

A systematic review and meta-analysis of the association between anxiety symptoms and coping in family carers of dependent people aged 18 and over

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Abstract

Anxiety symptoms are prevalent in family carers of dependent people. Despite accumulating evidence in the area, there are still inconsistent findings on the association between carer anxiety symptoms and coping strategies. The aim of our study was to systematically analyse the relationship between anxiety symptoms and coping strategies in carers of dependent adults aged 18 years and older, and examine possible sources of heterogeneity in the results. The study design was a systematic review and meta-analysis. We searched several international databases (Pubmed, CINAHL, PsycINFO and LILACS) from June 2022 up to February 2023. We followed the preferred reporting items for systematic reviews and meta-analyses statement and performed several subgroup analyses to examine whether study design, cause of dependency and whether or not controlling for various biases influenced results. Forty-one studies were included in the review. We found significant associations between greater use of dysfunctional coping and higher anxiety symptoms. Greater use of problem-focused coping was associated with lower anxiety symptoms in carers of frail older people, but higher anxiety in carers of people surviving cancer. Emotion-focused coping and some of its individual strategies, such as acceptance and positive reappraisal, in probabilistic samples, were associated with lower anxiety symptoms across all groups. Most of the studies included in this review were cross-sectional. Evidence overall indicates that only specific dimensions and strategies of coping are significantly associated with anxiety symptoms in family carers. These findings should be considered when developing future interventions supporting carers.

KEYWORDS

anxiety, caregivers, coping, meta-analysis, systematic review

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1 | INTRODUCTION

The increase in life expectancy globally means that the number of people requiring assistance and care to meet their basic needs is increasing (OECD, 2019). This unpaid care falls mainly on family members, or 'informal carers' who spend several hours per day assisting with personal care, domestic care and emotional support (Pakenham et al., 2006; Pérez-Cruz et al., 2017).

Despite the positive effects of providing care (Li & Loke, 2013; Lloyd et al., 2016), the stress associated with caregiving impacts carers' health and increases risk of psychiatric distress (Loh et al., 2017; Sallim et al., 2015). Studies have consistently shown that anxiety symptoms are prevalent in family carers and impact the family caregiving context (Loh et al., 2017; Sallim et al., 2015). Anxiety is often the main reason why family carers consult with healthcare professionals, expressing feelings of worry and fear (Sánchez-López et al., 2015). Approximately 21.4% of carers of people surviving a stroke (Loh et al., 2017) and around 43.6% of carers of people with dementia (Sallim et al., 2015) report clinically significant symptoms of anxiety. Experiencing high levels of anxiety symptoms increases the risk of developing a depressive episode and providing poor quality care to the care recipient (Shaffer et al., 2016). Understanding therefore which factors increase anxiety in carers is important for improving both carer and care recipient outcomes.

The stress sustained as a result of caring is considered to directly influence onset of anxiety symptoms. One of the most influential theoretical models of caregiving proposed by Pearlin et al. (1990), posits that carers' coping responses act as mediators or moderators between a stressful situation and the occurrence of negative emotional experiences such as anxiety. Coping has been defined by

Lazarus and Folkman (1984) as 'constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands appraised as taxing or exceeding the resources of the person'. It can be classified according to the direction of efforts and responses of individuals in several broad dimensions. These include distinctions between problem-focused and emotion-focused coping (Lazarus & Folkman, 1984), active or approach coping, and passive or avoidance coping (Moos et al., 1990).

Problem-focused coping is primarily aimed at resolving stress-causing situations while emotion-focused coping involves efforts by individuals to regulate their emotions in the context of stressful situations (Lazarus & Folkman, 1984). Approach coping aims to re-evaluate, modify, and solve problems, while avoidance coping is characterized by responses resulting in distancing oneself or avoiding addressing the problem (Lazarus & Folkman, 1984). Other dimensions of coping include classifications based on behaviours which involve changing the problematic situation through actions or cognitive efforts whereby individuals address problems through the use of cognitive strategies such as positive reappraisal or denial (Moos et al., 1990).

Within each dimension, we find numerous coping strategies, which are specific ways in which we respond to stress that can be functional or dysfunctional. Carver (1997) further classified coping as functional or dysfunctional into three broad dimensions: (a) problem-focused coping (active coping, planning and seeking instrumental support), (b) emotion-focused coping (acceptance, positive reappraisal, seeking emotional support, humour and religion) and, (c) dysfunctional coping (behavioural disengagement, denial, self-distraction, self-blame, substance use and venting) (Figure 1).

Recent research has highlighted the importance of analysing specific mechanisms of coping individually rather than single broad

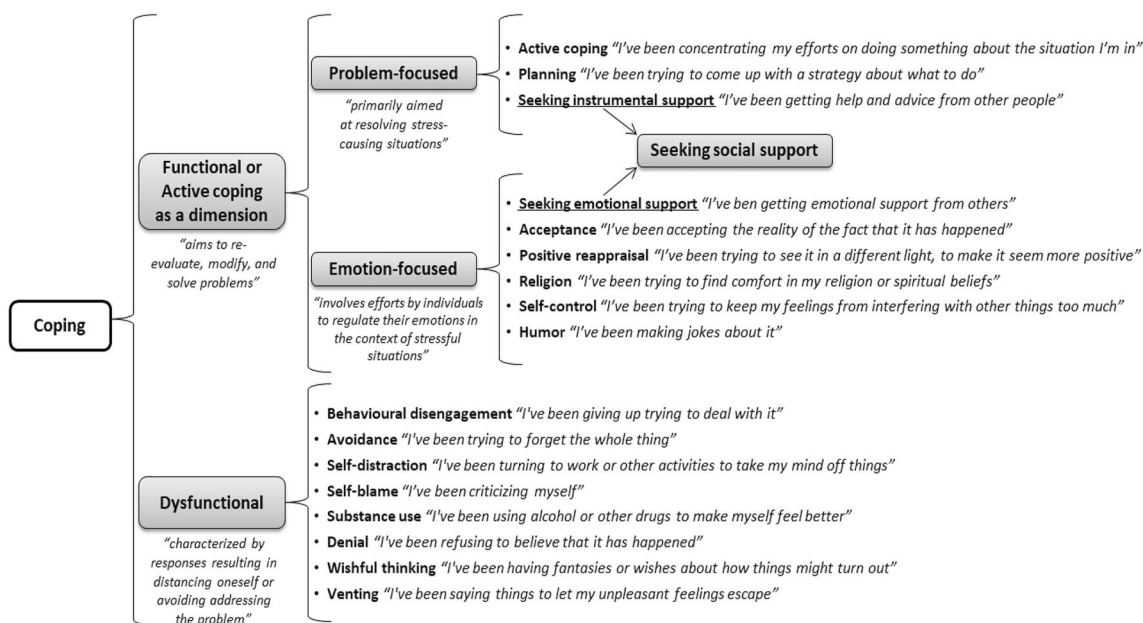


FIGURE 1 Classification of dimensions and coping strategies following the models of Lazarus and Folkman (1984), Moos et al. (1990), and Carver (1997).

classifications of coping responses (Morris et al., 2018). Studying specific individual coping strategies is considered important given the heterogeneity of the different individual strategies which can differentially impact adjustment processes and be effective or ineffective depending on the specific context (Morris et al., 2018).

In the scientific literature for example, contradictory results are often reported on the association between different coping dimensions and carer psychological morbidity which may stem from using broad classifications (Monteiro et al., 2018). The only published systematic review and meta-analysis on this topic (Li et al., 2012) found that greater use of emotion-focused coping and less use of dysfunctional coping were consistently associated with lower levels of anxiety symptoms in dementia carers. However, for the remaining coping strategies results remained inconsistent and imprecise which was partly explained by the low number of studies.

Although previous results are informative, there are currently no systematic reviews across all caregiving groups which limits any conclusions about the effect of context of caregiving. Given the increasing number of recent studies and interventions supporting carer coping (Cheng et al., 2022), it is also necessary to conduct an updated systematic review. A more up to date and comprehensive understanding of the effect of the different types of coping strategies on carers' anxiety symptoms can better inform the development of future interventions for this group and prevent the onset of anxiety symptoms. In the present review therefore, we aimed to: (a) provide an update of the current literature, (b) systematically review research on the association between coping and anxiety symptoms across all caregiving groups, examining both broad dimensions and individual coping strategies and (c) investigate the effect of several potential sources of heterogeneity on the results.

2 | METHODS

2.1 | Design

We followed current standards reported by preferred reporting items for systematic reviews and meta-analyses (Page et al., 2021) when conducting our systematic review and meta-analysis, and pre-registered our review with the International Prospective Register of Systematic Reviews (PROSPERO id: CRD42022300607).

2.2 | Search methods

We searched several major international Health Sciences databases (PubMed, CINAHL, PsycINFO and LILACS) from June 2022 up to February 2023, using relevant search terms (i.e., anxiety, caregivers and coping; without adding time filtering; see Supporting Information S1). In addition, we scanned reference lists of relevant articles and reviews to ensure no studies were missed.

2.3 | Eligibility criteria

Studies were included in the review if they met the following criteria: (1) original study using an observational design, (2) in family carers of dependent persons (those requiring assistance to perform one or more basic activities of daily living), aged 18 years or older, (3) examining the relationship between at least one coping dimension or strategy and anxiety symptoms, (4) reporting a correlation coefficient or other statistical metric that allowed the calculation of a correlation coefficient. We only included studies published in English, French, Spanish or Portuguese. Study selection was conducted by two reviewers independently (interrater reliability, Kappa: 0.96), with discrepancies resolved by consensus with a third reviewer.

2.4 | Data extraction

From each study we extracted data on: type of design, sampling method, sample size, age and cause of dependency of the care recipient, place of residence of family carers, type of coping strategy studied, scales used to measure anxiety symptoms and coping strategies, and reported effect sizes. Two reviewers extracted data independently (interrater reliability, percent agreement: 95.5%), with discrepancies resolved by consensus with a third reviewer.

When extracting data on coping, we used the following classifications (Figure 1) (Carver, 1997; Lazarus & Folkman, 1984; Moos et al., 1990): (a) problem-focused dimension: active coping, planning, and seeking instrumental support; (b) emotion-focused dimension: acceptance, positive reappraisal, religion, self-control, seeking emotional support, and religion, and (c) dysfunctional coping dimension: behavioural disengagement, avoidance, self-distraction, self-blame, substance use, denial, wishful thinking, and venting. In addition, we extracted data on the following dimensions: (d) second-order active coping (a combination of problem-focused and emotion-focused coping strategies) and (e) social support seeking (a combination of instrumental and emotional support seeking).

2.5 | Quality appraisal

We followed the criteria of Boyle (1998) and Viswanathan et al. (2013) to assess the methodological quality of studies which included: (1) whether the sample was representative through the use of probability sampling (control for selection bias), (2) whether the scales used to measure coping and anxiety symptoms were reliable and valid, through content validity and internal consistency (control for classification bias), and (3) whether studies controlled for confounding bias (including at least one measure of objective burden). For longitudinal studies, we further assessed the following: (4.1) study duration of at least 6 months, and (4.2) follow-up rate of at least 80% of the original sample recruited to the study. Two

reviewers independently assessed quality of studies (intrater reliability, percent agreement: 94.5%), with disagreements resolved by consensus with a third reviewer.

Given that objective burden is considered one of the main determinants of carer anxiety symptoms (Cooper et al., 2007; del-Pino-Casado et al., 2014; Watson et al., 2019), we decided to focus on the following variables when controlling for confounding bias: (a) characteristics of the care recipient (such as functional ability, behavioural problems or cognitive ability) and (b) caregiving intensity (such as hours per day spent caregiving) (Aneshensel et al., 1995; Wolfs et al., 2012). Given the high intercorrelation of objective burden measures (Pinquart & Sörensen, 2003), we considered a study to be at low risk of confounding bias if it controlled for at least one of these variables in the design or analysis (Viswanathan et al., 2013). In the case of statistical adjustment, we considered risk of confounding bias to be minimal if the variation in the outcome before and after adjustment was less than 10% (Rothman et al., 2008).

2.6 | Certainty assessment

We assessed robustness of the results using: (I) inconsistency, (II) imprecision and (III) risk of publication bias, following the Grading of Recommendations Assessment Development and Evaluation guidelines (Atkins et al., 2004). We measured heterogeneity of results across studies using inconsistency, whereas for imprecision (Meader et al., 2014) we took into account the total number of studies included in each meta-analysis (small: <5 studies, medium: 5–10 studies and adequate: >10 studies) and average sample size (low: <100 participants, intermediate: 100–300 participants, and high: >300 participants). Funnel plot and statistical tests were used to assess publication bias.

2.7 | Analyses

To obtain a weighted average of the different correlation coefficients, we conducted a meta-analysis using a random effects model (Hedges & Vevea, 1998), given variation in the population studied (e.g., carer sex, kinship, age and cause of dependency of care recipient). In studies using measures with correlations referring to the same time point, we selected the first correlation to ensure independence of comparisons (Higgins & Thomas, 2020). Statistical measures that could be transformed to correlation coefficients (such as odds ratios, standardized mean differences, etc.) were used to transform data and obtain estimates.

We measured statistical heterogeneity using the *Q*-test (Cochran, 1954), and the degree of inconsistency (I^2) to estimate whether variability between studies was not due to chance (Higgins et al., 2002). To assess publication bias, we used the Egger's test (Egger et al., 1997) alongside funnel plots to determine skewness, and the Trim and Fill method (Duval & Tweedie, 2000) to estimate an effect size in a hypothetical case of no publication bias.

We conducted several sensitivity analyses to examine robustness of the results (Cooper et al., 2019). In a series of subgroup analyses we examined whether there were differences due to: (a) type of study design (cross-sectional or longitudinal), (b) cause of dependency (i.e., dementia, cancer, stroke, mental health disorders) and (c) methodological quality (i.e., control or not of selection bias, classification and confounding). Estimated effect sizes of <0.09 were considered negligible, whereas values of 0.10 to 0.29 small, 0.30 to 0.49 moderate and >0.5 large (Cohen, 1988). We used Comprehensive Meta-Analysis Software 3.3.070 (Biostat, Inc.) for all analyses.

3 | RESULTS

Our search results identified a total of 567 records, with 12 additional records identified through other sources. After removing duplicates, we screened 549 studies, of which 508 were excluded for not meeting inclusion criteria or for being redundant, resulting in 41 studies meeting final inclusion criteria (see Figure 2) (see references in Supporting Information S2).

The characteristics of the 41 studies, reporting on 42 independent samples, are presented in Table 1. Thirty-seven studies were cross-sectional, one was longitudinal using cross-sectional repeated measures, and three were longitudinal using repeated measures. The most frequent cause of dependency was dementia (12 studies) followed by cancer (eight studies), stroke survivors (four studies each), and frail older people and stroke survivors (four studies each).

Table 2 shows the assessment of methodological quality of studies. Only two studies used probability sampling, and a total of 36 studies used reliable and valid scales to measure anxiety symptoms and coping. The remaining five studies used coping questionnaires that were not validated or did not have sufficient internal consistency for at least one strategy. Five studies had a low risk of confounding bias for all coping strategies studied, while eight studies controlled for this bias for at least one coping strategy.

Table 3 shows the results of our meta-analyses. Subgroup analyses are shown in Supporting Information S3. Given the large number of analyses conducted, we only report part of these below.

3.1 | Problem-focused coping

Figure 3 shows the forest plot of the association between problem-focused coping and carer anxiety symptoms, and Figure 4 the associations between the different individual problem-focused coping strategies and carer anxiety.

- Problem-focused coping as a dimension

We found no statistical significance between problem-focused coping and anxiety symptoms, (\bar{r} [combined correlation coefficient] = -0.027 ; 95% CI [95% confidence interval] = $-0.112, 0.059$; 18 studies; $N = 1940$), with statistical heterogeneity overall low

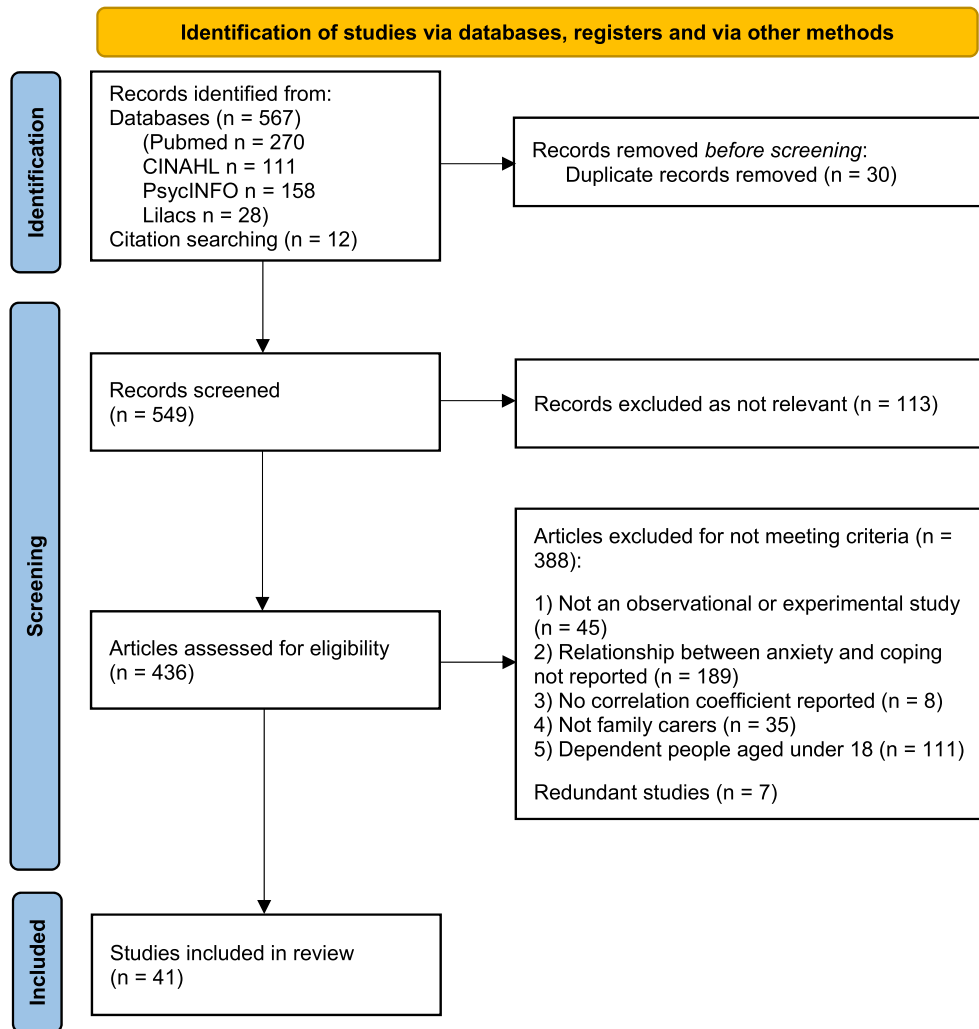


FIGURE 2 Preferred Reporting Items for Systematic Reviews and Meta-Analysis flow diagram of study selection.

($Q = 20.13$; df [degrees of freedom] = 17; $p = 0.27$; $I^2 = 15.6\%$). These results were not very robust, given the high variation when removing one study at a time in sensitivity analysis (70.4%).

Regarding publication bias, the funnel plot showed some asymmetry (see Supporting Information S4: Figure 1), with the Egger's test yielding a p -value of 0.81; the Trim & Fill method corrected the combined estimate ($\bar{r} = -0.040$), which varied by 48.2% from the observed combined estimate.

In subgroup analysis, we found that greater use of problem-focused coping was statistically correlated with fewer anxiety symptoms in carers of frail older people ($\bar{r} = -0.133$; 95% CI = $-0.226, -0.037$; three studies; $N = 422$), and more anxiety symptoms in carers of people surviving cancer ($\bar{r} = 0.180$; 95% CI = $0.003, 0.346$; two studies; $N = 126$).

- Problem-focused coping as individual strategies

We found no significant association between active first-order coping and carer anxiety symptoms ($\bar{r} = -0.063$; 95% CI = $-0.182, 0.058$; eight studies; $N = 946$), with no heterogeneity across studies

($Q = 6.44$; $gf = 7$; $p = 0.49$; $I^2 = 0\%$). The funnel plot (Supporting Information S4: Figure 2) was asymmetric, with an Egger's p -value of 0.75 and a variation of 84.1% when correcting using the Trim and Fill method (estimated $\bar{r} = -0.010$). In our sensitivity analysis, we found a variation of 69.8% when eliminating one study at a time. In subgroup analysis, we found a significant association when sampling was probabilistic ($\bar{r} = -0.194$; 95% CI = $-0.305, -0.078$; two studies; $N = 281$), confounding bias was controlled for ($\bar{r} = -0.138$; 95% CI = $-0.239, -0.034$; three studies; $N = 479$), and when care recipients were frail older people ($\bar{r} = -0.138$; 95% CI = $-0.239, -0.034$; three studies; $N = 479$).

We found no significant association between instrumental support seeking and anxiety symptoms ($\bar{r} = 0.032$; 95% CI = $-0.022, 0.085$; nine studies; $N = 1606$; $Q = 8.04$; $gf = 8$; $p = 0.43$; $I^2 = 0.5\%$). Risk of publication bias was low (Supporting Information S4: Figure 3; Egger test $p = 0.49$; Trim and Fill method estimated $\bar{r} = 0.032$; not variation), and removing one study at a time yielded a variation of 59.4%. We found no differences in subgroup analysis.

There was no association between planning and carer anxiety symptoms ($\bar{r} = 0.064$; 95% CI = $-0.043, 0.169$; 11 studies; $N = 1455$),

TABLE 1 Descriptive information for the studies included in the systematic review.

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales		
						Anxiety symptoms	Coping	
Ali and Kausar (2016)	Cross-sectional	90	Lahore, Pakistan	Stroke	Care recipients: Mean [M]: 61.6 ± 17.4	Depression Anxiety Stress Scale - 42 items (DASS - 42)	Coping Strategies Questionnaire (CSQ)	Problem-focused (Not Significant (NS)); Religion (NS); Avoidance (NS); Self-distraction (NS)
Atila and Ozsaker (2022)	Cross-sectional	74	Turkey	Heart failure	Carers: M: 48.3 ± 10.2	Depression Anxiety Stress Scale - 21 items (DASS - 21)	Coping Styles Scale (CSS)	Social support seeking (NS)
Borstelmann et al. (2020)	Cross-sectional	289	United States (US)	Cancer	Care recipients: Range [R]: 22-40 M: 36.0	The Hospital Anxiety and Depression Scale (HADS)	Brief COPE	Dysfunctional coping (positive relation (+))
Cedillo-Torres et al. (2015)	Cross-sectional	60	Mexico	Bedridden dependants for different reasons (cancer, stroke, COPD and other health problems)	Care recipients: R: 26-102	Beck Anxiety Inventory (BAI)	Coping Strategies Inventory (CSI)	Problem-focused (+); Positive reappraisal (NS); Emotional support seeking (NS); Self-blame (+); Venting (NS); Wishful thinking (+); Avoidance (NS)
Claar et al. (2005)	Cross-sectional	82	North Carolina, US	Lung transplant candidates	Care recipients: >18	State - Trait Anxiety Inventory - State Form (STAI)	Medical Coping Modes Questionnaire Revised (MCMQ - R)	Instrumental support seeking (NS); Emotional support seeking (NS); Avoidance (+)
Cooper et al. (2006)	Cross-sectional	126	London and South East England, United Kingdom (UK)	Dementia	Care recipients: >50	HADS	Brief COPE	Problem-focused (+); Emotion-focused (NS); Dysfunctional (+)
Cooper et al. (2010)	Cross-sectional	220	London and Essex, UK	Dementia	Care recipients: R: 58-99 M: 81.6 ± 7.8	HADS	Brief COPE	Dysfunctional (+)
Davis (1998)	Cross-sectional	47	Kingston, Canada	Stroke	Care recipients: R: 44-96 M: 68.3 ± 10.6	STAI	Coping Responses Inventory (CRI)	Dysfunctional (+)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales		
						Anxiety symptoms	Coping	Coping
Del-Pino-Casado et al. (2014)	Cross-sectional	140	Jaén, Spain	Frail older people	Care recipients: M: 78.28 ± 8.24	Hamilton Anxiety Rating Scale (HARS)	Brief COPE	Problem-focused (NS); Emotional-focused (+); Dysfunctional (+)
Del-Pino-Casado et al. (2019)	Repeated measures (RM) longitudinal	200	Jaén, Spain	Dependent people	Care recipients: M: 82 ± 9.7	Goldberg test	Brief COPE	Problem-focused (Negative Relation [−]); Active first-order (−); Planning (NS); Instrumental support seeking (NS); Emotion-focused (−); Positive reappraisal (−); Acceptance (−); Humour (NS); Religion (NS); Emotional support seeking (−); Dysfunctional (+); Self-distraction (−); Denial (+); Behavioural disengagement (NS); Self-blame (+)
Dempster et al. (2011)	Cross-sectional	382	UK	Cancer	Carers (94% spouses or partner): M: 62 ± 10.91	HADS	Cancer Coping Questionnaire (CCQ)	Planning (+); Positive reappraisal (NS); Self-distraction (+)
Dennison (2001)	Cross-sectional	39	US	Amyotrophic lateral sclerosis	Carers: M: 49.38 ± 15.03	Global Severity Index (GSI)	Ways of Coping Scale (WCS)	Avoidance (+)

(Continues)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales		
						Anxiety symptoms	Coping	Coping
García-Alberca et al. (2012)	Cross-sectional	80	Malaga and Middle Spain	Dementia	Care recipients: M: 77.34 ± 5.74	STAI	CSI	Active second-order (-); Dysfunctional (+)
Goetzinger et al. (2012)	Cross-sectional	621	North Carolina, US	Potential candidates for lung, liver, heart or kidney transplantation	Care recipients: >18 Carers: M: 51.24 ± 11.4	STAI	MCMQ - R	Instrumental support seeking (NS); Emotional support seeking (NS); Avoidance (+)
Grant (2022)	Cross-sectional	99	Worldwide	Dementia	R: 40-98 M: 73.98 (12.41)	HADS	Brief-COPE	Problem-focused (-); Emotion-focused (-); Dysfunctional (+)
Guardia-Canales (2011)	Cross-sectional	66	Lima, Peru	Schizophrenia	Care recipients: R: 19-71 M: 32.61 ± 13.46	STAI	COPE	Active first-order (NS); Planning (NS); Instrumental support seeking (NS); Emotional support seeking (NS); Positive reappraisal (NS); Acceptance (NS); Religion (NS); Dysfunctional (+); Denial (+); Venting (+); Behaviour disengagement (+); Mental disengagement (+)
Guedes and Pereira (2013)	Cross-sectional	50	Northern Portugal	Functional dependent people	Care recipients: >18 Carers: M: 56	DASS - 21	Carer's assessment of managing index	Problem-focused (-); Emotion-focused (-)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales	
						Anxiety symptoms	Coping
Jones et al. (2015)	Cross-sectional	76	South Australia	Cancer	>69	DASS - 21	Brief COPE Problem-focused (NS); Emotion-focused (NS); Dysfunctional (+)
Lee and Song (2022)	Cross-sectional	131	South Korea	Stroke	Care recipients: M: 67.76 ± 10.61	The Korean version of the Beck Anxiety Inventory (K - BAI)	The Ways of Coping Questionnaire (WCQ) Problem-focused (+)
León-Campos et al. (2018)	Cross-sectional	163	Valparaiso, Chile	Dementia	Care recipients: M: 80.27 ± 7.9	HADS	Brief COPE Problem-focused (NS); Emotion-focused (NS); Dysfunctional (NS); Denial (+)
López-Martínez (2019)	RM longitudinal	81	Jaén, Spain	Frail older people	Care recipients: M: 85.2	Goldberg test	Brief COPE Problem-focused (NS); Active first-order (NS); Planning (NS); Instrumental support seeking (NS); Emotion-focused (NS); Positive reappraisal (NS); Acceptance (NS); Humour (NS); Religion (NS); Emotional support seeking (NS); Dysfunctional (+); Self-distraction (NS); Denial (NS); Venting (+); Substance use (+); Behavioural disengagement (NS); Self-blame (+) (Continues)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales	
						Anxiety symptoms	Coping
MacDonald (2022)	Cross-sectional	43	California, US	Cancer	Care recipients: M: 66.74 ± 10.33	Patient Health Questionnaire - 4 (PHQ - 4)	COPE Acceptance (NS); Active first-order (NS); Positive reappraisal (NS); Avoidance (+)
Murfield et al. (2020)	Cross-sectional	141	Australia	Frail older people	Care recipients: >65 M: 81 ± 9	DASS - 21	Brief COPE Problem-focused (NS); Emotion-focused (NS)
Muscat and Scerri (2018)	Cross-sectional	60	Malta	Dementia	Care recipients: R: 46-92 M: 77.5	HADS	Brief COPE Planning (+); Emotion-focused (-); Acceptance (-); Positive reappraisal (-); Dysfunctional (+); Self-blame (+); Self-distraction (-); Denial (+); Behavioural disengagement (+)
Neundorfer (1991)	Cross-sectional	60	Illinois, US	Dementia	Care recipients: R: 61-90 M: 74 ± 6.4	Brief Symptom Inventory (BSI)	Ways of Coping Checklist (WCCL) Social support seeking (+); Planning (+); Positive reappraisal (NS); Avoidance (+)
O'Dwyer et al. (2016)	Cross-sectional	566	Australia and north America	Dementia	Carers: M: 63	Geriatric Anxiety Inventory (GAI)	Brief COPE Dysfunctional (+)
Pakenham and Bursnall (2006)	Cross-sectional	48	Queensland, Australia	Multiple sclerosis	Carers children: R: 10-25 M: 15.6 ± 3.97	Brief Symptom Inventory (BSI)	28-item Coping Inventory (COPE, WCQ, Coping Scale, Response Stress Questionnaire) Social support seeking (NS); Problem-focused (NS); Acceptance (-); Denial (NS); Wishful thinking (+)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales		
						Anxiety symptoms	Coping	
Parveen et al. (2013)	Cross-sectional	73	British south Asians, UK	Dependent people for different reasons (cancer, stroke, dementia, Parkinson and other health problems)	Care recipients: >18 Carers: M: 40.91 ± 16.5	HADS	Brief COPE	Active first-order (NS); Planning (NS); Instrumental support seeking (NS); Emotional support seeking (NS); Positive reappraisal (NS); Humour (NS); Acceptance (NS); Religion (NS); Denial (+); Self-distraction (NS); Behaviour disengagement (NS); Venting (+); Substance use (+); Self-blame (+)
		162	White British, UK		Care recipients: >18 Carers: M: 63.78 ± 8.51			Active first-order (NS); Planning (NS); Instrumental support seeking (NS); Emotional support seeking (NS); Positive reappraisal (NS); Humour (NS); Acceptance (NS); Religion (NS); Denial (+); Self-distraction (NS); Behaviour disengagement (NS); Venting (+); Substance use (+); Self-blame (+)

(Continues)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales		
						Anxiety symptoms	Coping	Coping
Parveen et al. (2014)	RM longitudinal	123	England and Wales	Dependent people for different reasons (Parkinson, multiple sclerosis, dementia, stroke, cancer and other health problems)	Care recipients: >18 Carers: M: 61.16 ± 13.72	HADS	Brief COPE	Active first-order (+); Planning (+); Instrumental support seeking (+); Emotional support seeking (NS); Positive reappraisal (NS); Humour (NS); Acceptance (NS); Religion (+); Denial (+); Self-distraction (+); Behavioural disengagement (NS); Venting (+); Substance use (NS); Self-blame (+)
Pérez-Cruz et al. (2019)	Cross-sectional	198	Jaén, Spain	Frail older people	Care recipients: M: 78.1 ± 8.1	HARS	Brief COPE	Active first-order (NS); Planning (NS); Instrumental support seeking (NS); Emotional support seeking (NS); Positive reappraisal (NS); Acceptance (-); Humour (NS); Religion (NS); Self-distraction (+); Venting (NS); denial (+); Substance use (NS); Self-blame (NS); Behavioural disengagement (NS)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales		
						Anxiety symptoms	Coping	Coping
Pérez-Ordóñez et al. (2016)	Cross-sectional	50	Granada, Spain	Cancer	Care recipients: M: 72.2 ± 14.3	Goldberg test	Brief COPE	Problem-focused (NS); Emotion-focused (NS); Dysfunctional (NS)
Pruchno and Resch (1989)	Cross-sectional	315	Philadelphia, US	Dementia	Carers (spouses): R: 45–94 M: 70.2	Hopkins Symptom Checklist (HSC)	34 items – Kiyak	Problem-focused (NS); Acceptance (–); Wishful thinking (+)
Rodrigue and Hoffmann (1994)	Cross-sectional	77	Florida, US	Cancer	Care recipients: M: 42.3	Symptom Checklist 90 items revised (SCL-90-R)	MCMQ	Active second-order (NS); Dysfunctional (NS)
Romero-Moreno et al. (2016)	Cross-sectional	256	Madrid, Spain	Dementia	Care recipients: R: 55–101 M: 79 ± 9	Tension-anxiety subscale from the Profile of Mood States (POMS)	Acceptance and Action Questionnaire (AAQ)	Avoidance (+)
Sanders (1999)	Cross-sectional	43	Oklahoma, US	Dementia	Care recipients: R: 49–88 M: 72.8 ± 7.2	SCL-90-R	Revised Ways of Coping Checklist (WCCL-R)	Problem-focused (NS)
Serres et al. (2017)	Cross-sectional	79	Marseilles, France	Major depressive disorder	Care recipients: R: 18–64 M: 41.6 ± 14.8	STAI	Brief COPE	Problem-focused (–); Emotion-focused (–); Dysfunctional (+)
Sinha (1996)	Cross-sectional	48	Cincinnati, US	Dementia	Care recipients: R: 45–94 M: 74.89 ± 9.45	BSI	CSI	Active second-order (NS); Problem-focused (NS); Positive reappraisal (NS); Venting (NS); Emotional support seeking (NS); Avoidance (NS); Wishful thinking (+); Self-blame (NS); Dysfunctional (+)

(Continues)

TABLE 1 (Continued)

Author-year	Design	N	Carers' residence	Cause of dependency	Care recipients' age/carers' age	Scales	
						Anxiety symptoms	Coping
Tan et al. (2021)	Cross-sectional	99	Nanjing, China	Cancer	Carers: R: 18–69 M: 41.83 ± 11.2	Zung's Self-Rating Anxiety Scale	Coping strategy indicator Dysfunctional (+)
Valadez-Roque et al. (2017)	Cross-sectional	100	Mexico City	Stroke	Care recipients: M: 62	BAI	Multidimensional and multisituational scale of styles of coping with problems Active second-order (-); Venting (+); Avoidance (+)
Vedhara et al. (2000)	RM cross-sectional	50	Bristol, England	Dementia	Carers (spouses): M: 72 ± 8	Savage Personality Screening Scale (SPSS - 20)	WCS Planning (NS); Social support seeking (NS); Positive reappraisal (NS); Avoidance (+)
Zhu et al. (2022)	Cross-sectional	385	Changsha, China	Cancer	Care recipients: >18	HADS	Simplified Coping Style Questionnaire (SCSQ) Active second-order (NS); Dysfunctional (NS)

Abbreviation: COPD, chronic obstructive pulmonary disease.

with no statistical heterogeneity between studies ($Q = 8.78$; $gf = 10$; $p = 0.55$; $I^2 = 0\%$), and risk of publication bias low (Supporting Information S4: Figure 4; Egger test $p = 0.88$; Trim and Fill method estimated $\bar{r} = 0.064$; no variation). In sensitivity analysis, we obtained a variation of 39.1% when removing one study at a time. In subgroup analysis, more use of planning was associated with higher anxiety symptoms in carers of people with dementia ($\bar{r} = 0.186$; 95% CI = 0.034, 0.330; three studies; $N = 170$).

3.2 | Emotion-focused coping

Results of the analyses of the association between carers' anxiety symptoms and emotion-focused coping as well as individual coping strategies for this dimension are presented in Figures 3 and 4, respectively.

- Emotion-focused coping as a dimension

We found a significant association between emotion-focused coping and carer anxiety symptoms ($\bar{r} = -0.137$; 95% CI = -0.252 , -0.019 ; 12 studies; $N = 1265$). Heterogeneity was low ($Q = 11.94$; $gf = 11$; $p = 0.37$; $I^2 = 7.9\%$) with some publication bias evident in the funnel plot (Supporting Information S4: Figure 5). The Egger's test p -value was 0.43 and variation was 21.9% between observed and estimated combined effect size ($\bar{r} = -0.107$), after Trim and Fill correction. Sensitivity analysis showed a variation of 24.8% when eliminating one study at a time. No differences were found in subgroup analyses.

- Emotion-focused coping as individual strategies

Higher levels of acceptance were significantly associated with fewer anxiety symptoms ($\bar{r} = -0.114$; 95% CI = -0.187 , -0.040 ; 11 studies; $N = 1369$), with low heterogeneity across studies ($Q = 10.74$; $gf = 10$; $p = 0.38$; $I^2 = 6.9\%$). Despite some asymmetry in the funnel plot (Supporting Information S4: Figure 6), the p -value of the Egger's test was 0.42 and there was no variation when performing the Trim and Fill method (estimated $\bar{r} = -0.114$). The robustness of this result was weak, varying by 21.1% after eliminating one study at a time. We found no differences in subgroup analyses.

Positive reappraisal was not statistically associated with carer anxiety symptoms ($\bar{r} = -0.088$; 95% CI = -0.178 , 0.002 ; 14 studies; $N = 1606$; $Q = 11.71$; $gf = 13$; $p = 0.55$; $I^2 = 0\%$). Risk of publication bias was low despite an asymmetric funnel plot (Supporting Information S4: Figure 7; Egger test p -value = 0.26; Trim and Fill method estimated $\bar{r} = -0.088$; variation of 0%). We obtained a variation of 36.4% in our sensitivity analysis; however, in subgroup analysis, when sampling was probabilistic, higher use of positive reappraisal was associated with fewer anxiety symptoms ($\bar{r} = -0.226$; 95% CI = -0.423 , -0.008 ; two studies; $N = 281$).

TABLE 2 Quality assessment of the studies included in the systematic review.

	C1	C2	C3	C4.1	C4.2
Ali and Kausar (2016)	-	+ Religion/-	+	N/A	N/A
Atila and Ozsaker (2022)	-	+	-	N/A	N/A
Borstelmann et al. (2020)	-	+	-	N/A	N/A
Cedillo-Torres et al. (2015)	-	+/- Emotional support	-	N/A	N/A
Claar et al. (2005)	-	+	+/- Instrumental support	N/A	N/A
Cooper et al. (2006)	-	+	?	N/A	N/A
Cooper et al. (2010)	-	+	+	N/A	N/A
Davis (1998)	-	+	-	N/A	N/A
Del-Pino-Casado et al. (2014)	-	+	+ Dysfunctional/-	N/A	N/A
Del-Pino-Casado et al. (2019)	+	+	+	+	+
Dempster et al. (2011)	-	+	-	N/A	N/A
Dennison (2001)	-	+	-	N/A	N/A
García-Alberca et al. (2012)	-	+	-	N/A	N/A
Goetzinger et al. (2012)	-	+	-	N/A	N/A
Grant (2022)	-	+	-	N/A	N/A
Guardia-Canales (2011)	-	+	-	N/A	N/A
Guedes et Pereira (2013)	-	+	-	N/A	N/A
Jones et al. (2015)	-	+	-	N/A	N/A
Lee and Song (2022)	-	+	-	N/A	N/A
León-Campos et al. (2018)	-	+	-	N/A	N/A
López-Martínez (2019)	+	+	+/- Problem-focused, planning, acceptance, humour, religion, instrumental, behaviour disengagement	+	+
MacDonald (2022)	-	+	-	N/A	N/A
Murfield et al. (2020)	-	+	-	N/A	N/A
Muscat and Scerri (2018)	-	+	-	N/A	N/A
Neundorfer (1991)	-	+	+ Avoidance, planning/-	N/A	N/A
O'Dwyer et al. (2016)	-	+	+	N/A	N/A
Pakenham and Bursnall (2006)	-	?	-	N/A	N/A
Parveen et al. (2013)	-	+	-	N/A	N/A
Parveen et al. (2014)	-	+	-	-	+
Pérez-Cruz et al. (2019)	-	+/- Substance use	+/- Support, religion, behaviour disengagement	N/A	N/A
Pérez-Ordóñez et al. (2016)	-	+	+/- Problem-focused	N/A	N/A
Pruchno and Resch (1989)	-	+	+/- Problem-focused	N/A	N/A
Rodrigue and Hoffman (1994)	-	+	-	N/A	N/A
Romero-Moreno et al. (2016)	-	-	+	N/A	N/A
Sanders (1999)	-	+	-	N/A	N/A
Serres et al. (2017)	-	+	-	N/A	N/A
Sinha (1996)	-	+	-	N/A	N/A
Tan et al. (2021)	-	+	-	N/A	N/A
Valadez-Roque et al. (2017)	-	+	-	N/A	N/A

(Continues)

TABLE 2 (Continued)

	C1	C2	C3	C4.1	C4.2
Vedhara et al. (2000)	-	+	-	+	+
Zhu et al. (2022)	-	+	-	N/A	N/A

Note: (-) Risk of bias; (+) Low risk of bias; (?) Not enough information to evaluate. Ratings apply to 'all outcomes' unless specified otherwise; for example, in some columns the sign is followed by the specific outcome/coping variable (i.e., +_{dysfunctional}).

Abbreviations: C1, control of selection bias; C2, control for classifications bias; C3, control for confounding bias; C4.1, follow-up of more than 6 months; C4.2, initial sample integrity remains >80%; N/A, not applicable.

There was no significant association between carer anxiety and humour ($\bar{r} = -0.048$; 95% CI = $-0.116, 0.020$; six studies; $N = 837$), religion ($\bar{r} = 0.053$; 95% CI = $-0.029, 0.133$; eight studies; $N = 993$) and seeking emotional support ($\bar{r} = 0.028$; 95% CI = $-0.059, 0.115$; 11 studies; $N = 1714$). However, a positive association was found between seeking emotional support and anxiety in cross-sectional studies ($\bar{r} = 0.075$; 95% CI = $0.015, 0.135$; eight studies; $N = 1351$).

3.3 | Active coping as a dimension

Second-order active coping, consisting of problem-focused and emotion-focused coping strategies, was not associated with carer anxiety symptoms ($\bar{r} = -0.157$; 95% CI = $-0.314, 0.009$; five studies; $N = 690$). These results were not robust (variation of 57.3% when removing one study at a time), despite low heterogeneity across studies ($Q = 4.23$; $gf = 4$; $p = 0.38$; $I^2 = 5.5\%$). The funnel plot was asymmetric (Supporting Information S4: Figure 8) with a p -value in Egger's test of 0.45 and a variation of 16.6% when correcting with the Trim and Fill method (estimated $\bar{r} = -0.183$). There were no differences in subgroup analysis.

3.4 | Social support seeking as a dimension

Seeking social support was not statistically associated with anxiety symptoms ($\bar{r} = -0.038$; 95% CI = $-0.253, 0.323$; four studies; $N = 232$); we found no heterogeneity between studies ($Q = 2.79$; $gf = 3$; $p = 0.43$; $I^2 = 0\%$), and removing one study at a time showed a variation of 323.7%. There was evidence of an asymmetric funnel plot (Supporting Information S4: Figure 9); this was in line with the results of the Egger's test of 0.68; there was no variation when correcting by the Trim and Fill method (estimated $\bar{r} = 0.038$).

3.5 | Dysfunctional coping

Results of the association between carer anxiety symptoms and dysfunctional coping are presented in Figures 3 and 5.

- Dysfunctional coping as a dimension

Higher levels of anxiety symptoms were associated with more use of dysfunctional coping ($\bar{r} = 0.362$; 95% CI = $0.284, 0.435$; 20

studies; $N = 2951$). These results were robust (with a variation of 5% when removing one study at a time) and no heterogeneity present ($Q = 12.58$; $gf = 19$; $p = 0.86$; $I^2 = 0\%$). Despite some asymmetry in the funnel plot (Supporting Information S4: Figure 10), we found an Egger's p of 0.41; the Trim and Fill method showed minor variation (estimated $\bar{r} = 0.337$; variation of 6.9%). There were no differences in subgroup analysis.

- Dysfunctional coping as individual strategies

We found that stress avoidance was significantly associated with higher anxiety ($\bar{r} = 0.361$; 95% CI = $0.236, 0.474$; 11 studies; $N = 1449$). Heterogeneity across studies was low ($Q = 12.67$; $gf = 10$; $p = 0.24$; $I^2 = 21.1\%$), and results robust (variation of 8.9% when removing one study at a time). We obtained an asymmetric funnel plot (Supporting Information S4: Figure 11) but with a p -value in the Egger's test of 0.91; there was no variation in the Trim and Fill correction (estimated $\bar{r} = 0.361$), and no differences in subgroup analysis.

Denial was also associated with higher anxiety ($\bar{r} = 0.247$; 95% CI = $0.192, 0.300$; 10 studies; $N = 1174$) with no heterogeneity between studies ($Q = 7.27$; $gf = 9$; $p = 0.61$; $I^2 = 0\%$). This result was robust (with a variation of 5.3% in the sensitivity analysis). Risk of publication bias was low (symmetrical funnel plot in Supporting Information S4: Figure 12; p Egger test = 0.12; Trim and Fill method = estimated $\bar{r} = 0.247$, indicating no variation), and there were no differences in subgroup analysis.

Increased use of wishful thinking ($\bar{r} = 0.362$; 95% CI = $0.280, 0.439$; four studies; $N = 471$), self-blame ($\bar{r} = 0.299$; 95% CI = $0.201, 0.391$; nine studies; $N = 1005$), venting ($\bar{r} = 0.254$; 95% CI = $0.153, 0.349$; nine studies; $N = 911$), substance use ($\bar{r} = 0.168$; 95% CI = $0.091, 0.243$; five studies; $N = 637$) and behaviour disengagement ($\bar{r} = 0.172$; 95% CI = $0.028, 0.310$; eight studies; $N = 963$) were also associated with higher anxiety symptoms, whereas self-distraction ($\bar{r} = 0.094$; 95% CI = $-0.107, 0.288$; nine studies; $N = 1369$) was not.

4 | DISCUSSION

This systematic review and meta-analysis is the first to investigate the association between anxiety symptoms in family carers of dependent people. We were able to analyse both several coping dimensions as well as individual coping strategies across caregiving

TABLE 3 Results of the meta-analysis.

Coping	k	N	N/k	r	95% CI		Heterogeneity			Inconsistency		Sensitivity		Publication bias		Trim and fill Estimate	% Var
					Lower limit	Upper limit	Q (df)	p	I ²	One study removed (% var)	Funnel plot	p for Egger test					
Problem-focused coping	18	1940	107.78	-0.027	-0.112	0.059	20.13 (17)	0.27	15.6%	70.4%	Asymmetric	0.81	-0.04	48.2%			
Active coping	8	946	118.25	-0.063	-0.182	0.058	6.44 (7)	0.49	0	69.8%	Asymmetric	0.75	-0.010	84.1%			
Instrumental support seeking	9	1606	178.44	0.032	-0.022	0.085	8.04 (8)	0.43	0.5%	59.4%	Symmetric	0.49	0.032	0%			
Planning	11	1455	132.27	0.064	-0.043	0.169	8.78 (10)	0.55	0	39.1%	Symmetric	0.88	0.064	0%			
Emotion-focused coping	12	1265	105.42	-0.137*	-0.252	-0.019	11.94 (11)	0.37	7.9%	24.8%	Asymmetric	0.43	-0.107	21.9%			
Positive reappraisal	14	1606	114.71	-0.088	-0.178	0.002	11.71 (13)	0.55	0	36.4%	Asymmetric	0.26	-0.088	0%			
Acceptance	11	1369	124.5	-0.114*	-0.187	-0.040	10.74 (10)	0.38	6.9	21.1%	Asymmetric	0.42	-0.114	0%			
Humour	6	837	139.5	-0.048	-0.116	0.020	3.46 (5)	0.63	0	43.8%	Asymmetric	0.16	-0.048	0%			
Religion	8	993	124.13	0.053	-0.029	0.133	7.91 (7)	0.34	11.5%	41.5%	Asymmetric	0.67	0.079	49.1%			
Emotional support seeking	11	1714	155.82	0.028	-0.059	0.115	9.46 (10)	0.49	0	153.6%	Asymmetric	0.84	0.028	0%			
Active coping (dimension)	5	690	138	-0.157	-0.314	0.009	4.23 (4)	0.38	5.5%	57.3%	Asymmetric	0.45	-0.183	16.6%			
Social support seeking	4	232	58	0.038	-0.253	0.323	2.79 (3)	0.43	0	323.7%	Asymmetric	0.68	0.038	0%			
Dysfunctional coping	20	2951	147.55	0.362*	0.284	0.435	12.58 (19)	0.86	0	5%	Asymmetric	0.41	0.337	6.9%			
Avoidance	11	1449	131.7	0.361*	0.236	0.474	12.67 (10)	0.24	21.1%	8.9%	Asymmetric	0.91	0.361	0%			
Denial	10	1174	117.4	0.247*	0.192	0.3	7.27 (9)	0.61	0	5.3%	Symmetric	0.12	0.247	0%			
Wishful thinking	4	471	117.75	0.362*	0.28	0.439	0.65 (3)	0.88	0	12.7%	Symmetric	0.037	0.346	4.4%			
Self-blame	9	1005	111.67	0.299*	0.201	0.391	8.07 (8)	0.43	0.8%	10%	Asymmetric	0.01	0.247	17.4%			
Venting	9	911	101.22	0.254*	0.153	0.349	8.26 (8)	0.41	3.2%	12.6%	Asymmetric	0.87	0.210	17.3%			
Substance use	5	637	127.4	0.168*	0.091	0.243	3.66 (4)	0.45	0	26.2%	Asymmetric	0.15	0.141	16.1%			
Behaviour disengagement	8	963	120.38	0.172*	0.028	0.310	8.05 (7)	0.33	13.1%	34.3%	Asymmetric	0.18	0.114	33.7%			
Self-distraction	9	1369	152.11	0.094	-0.107	0.288	6.66 (8)	0.57	0	56.4%	Asymmetric	0.04	0.146	55.3%			

Note: Statistically significant findings are presented in bold.
 Abbreviations: K, number of included studies; N, overall sample size; r, combined correlation coefficient.
 *Statistically significant.

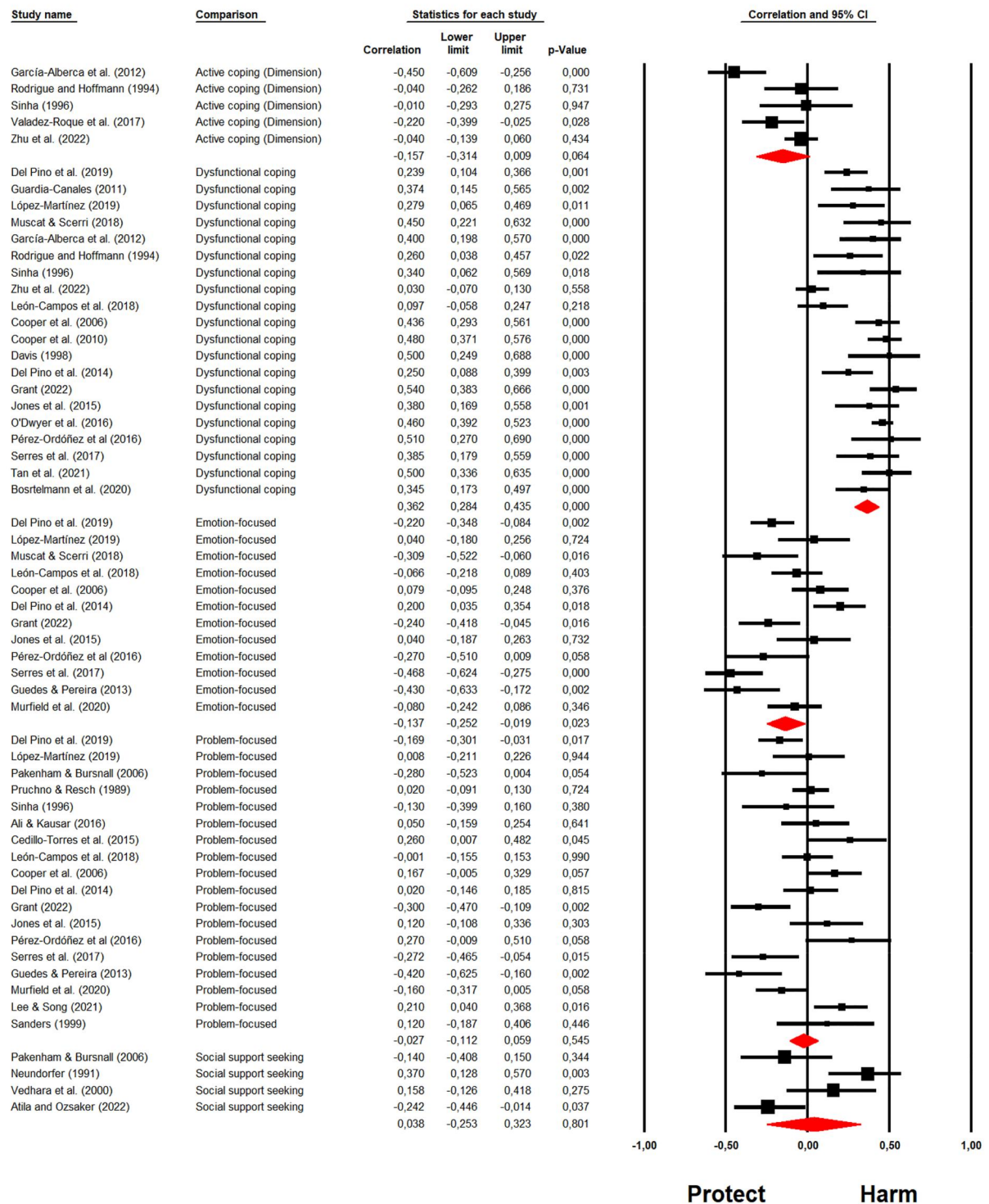


FIGURE 3 Forest Plot of dimensions of coping and anxiety symptoms.

groups summarizing findings of all studies conducted to date. Our review is also the first to systematically examine the effect of several sources of heterogeneity on the results which strengthens our understanding of how different coping strategies influence anxiety symptoms in family carers.

4.1 | Problem-focused coping

Interestingly, we found no significant association between the dimension of problem-focused coping and carer anxiety symptoms, combining all 18 studies conducted to date, results similar to those

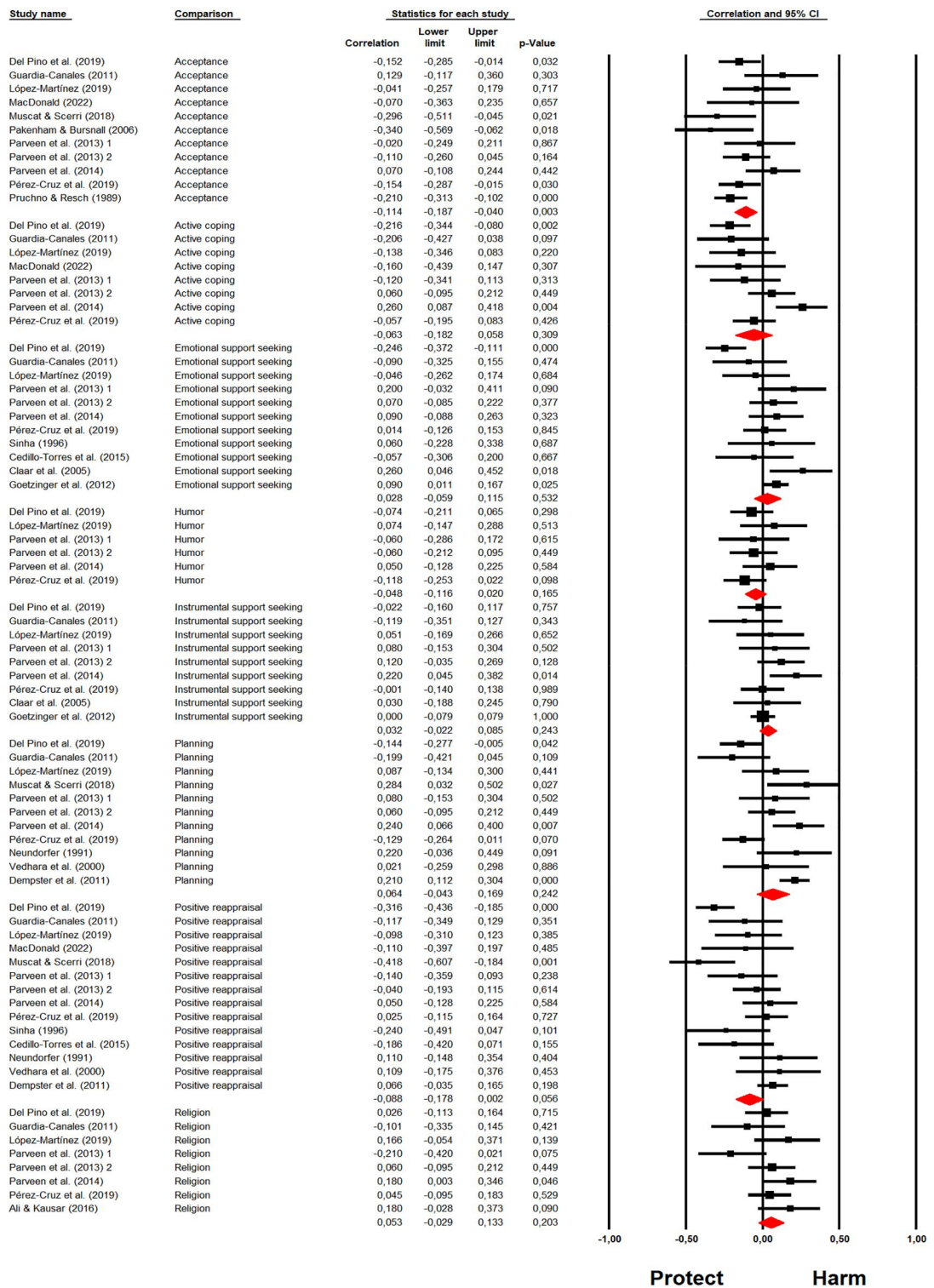


FIGURE 4 Forest Plot of active coping strategies and anxiety symptoms.

of Li et al. (2012) by further extending these results to incorporate recent published studies. An important contribution of our study however is that we synthesized results across all caregiving groups and conducted several additional analyses to investigate sources of

heterogeneity. When analysing our results by subgroups we found that type of care dependency influenced results. We found that this form of coping was a useful strategy in terms of its association with fewer anxiety symptoms only in carers of frail older

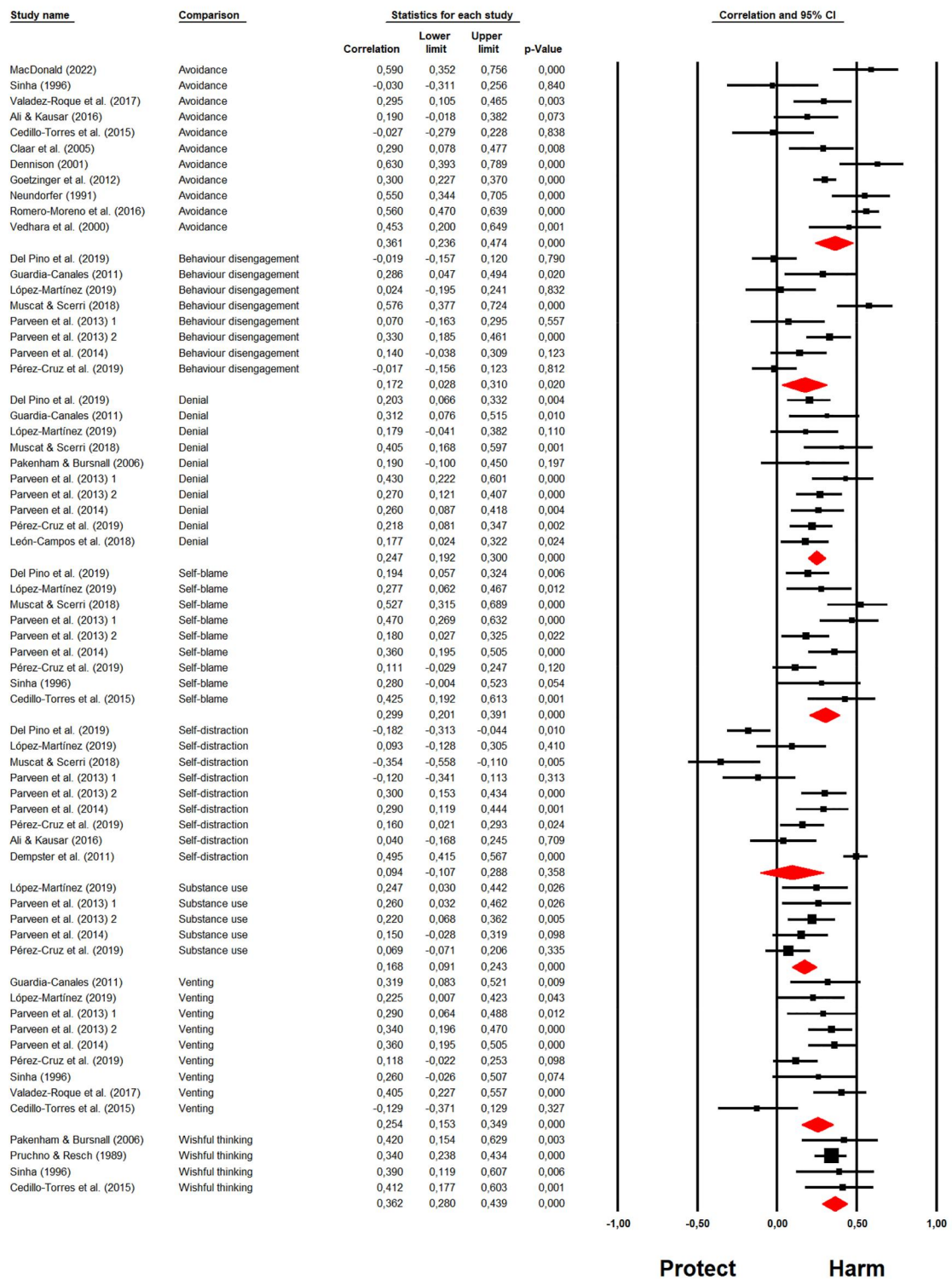


FIGURE 5 Forest Plot of dysfunctional coping strategies and anxiety symptoms.

people. Similarly, to previous theories arguing for specificity of context (Pearlin et al., 1990) we found that this coping mechanism exerts an effect on carer anxiety that is quite specific to frailty.

Overall, our results are important as they indicate that problem-focused coping may be a protective and effective coping mechanism only in some caregiving groups. Use of problem-focused coping appears to be most useful in the context of caring for someone with

physical dependence but not when caring for someone with cognitive impairment or other type of care dependency. These findings support the hypothesis that problem-focused coping may be a protective and effective coping mechanism in the context of frailty, where physical dependence is more likely to occur than cognitive impairment or behavioural problems (Pinquart & Sörensen, 2003), and therefore more effective in situations that are controllable (Wartella et al., 2009). These results are in line with a recent systematic review reporting similar associations between problem-focused coping and carer depressive symptoms Muñoz-Cruz et al. (2023) indicating overall specific effects in terms of caregiving context.

On the other hand, we found that the use of this coping dimension was associated with more anxiety symptoms in carers of cancer survivors. This may be explained by the fact that when caring for people with cancer, use of this form of coping may generate anxiety as opposed to being protective given the uncertainty of the future or a terminal phase of care dependency being imminent (Groves et al., 2005).

Therefore, use of problem-focused coping, theoretically considered to be protective of anxiety (Lambert et al., 2021), may be more or less effective depending on the cause of dependency of care and condition (Wartella et al., 2009). Despite being informative however, our results should be interpreted with caution given that the number of studies included in our meta-analyses comparing different caregiving groups was generally small.

As part of our review, we were also able to examine the association between anxiety symptoms and several individual problem-focused coping strategies such as first-order active coping, planning and seeking instrumental support. For all of these strategies there was no overall significant association with carer anxiety symptoms. However, when analysing our results by subgroups, we found that greater use of first-order active coping was associated with fewer anxiety symptoms, in studies controlling for confounding biases, in carers of frail older people, and in studies where sampling was probabilistic. This finding highlights the importance of controlling for objective burden variables as sources of confounding when studying anxiety in family caregiving (Cooper et al., 2007).

In our additional analyses, we found that greater use of planning was correlated with higher levels of anxiety in family carers of people with dementia. These results further support the importance of distinguishing between different individual coping mechanisms within the context of caregiving; planning may be ineffective as a form of coping in the context of dementia caregiving given the progressive nature of the condition and its likelihood of being associated with more uncontrollable demands and stressors (Wartella et al., 2009).

4.2 | Emotion-focused coping

In line with prior theory, we found that greater use of emotion-focused coping was associated with fewer anxiety symptoms in carers. When examining the effect of individual coping strategies, we found that not all emotion-focused coping strategies were equally

adaptive. Specifically we found that acceptance was consistently related with fewer anxiety symptoms overall, with results being precise and consistent. For the remaining individual strategies of this dimension although we found no statistical association with anxiety symptoms, subgroup analysis indicated that when sampling was probabilistic, higher positive reappraisal was associated with lower anxiety. These findings are in line with those of Muñoz-Cruz et al. (2023) where use of acceptance as a form of coping and positive re-appraisal were associated with fewer depressive symptoms in carers. Thus, we provide further evidence that these strategies are related to better adjustment in the caregiving context (Hawken et al., 2018).

4.3 | Dysfunctional coping

As hypothesized by prior work and theory we found a consistent and robust significant association between greater use of dysfunctional coping and higher anxiety symptoms in carers, representing an overall moderate-size effect. This association was precise and robust, not influenced by the caregiving context (Rodríguez-Pérez et al., 2017; Taylor et al., 2015). In line with recent meta-analyses therefore this form of coping (Muñoz-Cruz et al., 2023), is an important predictor of psychological distress in family carers that is less influenced by other variables. Most of the individual strategies of this domain were also associated with higher levels of anxiety, similarly to evidence on use of dysfunctional coping and anxiety in the general population (Kato, 2015). Strategies therefore that incorporate avoidance, denial, wishful thinking, self-blame, venting, substance use and behavioural disengagement are less likely to be psychologically adaptive in the context of family caregiving and thereby increase risk of experiencing clinically significant symptoms of anxiety.

An important contribution of our review is that we found no significant differences between cross-sectional and longitudinal results, suggesting that anxiety symptoms appear to remain both at the onset of the stressful situation and long-term with regards to the use of dysfunctional coping. This finding contradicts the hypothesis that this type of coping may increase difficulties in psychological adjustment through the use of emotion regulation, and reinforces the view that dysfunctional coping responses may maintain anxiety symptoms over time when the stressor is not modified or removed (Carver, 2011). Given that dysfunctional coping appears to be associated with psychological distress, and evidence that emotion-focused coping may reduce this distress, it may be appropriate to offer carers interventions that enhance acceptance and positive reappraisal and prevent the use of dysfunctional coping strategies (Losada et al., 2015).

4.4 | Limitations

Despite the important findings of our review, there are significant limitations. Firstly, most of the studies included in our analyses were

cross-sectional, so we cannot draw conclusions about causality. Further research evaluating the causal association between coping mechanisms and carer anxiety symptoms using longitudinal data will be important for future work in the area. Secondly, most studies included in our review employed non-probability sampling, limiting the extrapolation of our results. When investigating the effects of publication bias, we found that this bias influenced several analyses, with many of these reporting on fewer than 10 studies overall, limiting therefore the reliability of our results. When examining the effect of confounding bias, we found that this influenced results and specifically the relationship between first-order active coping and anxiety symptoms. On the other hand, several findings of our subgroup analyses were imprecise due to the low number of studies included, with many of the effect sizes reported being small, which limits the clinical significance of our results. Finally, although most carers report the use of a specific coping style such as the use of either active or avoidance coping, it is also likely that some carers may use a mix of coping responses for example, by combining both active and avoidance coping strategies (Kartalova-O'Doherty & Doherty, 2008). However, only first and second order active coping combinations were studied in this review because the included studies do not provide more specific information on the combination of different coping strategies for individual caregivers.

5 | CONCLUSIONS

Our review provides relevant new evidence on the importance of evaluating both broad dimensions as well as individual coping responses in the context of caregiving. We found a consistent association between dysfunctional coping and carer anxiety symptoms. Both the broader dimension of dysfunctional coping, and its' individual coping strategies, were associated with higher anxiety symptoms in all groups of family carers, highlighting that the use of these strategies may increase onset of clinically significant anxiety symptoms. On the other hand, problem-focused coping may protect carers of frail older people from high anxiety but increase risk in those caring for people with cancer. Among individual problem-focused coping strategies, active coping may be protective, whereas planning may increase anxiety in carers of people with dementia. Emotion-focused coping and its individual strategies of acceptance and positive reappraisal, is protective of anxiety symptoms in all groups of carers studied to date.

6 | RELEVANCE TO CLINICAL PRACTICE

Dysfunctional coping strategies are associated with higher levels of anxiety symptoms in carers, whereas emotion-focused coping may reduce risk. Future interventions offered to family caregivers should take into account these findings on the specific effect of the caregiving context to prevent and treat carer psychological distress.

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CONFLICT OF INTEREST STATEMENT

Drs Vasiliki Orgeta, Catalina López-Martínez and Rafael Del Pino-Casado were co-authors of one article, Rafael Del-Pino-Casado and Catalina López-Martínez were co-authors of one article and Rafael Del-Pino-Casado was author of two more articles that met the inclusion criteria for this review. There are no other known conflicts of interest.

DATA AVAILABILITY STATEMENT

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

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