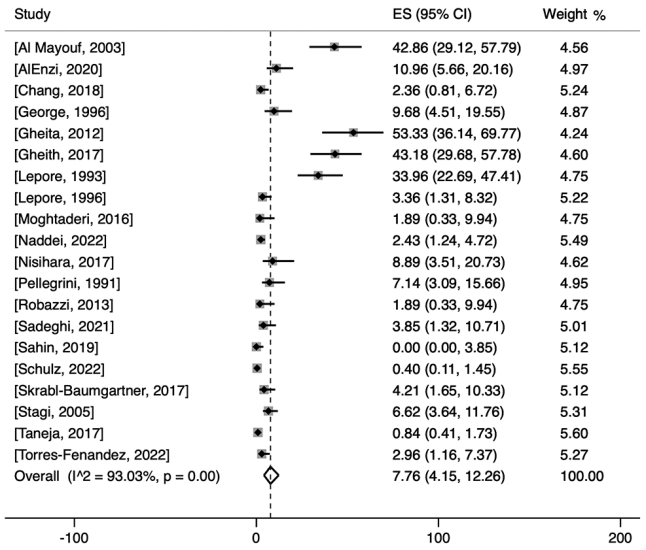
Supplementary Fig. S4. Prevalence of coeliac disease antibodies (tissue transglutaminase or endomysial antibodies) in patients with rheumatoid arthritis.
CI: confidence interval.



Supplementary Fig. S5. Prevalence of coeliac disease antibodies (tissue transglutaminase or endomysial antibodies) in patients with juvenile idiopathic arthritis.
CI: confidence interval.



Supplementary Fig. S6. Prevalence of coeliac disease antibodies (tissue transglutaminase, endomysial, or anti-gliadin antibodies) in patients with rheumatoid arthritis.
CI: confidence interval.



Supplementary Fig. S7. Prevalence of coeliac disease antibodies (tissue transglutaminase, endomysial, or anti-gliadin antibodies) in patients with juvenile idiopathic arthritis.
CI: confidence interval.