



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

University of Wollongong
Research Online

Faculty of Science, Medicine and Health - Papers

Faculty of Science, Medicine and Health

2013

The effects of spending time outdoors in daylight on the psychosocial wellbeing of older people and family carers: a comprehensive systematic review protocol

Victoria Traynor

University of Wollongong, vtraynor@uow.edu.au

Ritin Fernandez

University of Wollongong, ritin@uow.edu.au

Katherine Caldwell

University of Wollongong, kc582@uowmail.edu.au

Publication Details

Traynor, V., Fernandez, R. & Caldwell, K. (2013). The effects of spending time outdoors in daylight on the psychosocial wellbeing of older people and family carers: a comprehensive systematic review protocol. *JBIC Database of Systematic Reviews & Implementation Reports*, 11 (9), 36-55.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

The effects of spending time outdoors in daylight on the psychosocial wellbeing of older people and family carers: a comprehensive systematic review protocol

Abstract

Review question/objective The overall objective of this research is to undertake a systematic review of the effects of spending time outdoors in daylight on the psychosocial wellbeing of older adults and family carers. The specific questions to be addressed are: Which aspects of psychosocial wellbeing are affected by spending time outdoors in daylight in older adults and family carers? To what extent is spending time outdoors in the daylight effective in improving aspects of psychosocial wellbeing in older adults and family carers?

Keywords

systematic, review, protocol, family, people, carers, older, comprehensive, wellbeing, psychosocial, daylight, outdoors, time, spending, effects

Disciplines

Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details

Traynor, V., Fernandez, R. & Caldwell, K. (2013). The effects of spending time outdoors in daylight on the psychosocial wellbeing of older people and family carers: a comprehensive systematic review protocol. *JBI Database of Systematic Reviews & Implementation Reports*, 11 (9), 36-55.

The effects of spending time outdoors in daylight on the psychosocial wellbeing of older people and family carers: a comprehensive systematic review protocol

Victoria Traynor PhD, BSc(Hons), RGN, PGCHE, ILM,^{1,3}

Ritin Fernandez RN, MN, PhD^{1,3}

Katherine Caldwell (PhD candidate) BSc²

1. School of Nursing, Midwifery and Indigenous Health, University of Wollongong
2. School of Health Sciences, University of Wollongong
3. Centre for Evidence based Initiatives in Health Care – An Affiliate Centre of the Joanna Briggs Institute

Corresponding author:

Katherine Caldwell

kc582@uow.edu.au

Review question/objective

The overall objective of this research is to undertake a systematic review of the effects of spending time outdoors in daylight on the psychosocial wellbeing of older adults and family carers. The specific questions to be addressed are:

Which aspects of psychosocial wellbeing are affected by spending time outdoors in daylight in older adults and family carers?

To what extent is spending time outdoors in the daylight effective in improving aspects of psychosocial wellbeing in older adults and family carers?

Background

Spending time outdoors in daylight has shown to provide substantial benefits for older people's psychological wellbeing. Good psychosocial wellbeing is essential in maintaining overall health as people age and often reflects adequate physical functioning.¹ Psychosocial wellbeing encompasses behavioral disturbances, cognition, mood, quality of life (QoL), self-rated health, social interaction and satisfaction of service provision if a person is living in a residential aged care facility (RACF). Spending time outdoors in daylight is often difficult for older people as a result of increasing frailty, environmental barriers and poor health. Other psychological limitations include a fear of falling and a fear of sun-exposure-related cancers.² Therefore, the ability of older people to interact with the outdoors is lessened, and research commonly reports that older people do not spend enough time outdoors in the daylight.^{3,4}

In research to date, there has been an over-reliance on the use of electric 'bright light' phototherapy. However, some research has shown that natural daylight may be more beneficial to human health than artificial light as it is generally stronger and brighter.⁴ In addition, spending time outdoors in the daylight includes exposure to a range of other natural elements such as fresh air and 'green space'. These factors have been linked to additional benefits across a range of clinical and psychosocial outcomes, when compared to general light exposure. The psychosocial benefits of spending time outdoors extends to participating in socially-related activities, whereby studies have associated the use of outdoor natural spaces such as parks, with improved social networks among the older community.^{6,7}

It has been established that a well-designed outdoor built environment is fundamental to enable active and independent lives for older people. However, the philosophy of 'build it and they will come' has not been successful in getting older people to spend adequate time outdoors in the daylight. A study in an Australian setting demonstrated that despite the large majority of older people understanding that getting outdoors in the daylight can provide health benefits, more than one third of respondents preferred to engage in indoor activities.²

Behavioral disturbances encompass a range of symptoms such as agitation, wandering, sun-downing and nocturnal delirium.⁸ Behavioral disturbances are generally associated with older adults living with a dementia-related disease. For older people living with dementia, increasing the amount of time spent outdoors in daylight is associated with lessened behavioral disturbances.⁹⁻¹¹ These outcomes have been associated with the ability of daylight to regulate the body's circadian rhythm.¹²

Older people with cognitive impairment are likely to spend less time outdoors in daylight. Research has shown that older people who have few reasons to spend time outdoors, show a more rapid decrease in cognitive function over time.¹³ Additionally, research suggests that time spent outdoors in the daylight can predict better cognitive outcomes in older people.¹³⁻¹⁵ These results have been related to improvements in vitamin D status,¹⁵ and other social factors. Spending time outdoors in 'green space' has been shown to provide a restorative effect on measures of cognition, including concentration.¹⁶

Reduced levels of daylight are consistently linked to depressive symptoms in a phenomenon called seasonality.¹⁷ However, research surrounding seasonality has largely overlooked older adults and has resulted in inconsistent findings. Increased light exposure, including spending time outdoors in daylight, is related to improved mood in older adults.¹⁸ Outdoor exercise programs in older adults have shown positive beneficial effects on mood, even after controlling for exercise.¹⁹ Elevation in mood has been associated with a favourable effect upon perceived wellbeing in older people. However some research has found no association between daylight and mood, and argues that the literature might overestimate the impact of seasonality.¹⁷

Spending time outdoors in daylight is enjoyable and is associated with improved QoL in older adults. While the definition of QoL is contentious, essentially it is a multi-layered concept that involves measuring objective variables including health and physical functioning, as well as subjective satisfaction with life.²⁰ Correlations between light exposure and QoL have been documented both qualitatively²¹ and quantitatively.¹⁸ Older people who perceive barriers in the outdoor environment have been shown to have a lower QoL.²²

Outdoor activities might improve self-rated health in older adults. Self-rated health is a subjectively measured outcome that has shown to be a valid and reliable measure of health. This area of research has limited data available in older adults, and some results show that self-rated health is not significantly improved by participating in outdoors activities.²³ A study that assessed the effects of a natural green-space on self-rated health in a residential aged care facility (RACF) outlined that the main hindrances related to spending time outdoors were a lack of assistance and uncomfortable weather conditions.²⁴ It was concluded that increasing the accessibility and attractiveness of the outdoor area could result in more frequent outdoor use, and consequently improved self-rated health.²⁴

An older persons ability to spend time outdoors in daylight has shown to be more severely limited if they reside in a RACF.²⁵ This may be a consequence of an individual's physical inability, or a lack of outdoor areas that are conducive for spending time outdoors in daylight.²⁶ Therefore RACFs should provide an individualized care approach to focus on the unique needs of individuals, including the ability of their living environment to provide for their tailored needs.

Spending time outdoors in daylight provides an opportunity for social interaction among older adults. While it has been argued that social interaction can happen anywhere, outdoor spaces are associated with the formation of greater social networks within the community.⁶ Social interaction is an imperative component of the lives of older people and is associated with overall health and functional status.²⁷ Performing physical activity in outdoor locations has shown to provide psychosocial benefits from social interactions, and a greater commitment to the activity being performed. A recent report released by the National Seniors Productive Ageing Centre (2013) showed that in a one month period, only 25% of older Australian adults engaged in outdoor social activities with friends, and only 15% of respondents participated in outdoor social activities with family members.²⁸ These figures are particularly low, especially considering that almost 73% of respondents agreed that they socialized as much as they desired.

A large body of literature found that providing care to an older person is a very stressful experience for a family carer,^{29,30} with an overall impact across many psychosocial health factors. A meta-analysis has associated caregiver burden with physical and psychological outcomes,³⁰ in which it was determined that if a care-receiver experienced poorer physical health and greater behavioral disturbances, the burden experienced by the carer was also significantly greater. Therefore, it can be concluded that by improving the physical and psychosocial health of a care-receiver, through spending time outdoors in the daylight, a carer would experience less stress and greater satisfaction.

A review of the effects of spending time outdoors in daylight on the psychological wellbeing of older people and family carers has national and international relevance, as it is a phenomenon without geographical boundaries. The purpose of this study is to present all the available evidence relating to the effects of spending time outdoors in daylight on the psychosocial wellbeing of older adults and family carers. As there appears to be a lack of consensus in this area, this study could inform best practice guidelines for multi-disciplinary teams in aged care.

Keywords

older people; daylight; outdoor; psychosocial; carer

Inclusion criteria

Types of participants

This review will consider studies that include all older adults aged 55 years or more, including those living in a community setting or a residential aged care facility. The age criterion has been selected as 55 years or more, to ensure all appropriate literature relating to older people is captured. In addition, this review will consider family carers, who are defined as unpaid relatives or friends of an older person, who help that individual with their activities of daily living. No further exclusion criteria will be applied.

Types of intervention(s)/phenomena of interest

The intervention or phenomenon of interest is spending time outdoors in daylight. 'Outdoors in daylight' is a broad term that encompasses all outdoor environments where participants are exposed to daylight in a natural setting while participating in any type of outdoor activity. For this review, the definition of outdoor activity is simply 'being outdoors', in order to capture all types of engagement with outdoor environments. Studies will be excluded if they utilise artificial 'bright' light sources, or modify the indoor environment to improve light exposure. An absence of activity, or indoor activity with no exposure to daylight, will be used as a comparator.

Types of outcomes

This review will consider studies that include objective and/ or subjective measures of the following outcomes:

Older adults:

- Psychosocial well-being:
 - behavioral disturbances
 - cognition
 - mood levels
 - quality of life
 - satisfaction with service provision
 - social interaction

Family carer health:

- carer satisfaction
- carer stress

Due to the large variety of tools that can be utilized to measure these outcomes, this review will consider all tools that have been validated and assessed for reliability.

Types of studies

As it is anticipated that a lack of high quality research is published in this area, all study designs will be included in this review. More specifically, the quantitative component of the review will consider experimental and epidemiological study designs including randomized controlled trials, non-randomized controlled trials, quasi-experimental, before and after studies, prospective and retrospective cohort studies, case control studies and analytical cross sectional studies for inclusion. The quantitative component of the review will also consider descriptive epidemiological study designs including case series, individual case reports and descriptive cross sectional studies for inclusion. The qualitative component of the review will consider studies including phenomenology, grounded theory, ethnography, action research and feminist research. In the absence of research studies, other text such as opinion papers and reports will be considered. The textual component of the review will consider expert opinion, discussion papers, position papers and other text.

Studies published only in the English language will be included in this review.

Search strategy

The search aims to find published and unpublished studies from all countries through electronic databases, reference lists, key reports and the World Wide Web. A three-step search strategy will be utilized in this review. Initial key terms have been developed using MeSH terms in four broad search categories:

- Population: (MH) aged, elderly, older adult, older person, geriatric.
- Phenomena of interest: (MH) sunlight, daylight, sunshine, sun, natural light, outdoor, (MH) light.
- Family carer health: (MH) caregivers, carer and (MH) satisfaction, and carer and (MH) stress.
- Psychosocial well-being: (MH) behavior, (MH) cognition, (MH) mood disorders, (MH) quality of life, satisfaction, service provision and social interaction.

Studies will be restricted to those published from 1979 to 2012. The cut-off date of 1979 was selected because that was the year during which one of the first studies focusing on the effects of spending time outdoors in daylight for older people, specifically physical health outcomes (vitamin D status), was published.³¹

The initial phase will consist of searches of the databases CINAHL and MEDLINE using the initial search terms. Terms within each category will be used in combination using the Boolean term 'OR'. Then, a search will combine each category using the Boolean term 'AND'.

A second more extensive search will be undertaken using appropriate headings and keywords for the following databases:

- Current Index to Nursing and Allied Health Literature (CINAHL) Plus (includes Nursing and Allied Health Collection);
- Medline (includes PubMed)
- National Health and Medical Research Council (NHMRC) guidelines
- Proquest (includes Dissertation and Thesis Abstracts and Joanna Briggs Institute)
- Scopus (includes Science Direct)

- Wiley Online Library (includes Cochrane Library).

Literature resources from the following web sites will be undertaken using identified search terms:

- Joanna Briggs Institute (<http://www.joannebriggs.edu.au>)
- National Institute of Clinical Studies Australian Centre for Evidence Based Clinical Practice (<http://www.acebcp.org.au>)
- An internet search using the Google search engine (<http://google.com>).

The third stage will involve hand searching the reference lists of the articles retrieved. Systematic hand searching will also include a prospective search of core dementia, geriatric and psycho-geriatric journals as they arise.

Assessment of methodological quality

Papers selected for retrieval will be individually assessed by two independent reviewers for methodological validity, prior to inclusion in the review using standardized critical appraisal instruments. The Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI), the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI), and the Joanna Briggs Institute Narrative, Opinion and Text Assessment and Review Instrument (JBI-NOTARI) quality appraisal checklists (Appendix I) will be used to assess quantitative, qualitative and textual papers respectively. Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

Data collection

Quantitative, qualitative and textual data will be extracted from papers included in the review using the standardized data extraction tool from JBI-MAStARI, JBI-QARI and JBI-NOTARI respectively (Appendix II). The data extracted from all papers will include specific details about the interventions or phenomena of interest, populations, setting, study methods, limitations of the study, outcomes of significance to the review question and specific objectives, and author conclusions. The data will be individually extracted by two reviewers. Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. All results will be subject to double data entry to minimize human errors. Attempts will be made to contact authors for any missing data from studies.

Data synthesis

Quantitative papers will, where possible be pooled in statistical meta-analysis using JBI-MAStARI. Effect sizes expressed as odds ratios (for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard Chi-square. Subgroup analyses will be performed as required based on the different quantitative study designs included in this review. In addition, subgroup analysis may be performed based on the study population; for example, stratifying according to age. For all studies where statistical pooling is not possible, the findings will be presented in narrative form including tables and figures to aid in data presentation where appropriate.

Qualitative research findings will, where possible be pooled using JBI-QARI. This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings rated according to their quality, and categorizing these findings on

the basis of similarity in meaning. These categories are then subjected to a meta-synthesis in order to produce a single comprehensive set of synthesized findings.

Textual papers will, where possible be pooled using JBI-NOTARI. This will involve the aggregation or synthesis of conclusions to generate a set of statements that represent that aggregation, through assembling and categorizing these conclusions on the basis of similarity in meaning. These categories are then subjected to a meta-synthesis in order to produce a single comprehensive set of synthesized findings.

Conflicts of interest

None to be declared.

Acknowledgements

None to be declared.

References

1. Zammit AR, Starr JM, Johnson W, Deary IJ. Profiles of physical, emotional and psychosocial wellbeing in the Lothian birth cohort 1936. *BMC geriatrics*. 2012;12(1):64.
2. Durvasula S, Kok C, Sambrook PN, Cumming RG, Lord SR, March LM, et al. Sunlight and health: attitudes of older people living in intermediate care facilities in southern Australia. *Archives of Gerontology & Geriatrics*. 2010;51(3):e94-9.
3. Kono A, Kai I, Sakato C, Rubenstein LZ. Frequency of going outdoors predicts long-range functional change among ambulatory frail elders living at home. *Archives of gerontology and geriatrics*. 2007;45(3):233-42.
4. Kono A, Kai I, Sakato C, Rubenstein LZ. Frequency of going outdoors: a predictor of functional and psychosocial change among ambulatory frail elders living at home. *The journals of gerontology*. 2004;59(3):275-80.
5. Lewy AJ, Wehr TA, Goodwin FK, Newsome DA, Markey SP. Light Suppresses Melatonin Secretion in Humans. *Science*. 1980;210(4475):1267-9.
6. Kweon B-S. Green Common Spaces and the Social Integration of Inner-City Older Adults. *Environment and Behavior*. 1998;30(6):832-58.
7. Takano T, Nakamura K, Watanabe M. Urban Residential Environments and Senior Citizens' Longevity in Megacity Areas: The Importance of Walkable Green Spaces. *Journal of Epidemiology and Community Health*. 2002;56(12):913-8.
8. Kim S, Song HH, Yoo SJ. The effect of bright light on sleep and behavior in dementia: an analytic review. *Geriatric Nursing*. 2003;24(4):239-43.
9. Calkins M, Szmerekovsky J, Biddle S. Effect of Increased Time Spent Outdoors on Individuals with Dementia Residing in Nursing Homes. *Journal of Housing For the Elderly*. 2007;21(3):211-28.
10. Cohen-Mansfield JaW, P. Visits to an outdoor garden: Impact on behaviour and mood of nursing home residents who pace. Vellas B. FJ, and Frisoni G., editor. New York: Springer Publishing Company; 1998.
11. Mooney P, Nicell PL. The importance of exterior environment for Alzheimer residents: effective care and risk management. *Healthcare management forum*. 1992;5(2):23-9.
12. Martin JL, Marler MR, Harker JO, Josephson KR, Alessi CA. A multicomponent nonpharmacological intervention improves activity rhythms among nursing home residents with disrupted sleep/wake patterns. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences*. 2007;62(1):67-72.
13. Suzuki T, Murase S. Influence of outdoor activity and indoor activity on cognition decline: use of an infrared sensor to measure activity. *Telemedicine Journal & E-Health*. 2010;16(6):686-90.
14. Kent ST, McClure LA, Crosson WL, Arnett DK, Wadley VG, Sathiakumar N. Effect of sunlight exposure on cognitive function among depressed and non-depressed participants: a REGARDS cross-sectional study. *Environmental health : a global access science source*. 2009;8(1):34.
15. Aydin ZD, Ersoy IH, Baştürk A, Kutlucan A, Göksu SS, Güngör G, et al. Predictors of clock drawing test (CDT) performance in elderly patients attending an internal medicine outpatient clinic: A pilot study on sun exposure and physical activity. *Archives of Gerontology & Geriatrics*. 2011;52(3):e226-31.
16. Ottosson J, Grahn P. Measures of restoration in geriatric care residences: the influence of nature on elderly people's power of concentration, blood pressure and pulse rate. *Journal of Housing For the Elderly*. 2005;19(3/4):227-56.
17. de Craen AJM, Gussekloo J, van der Mast RC, le Cessie S, Lemkes JW, Westendorp RGJ. Seasonal mood variation in the elderly: the Leiden 85-plus study. *International Journal of Geriatric Psychiatry*. 2005;20(3):269-73.
18. Grandner MA, Kripke DF, Langer RD. Light exposure is related to social and emotional functioning and to quality of life in older women. *Psychiatry Research*. 2006;143(1):35-42.
19. Shin Y. The effects of a walking exercise program on physical function and emotional state of elderly Korean women. *Public Health Nursing*. 1999;16(2):146-54.
20. Kahn RL, Juster FT. Well-Being: Concepts and Measures. *Journal of Social Issues*. 2002;58(4):627-44.
21. Cedervall Y, Aberg AC. Physical activity and implications on well-being in mild Alzheimer's disease: A qualitative case study on two men with dementia and their spouses. *Physiotherapy Theory & Practice*. 2010;26(4):226-39.
22. Rantakokko M, Iwarsson S, Kauppinen M, Leinonen R, Heikkinen E, Rantanen T, et al. Quality of life and barriers in the urban outdoor environment in old age. *Journal of the American Geriatrics Society*. 2010;58(11):2154-9.

23. Kerr J, Sallis JF, Saelens BE, Cain K, Conway TL, Frank LD, et al. Outdoor physical activity and self rated health in older adults living in two regions of the U.S. *The international journal of behavioral nutrition and physical activity*. 2012;9(1):89.
24. Rappe E, Kivela S-L, Rita H. Visiting Outdoor Green Environments Positively Impacts Self-rated Health among Older People in Long-term Care. *Horttechnology*. 2006;16(1):55-9.
25. Barnes S. The design of caring environments and the quality of life of older people. *Ageing and Society*. 2002;22(6):775-89.
26. Cohen-Mansfield J, Werner P. The effects of an enhanced environment on nursing home residents who pace. *Gerontologist*. 1998;38(2):199-208.
27. Avlund K, Lund R, Holstein BE, Due P. Social relations as determinant of onset of disability in aging. *Archives of gerontology and geriatrics*. 2004;38(1):85-99.
28. Crawford, H Booth H. *Staying Connected: Social Engagement and Wellbeing Among Mature Age Australians* 2013.
29. Pinquart M, Sörensen S. Differences between caregivers and noncaregivers in psychological health and physical health: a meta-analysis. *Psychology and aging*. 2003;18(2):250-67.
30. Pinquart M, Sörensen S. Associations of stressors and uplifts of caregiving with caregiver burden and depressive mood: a meta-analysis. *The journals of gerontology* 2003;58(2):112-28.
31. Lawson D, Paul A, Black A, Cole T, Mandal A, Davie M. Relative Contributions Of Diet And Sunlight To Vitamin D State In The Elderly. *The British Medical Journal*, 1979. 2(6185): p. 303-305.

Appendix I: Appraisal instruments

QARI Appraisal instrument

JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Is there congruity between the stated philosophical perspective and the research methodology?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Is there congruity between the research methodology and the research question or objectives?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Is there congruity between the research methodology and the methods used to collect data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is there congruity between the research methodology and the representation and analysis of data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is there congruity between the research methodology and the interpretation of results?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there a statement locating the researcher culturally or theoretically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the influence of the researcher on the research, and vice-versa, addressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Are participants, and their voices, adequately represented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info.

Comments (Including reason for exclusion)

MAStARI Appraisal instrument

JBI Critical Appraisal Checklist for Randomised Control / Pseudo-randomised Trial

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Was the assignment to treatment groups truly random?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were participants blinded to treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Was allocation to treatment groups concealed from the allocator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were those assessing outcomes blind to the treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were the control and treatment groups comparable at entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were groups treated identically other than for the named interventions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in the same way for all groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info.

Comments (Including reason for exclusion)

JBI Critical Appraisal Checklist for Descriptive / Case Series

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Was study based on a random or pseudo-random sample?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were the criteria for inclusion in the sample clearly defined?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Were confounding factors identified and strategies to deal with them stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were outcomes assessed using objective criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. If comparisons are being made, was there sufficient descriptions of the groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up carried out over a sufficient time period?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

JBI Critical Appraisal Checklist for Comparable Cohort/ Case Control

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Is sample representative of patients in the population as a whole?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Are the patients at a similar point in the course of their condition/illness?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has bias been minimised in relation to selection of cases and of controls?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Are confounding factors identified and strategies to deal with them stated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Are outcomes assessed using objective criteria?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Was follow up carried out over a sufficient time period?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info.

Comments (Including reason for exclusion)

NOTARI Appraisal instrument

JBI Critical Appraisal Checklist for Narrative, Expert opinion & text

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Is the source of the opinion clearly identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the source of the opinion have standing in the field of expertise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are the interests of patients/clients the central focus of the opinion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is the opinion's basis in logic/ experience clearly argued?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the argument developed analytical?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there reference to the extant literature/evidence and any incongruency with it logically defended?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the opinion supported by peers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info

Comments (Including reason for exclusion)

Appendix II: Data extraction instruments

QARI data extraction instrument

JBI QARI Data Extraction Form for Interpretive & Critical Research

Reviewer Date

Author Year

Journal Record Number

Study Description

Methodology

Method

Phenomena of interest

Setting

Geographical

Cultural

Participants

Data analysis

Authors Conclusions

Comments

Complete Yes No

MAStARI data extraction instrument

**JBI Data Extraction Form for
Experimental / Observational Studies**

Reviewer Date

Author Year

Journal Record Number

Study Method

RCT Quasi-RCT Longitudinal
 Retrospective Observational Other

Participants

Setting _____

Population _____

Sample size

Group A _____ Group B _____

Interventions

Intervention A _____

Intervention B _____

Authors Conclusions:

Reviewers Conclusions:

Study results

Dichotomous data

Outcome	Intervention () number / total number	Intervention () number / total number

Continuous data

Outcome	Intervention () number / total number	Intervention () number / total number

NOTARI data extraction instrument

JBI Data Extraction for Narrative, Expert opinion & text

Reviewer Date

Author Year Record Number

Study Description

Type of Text:

Those Represented:

Stated Allegiance/ Position:

Setting

Geographical

Cultural

Logic of Argument

Data analysis

Authors Conclusions

Reviewers Comments

Data Extraction Complete Yes No

