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# The Effects of Mindfulness-Based Interventions on Couples in Later Life. A Mixed Methods Systematic Review

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## ABSTRACT

**Objectives:** To review current quantitative and qualitative evidence on the physical and mental health outcomes and participant experiences following mindfulness-based interventions (MBIs) for couples over the age of 65.

**Methods:** The search strategy used PubMed; Web of Science; PsycInfo; The Dementia Evidence Toolkit; NIH RePORTER; NIH Clinical Trials.gov and Scopus databases and followed the JBI framework.

**Results:** Four studies were included, of these, three were described as patient-carer dyads. Overall, the studies suggested that standardized, eight-week mindfulness interventions may be feasible for older adult independent couples and caregiving dyads, including people with cognitive decline, but the available evidence should be considered with caution.

**Conclusions:** Further high-quality studies investigating specific older adult dyads with sensitive and appropriate outcome measures are needed.

**Clinical Implications:** Whilst older adult mindfulness groups delivered to couples are feasible, conclusions about the effects of mindfulness on older adult caregiving and/or romantic couples are impossible to establish.

## KEYWORDS

Mindfulness; later life; couples; older adults

## Introduction

Beyond awareness, mindfulness is fundamentally about relationships. The practice of mindfulness encourages awareness of how we relate to our internal and external experiences, and how we relate to others (Wachs & Cordova, 2007). The patterns of our relationships with others frequently shift in later life, starkly reflected in research and health-care practice, where spouses or partners can become “patient” and/or “carer.” In navigating these changes, there is a potentially important role for mindfulness to support healthy aging in later life through compassionate relationships. Yet, much of the research on the role of mindfulness in later life focusses on individuals (for a review see Geiger et al., 2016), particularly in relation to the prevention and stabilizing of cognitive decline. For example, there is wide-ranging evidence that mindfulness can increase hippocampal volume, improve memory functioning in patients with mild cognitive impairment, and improve well-being in

patients with dementia (Klimecki et al., 2019). Across the life course, mindfulness is efficacious in the treatment of recurrent depression (Kuyken et al., 2008), anxiety (Evans et al., 2008), and carer stress (Jaffray, Bridgman, Stephens, & Skinner, 2016). For physical health it has been shown to lower inflammatory response, reduce chronic pain symptoms, lower blood pressure, and support well-being for cancer patients (Campbell, Labelle, Bacon, Faris, & Carlson, 2012; Fountain-Zaragoza & Prakash, 2017; Kabat-Zinn, Lipworth, & Burney, 1985).

The benefit of mindfulness across physical and mental health difficulties is thus well established. However, less recognized in the mindfulness literature is that the effect of chronic health conditions appears to vary depending on the relationship status of the individual. In their developmental-contextual model of couples coping with chronic illness, Berg and Upchurch (2007) posit that the rise in illness rates in older adults is typically offset by

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couples having more collaborative coping resources and positive appraisals at this point in their lives. Importantly, research has also shown that dyadic interventions for chronic disease are more effective than those that focus on patients alone (Van't Leven et al., 2013).

The role of mindfulness and social relationships in physical health has been modeled by Cresswell, Lindsay, Vallalba, and Chin (2019). At the core of this model is a stress buffering mechanism through which mindfulness fosters resilience to stress and consequently health benefits. Specifically, Cresswell et al. (2019) model a top down approach through which learning mindfulness skills improves stress resilience pathways in the brain, leading to an increased ability to regulate emotions and make use of psychosocial resources, such as positive emotions and social functioning. At a physical level, improved emotion regulation and psychosocial behavior reduces stress reactivity and stress related negative health behaviors, leading to improved stress-related disease outcomes. Thus both an individual's relationship to their own stressors, and their capacity to relate positively to others, are both factors which improve health outcomes via mindfulness. Interestingly, whilst this model refers to improvements in social functioning as a component in mindfulness-mediated health improvements, the focus of the model is on the link between mindfulness and physical health. Indeed, the connection between mindfulness, health, and relationships has not been comprehensively examined in the literature. This is despite a growing empirical (Gillespie, Davey, & Flemke, 2015; Quaglia, Goodman, & Brown, 2015; Wachs & Cordova, 2007) and theoretical (e.g., Karremans, Schellekens, & Kappen, 2017) research literature on the beneficial effects of mindfulness on intimate relationships. Evidence has also shown that mindfulness improves relationship quality across the life course, and particularly in older adults (Lenger, Gordon, & Nguyen, 2019).

Mindfulness for couples in later life may therefore both support relationship quality, and physical and mental health. A recent review (Berk, Warmenhoven, van Os, & van Boxtel, 2018)

examined the impact of mindfulness for later life patients across a range of dementias, both for patients and carers separately and together. This review stated that mindfulness is feasible with older adults, but did not define feasibility. Further, the range of populations and interventions examined makes it difficult to draw clear conclusions regarding the effects on later life couples specifically. To the best of the authors knowledge, the impact of mindfulness interventions delivered to couples, on physical and mental health has not been systematically reviewed. The aim of the current review is to provide a comprehensive synthesis of the evidence relating to the effects of mindfulness interventions on couples in later life. Acknowledging that spousal relationships in later life can be characterized by increased interdependence, we include both couples who are described both in terms of their caregiving relationship, and those who are described as "couples." A mixed methods systematic review was chosen to bring together the findings of outcomes of interventions and participant's experiences to support decision-making about future interventions, clinical implications, and gaps in the research.

### **Research questions**

What are the physical health, mental health, and/or psychosocial outcomes following mindfulness interventions delivered to couples in later life?

What are participants experiences of attending a mindfulness group as part of a couple in later life?

### **Method**

A mixed methods systematic review is deemed the most suitable method due to the research question proposed and the literature it intends to include. In particular, the review follows the JBI (Aromataris & Munn, 2020) mixed method review guidance using a convergent segregated approach to synthesis and integration. The convergent segregated approach to synthesis and integration was used as the quantitative and qualitative evidence was considered to address different aspects of the phenomenon of interest.

### Eligibility Criteria

Qualitative, quantitative, and mixed method research related to the topic of mindfulness for couples over the age of 65. The purpose of the current systematic review was to synthesize all primary studies on this topic. For this reason, systematic reviews, meta-analyses, letters, and guidelines were excluded. The search was limited to literature written in English and to papers published from 1979 onwards. The rationale for this was that 1979 was the year that mindfulness-based stress reduction was developed (as cited in Kabat-Zinn, 1990). We utilized the PICO criteria, as follows:

### Participants

Participants were couples in later life. A couple was defined here as a dyad (two-person pair) who are married or otherwise closely associated romantically or sexually; any length of relationship and depth of emotional commitment were included; defined as “patient and carer” “a couple” or “spouses.” In the absence of a universal definition of an older adult, a broad parameter was applied, where all participants were aged 55 years or older.

### Interventions

We included studies that combined elements, or focus on a specific element, from mindfulness practices (such as recognized mindfulness practices, that is, the body scan, mindfulness of sounds and thoughts), provided that at least 50% of the intervention was devoted to mindfulness-based practices. Recognized mindfulness-based interventions (Mindfulness-Based Stress Reduction [MBSR], Mindfulness-Based Cognitive Therapy [MBCT]) in any duration or format were included. Interventions that were not mindfulness based including those that use other forms of meditation (e.g., transcendental, concentration, or Kundalini Yoga, Kirtan Kriya) were excluded.

### Comparators

For quantitative studies, randomized controlled trials (RCT), quasi-RCT, and controlled before-and-after studies were included. A study was classified as an RCT if individuals were prospectively assigned to one of two (or more) groups (one being the intervention) via a concealed randomization procedure. If a study used a quasi-method of

allocation or if a concealed randomization procedure was suspected but not stated, it was classified as a quasi-RCT. Studies where participants were allocated to one of two groups without concealed- or quasi-randomization were identified as controlled before-and-after studies. Inactive comparators (waitlist or treatment as usual [TAU]) and active comparators (alternative interventions where the mode of delivery, content, and design were described) were included. If the study did not use comparators but still answered our research question, it was included in our review. Qualitative studies were not expected to include comparators.

### Outcomes

Quantitative outcomes of interest were changes in mental health, physical health, wellbeing, relationship quality, quality of life, and/or carer stress scores. Qualitative studies were not expected to include outcomes. Included quantitative studies will be required to report at least one of the following outcome measures:

1. Measures of mental health (e.g. depression, anxiety), typically self-report, validated questionnaire measures (e.g. Beck Depression Inventory, Generalized Anxiety Disorder Assessment, GAD-7);
2. Measures of relationship quality (e.g. The couple's satisfaction index, wellbeing in couple relationship scale);
3. Measures of Quality of Life (e.g. The Quality of Life Scale);
4. Measures of physical health or wellbeing (e.g. the World Health Organization Well-Being Index WHO-5);
5. Measures of carer stress (e.g. the Care Giver Burden Inventory).

Secondary outcomes related to changes in skills, attitudes and/or values associated with mindfulness and/or compassion. These are typically used as a measure of trait mindfulness/compassion and/or to ascertain whether an intervention increased mindfulness skills. These were expected to be context specific, but secondary outcomes included:

- Self-report measures of trait mindfulness (for example, the five-factor mindfulness questionnaire;
- Self-report measures of compassion (for example, the self-compassion scale).

## Search strategy

Language was limited to English only. The search terms are shown below. It was adapted to the syntax and subject-heading requirements of each database and the searches were run through PubMed; Web of Science; PsycInfo; The Dementia Evidence Toolkit; NIH RePORTER; NIH Clinical Trials.gov and Scopus databases.

Final search strategy:

Line 1: (*mindful*[Title/Abstract] \* OR MBCT [Title/Abstract] OR MBSR[Title/Abstract]) AND

Line 2: (*program*\*[Title/Abstract] OR *intervention*\* [Title/Abstract] OR *train*\*[Title/Abstract] OR *therap*\*[Title/Abstract] OR *group*\*[Title/Abstract] OR *self-help*[Title/Abstract] OR “*self-help*” [Title/Abstract] OR *self-care*[Title/Abstract] OR “*self-care*” [Title/Abstract]) AND

Line 3: (*patient*\*[Title/Abstract] OR *caregiver*\* [Title/Abstract] OR *carer*\*[Title/Abstract] OR *famil*\* *car*\*[Title/Abstract] OR *famil*\* *member*\* [Title/Abstract] OR *informal car*\*[Title/Abstract] OR *relative*\*[Title/Abstract] OR *spous*\*[Title/Abstract] OR *partner*\*[Title/Abstract] OR *kin*\* [Title/Abstract] OR *couple*\*[Title/Abstract] OR *dyad*\*[Title/Abstract])

Line 4: (*elder*\*[Title/Abstract] OR *old*\*[Title/Abstract] OR *geriatric*\*[Title/Abstract] OR *aged*\* [Title/Abstract] OR *senior*\*[Title/Abstract] OR *later life*\*[Title/Abstract])

Additionally, gray literature was searched in OpenGrey, Google and Google Scholar. The search term “mindfulness and older adult couples” was used to identify gray literature as these were identified as the most relevant terms in the exploratory and database searches. In addition, reference lists of all relevant studies, reviews, and reports were searched.

## Information sources

### Study selection

Study selection (both at title/abstract screening and full-text screening) was performed by two reviewers, independently. Any disagreements were solved by discussion with the third reviewer. After eliminating the duplicates, an initial screening of titles, abstracts, and summaries was undertaken to exclude records that clearly do not meet the inclusion criteria. Each record was classified as “include”

or “exclude” or “maybe” with comments to identify relevant and exclude irrelevant literature (94% agreement between reviewers). The researchers were inclusive at this stage and, if uncertain about the relevance of a publication or report, studies were left in. The full texts were obtained for all the records that met the inclusion criteria (based on the title and abstract/summary screening). All the full-text papers were screened against the Research question, PICO, and inclusion/exclusion criteria by all three reviewers independently (100% agreement between reviewers). [Figure 1](#) shows an adapted PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses, Moher, Liberati, Tetzlaff, & Altman, 2009) flow-chart of study selection.

## Data collection process

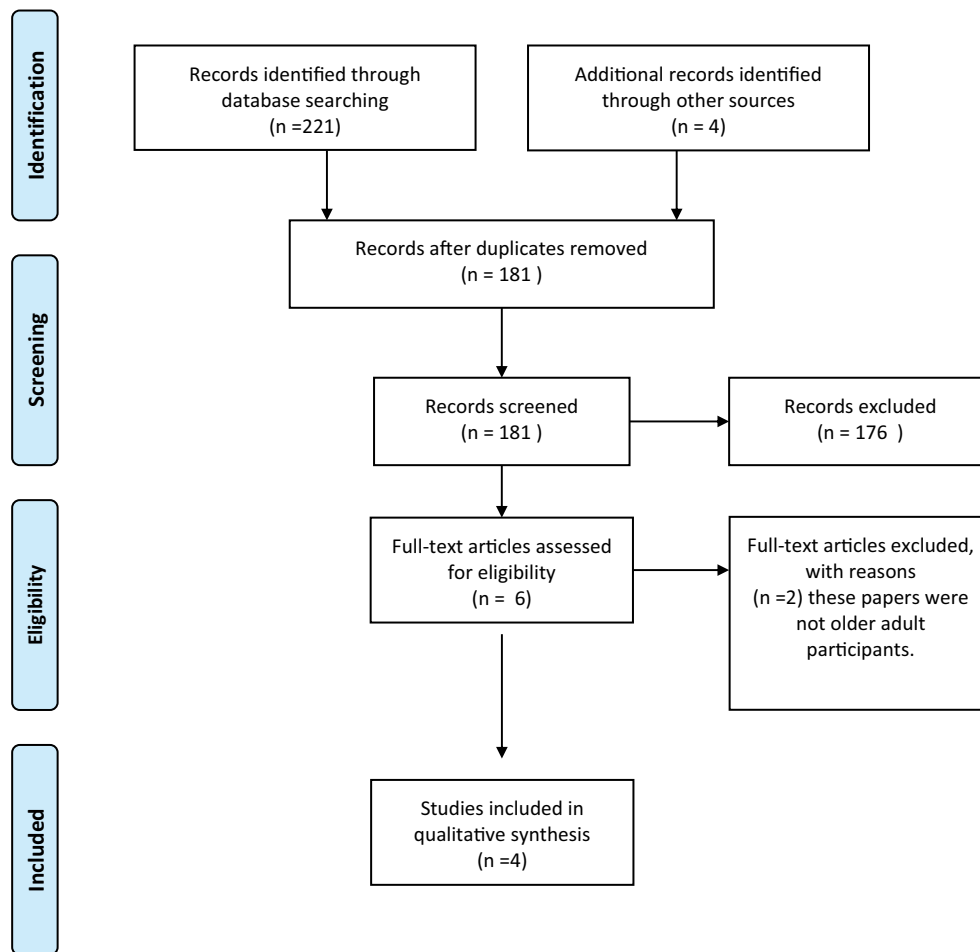
### Data extraction

One reviewer extracted data from each included study and inserted into the Excel spreadsheet (as detailed above). Other two reviewers reviewed the extracted data sheet and discrepancies were resolved through discussion between all authors. For the extracted data we used the following headings: participants, interventions, comparators, and outcomes. In addition to that the extraction sheet included authors, year of study/report, aim/purpose, methods used, type of paper (e.g. journal article, annual evaluation report, etc), geographical area, study population (e.g. age of participants and health condition of the patient group if applicable), sample size, study design, and key findings that relate to the review question.

### Data synthesis and integration

A convergent segregated approach to synthesis and integration was applied. This involves a separate quantitative and qualitative synthesis followed by integration of the resultant evidence. Due to the small number of studies, and the heterogeneity of them, findings from included studies were synthesized and integrated narratively. The “Guidance on the Conduct of Narrative Synthesis in Systematic Reviews” was used to advise the narrative synthesis (Popay, Roberts, Sowden, Petticrew, & Arai et al., 2006). For the thematic analysis of the qualitative findings, all authors agreed on the analysis





**Figure 1.** PRISMA flow chart of study selection.

procedure, which followed Braun and Clarke (2006). The first author completed the initial thematic analysis that was then discussed with the second and third author prior to refining the structure of the themes and subthemes. There was no change to the content of the themes following discussion. However, themes were mapped under “response changes” and “relationship changes” rather than “patient responses” and “carer responses” to more accurately reflect the content of them.

### **Methodological quality**

Each of the included studies was appraised using a standardized critical appraisal tool.

To cover both the quantitative and qualitative studies, the Mixed Methods Appraisal Tool (MMAT) Version 2018 (Hong et al., 2018) and

the Critical Appraisal Skills Programme (CASP) tool (Critical Appraisal Skills Programme 2012) were used.

### **Results**

We found four studies of mindfulness for couples in later life that adhered to the inclusion and exclusion criteria above. Table 1 outlines the characteristics of included papers. Notably, three out of the four studies were described as dyads of caregivers and cared for relative, the exception being Monin et al.’s (2020) study. The review outcomes are presented under the following categories: Characteristics of included studies (Participants, Objectives, Design and Method, Reliability, Validity, Credibility and Fidelity of the Intervention, Facilitators,)

**Table 1.** Characteristics of included studies.

Author (year)	Design	Sample	Dyad relationship	Mindfulness Program	Outcome Measures	Results
Leader et al. (2013)	UCT Pre, post intervention and 3 month follow up	Patient with dementia (n = 8) and their partner (n = 12)	Couples	Adapted MBSR, shorter practices and no day retreat. 8 weekly 2.5 hr sessions	WEMWBS, qualitative interviews and observations	Small increase in WEMWBS, not maintained at 3 month follow up. Interviews indicated that some patients found the practices helpful, all carers responded positively.
Monin et al., 2020	RCT Pre, post intervention and 3 month follow up	Older married couples, at least one with metabolic syndrome randomized in MBSR (n = 12) or wait list control (n = 10)	Couples	Standardized MBSR, 8 weekly 2.5 hr sessions, one 7.5 hr day retreat	Biomarkers of metabolic syndrome, PSS-10, SF-12, KIMS, RAS, post intervention questions	No significant intervention effects, significant interaction between intervention and gender whereby MBSR wives showed greater increases in physical functioning; relationship functioning than WLC wives.
Ozen et al. (2022)	RCT with cross over design. Pre, post intervention	People with memory difficulties (n = 8) and carers (n = 9)	Some couples, some individuals	Eight weekly 2 hr sessions MBCT with separate carer and patient groups	GDS, DASS, SCL-90-R, FFMQ, QOL-AD, SCS, AES, ZBI, COPE, MOCA	Significant improvement in quality of life for the memory difficulties group. Significant negative correlation in both groups between FFMQ non judgmental scores and depression symptoms. In the caregiver group significant correlations between reduction in depression scores and acting with awareness and burden scores
Paller et al., 2014	UCT. Pre and post intervention	People with cognitive decline (n = 17) and their caregivers (n = 20). Patient diagnoses: AD (n = 9); FTD (n = 1); stroke (n = 2); undiagnosed memory complaints (n = 3); MCI (n = 2)	Spouses (n = 13); adult children (n = 5); daughter in law (n = 1); mother in law (n = 1)	Primarily an 8 week MBSR program (1.5 hr per session), but with elements of DBT and ACT. No day retreat.	QoL-AD, GDS, PSQI, BAI, Trail Making Test A and B, RBANS	Significant improvements across patients and caregivers in quality of life (QoL-AD), depression (GDS), trend toward reduction in anxiety (BAI). Significant improvement on Trails B for patients only. Trend for patients to improve on the list recall and coding subtests of the RBANS.

ACT, Acceptance and Commitment Therapy; AD, Alzheimer's Dementia; AES, Apathy Evaluation Scale; BAI, Beck Anxiety Inventory; COPE, Brief COPE Inventory; DASS, Depression, Anxiety and Stress Scale; DBT, Dialectical Behaviour Therapy; FFMQ, Five Facet Mindfulness Questionnaire; FTD, Frontotemporal dementia; GDS, Geriatric Depression Scale; KIMS, Kentucky Inventory of Mindfulness Skills; MOCA, Montreal Cognitive Assessment; PSQI, MBCT, Mindfulness Based Cognitive Therapy; Mild Cognitive Impairment; MCI, Pittsburgh Sleep Quality Index; PSS-10, Perceived Stress Scale; QoL-AD, Quality of Life-Alzheimer's Disease; RAS, Relationship Assessment Scale; RBANS, Repeatable Battery for the Assessment of Neuropsychological Status; SCS, Self Compassion Scale; SF-12, Short Form Health Survey, SCL-90R, Symptoms Checklist-90 Revised; WEMWBS, Warwick Edinburgh Mental Well-being Scale; UCT, uncontrolled trial; ZBI, Zarit Burden Inventory, short version

## **Characteristics of included studies**

### **Participants**

Sample sizes were reported in all studies, with a total number of 96 participants across all studies, (48 patients, 48 caregivers, or spouses). All studies with the exception of Leader (2013) reported participant inclusion criteria to the study along with patient and caregiver or couple demographics. Ozen et al. (2022) and Monin et al. (2020) reported participants' age, gender, diagnoses, and educational level. Monin et al. (2020) additionally report ethnicity, employment, income, and number of children the couple have together. Leader et al. (2013) recruited 20 participants from three UK Alzheimer's Cafes; the type and severity of the dementia was not recorded. Some caregivers attended without their spouse. Ozen et al. (2022) recruited participants in the community, through referral from a local geriatrician, physicians, the local Alzheimer Society, posters in general practitioners' offices, word of mouth, and media sources. Evidence of depression symptoms with either a minimum score of 10 on the Geriatric Depression Scale (GDS) and/or a score of 10 on the depression subscale from the Depression, Anxiety, and Stress Scale (DASS) was required for participation (the only exception was for dyads, where one person was required to have depression symptoms). The "difficulties with memory" (DG) group consisted of individuals scoring in the 19–25 range on the Montreal Cognitive Assessment (MOCA). The Caregiver group (CG) were either spouses of DM group participants (i.e., a dyad) or participated on their own. Participants were excluded if there was evidence of unusual psychological processes and neurological disorders as assessed by the Symptoms Checklist-90 Revised (SCL-90-R) 26 and a demographic/health questionnaire.

Paller et al. (2014), recruited patients with progressive cognitive decline and their caregivers from the University Alzheimers Disease center, local advertisement, and word of mouth. Whilst 13 of the 20 caregivers were patients' spouses, there was no requirement to attend with a partner so long as participants were either a patient or a caregiver to

a patient. The patients in this study were aged 55 or above, with a mean age of 72 years, the caregivers were aged between 31 and 98, the mean age being 62.5 years. This is a result of the role of caregiver being diverse, with some carers being adult children or daughter-in-law of the patients they attended with.

Of Paller et al.'s (2014) participant sample of 37, 17 of them were identified as patients with progressive cognitive decline, however the individual diagnoses range from dementia, due to Alzheimer's disease or other impairment to memory issues arising from strokes or with no formal diagnosis. Monin et al. (2020) recruited 11 couples from the Yale Center for Clinical Investigation's Help Us Discover database, the Joint Data Analytics Team (JDAT), a unified Yale School of Medicine and Yale-New Haven Health Systems team, community flyers, and patient referrals from doctor's offices in the area. The presence of metabolic syndrome was tested by the research team in accordance with the American Heart Association guidelines.

### **Objectives**

Ozen et al. (2022), Monin et al. (2020) and Paller et al. (2014) stated that the purpose of their study was to assess the feasibility of implementing a mindfulness programme for older adult couples. However, the definition of "feasibility" was not provided. Leader et al. (2013) used a pilot study to test the proposal that mindfulness has the potential to improve the quality of life of people with dementia.

### **Design and method**

All papers with the exception of Ozen et al. (2022) utilized a mixed methods design. All were described as either pilot (Leader et al., 2013; Monin et al., 2020) or implementation (feasibility) studies (Ozen et al., 2022; Paller et al., 2014), see Table 1. Attrition data was reported by all studies with the exception of Monin et al. (2020) and ethical considerations only noted by Leader et al. (2013).

### **Reliability, validity, credibility, and fidelity of the intervention**

All studies broadly followed a standardized 8-week MBSR or MBCT protocol, this included a combination of formal practice (e.g. the body



scan practice, mindfulness of breathing) and informal practice (practicising mindfulness whilst carrying out daily tasks). Participants are provided with the guided formal practices and asked to complete them six days per week at home. However, Paller et al. (2014) included elements of dialectical behavior therapy and acceptance and commitment therapy, shortened the home practices, and removed the extended day retreat. Leader et al. (2013) reduced the length of some of the formal practices, omitted the all day session, and shortened the home practice requirements. Ozen et al. (2022) adjusted the speed, intensity, and methods of teaching, but did not state how this was done. Neither Paller et al. (2014) or Leader et al. (2013) detailed which homework activities and practices were shortened, and by how much. In Monin et al. (2020) participants were encouraged to do the daily formal homework practices together and reflect in class on this experience.

Reliability of some of the measures used in the study was cited by Monin et al. (2020). None of the studies reported the validity of their measures for the quantitative data, or provided a recognized qualitative analysis of the data (e.g. thematic analysis). There was no explanation of how the qualitative data was analyzed. Monin et al. (2020) described some of the characteristics of the qualitative data; Leader et al. (2013) summarized some of the qualitative data across patient, carer and observer reports. Paller et al. (2014) did not analyze their data. All papers stated what type of mindfulness programme was being followed. Where adaptations were made to the course manual, the content of the sessions was provided, with the exception of Ozen et al. (2022). None of the papers reported fidelity checks of the mindfulness intervention.

### **Facilitators**

The quality of the training provided by mindfulness teachers is considered crucial to the overall success of a mindfulness training programme (Crane, Kuyken, Hastings, Rothwell, & Williams, 2010). Monin et al. (2020) and Leader et al. (2013) utilize a certified MBSR facilitator to deliver their program. The Paller et al. (2014) and Ozen et al. (2022) studies are compromised

by the lack of information on the group facilitator or their qualifications for delivering a mindfulness-based program.

### **Findings of the review**

The findings of the review are first segregated as quantitative evidence (intervention effects, analytic strategy, adherence, and acceptability) and qualitative evidence (analytic strategy and research question; thematic synthesis). The evidence is then integrated following the analysis questions recommended by the JBI mixed method convergent segregated systematic review framework.

### **Quantitative evidence**

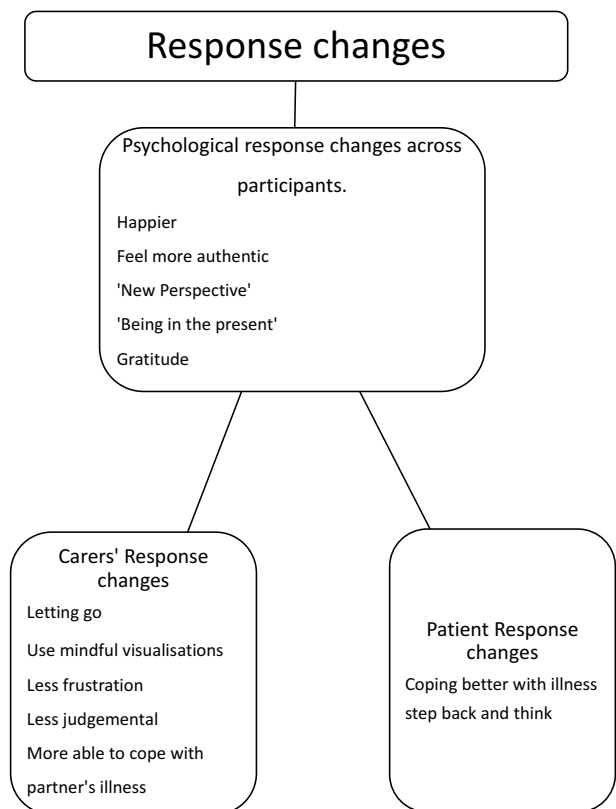
**Intervention effects.** Table 1 outlines the reported intervention effects. Two of the four studies reported significant changes in quantitative outcome measures following a mindfulness intervention Both Ozen et al. (2022) and Paller et al. (2014) report a statistically significant change in quality of life scores for memory difficulty patients. Both studies also report changes in depression scores. Ozen et al. (2022) find a statistically significant negative correlation between non-judgmental scores (measured by the Five Factor Mindfulness Questionnaire, FFMQ) and depression symptom scores (measured by the Geriatric Depression Scale) in both groups, whereby participants whose attitude became less judgmental had a reduction in depression symptoms. Similarly, greater reductions in depression symptoms were observed among caregivers who had greater improvements in acting with awareness scores and greater reductions in burden scores. Paller et al. (2014) find significant improvements in self reported depression and quality of life across patients and carers. For patients, there was a significant improvement on the Trails B (executive functioning) test. For carers, there was a significant improvement in caregiver health and carers reported a reduction in the number of memory and behavioral problems that the person they were caring with demonstrated.

**Analytic strategy.** Leader et al. (2013) report descriptive statistics only. Monin et al. (2020) use a linear mixed model to test changes in physical, psychological, relational, and biological outcomes as a function of time. This analytic approach is considered more appropriate than a traditional analysis of variance (ANOVA) for repeated measures designs as it makes no assumptions about the independence of participant's responses over time (Singmann & Kellen, 2017). However, as Kreft and de Leeuw (1998) note, multilevel models require large sample sizes depending on the level that fixed effects are examined. For Monin et al.'s (2020) study, the power for the Level 1 Time fixed effect is dependent on the number of individual observations, whilst the power for the Level 3 study condition (mindfulness or waitlist (WLC)) was dependent on the number of dyads. This goes some way to explain why the authors find a number of significant effects across time, but not as a function of study condition. Ozen et al. (2022) used paired t-tests to conduct pre-post analyses, and correlations (Pearson's R) to examine changes in mindfulness outcomes and their association with depression symptoms. Paller et al. (2014) use a mixed model ANOVA analysis to determine whether there were statistically significant changes between patients and carers before and after the intervention.

**Adherence and acceptability.** Monin et al. (2020) report that of the 11 couples in the study, four attended all 10 sessions. They also report variation in adherence to home practice as a function of gender, however this was not formally analyzed. Ozen et al. (2022) provide detailed information on participant intervention status at various stages of the trial. Of the 36 participants enrolled in the study, only 17 completed it. Of these seven were excluded prior to group allocation as they did not meet criteria. Paller et al. (2014) recruited 37 participants, of these six dropped out of the study before completion. Leader et al. (2013) did not report drop out or adherence rates. Reasons for non-completion were not recorded.

### Qualitative evidence

**Analytic strategy and research question.** Of the three studies that included qualitative data (Leader et al., 2013; Monin et al., 2020; Paller et al., 2014), none carried out a qualitative analysis on it. (Monin et al., 2020) asked participants how their partner had influenced their decision to participate, their decision to continue, and how it affected their experience of mindfulness. Paller et al. (2014) reported a sample comments from the posttreatment interview. How the sample was selected, or the questions asked to participants, was not included. Leader et al. (2013) asked patients and carers a range of questions designed to answer the research questions "Is it possible for people with dementia to learn mindfulness meditation?" and "Do mindfulness techniques make a difference to their wellbeing and quality of life?" Leader et al. (2013) also reported observations from the mindfulness group co-facilitator.



**Figure 2.** Thematic map of response changes following a mindfulness intervention.

**Thematic synthesis.** Although both the foci of the qualitative data and participants varied across these studies, secondary analysis of the qualitative findings yielded two major themes: changed ways of responding (Figure 2) and sharing and support (Figure 3). These two themes reflect experiences related to attending the group as part of a couple (Figure 3) and to altered ways of responding in relation to the mindfulness group (Figure 2). Under sharing and support, there were three sub-themes, partner encouraging me; doing an activity together and help for patients from others. Under changed ways of responding there were three sub-themes: psychological, patient response to illness and carer response to illness. As indicated, although there were some universal experiences, the majority of the experiences varied under each of the themes depending on whether the participant was a patient, carer, or a couple.

**Patients with cognitive impairment.** Under sharing and support, patients with cognitive impairment spoke of the practical help provided from the person attending the course with them “it’s really important for the carers to remind us to do the practice.” Conversely, for patients who did not have a carer to remind them, this lack of support was a significant barrier to practice “my problem is . . . I just can’t remember to do it” and “I don’t know how to use the CD player.” Under psychological changes, it was clear that some participants had been able to understand the principles of mindfulness, they spoke of

a sense of “gratitude” and of “being in the present.” Similarly, the response changes that they noted was consistent with mindful responding, “I step back and think” and “letting go.”

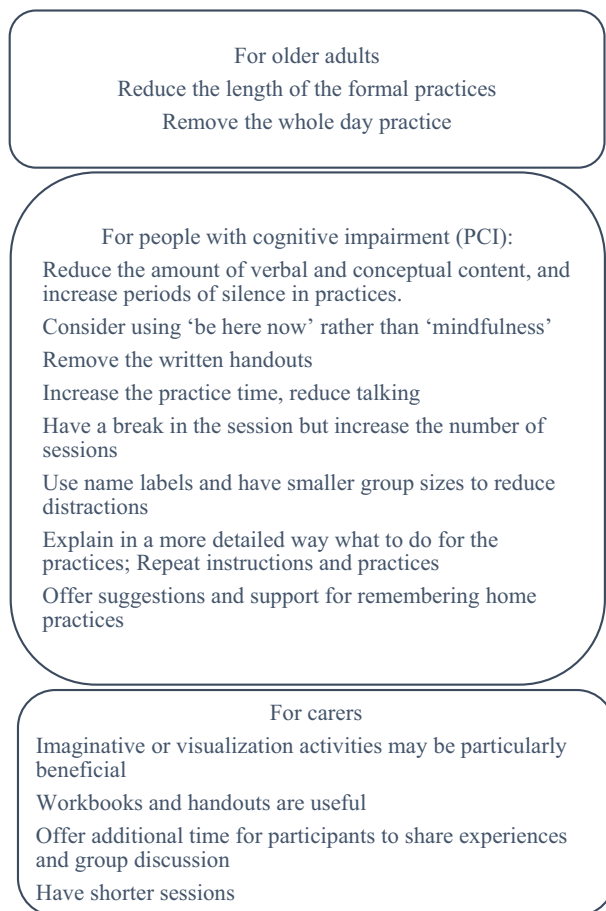
**Carers of people with cognitive impairment.** Under response changes to their partners illness, carers tended to speak of a reduction in negative ways of responding, rather than changes per se. For example, carers noted that they got “less frustrated” and were “less judgemental.” However, they also reported positive psychological changes in feeling “happier” and “more authentic.” Their adoption of some of the principles of mindfulness was reflected in several comments relating to “accepting” and “just living for now.” Carers found support from the other group participants “It’s nice meeting up with other people” and “I can share my thoughts.”

**Couples.** Although many patient-carer relationships were also couple relationships. Where neither is the “patient” or “carer” as in the Monin et al. (2020) study, the sharing and support tended to be equal, and participants spoke of a mutual support to “do home practice” or to provide encouragement. This was related to the experience of sharing the mindfulness practice, and that it provided a “shared interest” and was “fun” or “a bit romantic.”

For patient-carer dyads, the picture is mixed, with patients benefitting from the practical support of carer involvement, but that patients and carers



**Figure 3.** Thematic map of relational experiences in learning mindfulness.



**Figure 4.** Practice suggestions for delivering mindfulness for older adults with cognitive impairment and their carers.

may have different wants and needs from the classroom-based component of the course. The recommendations from patients and carers for delivering mindfulness courses are summarized in Figure 4.

**Integration of quantitative and qualitative evidence Quality of life.** Quantitative improvements in quality of life for patients (Ozen et al., 2022; Paller et al., 2014) and carers (Paller et al., 2014) supports the themes that emerged under “response changes” (Figure 3) across patients and carers, participants reported feeling happier, greater authenticity, and a sense of gratitude. A range of positive response changes was reported by carers in qualitative interviews, which was supported by a positive correlation between caregiver awareness and burden scores (Ozen et al., 2022). All of the studies were designed as either feasibility or pilot studies, and therefore did not recruit sufficient samples to test for efficacy. It is therefore

not possible to determine whether the positive effects reported in the interviews were reflected in the quantitative findings.

**Acceptability: attrition and adherence.** The qualitative evidence is largely positive and discusses the benefits of mindfulness. However, there were relatively high attrition rates (Ozen et al., 2022; Paller et al., 2014), and variable adherence rates (Monin et al., 2020) where these were reported. No interviews were carried out with couples who dropped out of the intervention part way through, or declined to participate. Reasons for non-completion were not recorded. This is an important gap in the literature.

**Changes in mindfulness skills and cognitive functioning.** Under “response changes” (Figure 3) several of the themes indicated that participants had learnt and were utilizing mindfulness skills, for example, “being in the present” and “use mindful visualisations” however quantitative changes in mindfulness skills was only tested by Monin et al. (2020) and Ozen et al. (2022). Cognitive improvements for patients were reported by Paller et al. (2014), but the implications of this has not been explored qualitatively. In particular, whether the improvements were noticed either by patients, or by carers.

**Gender and carer differences.** Gender effects were found at a quantitative level, but not explored qualitatively. Gender differences in the Monin et al. (2020) study include differences in adherence to home practice (women completing more formal practices, men completing more informal) and women who completed the intervention showing greater increases in physical and relationship functioning than wait list control women. Conversely, under “relational experiences” (Figure 2) different experiences were reported depending on whether one of the participants was a carer for the other. However, differences in carer burden (Ozen et al., 2022) and relationship satisfaction (Monin et al., 2020) were not measured routinely.

## Discussion

Several strands of the research literature have pointed to the beneficial effect of mindfulness on physical health, mental health, and relationships. However, there is no clear research agenda for

looking at these factors and their interactions across the life course, or in older adults specifically. This is reflected in the four studies we obtained following systematic search. Strikingly, only one of the studies (Monin et al., 2020) examined the effects of mindfulness on the older adult romantic relationship, the remaining three studies examined the caregiving relationship. All were described as either pilot (Leader et al., 2013) or feasibility Ozen et al. (2022), Monin et al. (2020) and Paller et al. (2014) studies.

With regard to feasibility, retention rates are low in the Ozen et al. study, where 27% of enrolled participants dropped out of the course and full attendance rates are low in the Monin et al. (2020) study (40% of participants attended all sessions), but neither paper provides participant reasons for this. Leader et al. (2013) do not provide any adherence or retention data. These findings suggest that more work needs to be done to examine the acceptability of the intervention for older adults. Whilst it is difficult to draw firm conclusions from the reviewed studies, by comparison Khoury, Sharma, Rush, and Fournier (2015) find an average attrition rate of 18% for working age adults attending MBSR; Hurley, Patterson, and Cooley (2014) report a 12% average attrition rate for carers of people with dementia attending mindfulness-based intervention courses. Beyond adherence and retention data, determining the acceptability of mindfulness interventions for this population will also need to examine, the extent to which mindfulness fits with older adult's value system, if and how much, older adults understand the intervention and how it works; the perceived effectiveness of mindfulness, and their confidence that they can engage with the mindfulness practices required to participate in the intervention (see Sekhon, Cartwright, & Francis, 2017).

Of the three studies that collected qualitative data, none carried out a formal analysis of it. In particular, there was no qualitative data collected from the participants who dropped out of the intervention, which may have been helpful to understand why mindfulness was not acceptable to these participants.

### ***Mindfulness interventions for older adult couples***

All papers in this review offered a mindfulness-based intervention to improve either the physical or mental health of independent or patient-

caregiver couples in later life. Three of the four studies looked at patients with organic memory difficulties and their caregivers, however these studies looked at patients with a range of diagnoses, or did not report diagnoses, making it difficult to compare results across studies. In addition, only Monin et al. (2020) measured relationship factors in couples.

Despite this, both Paller et al. (2014) and Ozen et al. (2022) report significant improvements in quality of life for participants, Leader et al. (2013) reports increases in mental well-being. This is in contrast to reviews examining mindfulness for healthy older adult individuals (Geiger et al., 2016) and the effects of MBIs on older adult cognition (Berk, van Boxtel, & van Os, 2017). Both reviews find limited (Berk et al., 2017) or mixed (Geiger et al., 2016) evidence for the interventions.

With regard to couples specifically, Berk et al. (2018) review studies over a wider age range (average age 54–75 years) that looked at mindfulness for people with dementia, caregiver and patient dyads (cancer and dementia patients) and caregivers attending on their own. They find that more methodologically rigorous trials are needed, and that more research is needed to understand the adaptations required for older adults. In common with our review, they suggest that for all mindfulness-based interventions for couples, research is needed to determine whether interventions are best delivered to patients and carers separately. Thus, this issue appears to be a pertinent one across the age range.

### ***Future research***

The current research shows that mindfulness intervention can be delivered to independent and patient-caregiver couples in later life, both with and without cognitive decline. In common with previous reviews, there are some questions over the acceptability of it, and the reasons for this need to be systematically explored, utilizing participant groups with greater homogeneity in the first instance. In addition, no research has specifically looked at whether attending a mindfulness intervention as part of a couple, is more or less



beneficial than attending alone. In a similar vein, only Monin et al. (2020) measured relationship satisfaction before and after the intervention. Thus, there is very limited evidence of the effect of mindfulness on couples specifically in later life. All studies apart from Monin et al. (2020) framed their research in terms of “patients” and “carers” even where couples also had an intimate relationship. It may be that this is too narrow, for example, the wellbeing of couples where one partner has dementia is known to be enriched by a sense of “togetherness” (Swall, Williams, & Marmstål Hammar, 2020;), including maintaining sexual intimacy (for a review see Albert, Eduardo Martinelli, & Costa Pessoa, 2022).

The qualitative research suggested that participants experienced the mindfulness group differently depending on whether they were attending in a caring role, as a patient, or as part of a couple where neither individual had caring responsibilities for the other (see Figure 4). These findings need to be examined more systematically, with a clearer rationale for delivering the programs to couples. For instance are carers included to support the patient to engage with the program, to support their relationship with the person they are caring for, and/or to benefit their own health and wellbeing? Depending on the foci of intervention, programs may need to be delivered in a different way to address the needs of independent couples and patient-carer couples.

### Limitations

This review is limited by the number of studies carried out on mindfulness with older adult couples, four in total. In addition, there were gaps in the design and analysis of these studies that means that the conclusions we have drawn are necessarily tentative. None of the studies carried out a formal analysis on their quantitative data, and only study (Leader et al., 2013) report descriptive statistics only. Three out of the four studies examined couples who were in a caregiving relationship, and did not take a measure of relationship functioning, patients ranged from those with marked cognitive decline

(Leader et al., 2013; Paller et al., 2014) to those with physical health difficulties (Monin et al., 2020). Only one of the studies (Monin et al., 2020) offered the intervention to independent couples rather than patient-caregiver dyads.

### Conclusions

The current research literature shows that mindfulness interventions can be delivered older adult couples, including people with cognitive decline. However, conclusions about the effects of mindfulness are impossible to establish given the heterogeneity of the studies. The concomitant nature of spousal health in later life, suggests that examining the effect of mindfulness in later life on couples’ relationship, both fully independent, and patient-carer couples is a significant gap in the literature. Further research is needed to understand what aspects of the approach are acceptable to this population, and what adaptations might be required. Taken as a whole, there is insufficient research on mindfulness for older adult couples, despite a range of research showing the beneficial effects of mindfulness on intimate relationships over the life course.

### Clinical implications

- There is limited evidence that delivering mindfulness courses is acceptable to older adult couples, but conclusions about the effects of mindfulness on older adult caregiving or romantic couples are impossible to establish.
- Patients and carers identify different needs and wants from a mindfulness course. Consider having separate groups for patients and carers, but the same home practice.
- Sensitive and appropriate outcome measures are needed to establish the effects of mindfulness courses delivered to older adult couples.

### Data Availability Statement

The data that support the findings of this study are available from the corresponding author [AP], upon reasonable request.

### Disclosure statement

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