

# Methodological Approaches for Assessing Certainty of the Evidence in Umbrella Reviews: A Scoping Review

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## BACKGROUND

- The number of umbrella reviews (URs) that compiled systematic reviews and meta-analysis (SR-MAs) has increased dramatically over recent years
- URs of non-interventional studies helps establish evidence linking exposure to certain health outcomes in a population
- No formal guidance for assessing the certainty of evidence in URs of meta-analyses exists nowadays

## OBJECTIVE

- To identify and describe the methodological approaches for assessing the certainty of the evidence in published URs of non-interventions

## METHODS

- Search Strategy: PubMed, Embase, and the Cochrane Library were searched from May 2010 to September 2021
- Inclusion criteria: URs that included SR-MAs of studies with non-interventions
- Two independent reviewers screened and extracted data
- A descriptive analysis was performed by frequencies and percentage
- Compared URs characteristics stratified by publication year, journal ranking, and journal impact factor (JIF), using Chi-square or Fisher's exact test
- The assessment of the certainty of evidence was defined as any of evaluation of the totality or strength of the evidence --such as the GRADE approach, criteria for credibility assessment, and other approaches used to grade the overall body of the UR evidence

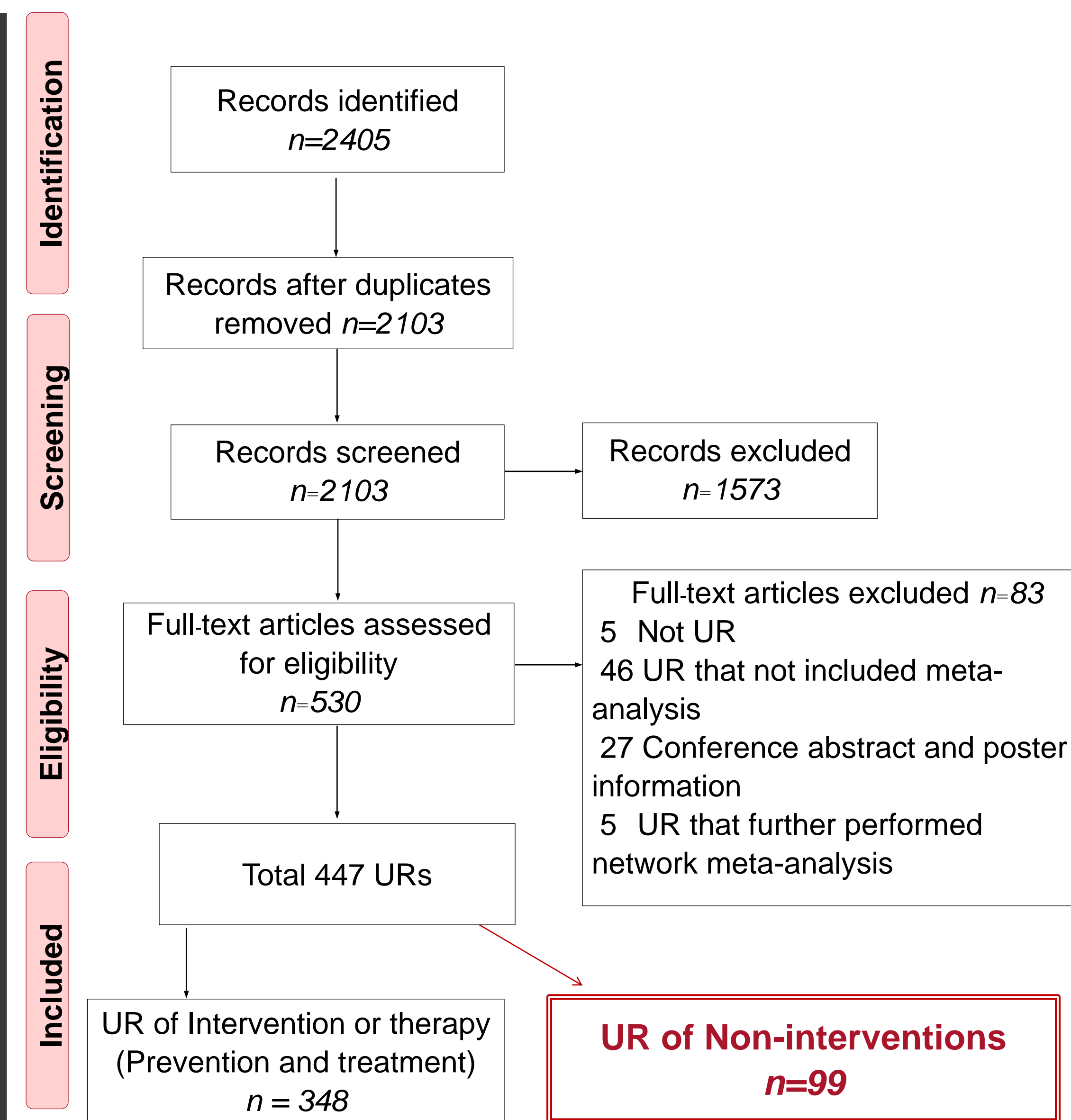


Figure 1: PRISMA flowchart

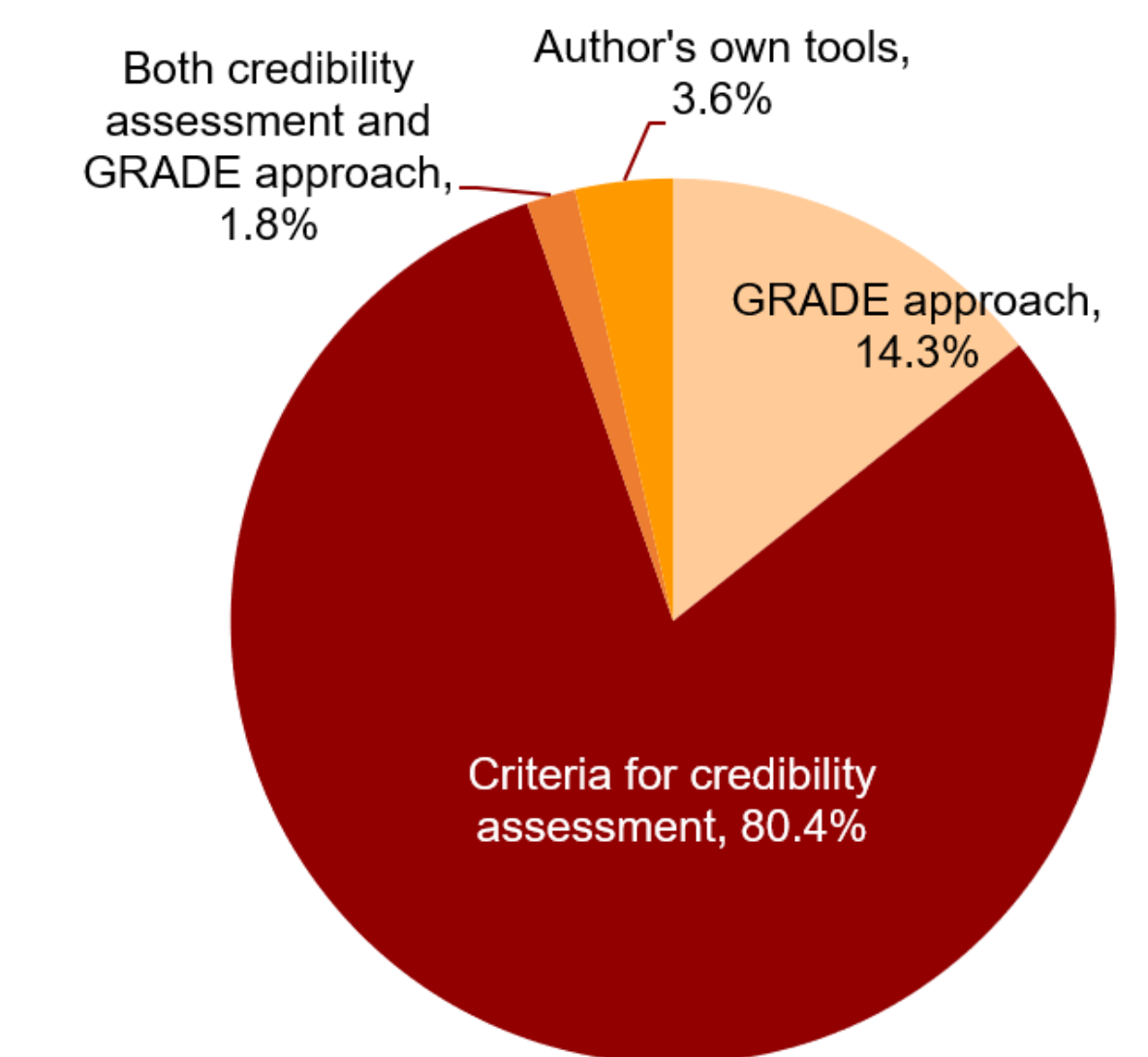


Figure 2A Methodological approaches for certainty of evidence assessment

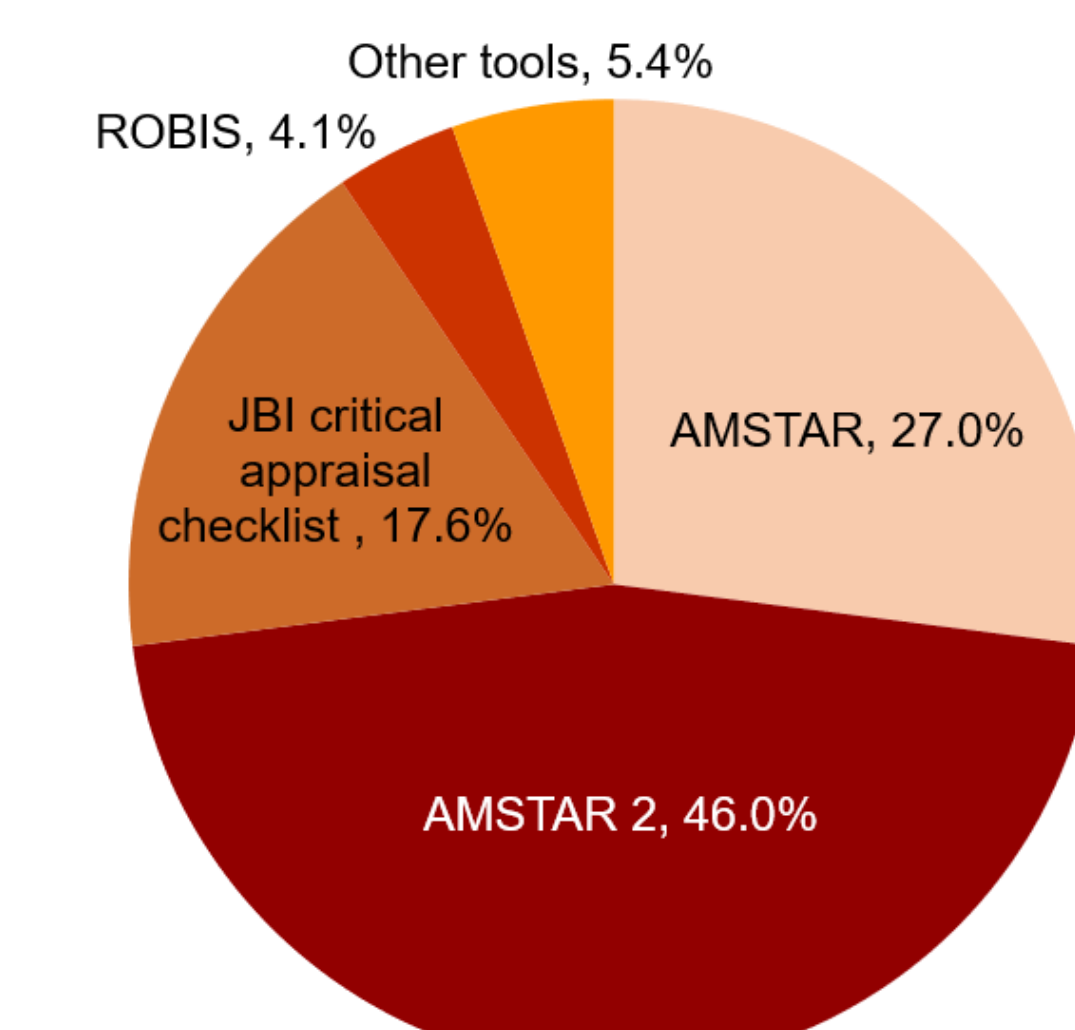


Figure 2B Methodological approaches for methodological quality assessment

## RESULTS

- 99 URs of non-interventions were included
- The median JIF of URs = 4.45 (3.01-7.72)
- Seven of the 99 URs (7.1%) were published in top-100 ranking journals according to the JIF in 2021
- The assessment of the certainty of evidence:**
  - Only half (56.6%) of included URs assessed the certainty of the evidence
  - The most frequently used method: credibility assessment (80.4%) (Figure 2A)
  - URs published in journals with higher JIF assessed more than URs published in lower impact group (77.1 VS 37.2% respectively, p < 0.05) (Table 1)
  - Criteria for credibility assessment used in 4 of the 7 URs that were published in top ranking journals were slightly varied
- The assessment of methodological quality:**
  - Most of the included URs performed the assessment (n = 74, 74.8%)
  - The most frequently used tool was AMSTAR 2 (Figure 2B)

Table 1: Certainty and methodological quality assessment in included URs

Study characteristics	Assessment	P-value
<b>1. Performed a certainty assessment</b>		
<b>1.1 Classified by the median of impact factor</b>		
• Published in Higher impact journals (JIF > 4.45)	37/48 (77.1%)	<0.05
• Published in Lower impact journals (JIF ≤ 4.45)	19/51 (37.3%)	
<b>1.2 Classified by ranking of journal</b>		
• Published in higher impact group (top 100 ranking)	5/7 (71.4%)	0.70
• Published in lower impact journals	51/92 (55.4%)	
<b>1.3 Classified by year of publication</b>		
• 2010-2016	6/9 (66.7%)	0.73
• 2017-2021	50/90 (55.6%)	
<b>2. Performed a methodological quality assessment</b>		
<b>2.1 Classified by the median of impact factor</b>		
• Published in Higher impact journals (JIF > 4.45)	35/48 (72.9%)	0.69
• Published in Lower impact journals (JIF ≤ 4.45)	39/51 (74.6%)	
<b>2.2 Classified by ranking of journal</b>		
• Published in higher impact group (top 100 ranking)	5/7 (71.4%)	0.99
• Published in lower impact journals	69/92 (75%)	
<b>2.3 Classified by year of publication</b>		
• 2010-2016	3/9 (33.3%)	<0.05
• 2017-2021	71/90 (78.9%)	

## DISCUSSION

- The criteria for credibility assessment
  - Classified the certainty of the evidence according to several statistical criteria, which usually reported in MAs
  - This method was recently released might be specific to URs of MAs of non-interventions, and was being used more commonly
- Limitations:**
  - The definition of included studies was restricted to URs
  - This study confined to only URs of non-intervention studies and focused on describing the method used in previously published URs that most of them did not provide the reasons for methods selection

## CONCLUSION

- Half of URs of MAs of non-interventional studies have assessed the certainty of the evidence, in which criteria for credibility assessment was the most commonly used method.
- Guidance and standards are required to ensure the methodological rigor and consistency of certainty of evidence assessment for URs.