

# Is BMIC a useful biomarker in assessing maternal and infant iodine status: a systematic review

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## Background

- Iodine is needed for the production of thyroid hormones, which are essential for the growth and development of infants.
- Urinary iodine concentration (UIC) is commonly used as a biomarker to assess iodine status in populations.
- Wide variations in BMIC and UIC.
- Unclear if BMIC is associated with UIC in populations residing in iodine sufficient or deficient areas.

## Aims

- To evaluate the relationship between BMIC and UIC
- To evaluate whether BMIC can be used as a biomarker of maternal and infant iodine status

## Methods



### Electronic databases

- PubMed
- Web of Science
- Scopus

### Inclusion and exclusion criteria



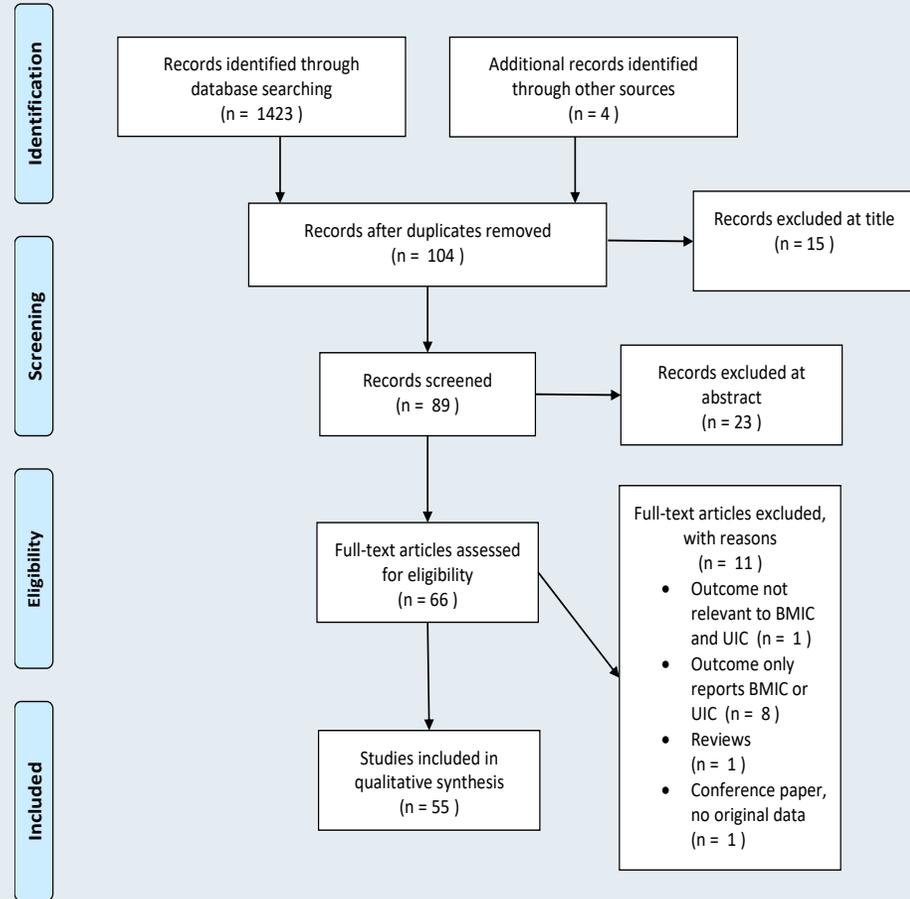
### Data extraction

### Quality assessment

- Jadad scale
- Adapted Newcastle-Ottawa scale



## Results



**Consistence**

BMIC  $\geq 100$   $\mu\text{g/L}$   
UIC  $\geq 100$   $\mu\text{g/L}$

**22**



**Consistence**

BMIC  $< 100$   $\mu\text{g/L}$   
UIC  $< 100$   $\mu\text{g/L}$

**22**

median BMIC  $\geq 100$   $\mu\text{g/L}$  = sufficient iodine status  
median UIC  $\geq 100$   $\mu\text{g/L}$  = sufficient iodine status



**Inconsistence**

BMIC  $\geq 100$   $\mu\text{g/L}$   
UIC  $< 100$   $\mu\text{g/L}$

**4**



**Inconsistence**

BMIC  $< 100$   $\mu\text{g/L}$   
UIC  $\geq 100$   $\mu\text{g/L}$

**8**

### Inclusion criteria:

- 1) Original articles published until year 2021.
- 2) Exposures of the study must be relevant to maternal iodine status.
- 3) Outcome of the study must report BMIC and UIC.
- 4) Studies must focus on healthy women only.
- 5) Studies must have either one of the following: BMIC and UIC of lactating women, BMIC of lactating women and UIC data of infants.
- 6) Studies must be reported in the English language.

### Exclusion criteria:

- 1) Studies in animals.
- 2) Exposures of the study were not relevant to maternal iodine status.
- 3) Exposures of the study focused on not only iodine.
- 4) Outcome of the study was not relevant to BMIC and UIC.
- 5) Studies reported just on single case (e.g., letters and case reports).
- 6) Reviews, rather than original data

## Conclusions

- The majority of these studies suggested that BMIC is a promising biomarker of iodine status, with some limitations.
- For future research studies, the evaluation of BMIC as a biomarker of maternal and infant iodine status can be improved.

## References

- Secretariat W, Andersson M, De Benoist B, et al. (2007) Prevention and control of iodine deficiency in pregnant and lactating women and in children less than 2-years-old: conclusions and recommendations of the Technical Consultation. 10: 1606-1611.
- 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(7): e1000097.

