**Appendix 2 - Quality appraisal: JBI Checklist**

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| **Criterium as formulated bij JBI** | **Operationalization** |
| 1. Was the sample frame appropriate to address the target population? | If prevalence percentages were not given for a group of people, specifically minimum 60 years or older, the criterium was marked as “-“. If this criterium was “-“, we decided not to include this paper, since this was an essential criterium. |
| 2. Were study participants sampled in an appropriate way? | If the article did not state that the sample was random, the criterium was marked as “-“. |
| 3. Was the sample size adequate? | If the sample size was < 1000 and if calculation of sample size was not shown, the criterium was marked as “-“. If sample size was not mentioned, the criterium was marked as “-“ (in red), and we decided not to include this paper, since this was an essential criterium. |
| 4. Were the study subjects and the setting described in detail? | This should have been mentioned in table/results/method, otherwise the criterium was marked as “-“. |
| 5. Was the data analysis conducted with sufficient coverage of the identified sample? | If the 60+ age group we investigate was represented to a lesser extent in the total sample, the criterium was marked as “-“. |
| 6. Were valid methods used for the identification of the condition? | If there was no bibliography next to the measurement instrument/question used (and thus, if it was not possible to determine where the measurement instrument/question originated from), the criterium was marked as “-“. |
| 7. Was the condition measured in a standard, reliable way for all participants? | If a one-item-question was used, the criterium was marked as “-“. |
| 8. Was there appropriate statistical analysis? | If a confidence interval was not mentioned for the prevalence rate(s), the criterium was marked as “-“. |
| 9. Was the response rate adequate, and if not, was the low response rate managed appropriately? | If a response rate was not mentioned for our specific age group of minimum 60+, the criterium was marked as “-“. |

Legend

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| --- | --- |
| + | Yes, met the criterium |
| - | No, did not meet the criterium |
|  | Low score (0-3 points) |
|  | Moderate score (4-6 points) |
|  | High score (7-9 points) |
| ✖︎ | Articles marked with a ‘✖︎’, are part of the systematic review, but not of the meta-analysis due to unsufficient quality. |

TOTAL SCORE: OVERALL METHODOLOGICAL QUALITY: low (0-3 points), moderate (4-6 points), high (7-9 points) 🡪 We included all articles with a moderate or high score in our meta-analyses, unless if they scored “-“ on criterium 1, then we did not include the article.

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| **Included studies** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **TOTAL SCORE** | **Comments** |
| 1. Anil (2016) | + | - | + | + | + | + | + | - | - | 6 | 3. Sample size was calculated, but without any further information |
| 2. Bao et al. (2021) ✖︎ | - | - | + | + | + | + | - | - | - | 4 | 1. Information for 50+, not specifically 60+; 2. Convenience sample |
| 3. Carrasco et al. (2021) | + | + | + | + | + | + | + | - | - | 7 |  |
| 4. Cheng et al. (2015) | + | + | + | + | + | + | + | - | + | 8 |  |
| 5. Chokkanathan (2020) | + | + | - | + | + | + | + | - | + | 7 |  |
| 6. Chow et al. (2021) | + | - | + | + | + | + | + | - | - | 6 |  |
| 7. Clark et al. (2021) ✖︎ | - | + | - | - | - | + | + | - | - | 2 | No information about 60+ age group |
| 8. Dahlberg et al. (2018) | + | + | + | + | + | - | - | - | + | 6 |  |
| 9. Dahlberg et al. (2015) | + | + | + | + | + | - | - | - | + | 6 |  |
| 10. Devkota et al. (2019) | + | + | + | + | + | + | + | - | - | 7 | 3. Sample size calculation was shown |
| 11. Djukanović et al. (2014) | + | + | + | + | + | - | - | - | + | 6 |  |
| 12. Fokkema et al. (2012) ✖︎ | - | + | + | + | + | + | - | - | - | 5 | No information about 60+ age group |
| 13. Gao et al. (2021) ✖︎ | - | - | + | + | + | + | - | + | - | 5 | Made use of proxy interviews 🡪 not an appropriate manner to research loneliness |
| 14. Gibney et al. ✖︎ | - | + | + | + | + | + | + | + | + | 8 | No information about 60+ age group |
| 15. Groarke et al. (2020) | + | - | - | + | - | + | + | - | - | 4 | 2. Convenience sample; 3. No sample size calculation; 5. Older adults are under-represented (is mentioned in limits); 9. No response rate for 60+ |
| 16. Hansen et al. (2016) | + | + | + | + | + | + | + | - | - | 7 |  |
| 17. Ho et al. (2021) | + | - | + | + | + | + | + | + | - | 7 |  |
| 18. Holmén et al. (1992) | + | + | + | + | + | + | - | - | - | 6 |  |
| 19. Huang et al. (2021) | + | + | + | + | + | + | - | - | - | 6 |  |
| 20. Igbokwe et al. (2020) | + | + | + | + | + | + | + | - | - | 7 |  |
| 21. Jia et al. (2020) | + | + | + | + | + | + | + | - | + | 8 |  |
| 22. Joseph et al. (2020) | + | - | + | + | + | - | + | - | - | 5 |  |
| 23. Kearns et al. (2015) | + | + | + | + | + | + | - | - | - | 6 |  |
| 24. La Grow et al. (2012) | + | + | - | - | - | + | + | - | + | 5 | Is a brief report, therefore some information is missing |
| 25. Lay-Yee et al. (2020) | + | + | + | + | + | + | + | - | - | 7 |  |
| 26. Lee (2020) | + | + | + | + | + | + | + | - | - | 7 |  |
| 27. Li et al. (2020) | + | + | + | - | - | + | - | - | + | 5 | 4. Missing participant characteristics; 5. Unknown whether our identified sample differs from the others (since not enough characteristics were given) |
| 28. Losada et al. (2020) ✖︎ | + | + | - | - | - | - | - | - | - | 2 | Many missing information (also about the participants) |
| 29. Nicolaisen et al. (2014) | + | - | + | + | + | + | + | - | - | 6 |  |
| 30. O’Shea et al. (2021) | + | - | + | + | + | + | + | + | - | 7 | 8. One of the few studies reporting a CI for the prevalence percentages; 9. Design described elsewhere |
| 31. Öztürk Haney et al. (2017) | + | - | - | + | + | + | + | - | - | 5 |  |
| 32. Paúl et al. (2006) | + | + | + | + | + | + | - | - | + | 7 | 3. Explanation on how the sample size was obtained |
| 33. Paúl et al. (2009) | + | + | + | + | + | + | - | - | - | 6 |  |
| 34. Peltzer et al. (2020) | + | - | + | + | + | - | - | - | - | 4 | 2. Randomness described elsewhere |
| 35. Perissinotto et al. (2012) | + | + | + | + | + | + | + | - | - | 7 |  |
| 36. Phaswana-Mafuya et al. (2017) | + | - | + | + | + | - | - | - | - | 4 |  |
| 37. Rantakokko et al. (2014) | + | + | - | + | + | - | - | - | - | 4 | 9. Described elsewhere |
| 38. Rapolienè et al. (2021) ✖︎ | + | - | + | - | + | - | - | - | - | 3 |  |
| 39. Routasalo et al. (2006) | + | + | + | + | + | + | - | - | + | 7 |  |
| 40. Savikko et al. (2005) | + | + | + | + | + | + | - | - | + | 7 |  |
| 41. Srivastava et al. (2020) ✖︎ | - | - | + | + | + | + | - | - | - | 4 |  |
| 42. Steed et al. (2007) | + | + | - | + | + | + | + | - | + | 7 |  |
| 43. Stickley et al. (2015) ✖︎ | + | + | - | + | - | - | - | - | - | 3 | 3. N = 340 60+; 5. Unknown whether 60+ age group differs significantly from other age groups; 8. There is a CI, but between age groups |
| 44. Stickley et al. (2013) | + | + | + | + | - | - | - | - | - | 4 | 5. Unknown whether 60+ age group differs significantly from other age groups |
| 45. Sundström et al. (2009) | + | + | + | + | + | - | - | - | - | 5 |  |
| 46. Susheela et al. (2018) | + | + | + | + | + | + | + | - | - | 7 |  |
| 47. Theeke et al. (2010) ✖︎ | - | + | + | + | - | + | - | - | - | 4 | 5. Unknown whether 60+ age group differs significantly from other age groups |
| 48. Tomstad et al. (2017) | + | + | + | + | + | - | - | - | - | 5 | 6. No information on source loneliness question; 9. Response rate is mentioned, but is low |
| 49. Torres et al. (2021) | + | - | + | + | + | + | - | - | - | 5 | 2. No information about first sampling |
| 50. van den Broek (2017) ✖︎ | - | + | + | + | - | + | + | - | - | 5 | 9. No response rate per age category |
| 51. Van Tilburg (2021) | + | + | - | + | - | + | + | - | - | 5 |  |
| 52. Victor et al. (2012a) | + | + | - | + | + | + | - | - | + | 6 |  |
| 53. Victor et al. (2012b) | + | + | + | - | - | + | - | - | - | 4 |  |
| 54. Victor et al. (2005) | + | + | - | + | + | + | + | - | + | 7 |  |
| 55. Victor et al. (2006) ✖︎ | + | - | - | - | - | - | - | - | + | 2 | 3. N = 999; 4. Participant information is limited |
| 56. Vozikaki et al. (2018)✖︎ | + | - | - | + | + | + | - | + | - | 5 | Many essential information (e.g., sample size) is missing, therefore we do not include this article in the meta-analyses |
| 57. Wang et al. (2011) | + | + | + | + | + | + | + | - | + | 8 |  |
| 58. Wang et al. (2001) | + | - | - | + | - | + | + | - | + | 5 | 2. No information about randomization; 3. No sample size calculation |
| 59. Yang et al. (2011) | + | + | + | - | - | + | - | - | - | 4 |  |
| 60. Yang et al. (2008) | + | + | + | + | - | + | - | - | - | 5 |  |
| 61. Zebhauser et al. (2014) | + | + | + | + | + | + | + | - | + | 8 |  |
| 62. Zhang et al. (2018) | + | + | + | + | + | + | - | - | - | 6 |  |