

Modified Newcastle-Ottawa Scale (NOS)

Record ID _____

Domain of evaluation: Methods for selecting study participants (i.e. Selection bias)

Is the source population (cases, controls, cohorts) appropriate and representative of the population of interest?

Example of low risk of bias: A consecutive sample or random selection from a population that is representative of the condition under study.

Example of moderate risk of bias: A consecutive sample or random selection from a population that is not highly representative of the condition under study.

Example of high risk of bias: The source population cannot be defined or enumerated (i.e. volunteering or self-recruitment).

- Definitely no (high risk of bias)
- Mostly no
- Mostly yes
- Definitely yes (low risk of bias)

Domain of evaluation: Methods to control confounding (i.e. Performance bias)

Is the sample size adequate and is there sufficient power to detect a meaningful difference in the outcome of interest?

Example of low risk of bias: Sample size was adequate and there was sufficient power to detect a difference in the outcome.

Example of high risk of bias: Sample size was small and there was not enough power to test outcome of interest.

- Definitely no (high risk of bias)
- Mostly no
- Mostly yes
- Definitely yes (low risk of bias)

Did the study identify and adjust for any variables or confounders that may influence the outcome?

Example of low risk of bias: The study identified and adjusted for all possible confounders that may influence estimates of association between exposure and outcome (i.e. Was the patient being treated for a medical condition such as chronic pain and was being prescribed opioids while on methadone treatment?)

Example of moderate risk of bias: The study identified and reported possible variables that may influence the outcome but did not explore the interaction.

Example of high risk of bias: The study either did not report any variables of influence or acknowledge variables of influence when it was clear they were present.

- Definitely no (high risk of bias)
- Mostly no
- Mostly yes
- Definitely yes (low risk of bias)

Domain of evaluation: Statistical methods (i.e. Detection bias)

Did the study use appropriate statistical analysis methods relative to the outcome of interest?

Example of low risk of bias: The study reported use of appropriate statistical analysis as required (i.e. adjusting for an unbalanced distribution of a specific covariate among sexes, or correcting for multiple testing error)

Example of moderate risk of bias: The study either used correct statistical methods but did not report them well, or used the incorrect methods but reported them in detail.

Example of high risk of bias: The study did not use appropriate statistical analysis as required (i.e. did not adjust for an unbalanced distribution of a specific covariate among sexes, or correct for multiple testing error when necessary) or did not report them adequately.

- Definitely no (high risk of bias)
 Mostly no
 Mostly yes
 Definitely yes (low risk of bias)

Is there little missing data and did the study handle it accordingly?

Example of low risk of bias: The study acknowledged missing data to be less than 10% and specified the method of handling it.

Example of moderate risk of bias: The study either had greater than 15% but they specified the method they used to handle it.

Example of high risk of bias: The study had greater than 15% missing data and did not handle it at all.

- Definitely no (high risk of bias)
 Mostly no
 Mostly yes
 Definitely yes (low risk of bias)

Domain of evaluation: Methods for measuring outcome variables (i.e. Information bias)

Is the methodology of the outcome measurement explicitly stated and is it appropriate?

Example of low risk of bias: The study provides a detailed description of the outcome measure(s) which are appropriate for the outcome of interest.

Example of moderate risk of bias: The study provides a somewhat complete description of outcome measurements and they are justified.

Example of high risk of bias: The study provides limited information on the methods of measuring the outcome and the measure is not appropriate considering the outcome.

- Definitely no (high risk of bias)
 Mostly no
 Mostly yes
 Definitely yes (low risk of bias)

Is there an objective assessment of the outcome of interest?

Example of low risk of bias: The study used objective methods to discern the outcome status of participants (i.e. laboratory measurements, medical records).

Example of moderate risk of bias: The study relied on subjective data as the primary method to discern outcome status of participants (i.e. self-report).

Example of high risk of bias: The study had limited reporting about assessment of outcomes.

- Definitely no (high risk of bias)
 Mostly no
 Mostly yes
 Definitely yes (low risk of bias)