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The Association Between Chronic Psychological Stress and Dementia Risk in Later Life: A Systematic Review with a Gender-Stratified Analysis and Evidence-Based Prevention Approaches.”

Program: Master in public health and social care in practice

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Introduction

A global health concern, dementia has a catastrophic effect on people's quality of life, their families and carers, their finances, and social services (Luo et al,2023). The term "dementia" describes a collection of disorders that affect memory, cognition, and daily functioning (WHO, n.d.). It is essential to understand that dementia encompasses more than just memory loss; it can also impact communication, emotions, and behaviour (NHS, 2023). There are many risk factors for dementia, like cardiovascular, lifestyle, poor education and other psychosocial factors (Luo et al,2023). An increased incidence of dementia may be significantly correlated with stress exposure and response (Luo et al., 2023). Age-related stress was linked to small blood vessels and cerebral degeneration on brain magnetic resonance imaging (MRI) in the elderly (Guo et al, 2024). Additionally, women who experienced midlife stress had a greater amount of neurodegenerative variables in their cerebrospinal fluid (CSF) when they were older (Guo et al., 2024). Increased midlife stress caused by jobs was associated with less grey matter on cerebral MRI imaging, slower mental processing speeds, and poorer overall mental functioning (Guo et al., 2024). Women are at greater risk" has always been cited as the main reason for investigating sex or gender variations in dementia (Mielke and M. M., 2018).

But this reasoning must be reevaluated. Women comprise approximately two-thirds of individuals with AD dementia. Another risk factor for dementia is that women have a longer life expectancy than men (Mielke and M. M., 2018). Current studies, however, indicate that dementia progression may potentially be influenced differentially by sex-specific biological and psychosocial stress responses. For instance, elevated cerebrospinal fluid concentrations of neurodegenerative biochemical markers indicate a greater risk in midlife women who experience chronic stress (Guo et al., 2024). The association between gender, long-term psychological stress, and the risk of dementia in later life is still not well understood, despite new research (Guo et al., 2024).

Thus, with an emphasis on gender disparities and evidence-based preventive measures, this systematic review investigates the relationship between long-term psychological stress and dementia in adults 60 years of age and older.

Extent of the Issue in Health and Social Care

The World Health Organisation (WHO) estimates that dementia affects approximately 50 million people worldwide, with around 10 million new cases diagnosed annually (WHO, 2020b). In 2019, it was estimated that over 885,000 older adults aged 65 and above in the United Kingdom were living with dementia (NICE, 2025). Between 2019 and 2040, the population aged 65–74 in the UK is projected to increase by 20%, while those aged 85 and

above are expected to rise by 114%, substantially increasing demand on health and social care services (NICE, 2025). Dementia is one of the leading causes of disability and dependency among older people, contributing significantly to long-term care needs and healthcare expenditure (WHO, 2021). Older adults frequently experience chronic psychological stress, exacerbated by factors such as caregiving responsibilities, bereavement, social isolation, multimorbidity, and financial insecurity (Wallensten et al., 2023). Evidence suggests that individuals exposed to sustained stress are more likely to experience early dementia diagnosis as well as rapid memory loss. (Franks et al., 2021). Public health interventions aimed at slowing cognitive decline and delaying dementia onset should therefore prioritise stress reduction, as stress represents a modifiable and preventable risk factor across the life course (Livingston et al., 2024; Association of Stress with Risk of Dementia and Mild Cognitive Impairment, 2021).

Research Rationale

Although many studies have explored how long-term psychological stress relates to cognitive decline, the results are mixed. This inconsistency is largely due to differences in study designs, how stress is measured, relatively short follow-up periods, and the lack of analyses that consider gender differences (Cherbuin et al., 2015; Aggarwal et al., 2014). For instance, several long-term cohort studies have found that prolonged exposure to psychological stress or emotional distress increases the likelihood of cognitive decline or dementia later in life, with highly stressed individuals showing an estimated 30–40% higher risk (Wilson et al., 2005; Johansson et al., 2010).

However, other prospective studies have reported weaker or non-significant associations once confounding factors such as depression, socioeconomic status, and health behaviours are accounted for, highlighting important methodological limitations and inconsistencies across the evidence base (Greenberg et al., 2014).

To investigate the connection between long-term psychological stress and dementia in older adults, a thorough synthesis of existing evidence is required. This includes examination of biological mechanisms such as hippocampal volume reduction reported to be 5–10% lower in chronically stressed populations and dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis (Sapolsky et al., 2009; Dronse, 2023).

Additionally, understanding how vulnerability to stress varies by gender is crucial, as women represent nearly two-thirds of dementia cases globally. Identifying evidence-based stress management strategies that reduce dementia risk is therefore essential. This study is important for social services and public health, as it provides evidence to inform targeted interventions and preventative initiatives.

Research Question

What is the relationship between chronic psychological stress and the risk of developing dementia in adults aged 60 and over? How does this relationship differ by gender, and what interventions could help mitigate this risk?

Aim

To examine the relationship between chronic psychological stress and dementia risk in adults aged 60 and over, explore gender differences, and identify evidence-based interventions to reduce this risk.

Objectives

- To check the relationship between chronic psychological stress and the chance of developing dementia in adults aged 60 and over.
- To examine the factors and mechanisms through which chronic psychological stress may influence dementia risk.
- To investigate how the relationship between chronic psychological stress and dementia differs by gender.
- To identify potential interventions and provide evidence-based recommendations for reducing dementia risk related to chronic psychological stress in older adults.

Research Methodology

This study will employ a systematic review methodology, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. Using PRISMA ensures that all stages of the review searching, screening, appraisal, and synthesis are conducted with transparency, replicability, and methodological rigour (Johansson et al., 2010; Cherbuin et al., 2015). The review will include both quantitative and qualitative studies to capture a broad range of biological, behavioural, and psychosocial perspectives relevant to the research topic, thereby strengthening the comprehensiveness and applicability of the overall findings.

Study Design

A systematic review will be conducted to synthesise peer-reviewed evidence published between 2000 and 2025. This timeframe allows for the inclusion of contemporary research while capturing long-term trends and developments in the field. Eligible study designs will

include quantitative and qualitative analyses, ensuring a comprehensive assessment across multiple methodological approaches (Tse et al., 2014). All studies meeting pre-defined inclusion and exclusion criteria will undergo structured data extraction and quality appraisal, with findings compared across study types to identify consistencies, divergences, and gaps within the existing evidence base.

Source of data

A comprehensive search strategy will be implemented across major electronic databases, including:

- PubMed
- CINAHL
- Google Scholar
- ScienceDirect
- University Library Catalogue
- Cochrane Library

To strengthen the breadth and depth of the review, grey literature will also be incorporated. Relevant reports, guidelines, and policy documents will be sourced from reputable organisations such as the World Health Organisation (WHO), the National Institute for Health and Care Excellence (NICE), and the Alzheimer's Society. Incorporating grey literature reduces publication bias and supports a more complete understanding of current evidence and practice.

Search Methods

Search terms included: "chronic psychological stress", "perceived stress", "long-term stress", combined with "dementia", "cognitive decline", "Alzheimer's", "older adults", and "gender differences". Boolean operators and MeSH terms were applied to optimise search sensitivity and specificity. Filters included English language and publication years 2000–2024, with database-specific search adaptations and reference list screening used to ensure comprehensive identification of relevant studies.

Inclusion Criteria

- Adults aged ≥ 60
- Published from January 2000

- Studies carried out in the UK will be prioritised, but studies from other developed countries will also be used to fill the gaps in the research in the UK.
- Studies measuring chronic psychological stress
- Outcomes: dementia or cognitive decline
- Study designs: cohort, case-control, RCT, qualitative, mixed methods and systematic reviews with meta-analysis
- English-language publications

Exclusion Criteria

- Acute or short-term stress studies
- Dementia treatment-focused studies
- Animal studies
- Reviews or editorials
- No gender-disaggregated data

Process for Selecting Studies

The study selection will be carried out using the PRISMA flow framework to ensure transparency and methodological rigor. All records retrieved from database searches and grey literature will be imported into reference management software, and duplicate entries will be removed. Two reviewers will then independently screen titles and abstracts based on predefined inclusion and exclusion criteria. Studies that appear eligible or where eligibility is uncertain will undergo full-text review. Any disagreements between reviewers will be resolved through discussion or, if necessary, by involving a third reviewer. The entire selection process will be documented using a PRISMA flow diagram.

Data Extraction methods

A standardized data extraction form will be created to maintain consistency across all included studies. Information collected will cover the authors and year of publication, study design, population characteristics, sample size, details of the intervention or exposure, outcome measures, main findings, and any relevant contextual information. To enhance accuracy and minimize bias, data extraction will be carried out independently by two reviewers, following established best-practice guidelines for systematic reviews (Higgins et al., 2011). Extracted information will then be synthesised into thematic or tabulated summaries, depending on the nature of the data, allowing clear comparison of findings, identification of patterns, and improved interpretation of methodological and outcome-related differences across studies

(Page et al., 2021). Any discrepancies identified during the extraction process will be resolved through discussion or consultation with a third reviewer to enhance reliability and reduce subjective interpretation (Petticrew and Roberts, 2006). Data management procedures will follow established systematic review guidance to maintain transparency and auditability throughout the review process (Popay et al., 2006).

Assessment of Study Quality

Quality appraisal of the included studies will be carried out using validated tools appropriate to each study design. Tools such as the CASP checklists for qualitative research, the Newcastle–Ottawa Scale (NOS) for cohort and case-control studies, and the Cochrane Risk of Bias Tool for randomised controlled trials (RCTs) may be applied. Each study will be assessed for methodological rigour, clarity of reporting, risk of bias, and overall reliability. Additional criteria, including sample representativeness, control of confounding variables, and appropriateness of outcome measures, will also be considered to strengthen critical appraisal. Quality scores or judgements will be used to inform interpretation of the evidence and may contribute to sensitivity analyses, ensuring that conclusions are primarily informed by high-quality studies and consistent with PRISMA recommendations (Higgins et al., 2011; CASP, 2018; Page et al., 2021).

Technique for Data Analysis

This review will employ a systematic narrative synthesis to address the research question and meet the stated objectives, following established guidance by Whitemore and Knafl (2005), Popay et al. (2006), and PRISMA 2020 (Page et al., 2021). Given the expected heterogeneity in study designs, measures of chronic psychological stress, dementia outcomes, and populations, meta-analysis is unlikely to be feasible; therefore, quantitative findings will be synthesised descriptively to examine the direction, consistency, and strength of associations between chronic psychological stress and dementia risk in adults aged 60 and over, with attention to dementia subtypes and stress characteristics where reported. A thematic analysis will be undertaken across qualitative findings and relevant explanatory components of quantitative studies to identify key mechanisms and influencing factors, including biological, psychological, and social pathways through which chronic stress may affect dementia risk. Where data permit, narrative group comparisons will be used to explore gender differences in the stress–dementia relationship, considering variations in exposure, vulnerability, and outcomes. Findings related to interventions will be synthesised thematically to identify modifiable risk factors and inform evidence-based recommendations for reducing dementia risk associated with chronic psychological stress in older adults. Across all objectives, results

will be interpreted in relation to study quality, methodological design, and contextual factors, allowing for a nuanced understanding of the evidence base and ensuring methodological transparency throughout the synthesis process.

Reporting the Review

The final review will be reported in accordance with the PRISMA 2020 guidelines, ensuring clear documentation of the search strategy, selection process, study characteristics, quality appraisal outcomes, and synthesis methods. Findings will be presented through tables, thematic summaries, and explanatory narrative text. The report will highlight areas of convergence and divergence across the evidence base and identify gaps that warrant further investigation, while discussing implications for future research, policy development, and practice within health and social care settings.

Ethical Consideration

Formal ethical approval is not necessary for this study because it comprises secondary analysis of publicly available and published data (British Psychological Society, 2021). However, the review will adhere to principles of responsible research conduct, including transparency, accuracy, and accountability throughout the review process (National Academies of Sciences, Engineering, and Medicine, 2018). The review will respect the values of responsible reporting, correct attribution, and academic integrity to prevent plagiarism or misrepresentation of findings (Committee on Publication Ethics, 2019). The synthesis will be carried out with consideration for the intellectual contributions of the original authors, ensuring their work is accurately represented and appropriately acknowledged (Page et al., 2021). Data will be handled securely and analysed objectively to minimise researcher bias and selective reporting (Higgins et al., 2011). Ethical standards relating to equality, diversity, and respectful language will be upheld, particularly when discussing vulnerable populations such as older adults and individuals living with dementia (World Health Organisation, 2017). Adherence to recognised ethical frameworks strengthens the credibility, trustworthiness, and societal value of the review findings (National Academies of Sciences, Engineering, and Medicine, 2018).

Implications of Research

Recent evidence from population-based and longitudinal research suggests that chronic psychological stress is a modifiable risk factor for cognitive decline and dementia. A systematic review and meta-analysis found that higher levels of psychological stress,

exposure to stressful life events, and related factors are significantly associated with an increased risk of mild cognitive impairment and all-cause dementia in adults (Franks, Bransby, Saling, & Pase, 2021). Long-term population studies further indicate that stress-related fatigue in midlife can predict earlier onset dementia and lasting cognitive impairment later in life (Guo et al., 2024). In addition, large cohort studies show that chronic stress documented in medical records increases the risk of Alzheimer's disease and MCI in both men and women, particularly when stress co-occurs with depressive disorders (Wallensten et al., 2023). Evidence from social care research also highlights the need for targeted support for caregivers, as informal carers of people with dementia experience substantial psychological and physiological stress, including elevated cortisol levels and reduced executive functioning (Sörensen et al., 2011; Jackson, 2018). Together, these findings underscore the importance of future research incorporating biological stress markers and support the integration of stress-management and social support interventions into public health strategies for dementia prevention.

Conclusion

In conclusion, strong, peer-reviewed research shows a strong link between long-term psychological stress and a higher risk of dementia. Higher perceived stress and cumulative stressful life events increase the incidence of cognitive impairments, according to meta-analytic data (Franks, Bransby, Saling and Pase 2021). While large cohort studies reveal that chronic stress combined with depressive disorders increases the risk of Alzheimer's disease and MCI (Wallensten et al. 2023), longitudinal data from population cohorts demonstrate that stress-related exhaustion in midlife predicts earlier onset dementia and sustained cognitive deficits decades later (Guo et al. 2024). According to Sörensen (2011) and Jackson (2018) carers of individuals with dementia undergo significant stress and exhibit physiologic changes including higher cortisol and cognitive deficits, underscoring a crucial social care priority. When combined, these results highlight the need of putting stress-reduction strategies, public health campaigns, and carer support into practice to prevent dementia. Targeted intervention tactics will be improved and causative processes will be further clarified by future research using biological markers and sex-specific analysis.

GANTT CHART

Schedule a dissertation research project

Key activities	Week 1	Week 2	Week 3	Week 4	Week 5	W- 6	W- 7	W 8	W- 9	W- 10	W- 11	W- 12	W- 13	W- 14	W- 15	W- 16
Received ethical approval																
Chapter 1																
Database searches (Data collection)																
Chapter 2																
Screening of articles																
Quality Assessment																
Data extraction																
Data Analysis																
Chapter 3																
Chapter 4 Findings																
Conclusion																

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