BMJ Open

Association between life satisfaction and health behaviours among older adults: a systematic review and meta-analysis protocol

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ABSTRACT

Introduction Life satisfaction is a key indicator of successful ageing and reflects well-being. There is evidence of the association between life satisfaction and health behaviours among older adults. Therefore, this systematic review and meta-analysis protocol seeks to determine the strength and direction of the association between life satisfaction and health behaviours among older adults.

Methods and analysis This protocol followed the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols guidelines. We will search the electronic databases (MEDLINE, APA PsycINFO, Web of Science, CINAHL and Global Health) from inception to date. Only observational studies that described the association between life satisfaction and health behaviours—smoking, alcohol drinking, physical activity, diet/nutrition and sleep—will be included. Two independent reviewers will conduct screening, data extraction and risk of bias assessment of the articles. The risk of bias will be assessed using the Joanna Briggs Institute critical appraisal tools for cohort and analytical cross-sectional studies. Studies will be included in the meta-analysis if they report zero-order associations between life satisfaction and health behaviours; otherwise, a narrative synthesis will be presented.

Ethics and dissemination This study does not require ethics approval, as it involves analysing secondary data from published studies. The completed review will be published in a peer-reviewed journal and presented at conferences.

Trial registration number PROSPERO (CRD42023441386).

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Q-statistic, I^2 statistic and T^2 will be used to assess the heterogeneity of included studies, and a sensitivity analysis using a 'one-study-removed' approach will be applied to reduce the heterogeneity in the meta-analysis.

⇒ A 95% prediction interval will be computed to determine the effect size range that 95% of all studies comparable to those in the meta-analysis will fall.

⇒ Primary studies may be prone to self-report errors, particularly recall bias, which may lead to underestimating or overestimating the effect size.

⇒ Our review will include studies conducted only among healthy older adults, which may reduce the bias.

⇒ Since this review will include observational studies, cause-and-effect inferences will not be made from the pooled effect size.

INTRODUCTION

The population of older adults (60 years and above) is consistently increasing across the world,[1] constituting 13% of the global population and is expected to increase to 21% by 2050.[2] Therefore, stakeholders, including governments, policymakers, health practitioners and researchers, are keenly interested in promoting successful ageing.[3] Life satisfaction, which has been identified as a key indicator of successful ageing,[4] is a cognitive component of subjective well-being through which individuals measure the quality of their life based on their standards.[5 6] Life satisfaction is a judgement that reflects the difference between individuals' present conditions and the ideal standard they set for themselves.[5] The narrower the gap between individuals' current state and aspirations, the more life satisfaction they have.

Banjare *et al*[7] framework for life satisfaction determinants included demographic characteristics, socioeconomic factors, health behaviours, physical and mental health and social support. While previous systematic reviews[8–10] have synthesised the association between psychophysical, socioeconomic and demographic characteristics and life satisfaction among older adults, to our knowledge, no review has focused on the association between health behaviours and life satisfaction. Understanding the influence of health behaviours on life

satisfaction is useful because health behaviours are modifiable through individual adjustments and policy interventions.[11] Therefore, the outcome of this review is actionable and could enhance the life course models of successful ageing.

To bridge the literature gap, we propose to conduct a systematic review of the association between life satisfaction and health behaviours among older adults. The review aims to describe the direction and strength of the association between life satisfaction and health behaviours among older adults. We will consider the following health behaviours: smoking, drinking, physical activity, diet/nutrition and sleep, whose association with life satisfaction have been interrogated in pieces of available literature.[7 12–19]

METHODS AND ANALYSIS
PEOT criteria
Population: Older adults aged 60 years and over.

Exposure: Behavioural factors (smoking, alcohol drinking, physical activity, diet/nutrition and sleep).[7 12–19] These are widely researched health behaviours.

Outcome: Life satisfaction assessed with self-report measures including but not limited to the Satisfaction with Life Scale, Temporal Satisfaction with Life Scale, Life Satisfaction Index, Quality of Life Index, Personal Well-being Index, Single-item Life Satisfaction Scale, Extended Satisfaction with Life Scale and Quality of Life Enjoyment and Satisfaction Questionnaire.[20]

Time: From 1947 (when the oldest database was created) to the present.

Systematic review team members
The principal review author (CJA) will coordinate the review process from the beginning to the end. The content experts will include review authors OAA and ACO, who are experts in well-being and quality of life. A health sciences librarian (DRS) who is an expert in systematic review search methodology and the first author (CJA) developed the MEDLINE search strategy. They will adapt the search strategy for other databases and conduct literature searches across all databases. Two authors (MN) and (MK) will independently conduct title and abstract screening, while CJA and MN will independently screen the full text for inclusion and extract the data from the articles. The critical appraisal of the included studies will be performed independently by CJA and MK; OAA will resolve conflicts in the process. Two authors (MN) and (MK), who are experts in systematic and scoping reviews, will perform a qualitative/narrative synthesis of the literature. The statistical analysis will be completed by CJA and supported by OAA and ACO, who are experts in meta-analysis. The manuscript will be drafted primarily by the first author (CJA), while others will review it for important intellectual content.

Protocol and registration
This protocol was written following the Preferred Reporting Items for Systematic Review and Meta-Analyses Protocols (PRISMA-P) guidelines[21] and in adherence to the recommendations of Meta-analyses Of Observational Studies in Epidemiology guidelines.[22] The PRISMA-P checklist is attached in online supplemental file 1. This protocol has been registered at the International Prospective Register of Systematic Reviews: CRD42023441386. Any changes made to this protocol will be recorded and published with the systematic review results.

Eligibility criteria
Studies will be included if (1) they were observational studies describing the association between life satisfaction and any of the health behaviours, (2) conducted among healthy older adults (60 years and over), (3) written in the English language, (4) peer-reviewed and (5) published after 1947. Studies will be included in the meta-analysis if they report the zero-order associations between life satisfaction and health.[23] Studies will be excluded if they are qualitative, conducted among older adults with specific disease conditions and residing in institutions such as nursing homes and long-term care facilities.

Information sources
In line with the recommendation of database combination,[24] the following databases will be searched from inception to date: MEDLINE, APA PsycINFO, Web of Science, CINAHL and Global Health. Reference lists of included articles will be examined for inclusion of additional articles. We plan to commence the study on 10 January 2025.

Search strategy
The search terms were determined through consultations between the principal review author, content experts and the librarian and a review of the titles and abstracts of nine seed articles,[7 12–19] gathered by the primary investigator. Elements of search strings developed for previously published reviews also informed the search strategy.[8 25–29] The search string was first developed for MEDLINE (online supplemental file 2) and will be adapted for the other four databases.

When possible, subject headings from controlled vocabularies (eg, MeSH) were used in the search. To increase sensitivity, concepts were also entered in the search string as keywords, with truncation (eg, sleep*) and proximity operators (eg, adj3) used when appropriate. Boolean operators connected subject headings and keywords as shown in online supplemental file 2.

Study records
Data management
The search results from all the databases will be exported to a citation manager, EndNote V.20 software, to remove duplicate citations. After that, the citations will be transferred to Covidence—a systematic review management tool for title and abstract screening and full-text screening.

The included and excluded citations will be returned to the EndNote V.20 software for proper accountability and flow chart generation.

Selection process

The screening for eligibility will be completed in two stages (title and abstract screening and full-text screening), with two reviewers working independently at each stage. We will conduct a pilot screening process at every stage. The reviewers will screen the first 50 articles independently, compare their results and resolve any disagreements. This process will ensure inter-reviewer agreement ahead of the main screening.

Data collection process

Two reviewers will independently extract data from the included articles into a Microsoft Excel spreadsheet (online supplemental file 3). Prior data extraction will be piloted on a small sample of articles for inter-reviewer agreement.

Data items and outcomes

The following data will be extracted from each article: first author, year of publication, country of publication, study design, sample size, measures of life satisfaction, methods of data collection, descriptive summary of age, sex, behavioural factors (smoking, alcohol drinking, physical activity, diet/nutrition and sleep) and life satisfaction, and results of the inferential statistical method including p values and correlation coefficients (online supplemental file 3).

Risk of bias assessment

The methodological quality of the included studies will be assessed using the Joanna Briggs Institute (JBI) critical appraisal tools for cohort and analytical cross-sectional studies.[30] The JBI tools have clear instructions and guidelines and are preferred for observational studies.[31] Two reviewers will conduct the appraisal independently, and a third reviewer will resolve disagreements in the process.

Data synthesis
Narrative synthesis

A qualitative synthesis will be used to summarise the results of all included studies. Studies will be grouped based on behavioural factors, and the association between each factor and life satisfaction will be compared between studies.

Meta-analysis

The meta-analysis will be completed by using the Comprehensive Meta-Analysis (CMA, V.4) software.[32] The overall effect size index will be measured using Fisher's z-transformed correlation coefficient and reported with its 95% CI and p value.[33] The average effect sizes in studies that reported several effect sizes from the same population will be included as a sample in the meta-analysis.[34] Effect sizes in studies with independent subgroups will be entered as a distinct sample for each subgroup in the

analysis.[34] The CMA software weights studies by inverse variance and calculates the weighted average by aggregating the weights of the individual studies. The software will generate a forest plot and funnel plot for the analysis and the publication bias, respectively.

A random effect model will be used to calculate the pooled effect size, as the actual effect size in different studies is expected to be heterogeneous.[34] The model assumes that the studies in the meta-analysis are only a sample of all the possible studies that could be conducted on a particular subject,[35] thus allowing statistical inferences to be made on studies not included in the analysis.[36] The model considers both the within-study and between-study errors.[35]

Three indicators of heterogeneity, Q-statistic, I^2 statistic and T^2, will be used to assess the heterogeneity of included studies.[37] A Q-statistic will be employed to test the null hypothesis that the included studies have the same effect size. If all the studies have the same effect size, the Q-statistic will be equal to the df, and the p value will be equal to or greater than the criterion alpha of 0.1. An I^2 statistic will be computed to check the proportion of the total variability in effect size accounted for by the heterogeneity of studies (between-study variance). Higher values indicate that higher heterogeneity and lower sampling error account for total variability in effect size. The absolute value of between-study variance (heterogeneity) will be examined using T^2. Finally, a 95% prediction interval (PI) will be computed using a PI programme to determine the effect size range that 95% of all studies comparable to those in the analysis will fall.[38] The parameters (mean effect size, upper limit of CI, T^2 and number of studies) for the correlation coefficient will be entered into the programme for PI computation.

A sensitivity analysis using a 'one-study-removed' approach will be applied to reduce subgroup heterogeneity.[39] In this approach, studies will be considered outliers if their effect size falls outside the 95% CI of the mean effect size. The influence analysis, Cook's distance (D), will be calculated to identify studies with overt dominance. A threshold of D>0.5 will qualify a study as influential.[33]

Meta-bias

Publication bias will be examined by visual inspection of the funnel plot. Furthermore, a statistical approach using Egger's test will be used to test the symmetry of the funnel plot. Non-significant test statistic shows funnel plot symmetry, which reflects no publication bias.[37]

Confidence in cumulative evidence

The quality of evidence for an association between life satisfaction and behavioural factors will be assessed using the Grading of Recommendations, Assessment, Development and Evaluation approach.[40] This approach rates the quality of evidence based on the confidence in the effect estimate into four grades: high, moderate, low or very low. The confidence in the effect size estimate summarises

limitations in study design (risk of bias), inconsistency of results, indirectness of evidence, imprecision and publication bias.

ETHICS AND DISSEMINATION PLAN

Ethics approval is not required for this study because it is not a primary study. The study involves the analysis of secondary data from published studies.[34] The completed review will be published in a peer-reviewed journal and presented at conferences.

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Contributors CJA and OAA conceived this study. CJA, ACO, MN and MK designed the study. CJA and DRS developed the search strategy and drafted the protocol. All authors reviewed the protocol and approved the final manuscript. CJA will serve as the guarantor of the review.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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