

Supplementary file 3: Newcastle-Ottawa quality assessment form for cohort studies, case-control studies and cross-sectional studies

Note: A study can be given a maximum of one star (+) for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability.

Selection

- 1) Representativeness of the exposed cohort
 - a) Truly representative +
 - b) Somewhat representative +
 - c) Selected group
 - d) No description of the derivation of the cohort
- 2) Selection of the non-exposed cohort
 - a) Drawn from the same community as the exposed cohort +
 - b) Drawn from a different source
 - c) No description of the derivation of the non-exposed cohort
 - d) comparison within the group
- 3) Ascertainment of exposure
 - a) Secure record (e.g., surgical record) +
 - b) Structured interview +
 - c) Written self-report
 - d) No description
 - e) Other
- 4) Demonstration that outcome of interest was not present at start of study
 - a) Yes +
 - b) No

Comparability

- 1) Comparability of cohorts on the basis of the design or analysis controlled for confounders
 - a) The study controls for age and sex ++
 - b) The study controls for age or sex +
 - c) The study controls other factors, but not age or sex: _____
 - d) Cohorts are not comparable on the basis of the design or analysis controlled for confounders

Outcome

- 1) Assessment of outcome
 - a) Independent blind assessment +
 - b) Record linkage +
 - c) Self report
 - d) No description
 - e) Other
- 2) Was follow-up long enough for outcomes to occur
 - a) Yes +
 - b) No
- 3) Were objective standard criteria used for measurement of the condition
 - a) MRI +
 - b) ICD
- 4) Adequacy of follow-up of cohorts
 - a) Complete follow up- all subject accounted for +
 - b) Subjects lost to follow up unlikely to introduce bias-number lost less than or equal to 20% or description of those lost suggested no different from those followed. +
 - c) Follow up rate less than 80% and no description of those lost
 - d) No statement

Thresholds for converting the Newcastle-Ottawa scales to AHRQ standards (good, fair, and poor):

Good quality: 3 or 4 stars in selection domain **AND** 1 or 2 stars in comparability domain **AND** 3 or 4 stars in outcome/exposure domain

Fair quality: 2 stars in selection domain **AND** 1 or 2 stars in comparability domain **AND** 2 or 3 stars in outcome/exposure domain

Poor quality: 0 or 1 star in selection domain **OR** 0 stars in comparability domain **OR** 0 or 1 stars in outcome/exposure domain

Table S6. Quality assessment of included cohort studies

Author, year	Selection (Maximum 4 +)	Comparability (Maximum 2 +)	Outcome (Maximum 3 +)	Study quality*
Heliovaara et al. 1987	1b; 2a; 3b; 4b (+++)	1a (++)	1b; 2a; 3b; 4d (++)	++
Chung et al. 2013	1a; 2a; 3a; 4a (++++)	1a (++)	1b; 2a; 3b; 4d (+++)	+++
Makino et al. 2017	1b; 2d; 3a; 4b (++)	1b (+)	1a; 2a; 3a; 4c (+++)	++

* AHRQ standard: good (+++), fair (++) and poor (+)

NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE (adapted for cross sectional studies)

This scale has been adapted from the Newcastle-Ottawa Quality Assessment Scale for cohort studies to perform a quality assessment of cross-sectional studies for the systematic review, "Are Healthcare Workers' Intentions to Vaccinate Related to their Knowledge, Beliefs and Attitudes? A Systematic Review".

Selection (Maximum 4 +)

- 1) Representativeness of the sample:
 - a) Truly representative of the average in the target population. + (all subjects or random sampling)
 - b) Somewhat representative of the average in the target population. + (non-random sampling)
 - c) Selected group of users.
 - d) No description of the sampling strategy.
- 2) Sample size:
 - a) Justified and satisfactory. +
 - b) Not justified.
- 3) Non-respondents:
 - a) Comparability between respondents and non-respondents characteristics is established, and the response rate is satisfactory. +
 - b) The response rate is unsatisfactory, or the comparability between respondents and non-respondents is unsatisfactory.
 - c) No description of the response rate or the characteristics of the responders and the non-responders.
- 4) Ascertainment of the exposure (risk factor):
 - a) Validated measurement tool. ++
 - b) Non-validated measurement tool, but the tool is available or described. +
 - c) No description of the measurement tool.

Comparability

- 1) The subjects in different outcome groups are comparable, based on the study design or analysis.

Confounding factors are controlled.

- a) The study controls for the age and sex. ++
- b) The study controls for age or sex. +
- c) The study controls for confounding, but not age or sex.
- d) No confounder control in analyses and no matching

Outcome

- 1) Assessment of the outcome:
 - a) Independent blind assessment. ++
 - b) Record linkage. ++
 - c) Self report. +
 - d) No description.
- 2) Statistical test:
 - a) The statistical test used to analyze the data is clearly described and appropriate, and the measurement of the association is presented, including confidence intervals and the probability level (p value). +
 - b) The statistical test is not appropriate, not described or incomplete.
- 3) Were objective standard criteria used for measurement of the condition
 - a) MRI +
 - b) ICD

Thresholds for converting the Newcastle-Ottawa scales to AHRQ standards (good, fair, and poor):

Good quality: 3 or 4 stars in selection domain **AND** 1 or 2 stars in comparability domain **AND** 3 or 4 stars in outcome/exposure domain

Fair quality: 2 stars in selection domain **AND** 1 or 2 stars in comparability domain **AND** 2 or 3 stars in outcome/exposure domain

Poor quality: 0 or 1 star in selection domain **OR** 0 stars in comparability domain **OR** 0 or 1 stars in outcome/exposure domain

Table S7. Quality assessment of included cross-sectional studies

Author, year	Selection (Maximum 4 +)	Comparability (Maximum 2 +)	Outcome (Maximum 3 +)	Study quality*
Hartwig et al. 1997	1c; 2b; 3c; 4c (-)	1d (-)	1d; 2b; 3a (+)	+
Savage et al. 1997	1d; 2b; 3c; 4a (++)	1c (-)	1a; 2b; 3a (+++)	+
D'Agostin et al. 2017	1a; 2a; 3c; 4a (++++)	1d (-)	1b; 2c; 3a (+++)	+

* AHRQ standard: good (+++), fair (++) and poor (+)

Newcastle-Ottawa Quality Assessment Form for Case-Control Studies

Note: A study can be awarded a maximum of one star (+) for each numbered item within the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

Selection

- 1) Is the case definition adequate?
 - a) yes, with independent validation +
 - b) yes, e.g., record linkage or based on self-reports
 - c) other data
 - d) no description
- 2) Representativeness of the cases
 - a) consecutive or obviously representative series of cases +
 - b) potential for selection biases or not stated
- 3) Selection of Controls
 - a) community controls +
 - b) hospital controls
 - c) no description
- 4) Definition of Controls
 - a) no history of disease (endpoint) +
 - b) no description of source

Comparability

- 1) Comparability of cases and controls on the basis of the design or analysis
 - a) The study controls for age and sex ++
 - b) The study controls for age or sex +
 - c) The study controls other factors, but not age or sex: _____
 - d) Cohorts are not comparable on the basis of the design or analysis controlled for confounders

Exposure

- 1) Ascertainment of exposure
 - a) secure record (e.g. surgical records) +
 - b) structured interview where blind to case/control status +
 - c) interview not blinded to case/control status)
 - d) written self-report or medical record
- 2) Same method of ascertainment for cases and controls
 - a) Yes +
 - b) No
- 3) Non-Response rate
 - a) same rate for both groups +
 - b) non respondents described
 - c) rate different and no designation

Thresholds for converting the Newcastle-Ottawa scales to AHRQ standards (good, fair, and poor):

Good quality: 3 or 4 stars in selection domain **AND** 1 or 2 stars in comparability domain **AND** 3 or 4 stars in outcome/exposure domain

Fair quality: 2 stars in selection domain **AND** 1 or 2 stars in comparability domain **AND** 2 or 3 stars in outcome/exposure domain

Poor quality: 0 or 1 star in selection domain **OR** 0 stars in comparability domain **OR** 0 or 1 stars in outcome/exposure domain

Table S8. Quality assessment of included case-control studies

Author, year	Selection (Maximum 4 +)	Comparability (Maximum 2 +)	Exposure (Maximum 3 +)	Study quality*
Michaelis et al. 2001	1a; 2b; 3a; 4a (+++)	1a (++)	1d; 2a; 3a (++)	+++

* AHRQ standard: good (+++), fair (++) and poor (+)

References

Modesti PA, Reboldi G, Cappuccio FP, et al. Panethnic Differences in Blood Pressure in Europe: A Systematic Review and Meta-Analysis. PLoS One. 2016;11(1):e0147601. Published 2016 Jan 25. doi:10.1371/journal.pone.0147601

Wells, G.; Shea, B.; O'Connell, D.; Peterson, j.; Welch, V.; Losos, M.; Tugwell, P. The Newcastle–Ottawa Scale (NOS) for Assessing the Quality of Non-Randomized Studies in Meta-Analysis. 2000.