CRD summary
This generally well-conducted review concluded that the prevalence of biopsy-proved celiac disease in individuals meeting the IBS diagnostic criteria is approximately 4% and the odds for biopsy-proved celiac disease is more than four-fold that in healthy controls. Interpretation of the results should be undertaken with some caution due to the limitations of the included studies and the between study heterogeneity.

Authors' objectives
To estimate the prevalence of celiac disease in adults who met the diagnostic criteria for irritable bowel syndrome (IBS).

Searching
MEDLINE (1950 to May 2008) and EMBASE (1980 to May 2008) were searched without language restrictions. Search terms were reported. Conference proceedings (2000 to December 2007) and bibliographies of relevant studies were also searched.

Study selection
Case series and case-control studies with at least 90 unselected adults with a presumed diagnosis of IBS, which tested for celiac disease using serological tests in all enrolled individuals, were eligible for inclusion. Included studies were primarily conducted in Europe. Settings included primary and secondary care and population based studies. Tests used to diagnose celiac disease were endomysial antibody (EMA), IgA-class antigliadin antibody (AGA), tissue transglutaminase antibody (tTGA) and/or distal duodenal biopsy.

Two reviewers independently selected studies for the review. It was not reported how disagreements were resolved.

Assessment of study quality
The authors did not state that they assessed study quality. However, the authors reported whether patients were recruited consecutively and the potential for spectrum bias in diagnostic case-control studies was discussed.

Data extraction
The number of patients with positive serological tests was extracted and expressed as a percentage of the total. Odds ratios (OR) and 95% confidence intervals (CI) were calculated for serological or biopsy positive patients compared to control patients.

Two reviewers independently extracted data and discrepancies were resolved by consensus.

Methods of synthesis
A pooled prevalence of celiac disease was calculated by combining the percentage of patients meeting the IBS criteria with positive serological test or biopsy results from the case series and case-control studies. If a study reported no positive serological test or biopsy results, 0.5 was added to all four cells of the 2x2 table. Sensitivity analyses were conducted to investigate setting, geographic region, the IBS diagnostic criteria used, and the IBS sub-type. Individual subgroups were compared using the Cochrane Q test. Pooled OR and 95% CI were calculated using a random effects model. It was not reported how heterogeneity was assessed in these analyses. Publication bias was assessed for case-control studies using funnel plots and the Egger test.

Results of the review
Fourteen studies met the inclusion criteria (n=4,204 patients tested for celiac; n=2,278 patients met IBS diagnostic
criteria; sample size ranged from 100 to 1,200). Seven studies were case series and seven studies were case control studies. Only four of the included studies reported recruiting consecutive patients.

The percentage of patients meeting IBS criteria who tested positive for celiac disease ranged from 0% to 18% for IgA-class AGAs (pooled prevalence 4%, 95% CI: 1.7, 7.2%, seven studies, n=1,104), 0% to 11.4% for tTGAs (pooled prevalence 1.63%, 95% CI: 0.7, 3.0%, 13 studies, n=2,021), and 0% to 11.4% for biopsy (pooled prevalence 4.1%, 95% CI: 1.9, 7.0%, seven studies, n=1,464).

In studies comparing IBS diagnosed patients with controls, there was a higher rate of celiac disease in patients diagnosed with IBS when measured using IgA-class AGAs (OR 3.4, 95% CI: 1.62, 7.13, six studies, n=1,002), EMAs or tTGAs (OR 2.94, 95% CI: 1.36, 6.35, seven studies, n=2,978) and biopsy (OR 4.34, 95% CI: 1.78, 10.58, five studies, n=2,750).

Results for subgroup analyses were reported. The authors reported that there was no evidence of funnel plot asymmetry.

**Authors' conclusions**
The prevalence of biopsy-proved celiac disease in individuals meeting the diagnostic criteria for IBS is in the region of 4% and the odds for biopsy-proved celiac disease is more than four-fold that in healthy controls.

**CRD commentary**
The authors addressed a clear review question, with appropriate inclusion criteria. Appropriate sources were searched, with attempts to reduce the potential for language and publication bias. Each stage of the review was conducted in duplicate, reducing the potential for error and bias. The authors did not systematically assess study quality and insufficient study details were provided to allow the reader to perform an assessment. The study designs included and the poor reporting of patient recruitment could indicates a low level of evidence. There was clinical heterogeneity across studies that were pooled and results for a statistical test for heterogeneity were not reported. This was a generally well-conducted review, however, interpretation of the results should be undertaken with some caution due to the limitations of the included studies and the between study heterogeneity.

**Implications of the review for practice and research**
Practice: The authors stated that if screening is to be undertaken, the EMA or tTGA testing should be preferred to IgA-class AGA testing due to the higher positive predictive value. Yield will depend on the prevalence of celiac disease in the population being studied.

Research: The authors did not state implications for research.

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