**Appendix S2 - Quality Assessment of included studies:**

|  | **Weaknesses/ Limitations** | **Strenghts** | **Risk of Bias adapted from CASP Evaluation** | **Final Classification****(overall risk of bias)** |
| --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **5** |
| **Ahumada** **2015** | Incomplete reported data | Populations with similar comparisons | **+** | **+** | **+** | **-** | **?** | Low  |
| **Alcantara-Neves****2010** | Incomplete reported data | Populations with similar comparisons | **+** | **+** | **+** | **-** | **+** | Low |
| **Alcantara-Neves****2014** | Incomplete reported data | Populations with similar comparisons | **+** | **?** | **?** | **-** | **?** | Moderate |
| **Alcasid 1973** | Small sample size Incomplete reported dataPotential bias in characteristics of population |  | **+** | **?** | **?** | **-** | **-** | Moderate |
| **Alshishtawy 1991** | Small sample size Incomplete reported data | Populations with similar comparisonsCorrect exposure measurements | **+** | **+** | **+** | **?** | **+** | Low |
| **Amarasekera 2012** | Small sample size  | Populations with similar comparisonsCorrect exposure and outcomes measures  | **+** | **+** | **?** | **?** | **+** | Low |
| **Amberbir 2011** | Small sample size Incomplete reported data | Correct exposure and outcomes measures | **+** | **+** | **+** | **?** | **?** | Low |
| **Araujo 2000** | Small sample size  | Populations with similar comparisonsCorrect exposure and outcomes measures | **+** | **+** | **+** | **-** | **?** | Low |
| **Bahceciler 2007** | Incomplete reported data | Correct exposure and outcomes measures | **+** | **+** | **?** | **?** | **+** | Low |
| **Belyhun 2010** | Incomplete reported data | Populations with similar comparisonsCorrect exposure and outcomes measures | **+** | **+** | **+** | **?** | **+** | Low |
| **Benício 2004** | Incomplete reported data | Correct exposure and outcomes measures | **+** | **?** | **+** | **?** | **?** | Moderate |
| **Bragagnoli 2014** |  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Calvert 2010** | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **?** | **?** | **?** | Moderate |
| **Cardoso 2012** | Small sample size Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **?** | **?** | **+** | **+** | Low |
| **Carswell 1976** | Small sample size Incomplete reported dataPotential bias in characteristics of population |  | **?** | **?** | **-** | **-** | **-** | High |
| **Carswell 1977** | Small sample size Potential bias in characteristics of population | Populations with similar comparisons | **+** | **+** | **-** | **?** | **?** | Moderate |
| **Cheah 1972** | Small sample size Incomplete reported dataPotential bias in characteristics of population |  | **?** | **-** | **-** | **-** | **?** | High |
| **Choi 2011** |  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Chung 2016** | Small sample size Potential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **+** | **?** | **?** | **+** | Low |
| **Cooper 2004** | Small sample size  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **+** | **+** | Low |
| **Cooper 2003** |  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Cooper 2014** | Incomplete reported data | Large sample size Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **+** | **+** | Low |
| **Cooper 2018** | Incomplete reported data | Large sample size Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Cooper 2003** | Incomplete reported data | Large sample size Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Da Silva 2008** | Small sample size Potential bias in characteristics of population | Correct exposure measures | **+** | **?** | **?** | **?** | **?** | Moderate |
| **Dagoye 2003** | Small sample size Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **-** | **-** | **?** | **?** | Moderate |
| **Davey 2005** | Potential bias in characteristics of population | Large sample size Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Di Lorenzo 2006** | Small sample size Incomplete reported data | Correct exposure and outcomes measures | **?** | **?** | **-** | **-** | **?** | Moderate |
| **Dold 1998** | Incomplete reported dataPotential bias in characteristics of population |  | **?** | **-** | **-** | **-** | **?** | High |
| **El Kettani 2009** | Small sample size Potential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **+** | **?** | **?** | **?** | Moderate |
| **Endapa 2015** | Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisons | **+** | **+** | **?** | **+** | **+** | Low |
| **Flohr 2006**  | Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **?** | **?** | **+** | **+** | Low |
| **Freitas 2012** | Small sample size Incomplete reported dataPotential bias in characteristics of population | Populations with similar comparisons | **+** | **?** | **-** | **-** | **?** | Moderate |
| **Hagel 2007** | Small sample size Incomplete reported dataPotential bias in characteristics of population |  | **?** | **?** | **-** | **-** | **-** | High |
| **Haileamlak 2005** | Small sample size  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Hamid 2013** | Incomplete reported dataPotential bias in characteristics of population | Large sample size  | **+** | **?** | **-** | **-** | **?** | Moderate |
| **Hamid 2015** | Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **?** | **+** | **?** | **+** | Low |
| **Hawlader 2014** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Herrstrom 2001** | Small sample size Incomplete reported dataPotential bias in characteristics of population |  | **?** | **-** | **-** | **-** | **?** | High |
| **Huang 2002** | Potential bias in characteristics of population | Large sample size Correct exposure and outcomes measures | **+** | **?** | **?** | **?** | **+** | Moderate |
| **Hunninghake 2007** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Jarrett 1973** | Small sample size Incomplete reported dataPotential bias in characteristics of population |  | **?** | **?** | **-** | **-** | **-** | High |
| **Jogi 2017** | Small sample size Potential bias in characteristics of populationPotential bias on outcome assessment | Correct exposure measurement | **?** | **+** | **?** | **?** | **?** | Moderate |
| **Joubert 1979** | Small sample size Potential bias in characteristics of population |  | **?** | **-** | **?** | **-** | **-** | High |
| **Karadag 2006** | Potential bias in characteristics of population | Correct exposure and outcomes measuresGreat magnitude of risk association effect | **+** | **?** | **?** | **?** | **+** | Moderate |
| **Larbi 2011** |  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Lynch 1987** | Incomplete reported dataPotential bias in characteristics of population | Great magnitude of risk association effect | **?** | **?** | **-** | **-** | **?** | Moderate |
| **Meza 2008** | Small sample size Potential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **?** | **-** | **?** | Moderate |
| **Mohammadzadeh 2019** | Small sample size  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **-** | **+** | Low |
| **Moncayo 2010** |  | Large sample size Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Moncayo 2012** | Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Munivrana Skvorc 2014** | Potential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **?** | **?** | **+** | Moderate |
| **Nkurunungi 2019** | Incomplete reported data | Large sample size Populations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **+** | **+** | Low |
| **Nyan 2001** | Potential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **+** | **?** | **?** | **?** | Moderate |
| **Obeng 2014** | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **?** | **?** | **?** | Moderate |
| **Obihara 2006** | Potential bias in characteristics of population | Correct exposure and outcomes measuresGreat magnitude of risk association effect | **+** | **?** | **+** | **?** | **+** | Low |
| **Overeem 2014** | Small sample size Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **?** | **?** | **?** | Moderate |
| **Palmer 2002** | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **-** | **-** | **-** | High |
| **Ponce 1991** | Small sample size Incomplete reported dataPotential bias in characteristics of population | Populations with similar comparisons | **?** | **?** | **-** | **-** | **-** | High |
| **Pereira 2007** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Pinelli 2009** | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measuresGreat magnitude of risk association effect | **+** | **?** | **?** | **-** | **?** | Moderate |
| **Ponte 2006** | Small sample size  | Correct exposure measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Rodrigues 2008** | Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **+** | **+** | Low |
| **Rujeni 2012** | Incomplete reported dataPotential bias in characteristics of population | Great magnitude of risk association effect | **+** | **+** | **?** | **-** | **?** | Moderate |
| **Sangsupawanich 2010** | Potential bias in characteristics of population | Correct exposure and outcomes measuresGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **?** | Moderate |
| **Scrivener 2001** | Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Selassie 2000** | Small sample size Potential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **-** | **-** | **?** | Moderate |
| **Schafer 2005**  | Incomplete reported data | Large sample size Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Silva 2003**  | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Silva 2010** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Supali 2010** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Takeuchi 2016** | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measures | **+** | **?** | **?** | **?** | **?** | Moderate |
| **Takeuchi 2019** | Small sample size Incomplete reported data | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **?** | **+** | **?** | **+** | Low |
| **Van Den Biggellar 2000** |  | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| **Vereecken 2012** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Webb 2016** |  | Large sample sizeCorrect exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **+** | **+** | Low |
| **Wolstenholme 1979**  | Incomplete reported dataPotential bias in characteristics of population |  | **?** | **?** | **-** | **-** | **-** | High |
| **Wordemann 2008** | Potential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **+** | **+** | Low |
| **Zakzuk 2018** | Incomplete reported dataPotential bias in characteristics of population | Correct exposure and outcomes measuresPopulations with similar comparisonsGreat magnitude of risk association effect | **+** | **+** | **?** | **?** | **+** | Low |
| **Zeyrek 2006**  | Incomplete reported data | Correct exposure and outcomes measuresGreat magnitude of risk association effect | **+** | **+** | **+** | **?** | **+** | Low |
| 1 - Appropriateness of study2 – Design3 - Potential for selection bias4 - Measurement of exposures and outcomes5 - Generalizability of the study findings | **+** 🡪 Low risk of bias**?** 🡪 Moderate/uncertain risk of bias**-** 🡪 High risk of bias |