The Newcastle-Ottawa Scale (NOS) for Assessing the Quality of Nonrandomized Studies in Meta-Analysis

Development: Grouping Items

- Cohort studies
  - Selection of cohorts
  - Comparability of cohorts
  - Assessment of outcome

- Case-Control studies
  - Selection of case and controls
  - Comparability of cases and controls
  - Ascertainment of exposure
Newcastle-Ottawa Quality Assessment Scale: Case-Control Studies

- Selection (4)
- Comparability (1)
- Exposure (3)

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.
Valutazione di qualità di uno studio caso-controllo

• 1) study base:
  – è chiaramente definita?
• 2) selezione dei casi
  – i casi provengono dalla study base?
  – i criteri diagnostici sono validi?
• 3) selezione dei controlli
  – provengono dalla study base?
  – il campionamento è accurato?
• 4) accuratezza nella identificazione dei confondenti
  – vi sono confondenti non considerati?
• 5) validità nella misura dei confondenti
  – i confondenti sono misurati con adeguata validità?
• 6) la misura dell’esposizione è valida?
  – accurata, precisa?
  – c’è sospetto di misclassificazione?
• 7) il confondimento è stato controllato adeguatamente?
Selection

1. Is the case definition adequate?
   a) yes, with independent validation ♦
   b) yes, eg record linkage or based on self reports
   c) no description

2. Representativeness of the cases
   a) consecutive or obviously representative series ♦
   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

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e.g. ICD codes in database or self-report with no reference to primary record or no description

>1 person/record/time/process to extract information, or reference to primary record source such as x-rays or medical/hospital records
Comparability

1. Comparability of cases and controls on the basis of the design or analysis

   a) study controls for ______________ (select the most important factor) ♦

   b) study controls for any additional factor (This criteria could be modified to indicate specific control for a second important factor.) ♦
Exposure

1. **Ascertainment of exposure**
   a) secure record (eg 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 only
   e) no description

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
Newcastle-Ottawa Quality Assessment Scale: Cohort Studies

- Selection (4)
- Comparability (1)
- Outcome (3)

- A study can be awarded 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.
Elementi da isolare nel disegno dello studio

1) popolazione base:
   - criteri di selezione; generalizzabilità

2) popolazione in studio:
   - fattori di selezione

3) gruppi in studio:
   - metodi di selezione: random/non random

4) popolazione effettivamente esposta agli interventi:
   - intention to treat

5) popolazione su cui sono stati misurati gli outcome:
   - persi al f-u
Selection

1. **Representativeness of the exposed cohort**
   a) truly representative of the average ______________ (describe) in the community ♦
   b) somewhat representative of the average ______________ in the community ♦
   c) selected group of users eg nurses, volunteers
   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

3. **Ascertainment of exposure to implants**
   a) secure record (eg surgical records) ♦
   b) structured interview ♦
   c) written self report
   d) no description

4. **Demonstration that outcome of interest was not present at start of study**
   a) yes ♦
   b) no

In the case of mortality studies, outcome of interest is still the presence of a disease/ incident, rather than death; that is a statement of no history of disease or incident earns a star.
Comparability

1. Comparability of cohorts on the basis of the design or analysis

   a) study controls for ______________ (select the most important factor) ♦

   b) study controls for any additional factor (This criteria could be modified to indicate specific control for a second important factor.) ♦
Outcome

1. Assessment of outcome
   a) independent blind assessment ♦
   b) record linkage ♦
   c) self report
   d) no description

2. Was follow up long enough for outcomes to occur
   a) yes (select an adequate follow up period for outcome of interest) ♦
   b) no

3. Adequacy of follow up of cohorts
   a) complete follow up - all subjects accounted for ♦
   b) subjects lost to follow up unlikely to introduce bias - small number lost - > ___ % (select an adequate %) follow up, or description of those lost) ♦
   c) follow up rate < ___% (select an adequate %) and no description of those lost
   d) no statement