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REVIEW ARTICLE

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Subjective caregiver burden and coping in family carers of dependent adults and older people: A systematic review and meta-analysis

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Abstract

Subjective caregiver burden is highly prevalent in family caregivers. Despite several studies investigating the relationship between subjective caregiver burden and coping strategies, results remain inconsistent. The aim of our study was to systematically review current literature on the relationship between subjective caregiver burden and coping in family carers of dependent adults and older people. A secondary objective was to analyse possible sources of heterogeneity in the estimated effect. The study design was a systematic review with meta-analysis following Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA) guidelines. We searched several international databases (CINAHL, LILACS, PsycINFO and PubMed) up to February 2024. We performed several subgroup analyses to examine whether study design, methodological quality or care recipient dependency influenced results. Of the 1064 records identified in our search, a total of 80 studies met inclusion criteria. We found a significant association between greater use of dysfunctional coping and higher levels of subjective caregiver burden ($\bar{r} = 0.400$; 95% CI = 0.315, 0.478); higher use of second-order active coping was significantly associated with lower caregiver burden ($\bar{r} = -0.213$; 95% CI = −0.316, −0.105). Problem-focused coping showed no statistically significant association with levels of subjective burden; emotion-focused coping was associated with caregiver burden only after controlling for confounding variables ($\bar{r} = -0.258$; 95% CI = −0.441, −0.055); several individual strategies of this dimension such as acceptance ($\bar{r} = -0.135$; 95% CI = −0.238, −0.028), positive reappraisal ($\bar{r} = -0.178$; 95% CI = −0.255, −0.099) and religious coping ($\bar{r} = -0.083$; 95% CI = −0.162, −0.002), were associated with lower burden. We found that several dimensions of coping strategies are significantly associated with levels of subjective caregiver burden experienced by carers. These results can inform future research evaluating the effectiveness of interventions aimed at improving carers' mental health.

KEYWORDS
caregivers, coping, meta-analysis, subjective caregiver burden, systematic review

1 | INTRODUCTION

Due to increased life expectancy more people than ever are now living with chronic and disabling conditions, supported by family and friends who provide informal unpaid care (OECD, 2021). Informal carers often assist with various tasks such as home care, emotional support and medication management, being the first line of support for many dependent adults and older people (Roth et al., 2015). Across OECD countries, around 13% of people aged 50 and over in 2019, provided informal care at least weekly (OECD, 2021). Studies have identified both positive (Li & Loke, 2013; Quinn & Toms, 2019) and negative (Bom et al., 2019; Lacey et al., 2022) effects of providing informal care, with levels of stress experienced by carers playing an important role in moderating health effects (Pinquart & Sörensen, 2003a).

Theoretical and empirical work has shown that the consequences of experiencing sustained stress as a carer depends on both carers' appraisal of stressful events as well as their access to personal and social resources (Lazarus & Folkman, 1984). This is in line with the caregiving stress model, proposed by Pearlin et al. (1990), positing that the stress process varies from one individual to the other and is influenced by several factors such as: (a) background variables (sociodemographic characteristics of the caregiver and care-recipient, caregiving context), (b) stressors (cognitive or functional impairment experienced by the care-recipient, presence of behavioural symptoms), (c) mediators (coping and social support), and (d) carers' physical and mental health. Thus, caregivers' coping responses may act both as a mediator and a moderator between caregiving stressors and occurrence of negative health outcomes.

Coping enables carers to manage the external and/or internal demands of caregiving when these exceed their available resources (Lazarus & Folkman, 1984). It has been classified using several broad dimensions depending on the direction or nature of the coping response; the most widely used classification is that between problem-focused (aimed at actively resolving the stressful situation) and emotion-focused coping (seeking to regulate the emotions provoked by the stressor) (Lazarus & Folkman, 1984), followed by distinctions between active or approach coping (aiming to resolve, modify or re-evaluate the problem), versus more passive or avoidant coping styles (distancing oneself from or avoiding the problem) (Moos et al., 1990).

The different dimensions of coping encompass individual strategies, which are specific ways individuals' respond to stress (such as planning, acceptance, positive reappraisal, denial, wishful thinking or avoidance) (Carver, 1997) (Figure 1). Although coping responses have been largely investigated as separate dimensions, recent research highlights the need to analyse coping mechanisms individually, given evidence that coping responses may be either effective or ineffective depending on the specific context of care (Morris et al., 2018; Muñoz-Cruz et al., 2023a).

Coping strategies allow carers to respond to stressors by ameliorating subjective caregiver burden and its effects. Caregiver burden is a state characterized by fatigue, stress, and perceptions of limited social support available, that influence carers' adjustment to the caregiving role, threatening their physical, psychological, and functional health (Del-Pino-Casado et al., 2018; Kim et al., 2012; Zarit et al., 1980). Several systematic reviews show that caregiver burden is highly prevalent among carers, with rates between 25% and 54% in caregivers of stroke survivors (Rigby et al., 2009) to 26%–37% in caregivers of people with mental illness (Cham et al., 2022).

Increasing levels of subjective caregiver burden affect carers' ability to cope with caregiving duties (Litzelman et al., 2016), posing them at risk of experiencing clinically significant symptoms of depression and anxiety (Del-Pino-Casado et al., 2019; Del-Pino-Casado et al., 2021). Given therefore the negative effects of caregiver burden on carer mental health outcomes (Geng et al., 2018; Loh et al., 2017; Sallim et al., 2015), identifying which factors may reduce subjective caregiver burden, has the potential to improve caregiver mental health.

Despite several decades of research investigating the relationship between caregiver burden and carers' coping styles (van der Lee et al., 2014), systematic reviews quantifying the association remain limited. The only systematic review (Del-Pino-Casado et al., 2011) on this topic was conducted more than a decade ago, including only family carers of dependent older people; therefore results are now out of date and findings applicable only to caring for older people.

In addition, although previous reviews on the association between caregiving coping and carer mental health outcomes have incorporated meta-analyses (Li et al., 2012; Muñoz-Cruz et al., 2023a, Muñoz-Cruz et al., 2023a), there are currently no reviews quantifying the association between caregiving coping and subjective caregiver burden. A further important limitation of current research is that although findings on avoidant coping and caregiver burden are generally consistent, findings on the association between problem-focused and emotion-focused coping and caregiver burden remain inconsistent (Cheng et al., 2022). A more comprehensive assessment of the relationship between caregiver burden and coping responses will therefore provide much needed evidence on how different coping strategies influence subjective burden in carers.

The aim of the present study therefore was to systematically review and meta-analyse the relationship between subjective caregiver burden with all dimensions of coping, inclusive of individual coping responses, by synthesizing evidence across all caregiving groups of both dependent adults and older people. A secondary aim was to analyse the effect of several potential sources of heterogeneity on the estimates observed.

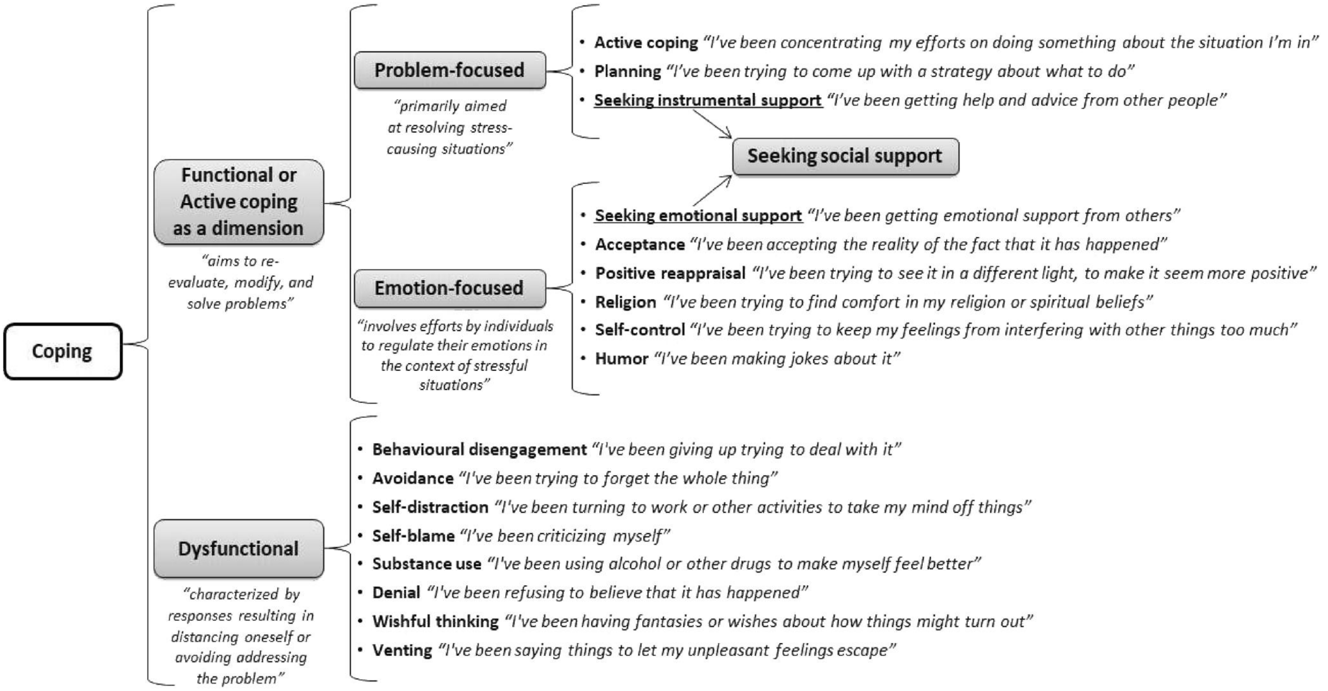


FIGURE 1 Classification of dimensions and coping strategies following the models of Lazarus and Folkman (1984), Moos et al. (1990), and Carver (1997).

2 | METHODS

2.1 | Design

We conducted a systematic review with meta-analysis following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA; Page et al., 2021), and registered our review in the International Prospective Register of Systematic Reviews (PROSPERO id: CRD42023406130).

2.2 | Search method

The literature search was conducted in several international databases (CINAHL, PubMed, LILACS and PsycINFO) up to February 2024. We included terms related to caregiver burden, coping and caregivers, without adding time filters or any other limitations (See Appendix A). We performed an additional search of reference lists of relevant articles and reviews and contacted authors of unpublished studies (grey literature including dissertations), to ensure no studies were missed.

2.3 | Eligibility criteria

Two reviewers [JCMC and CLM] independently selected studies (interrater reliability, kappa: 0,95), with discrepancies being resolved by consensus with a third reviewer [RdPC]. Inclusion criteria were the following: (1) original study with observational design, (2) examining the relationship between at least one coping strategy and subjective caregiver burden, (3) reporting a correlation coefficient or relevant statistic that would allow the calculation of a correlation coefficient, (4) in family carers of adults (aged 18 and over) or older people requiring assistance with one or more basic activities of daily living (e.g. eating, bathing, dressing or mobility), due to loss of autonomy. Studies had to be published in English, Spanish, French or Portuguese to be included.

2.4 | Data extraction

Data extracted from each study included: type of study design, sampling method, sample size, cause of dependency, place of residence and age of care-recipient, type of coping strategy assessed, measurement scale of subjective caregiver burden and coping, and reported effect size. Two review authors [JCMC and CLM] extracted data independently (interrater reliability, percent agreement: 98%) with discrepancies resolved by consensus with a third reviewer [RdPC].

We classified coping (Carver, 1997; Lazarus & Folkman, 1984; Moos et al., 1990) (Figure 1) as: (a) problem-focused: active coping, planning and instrumental support seeking; (b) emotion-focused: acceptance, emotional support seeking, positive reappraisal, self-control, religion and humour, and (c) dysfunctional coping: behavioural disengagement, denial, avoidance, distancing, self-blame, resignation, self-distraction, venting, wishful thinking and substance use. We included two additional classifications: (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 assessment

We assessed methodological quality of studies following the criteria of Boyle (1998) and Viswanathan et al. (2013): (1) To control for selection bias: representative sample using probability sampling; (2) control for classification bias: reliability and validity of measurement scales used (internal consistency and content validity for the target population); and (3) control for confounding bias: controlling for at least one objective burden variable. If the study was longitudinal, we also assessed the following criteria: (4.1) study duration of at least 6 months, and (4.2) reporting of follow-up of the original sample equal to or greater than 80%. Study quality assessment was performed independently by two reviewers [JCMC and CLM] (interrater reliability, percent agreement: 95%), and discrepancies were resolved by consensus with a third reviewer [RdPC].

We chose objective burden as a control variable for confounding bias as it is considered one of the main determinants of subjective caregiver burden (Pinquart & Sörensen, 2003b; van der Lee et al., 2014). The objective burden measures included: a) characteristics of the care-recipient such as behavioural symptoms, level of care dependency and cognitive impairment, and b) intensity of care provided such as daily hours spent on care (Aneshensel et al., 1995). Given objective burden variables show a high intercorrelation between them (Pinquart & Sörensen, 2003b), we rated as low risk of bias studies that controlled for at least one of these objective burden variables in their design or analysis (Viswanathan et al., 2013), prioritizing care-recipient behavioural symptoms, functional ability and intensity of care as main predictors (van der Lee et al., 2014). For statistical adjustment, we considered no confounding bias to be present if the variance between the unadjusted (correlation coefficient) and adjusted value was less than 10% (Rothman et al., 2008).

2.6 | Assessment of certainty

We used I) imprecision, II) inconsistency and III) risk of publication bias to assess the robustness of the results of our meta-analyses as indicated by the Grading of Recommendations Assessment Development and Evaluation (GRADE) guidelines (Atkins et al., 2004). We measured imprecision (Meader et al., 2014) through the total number of included studies (adequate: >10 studies; medium: 5–10 studies; small: <5 studies) and average sample size (high: >300 participants; intermediate: 100–300 participants; and low: <100 participants). For inconsistency, we measured heterogeneity of results across studies, and for assessing publication bias, we used statistical tests and funnel plots.

2.7 | Analyses

We conducted a meta-analysis of correlation coefficients using a random effects model (Hedges & Vevea, 1998) due to variation in the population studied (e.g. gender, age, kinship or cause of dependency of the care-recipient). We also included those statistical measures that could be transformed into correlation coefficients (such as standardized mean differences, odds ratios, etc.). For longitudinal studies with repeated measures of correlations referring to the same time point, we selected the first correlation to ensure independence of comparisons (Higgins & Thomas, 2020).

We measured statistical heterogeneity using the Q-test (Cochran, 1954) and the degree of inconsistency (I^2) to calculate the proportion of between-study variability that was not due to chance (Higgins et al., 2002). We assessed publication bias through the Egger's test (Egger et al., 1997), together with assessment of skewness in funnel plots, and applied the Trim and Fill method (Duval & Tweedie, 2000) that estimates an effect size in a hypothetical case of no publication bias.

We conducted several sensitivity analyses eliminating one study at a time (leave-one-out analysis) to examine the robustness of the results (Cooper et al., 2009), calculating the difference between the combined effect of these analyses and the original combined effect, and a series of subgroup analyses to examine whether differences obtained were due to: (a) study design (cross-sectional or longitudinal), (b) cause of dependency (e.g. dementia, stroke, cancer, etc.) and (c) methodological quality (control or not for selection, classification and confounding bias). All analyses were performed using Comprehensive Meta-analysis 3.3.070 (Biostat, Inc.).

3 | RESULTS

Our literature database search yielded a total of 1042 records, to which we added 22 records identified through other sources. After eliminating 159 duplicate records, we reviewed 905 studies, excluding 641 for not meeting inclusion criteria, 176 for irrelevance and 8 for redundancy. At final stage a total of 80 studies were included in our review (see Figure 2) (see Appendix B for a full list of references of included studies).

Table 1 shows the characteristics of the 80 studies, reporting on 83 independent samples. Ten studies were longitudinal (four being repeated longitudinal measures and six repeated cross-sectional measures) and 70 cross-sectional studies. The main causes of dependency were dementia (31 studies), followed by frailty in older people and cancer (eight articles each). In terms of carers' countries of residence, most studies were conducted in the United States (32 studies), China (eight studies) and Spain (seven studies). The most frequently used measure to assess coping was the Brief COPE (24) and the most common measure of caregiver burden was the Zarit Burden Interview (48).

Assessment ratings of the methodological quality of included studies are shown in Table 2. Seven studies employed probability sampling. For classification bias, all articles measured subjective caregiver burden using validated and reliable scales, and for the assessment of coping, only five studies did not report sufficient internal consistency for at least one strategy using Cronbach's α. In 11 studies the risk of confounding bias was low for all coping strategies

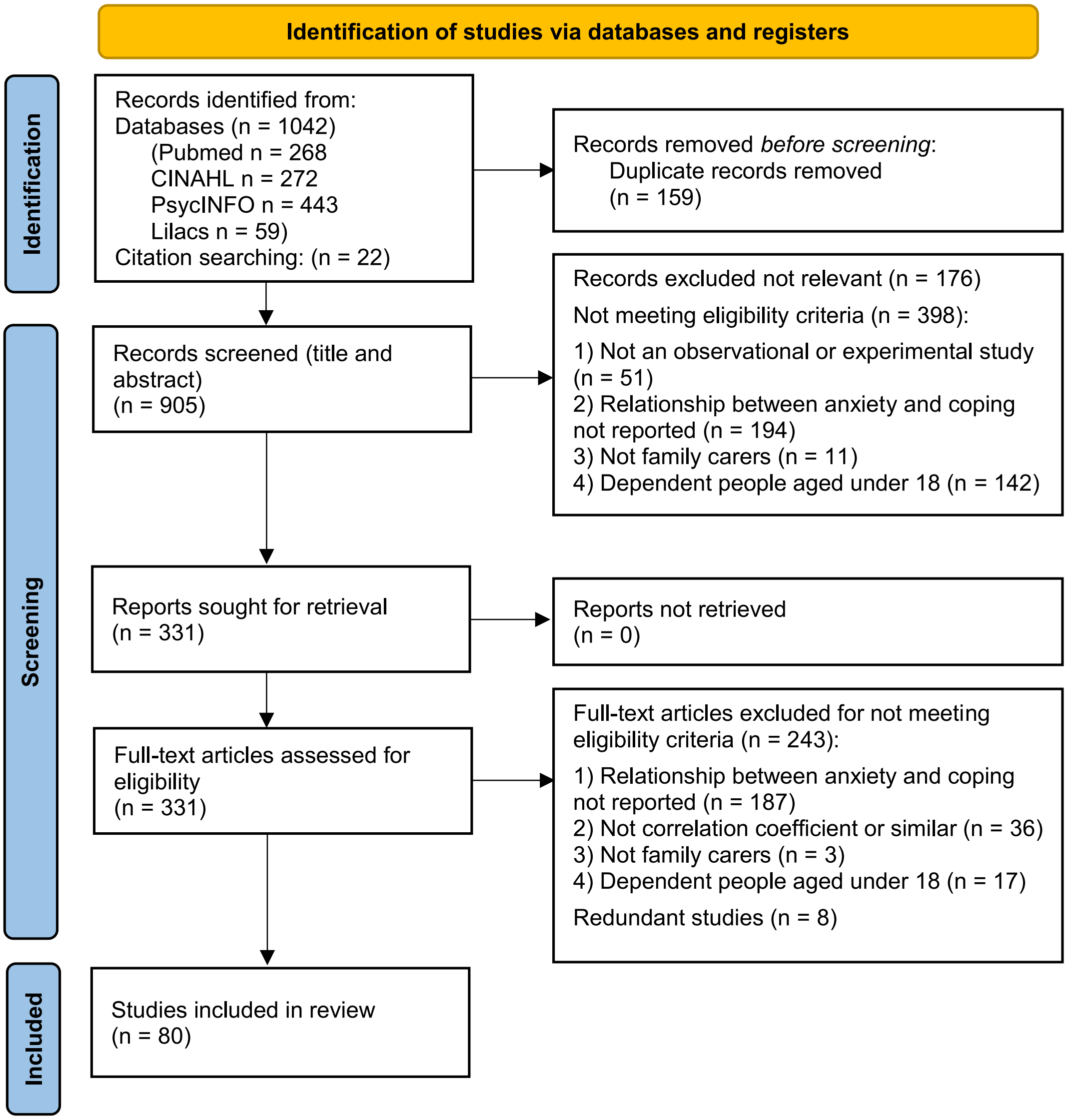


FIGURE 2 Flow diagram.

studied, while in 11 studies, this risk was low for at least one strategy. All results of the meta-analyses are presented in Table 3 and subgroup analyses in Appendix C. Due to the large volume of analyses conducted we only present a subset of analyses here.

3.1 | Active coping as a dimension

Analyses showed that active coping was negatively associated with subjective caregiver burden ($\bar{r}$ [combined correlation coefficient] = −0.213; 95% CI [95% confidence interval] = −0.316, −0.105; 19 samples; $N = 2536$; see Figure 3), with low statistical heterogeneity across studies ($Q = 18.43$; df [degrees of freedom] = 18; $p = 0.43$; $I^2 = 2.3\%$), representing a relatively robust estimate (maximum difference in leave-one-out analyses: 11.7%). Although inspection of the funnel plot showed evidence of asymmetry (Appendix D—Figure 1), alongside the Egger's test (p-value = 0.05), analyses correcting with the Trim and Fill method showed no variation (estimated $\bar{r} = -0.213$). There were no statistical differences in subgroup analysis.

3.2 | Problem-focused coping

The forest plot of the association between subjective caregiver burden and problem-focused coping as a general dimension and for each individual coping strategy is presented in Figure 4.

3.2.1 | Problem-focused coping as a dimension

We found no significant association between subjective caregiver burden and problem-focused coping ($\bar{r} = -0.006$; 95% CI = −0.122, 0.110; 35 samples; $N = 3953$) with no statistical heterogeneity

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

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
AboJabel and Werner (2022)	Cross-sectional	175	Israel	Dementia	Older people	12-Item Zarit burden interview short form [ZBI-SF]	Brief COPE-multidimensional coping inventory (30 items)	Active second-order (negative relation [-])
Artaso et al. (2003)	Cross-sectional	80	Navarra (Spain)	Dementia	Mean [M]: 79.64 ± 6.56	Zarit burden interview [ZBI]	The ways of coping questionnaire [WCQ]	Avoidance (positive relation [+])
Barber (1988)	Cross-sectional	171	United States [US]	Frail older people	Older people	ZBI	Family crisis-oriented personal evaluation scales [F-COPES]	Problem-focused (–); Positive reappraisal (no significant [NS]); Avoidance (NS)
Bianchi et al. (2016)	Cross-sectional	121	Sao Paulo (Brazil)	Frail older people	Older people	ZBI	Inventory of coping strategies [ICS]	Dysfunctional (+)
Bradley (2000)	Cross-sectional	84	US	Cancer	Range [R]: 20–89 M: 53.51	ZBI	WCQ	Distancing (NS); Self-control (NS); Seeking social support (+); Avoidance (NS); Planning (+); Positive reappraisal (NS)
Brashares and Catanzaro (1994)	Cross-sectional	73	Missouri, Illinois and Indiana (US)	Dementia	Older people	ZBI	Health and daily living form [HDLF]	Active second-order (–); Dysfunctional (+)
Chakrabarti and Gill (2002)	Cross-sectional	58	India	Schizophrenia and bipolar disorder	*Schizophrenia:* M: 38.93 ± 11.38 *Bipolar disorder:* M: 37.11 ± 1.23	Burden assessment schedule [BASS]	Family coping questionnaire [FCQ]	Seeking informational Support (+); Resignation (+); Avoidance (+); Substance use (+)
Chronister et al. (2010)	Cross-sectional	108	California and Wisconsin (US)	Traumatic brain injury [TBI]	>18	The modified caregiving appraisal scale [M-CAS]	The coping orientations to problem experiences [COPE]	Problem-focused (+); Emotion-focused (NS); Dysfunctional (+)
Claar et al. (2005)	Cross-sectional	82	North Carolina (US)	Potential lung transplant candidates	>18	Scale for caregiver burden-revised [SCB-R]	Medical coping modes questionnaire-revised [MCMQ-R]	Seeking emotional support (NS); Resignation (NS); Seeking instrumental support (NS); Avoidance (NS)
Cooper et al. (2008)	Cross-sectional	93	London And South-East Region of England (United Kingdom [UK])	Dementia	Older people	ZBI	Brief COPE	Problem-focused (+); Emotion-focused (+); Dysfunctional (+)

TABLE 1 (Continued)

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
Cooper et al. (2010)	Cross-sectional	220	London And South-East Region of England (UK)	Dementia	R: 58–99; M: 81.6 ± 7.8	ZBI	Brief COPE	Dysfunctional (+)
Del-Pino-Casado et al. (2019)	Repeated measures [RM] cross-sectional	200	Jaén (Spain)	Frail older people	M: 82 ± 9.7	Caregiver strain index [CSI]	Brief COPE	Problem-focused (NS); Active coping (NS); Planning (NS); Seeking instrumental support (NS); Emotion-focused (–); Positive Reappraisal (–); Acceptance (NS); Humour (NS); Religion (NS); Seeking emotional support (–); Dysfunctional (+); Self-distraction (–); Denial (+); Venting (+); Substance use (+); Behavioural disengagement (NS); Self-blame (+)
Dennison (2000)	Cross-sectional	39	US	Amyotrophic lateral sclerosis	>18	Screen for caregiver burden [SCB]	Ways of coping scale [WCS]	Avoidance (+)
Essex et al. (1999)	RM cross-sectional	133 dads	Massachusetts and Wisconsin (US)	Intellectual disability	R: 19–53	ZBI	COPE	Active second-order (NS); Dysfunctional (+)
		133 mums						Active second-order (NS); Dysfunctional (+)
Faronbi (2018)	Cross-sectional	325	Osun state (Nigeria)	Frail older people	R: 60–103 M: 76.08 ± 10.62	ZBI	Brief COPE	Problem-focused (–); Emotion-focused (–); Dysfunctional (–)
Felipe Silva et al. (2021)	Cross-sectional	40	Ribeirao Preto (Brazil)	Palliative care	M: 76.5 ± 13.8	ZBI	Coping strategies inventory [CSI]	Positive reappraisal (NS); Problem-focused (NS); Avoidance (+); Seeking social support (NS); Self-control (NS)
Gallagher et al. (2011)	Cross-sectional	84	Dublin (Ireland)	Dementia	R: 56–89 M: 74.1 ± 8.5	ZBI	Brief COPE	Problem-focused (NS); Emotion-focused (NS); Dysfunctional (+)
Geiger et al. (2015)	Cross-sectional	138	Southern United States (US)	Dementia	Older people	ZBI	Coping inventory for task stressors [CITS]	Problem-focused (NS); Dysfunctional (+)

(Continues)

TABLE 1 (Continued)

						Scales		
Study	**Design**	**N**	**Carers' residence**	**Cause of dependency**	**Dependent person's age**	**Subjective burden**	**Coping**	**Coping**
Goetzinger et al. (2012)	Cross-sectional	621	North Carolina (US)	Potential transplant candidates	>18	SCB-R	MCMQ-R	Seeking instrumental support (NS); Seeking emotional support (NS); Resignation (+); Avoidance (+)
Grant (2022)	Cross-sectional	99	Worldwide	Dementia	R: 40–98 M: 73.89 ± 12.41	ZBI: Short form	Brief COPE	Problem-focused (NS); Emotion-focused (–); Dysfunctional (+)
Catarina-Guedes and da-Graça-pereira (2013)	Cross-sectional	50	Northern Portugal	Dependent people	>18	ZBI	Carer's assessment of managing index [CAMI]	Problem-focused (NS); Emotion-focused (–)
Heo and Koeske (2013)	Cross-sectional	642	Birmingham, Miami, Memphis, palo Alto and Philadelphia (US)	Dementia	Older people	ZBI	Brief COPE	Religion (–)
Herrera et al. (2009)	Cross-sectional	66	San Diego (US)	Dependent people	>50	ZBI	Brief COPE	Religion (NS)
Hodgson et al. (2022)	Cross-sectional	19	US	Cancer	R: 22–39 M: 31.32 ± 5.35	ZBI	CSI: Short form	Active second-order (–); Dysfunctional (+)
Hu et al. (2017)	Cross-sectional	134	Chengdu (China)	Heart failure	>60: 71.6% M: 66.3 ± 15.2	ZBI	Simplified Coping style Questionnaire (SCSQ)	Active second-order (–); Dysfunctional coping (NS)
Intrieri and Rapp (1994)	Cross-sectional	44	US	Non-trauma induced cognitive impairment	>18	ZBI	Self-control schedule [SCS]	Active second-order (–)
Jathanna et al. (2010)	Cross-sectional	125	India	Dementia	M: 69.87 ± 10.28	ZBI	Brief COPE	Active coping (NS); Planning (NS); Positive reappraisal (–); Acceptance (NS); Humour (NS); Religion (NS); Seeking emotional support (NS); Seeking instrumental support (NS); Self-distraction (NS); Denial (NS); Venting (+); Substance use (NS); Behavioral disengagement (+); Self-blame (+)
Jones (2017)	Cross-sectional	96	New Zealand	Parkinson's disease	*Normal levels of cognition:* M: 68.23 ± 7.6	ZBI	Brief COPE	Problem-focused (+); Emotion-focused (+); Dysfunctional (+)

TABLE 1 (Continued)

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
					Mild cognitive impairment: M: 69.5 ± 6.86 *Parkinson's disease because dementia:* M: 72.73 ± 4.85			
Kazemi et al. (2021)	Cross-sectional	110	Tehran (Iran)	Stroke	>60 M: 69.91 ± 10.5	ZBI	WCQ	Positive reappraisal (NS); Problem-focused (NS); Avoidance (+); Seeking social support (NS); Self-control (NS); Distancing (+)
Kes and Aydin-Yildirim (2020)	Cross-sectional	181	Karabuk (Turkey)	Stroke	>18	ZBI	Religious coping scale [RCS]	Religion (–)
Khalaila and Cohen (2016)	Cross-sectional	110	Northern Israel	Dependent people	R: 50–87 M: 63.7 ± 7.9	ZBI	COPE	Active second-order (–); Dysfunctional (+)
Kim et al. (2003)	RM cross-sectional	246	Wisconsin and Massachusetts (US)	Intellectual disability	M: 34.1	ZBI	COPE	Active second-order (–); Dysfunctional (+)
		74	Wisconsin (US)	Mental illness	M: 35			Active second-order (NS); Dysfunctional (+)
Kim et al. (2007)	Cross-sectional	160	Los Angeles (US)	Dementia	Older people	ZBI	Brief COPE	Active second-order (NS); Dysfunctional (+)
Kramer (1992)	Cross-sectional	72	Washington (US)	Dementia	M: 76 ± 6	SCB	Ways of Coping Checklist (WCCL)	Problem-focused (NS); Dysfunctional (+)
Lau and Cheng (2017)	Cross-sectional	101	Hong Kong (China)	Dementia	R: 59–100 M: 81.7 ± 9.36	ZBI	Brief COPE	Problem-focused (NS); Emotion-focused (NS); Dysfunctional (+)
Lim et al. (2011)	Cross-sectional	107	Singapore	Dementia	M: 78 ± 8.9	ZBI	Brief COPE	Planning (+); Positive reframing (NS); Acceptance (NS); Humor (NS); Seeking emotional support (NS); Seeking instrumental support (+); Venting (+); Behavioral disengagement (+)

(Continues)

TABLE 1 (Continued)

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
Lloyd et al. (2019)	Cross-sectional	73	UK	Dementia	Older people	ZBI	Brief COPE	Emotion-focused (NS); Dysfunctional (+)
López-Martínez (2019)	RM longitudinal	81	Jaén (Spain)	Frail older people	M: 85.2	Robinson effort index [REI]	Brief COPE	Active coping (NS); Planning (NS); Positive reframing (NS); Acceptance (NS); Humor (NS); Religion (NS); Seeking emotional support (NS); Seeking instrumental support (NS); Self-distraction (NS); Denial (NS); Venting (NS); Substance use (NS); Behavioral disengagement (NS); Self-blame (+); Problem-focused (NS); Emotion-focused (–); Dysfunctional (+)
Ma et al. (2014)	Cross-sectional	150	Nanchang (China)	Spinal cord injury	M: 43.23 ± 11.92	Chinese version ZBI	SCSQ	Active second-order (–); Dysfunctional (+)
Matsuda (1995)	Cross-sectional	98	Tokyo (Japan)	Dementia	M: 82.1 ± 5.2	14-Item self-report inventory with cronbach 0.86	21-Item inventory with cronbach >0.6	Avoidance (+)
Mausbach et al. (2012)	Cross-sectional	126	San Diego (US)	Dementia	Older people	Role overload scale [ROS]	WCCL-R	Avoidance (+)
McConaghy and Caltabiano (2005)	Cross-sectional	42	North Queensland (Australia)	Dementia	Older people	ZBI	COPE	Active second-order (–)
Miltiades and Pruchno (2002)	Cross-sectional	142	US	Intellectual disability	R: 21–58 M: 34.49 ± 7.12	Nine-item scale witch cronbach 0.86	Eight-item scale with cronbach 0.91	Religion (NS)
Montoro-Rodriguez and Gallagher-Thompson (2009)	Cross-sectional	185	San Francisco (US)	Dementia	Older people	ZBI	Revised ways of coping questionnaire [R-WCQ]	Seeking instrumental support (NS); Avoidance (NS)
Moretta et al. (2014)	RM cross-sectional	24	Telese Terme (Italy)	Disorders of consciousness	R: 21–77 M: 52.4	Family strain questionnaire [FSQ]	COPE	Avoidance (+)

TABLE 1 (Continued)

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
Mulhinch (2017)	Cross-sectional	41	Michigan (US)	Amyotrophic lateral sclerosis	>18	ZBI	WCQ	Distancing (NS); Self-control (+); Seeking social support (NS); Avoidance (+); Problem-focused (NS); Positive reappraisal (NS)
Muscat and Scerri (2018)	Cross-sectional	60	Malta	Dementia	R: 46–92 M: 77.5 ± 8.9	ZBI	Brief COPE	Planning (+); Positive reappraisal (–); Dysfunctional (+); Behavioural disengagement (+); Denial (–); Self-distraction (–); Self-blame (+)
Nafiah (2015)	Cross-sectional	98	Central Java Province (Indonesia)	Schizophrenia	R: 18–80 M: 30.47 ± 13.33	BASS	Brief COPE	Active second-order (–); Dysfunctional (+)
Navarro-Arquelladas (2011)	Cross-sectional	23	Seville (Spain)	Frail older people	Older people	ZBI	CSI	Problem-focused (–); Self-blame (+); Venting (NS); Wishful thinking (NS); Social support (NS); Positive reappraisal (NS); Avoidance (+)
O'Dwyer et al. (2016)	Cross-sectional	566	Australia and north America (majority)	Dementia	Older people	ZBI	Brief COPE	Dysfunctional (+)
Olin (1994)	Cross-sectional	32	Southern California (US)	Dementia	>18	Caregiver Burden Inventory (CBI)	Ways of Coping Checklist (WCCL)	Problem-focused (–); Dysfunctional (+)
O'Rourke and Wenaus (1998)	Cross-sectional	56	British Columbia (Canada)	Dementia	Older people	ZBI	Coping Responses inventory [CRI]	Problem-focused (+); Dysfunctional (+)
Papastavrou et al. (2009)	Cross-sectional	130	Cyprus	Cancer	R: 19–83 M: 60.14 ± 15	ZBI	Greek version WCQ	Active second-order (–); Dysfunctional (+)
Papastavrou et al. (2011)	Cross-sectional	172	Cyprus	Dementia	R: 52–97 M: 75 ± 7.93	ZBI	Greek version WCQ	Active second-order (–); Seeking instrumental support (NS); Wishful thinking (+); Avoidance (NS)
Patrick and Hayden (1999)	Cross-sectional	596	Ohio (US)	Schizophrenia or intellectual disability	R: 18–59 M: 35.8	Nine-item burden scale witch Cronbach's alpha 0,845	6-ítem problem-focused coping scale (cronbach 0.757); 6-ítem wishful-escapism coping scale (cronbach 0.78)	Problem-focused (+); Wishful thinking (+)

(Continues)

TABLE 1 (Continued)

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
Pérez-Cruz et al. (2019)	Cross-sectional	198	Jaén (Spain)	Frail older people	M: 78.1 ± 8.1	CSI	Brief COPE	Problem-focused (NS); emotion-focused (–); Dysfunctional-focused (+); Active 1 coping (NS); Planning (NS); Instrumental support (–); Emotional support (–); Positive reappraisal (–); Acceptance (NS); Religion (NS); Humor (NS); Self-distraction (NS); Venting (NS); Denial (+); Behavioral disengagement (NS); Substance use (NS); Self-blame (NS)
Perez-Ordóñez et al. (2016)	Cross-sectional	50	Granada (Spain)	Palliative cancer	M: 72.2 ± 14.3	CSI	Brief COPE	Problem-focused (+); Emotion-focused (NS); Dysfunctional (+)
Pinto and Barham (2014)	Cross-sectional	20	Sao Carlos (Brazil)	Frail older people	Older people	ZBI	CARNET (based on WCQ)	Positive reappraisal (NS); Self-control (NS); Problem-focused (NS)
Rammohan et al. (2002)	Cross-sectional	60	India	Schizophrenia	R: 18–55 M: 36.3 ± 9.6	BASS	Coping checklist [CCL]	Problem-focused (–); Denial (+); Acceptance (NS); Religion (NS); Seeking social support (–)
Rodriguez-Perez et al. (2017)	Cross-sectional	86	Huelva (Spain)	Frail older people	>65	ZBI	COPE	Problem-focused (NS); emotion-focused (NS); Dysfunctional (+); Seeking social support (NS)
Saffari et al. (2018)	RM longitudinal	664	Tehran and qazvin (Iran)	Dementia	M: 70.63 ± 12.96	ZBI	Spiritual coping strategies scale [CSC]	Religion (–)
Schwarz and Roberts (2000)	RM cross-sectional	100	Ohio (US)	Frail older people	>65	Caregiver Strain questionnaire [CSQ]	WCCL-R	Problem-focused (NS)
Shafran (2001)	Cross-sectional	210	Cuyahoga (US)	Severe mental illness	>18	29-Item scale (cronbach 0.89)	Brief COPE	Active second-order (+); Dysfunctional (+)
Sinha (1995)	Cross-sectional	48	Cincinnati (US)	Dementia	R: 45–94 M: 74.89 ± 9.45	ZBI	CSI	Problem-focused (NS); cCognitive restructuring (NS); Venting (NS); Seeking social support (NS); Avoidance (NS); Wishful thinking (+); Self-blame (NS); Active second-order (NS); Dysfunctional (+)

TABLE 1 (Continued)

						Scales		
Study	**Design**	**N**	**Carers' residence**	**Cause of dependency**	**Dependent person's age**	**Subjective burden**	**Coping**	**Coping**
Smith et al. (1995)	Cross-sectional	226	New York (US)	Intellectual disability	R: 21–68 M: 38.2	ZBI	Coping with conflict scale [CCS]	Avoidance (+)
Smith (2004)	Cross-sectional	157	US	Severe mental illness	R: 20–58 M: 38 ± 8.2	ZBI	CCS	Avoidance (NS)
Sun et al. (2010)	Cross-sectional	141	Alabama (US)	Dementia	M: 79.5	Consequences of care index [CCI]	COPE	Dysfunctional (+)
Tartaglini et al. (2010)	Cross-sectional	200	Buenos Aires (Argentina)	Dementia	>18	ZBI	WCCL	Positive reappraisal (–); Seeking instrumental support (NS); Problem-focused (–); Venting (+)
Van Den Heuvel et al. (2001)	Cross-sectional	212	Netherlands	Stroke	>45	CSI	Utrecht coping list [UCL]	Problem-focused (+); Seeking social support (+)
Van Den Wijngaart et al. (2007)	Cross-sectional	95	Netherlands	Dementia	M: 76.4 ± 7.3	Self-perceived pressure from informal care scale [SPPIC]	UCL	Problem-focused (NS); Self-distraction (NS)
Vara-Garcia et al. (2022)	RM cross-sectional	111	San Diego (US)	Dementia	Older people	The role overload scale (4-item) (cronbach 0.8)	R-WCQ	Avoidance (+)
Visser-Meily et al. (2005)	RM longitudinal	187	Netherlands	Stroke	M: 56	CSI	UCL	Behavioural disengagement (+); Problem-focused (NS); Self-distraction (NS); Seeking social support (NS); Avoidance (NS); Venting (NS); Wishful thinking (NS)
Wartella et al. (2009)	RM longitudinal	51	Virginia (US)	TBI	>18	Caregiver appraisal scale [CAS]	COPE	Problem-focused (–); Active coping (–); Planning (NS); Seeking instrumental support (–); Emotion-focused (–); Seeking emotional support (–); Positive reappraisal (NS); Acceptance (–); Religion (NS); Denial (NS)
Webb et al. (1998)	Cross-sectional	59	Pennsylvania (US)	Severe mental illness	M: 21	The significant other scale [SOS]	WCQ	Problem-focused (NS)

(Continues)

TABLE 1 (Continued)

Study	Design	N	Carers' residence	Cause of dependency	Dependent person's age	Scales		Coping
						Subjective burden	Coping	
Wilcox et al. (2001)	Cross-sectional	39 wives	US	Dementia	M: 77 ± 9s	SCB	WCCL-R	Avoidance (NS); Self-blame (NS); Problem-focused (+); Seeking social support (NS); Wishful thinking (+); Religion (NS)
		32 daughters			M: 86 ± 5			Avoidance (NS); Self-blame (NS); Problem-focused (NS); Seeking social support (NS); Wishful thinking (NS); Religion (NS)
Yeung et al. (2018)	Cross-sectional	176	Shandong (China)	Breast cancer	>18	Caregiver reaction assessment scale [CRA]	Brief COPE	Acceptance (–)
Yeung et al. (2019)	Cross-sectional	176	Shandong (China)	Breast cancer	>18	CRA	Brief COPE	Planning (–); Denial (+)
Yeung et al. (2020)	Cross-sectional	176	Shandong (China)	Breast cancer	>18	CRA	Brief COPE	Positive reappraisal (–); Seeking emotional support (+)
Yi et al. (2021)	Cross-sectional	201	Shandong (China)	Chronic obstructive pulmonary disease	>18	ZBI	Trait coping style questionnaire [TCSQ]	Dysfunctional (+)
Zhu et al. (2023)	Cross-sectional	385	Changsha (China)	Lung cancer	M 56.1 ± 10.5	ZBI	SCSQ	Active second-order (NS); Dysfunctional (+)

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

	C1	C2	C3	C4.1	C4.2
AboJabel and Werner (2022)	-	+	-	N/A	N/A
Artaso et al. (2003)	-	+	?	N/A	N/A
Barber (1988)	-	+	-	N/A	N/A
Bianchi et al. (2016)	-	+	-	N/A	N/A
Bradley (2000)	-	+	-	N/A	N/A
Brashares and Catanzaro (1994)	-	+/−$^{\text{Dysfunctional}}$	-	N/A	N/A
Chakrabarti and Gill (2002)	-	+	-	N/A	N/A
Chronister et al. (2010)	-	+	-	N/A	N/A
Claar et al. (2005)	-	+/−$^{\text{Resignation}}$	-	N/A	N/A
Cooper et al. (2008)	-	+	-	N/A	N/A
Cooper et al. (2010)	-	+	-	N/A	N/A
Del-Pino-Casado et al. (2019)	+	+	+$^{\text{Emotion, self-distraction, venting, self-blame}}$/-	+	+
Dennison (2000)	-	+	-	N/A	N/A
Essex et al. (1999)	-	+	+$^{\text{Dysfunctional (dads)}}$/-	+	+
Faronbi (2018)	-	+	+	N/A	N/A
Felipe Silva et al. (2021)	-	+	-	N/A	N/A
Gallagher et al. (2011)	-	+	?	N/A	N/A
Geiger et al. (2015)	-	+	-	N/A	N/A
Goetzinger et al. (2012)	-	+/−$^{\text{Resignation}}$	-	N/A	N/A
Grant (2022)	-	+	-	N/A	N/A
Catarina-Guedes and da-Graça-pereira (2013)	-	+	-	N/A	N/A
Heo and Koeske (2013)	+	+	+	N/A	N/A
Herrera et al. (2009)	-	+	-	N/A	N/A
Hodgson et al. (2022)	-	+	-	N/A	N/A
Hu et al. (2017)	-	+	-	N/A	N/A
Intrieri and Rapp (1994)	-	+	+	N/A	N/A
Jathanna et al. (2010)	-	+	-	N/A	N/A
Jones (2017)	-	+	+$^{\text{Dysfunctional}}$/-	N/A	N/A
Kazemi et al. (2021)	-	+	-	N/A	N/A
Kes and Aydin-Yildirim (2020)	+	+	+	N/A	N/A
Khalaila and Cohen (2016)	-	+	-	N/A	N/A
Kim et al. (2003) (intellectual disability)	-	+	+	+	+
Kim et al. (2003) (mental illness)	-	+	-	+	-
Kim et al. (2007)	+	+	+	N/A	N/A
Kramer (1992)	-	+	-	N/A	N/A
Lau and Cheng (2017)	-	+	-	N/A	N/A
Lim et al. (2011)	-	+	-	N/A	N/A
Lloyd et al. (2019)	-	+	-	N/A	N/A
López-Martínez (2019)	+	+	+	+	+
Ma et al. (2014)	-	+	-	N/A	N/A
Matsuda (1995)	-	+	-	N/A	N/A
Mausbach et al. (2012)	-	+	-	N/A	N/A

(Continues)

TABLE 2 (Continued)

	C1	C2	C3	C4.1	C4.2
McConaghy and Caltabiano (2005)	-	+	-	N/A	N/A
Miltiades and Pruchno (2002)	-	+	-	N/A	N/A
Montoro-Rodriguez and Gallagher-Thompson (2009)	-	+	-	N/A	N/A
Moretta et al. (2014)	-	+	-	N/A	N/A
Mulhinch (2017)	-	+	-	N/A	N/A
Muscat and Scerri (2018)	-	+	-	N/A	N/A
Nafiah (2015)	+	+	-	N/A	N/A
Navarro-Arquelladas (2011)	-	+	-	N/A	N/A
O'Dwyer et al. (2016)	-	+	+	N/A	N/A
Olin (1994)	-	+	-	N/A	N/A
O'Rourke and Wenaus (1998)	-	+	+/−$^{\text{Problem}}$	N/A	N/A
Papastavrou et al. (2009)	-	+	-	N/A	N/A
Papastavrou et al. (2011)	-	+	+$^{\text{Active second-order}}$/-	N/A	N/A
Patrick and Hayden (1999)	-	+	-	N/A	N/A
Pérez-Cruz et al. (2019)	-	+	+/−$^{\text{Problem}}$	N/A	N/A
Perez-Ordóñez et al. (2016)	-	+	+$^{\text{Emotion}}$/-	N/A	N/A
Pinto and Barham (2014)	-	+	-	N/A	N/A
Rammohan et al. (2002)	-	+	+$^{\text{Social support, denial}}$/-	N/A	N/A
Rodriguez-Perez et al. (2017)	-	+	+	N/A	N/A
Saffari et al. (2018)	-	+	+	+	+
Schwarz and Roberts (2000)	-	-	-	-	-
Shafran (2001)	-	+	-	N/A	N/A
Sinha (1995)	-	+	-	N/A	N/A
Smith et al. (1995)	-	+	+	N/A	N/A
Smith (2004)	-	+	-	N/A	N/A
Sun et al. (2010)	+	+	+	N/A	N/A
Tartaglini et al. (2010)	-	+	-	N/A	N/A
Van Den Heuvel et al. (2001)	-	+	-	N/A	N/A
Van Den Wijngaart et al. (2007)	-	+	-	N/A	N/A
Vara-Garcia et al. (2022)	-	+	-	+	-
Visser-Meily et al. (2005)	-	+	+$^{\text{Behavioral disengagement}}$/-	+	+
Wartella et al. (2009)	-	+	-	-	-
Webb et al. (1998)	-	+	-	N/A	N/A
Wilcox et al. (2001)	-	+	-	N/A	N/A
Yeung et al. (2018)	-	+	-	N/A	N/A
Yeung et al. (2019)	-	+/−$^{\text{Planning}}$	-	N/A	N/A
Yeung et al. (2020)	-	+	-	N/A	N/A
Yi et al. (2021)	-	+	-	N/A	N/A
Zhu et al. (2023)	-	+	+$^{\text{Dysfunctional}}$/-	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 by the Table; for example, in some columns the sign is followed by the specific outcome/coping variable (i.e. +$^{\text{dysfunctional}}$).

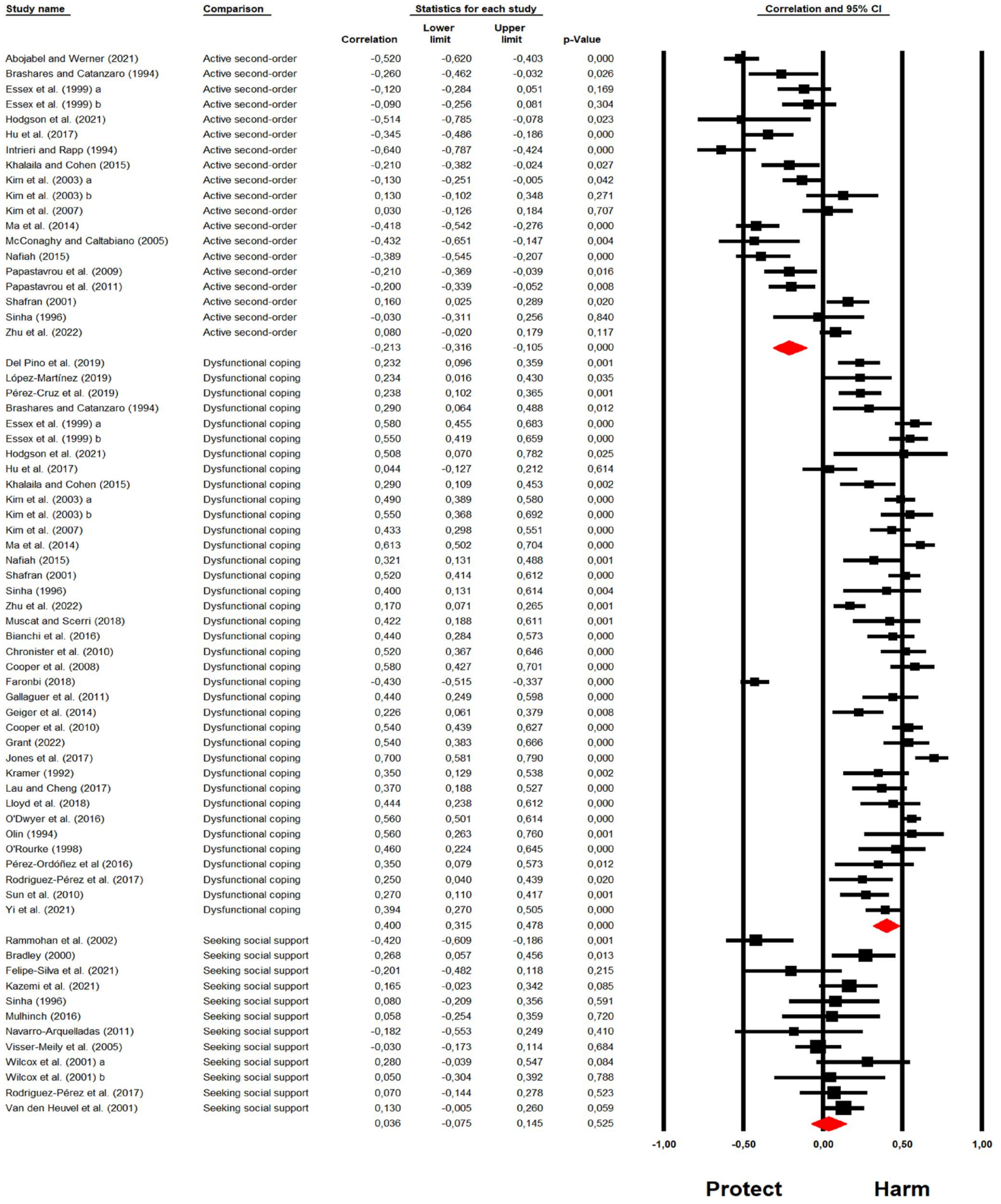
Abbreviations: C1 (Control of selection bias); C2 (Control for classifications bias); C3 (Control for confounding bias); C4.1 (Follow-up of more than 6 months); C4.2 (More than 80% of the sample is full); N/A (Not applicable).

TABLE 3 Results of the meta-analysis.

Coping	k	N	N/k	r	95% CI		Heterogeneity		Inconsistency	Sensitivity	Publication bias			
													Trim and fill	
					Lower limit	Upper limit	Q (df)	p	I^2	One study removed (% var)	Funnel plot	P for Egger test	Estimate	% Var
PROBLEM-FOCUSED COPING	35	3953	112.9	−0.006	−0.122	0.110	25.04 (34)	0.87	0%	550%	Asymmetric	0.59	−0.006	0
Active coping	5	655	131	−0.071	−0.184	0.045	4.57 (4)	0.33	12.4%	66.2%	Asymmetric	0.05	−0.071	0%
Instrumental support seeking	12	2080	173.3	0.023	−0.064	0.110	14.65 (11)	0.2	24.9%	95.6%	Asymmetric	0.49	0.003	87%
Planning	9	1082	120.2	0.040	−0.145	0.223	8.1 (8)	0.42	0.9%	170%	Asymmetric	0.3	0.040	0%
EMOTION-FOCUSED COPING	15	1695	113	−0,130	−0,280	0,026	9.9 (14)	0.77	0	33.1%	Asymmetric	0.03	−0.052	60%
Positive reappraisal	**17**	**1735**	**102.1**	**−0.178***	**−0.255**	**−0.099**	**15.4 (16)**	**0.5**	**0**	**15.2%**	**Symmetric**	**0.79**	**−0.178**	**0%**
Acceptance	**8**	**998**	**124.8**	**−0.135***	**−0.238**	**−0.028**	**6.36 (7)**	**0.5**	**0**	**36.3%**	**Asymmetric**	**0.62**	**−0.053**	**60.7%**
Humour	5	711	142.2	−0.021	−0.106	0.065	4 (4)	0.4	0	166.7%	Asymmetric	0.56	−0.021	0%
Religion	**13**	**2481**	**190.8**	**−0.083***	**−0.162**	**−0.002**	**9.9 (12)**	**0.62**	**0**	**33.7%**	**Asymmetric**	**0.01**	**−0.160**	**92.8%**
Emotional support seeking	9	1641	182.3	−0.074	−0.181	0.034	9.21 (8)	0.32	13.2%	51.3%	Symmetric	0.9	−0.074	0
Self-control	5	295	59	0.094	−0.033	0.217	4.1 (4)	0.39	2.2%	44.7%	Asymmetric	0.98	0.130	38.3%
ACTIVE COPING (DIMENSION)	**19**	**2536**	**133.5**	**−0.213***	**−0.316**	**−0.105**	**18.43 (18)**	**0.43**	**2.3%**	**11.7%**	**Asymmetric**	**0.05**	**−0.213**	**0**
SOCIAL SUPPORT SEEKING	12	962	80.2	0.036	−0.075	0.145	12.16 (11)	0.35	9.56%	136.1%	Asymmetric	0.48	0.018	51.4%
DYSFUNCTIONAL COPING	**37**	**5174**	**139.8**	**0.400***	**0.315**	**0.478**	**22.6 (36)**	**0.96**	**0%**	**5.3%**	**Asymmetric**	**0.32**	**0.322**	**19,5%**
Avoidance	**23**	**2754**	**119.7**	**0.257***	**0.176**	**0.335**	**23.97 (22)**	**0.35**	**8.2%**	**8.6%**	**Asymmetric**	**0.87**	**0.244**	**5.1%**
Denial	**8**	**951**	**118.9**	**0.221***	**0.069**	**0.362**	**9.3 (7)**	**0.23**	**24.9%**	**24.9%**	**Asymmetric**	**0.68**	**0.221**	**0%**
Wishful thinking	**8**	**1227**	**153.4**	**0.231***	**0.055**	**0.393**	**4.66 (7)**	**0.7**	**0**	**26.84%**	**Asymmetric**	**0.42**	**0.200**	**13.4%**
Self-blame	**9**	**806**	**89.6**	**0.271***	**0.161**	**0.374**	**7.81 (8)**	**0.45**	**0**	**14.76%**	**Asymmetric**	**0.65**	**0.223**	**17.7%**
Venting	**9**	**1169**	**129.9**	**0.172***	**0.115**	**0.227**	**7.75 (8)**	**0.46**	**0**	**12.21%**	**Asymmetric**	**0.29**	**0.154**	**10.5%**
Substance use	5	662	132.4	0.085	−0.065	0.232	4.41 (4)	0.35	9.2%	69.4%	Asymmetric	0.94	0.085	0
Behaviour disengagement	**7**	**958**	**136.9**	**0.240***	**0.106**	**0.366**	**7.7 (6)**	**0.26**	**22%**	**21.7%**	**Asymmetric**	**0.2**	**0.240**	**0%**
Self-distraction	7	946	135.1	−0.059	−0.175	0.059	5.6 (6)	0.47	0%	79.7%	Symmetric	0.77	−0.059	0
Distancing	**3**	**235**	**78.3**	**0.163***	**0.022**	**0.297**	**2 (2)**	**0.37**	**0.53%**	**41.1%**	**Asymmetric**	**0.73**	**0.130**	**20.2%**
Resignation	**3**	**761**	**253.7**	**0.259***	**0.065**	**0.434**	**2.87 (2)**	**0.24**	**30.2%**	**30,5%**	**Asymmetric**	**0.68**	**0.259**	**0**

Note: Values of statistically significant relationships with subjective caregiver burden appear in bold.

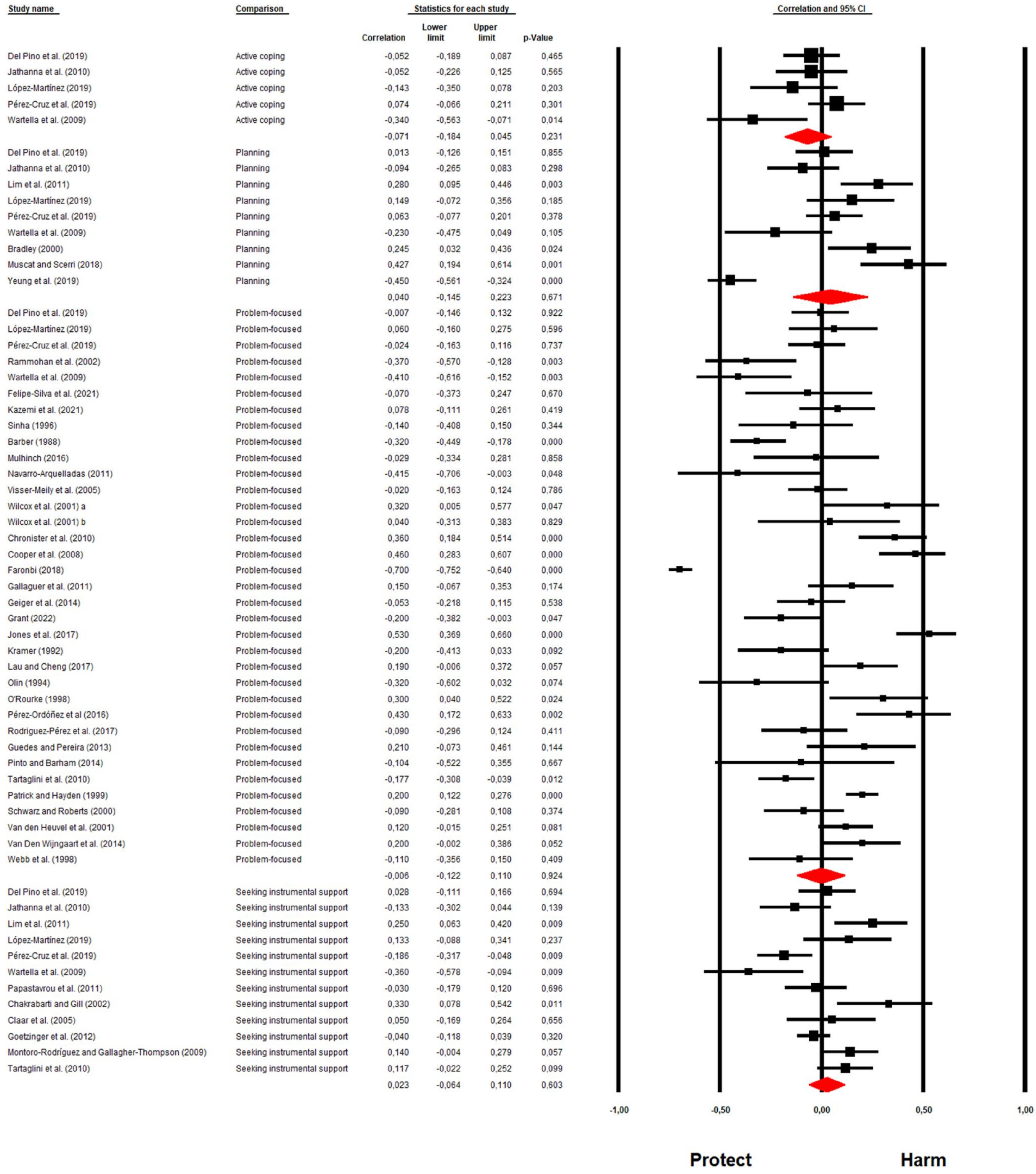
Abbreviations: *K* (number of included studies); *N* (overall sample size); *r* (combined correlation coefficient).



Study name	Comparison	Statistics for each study Correlation	Lower limit	Upper limit	p-Value
Abojabel and Werner (2021)	Active second-order	-0,520	-0,620	-0,403	0,000
Brashares and Catanzaro (1994)	Active second-order	-0,260	-0,462	-0,032	0,026
Essex et al. (1999) a	Active second-order	-0,120	-0,284	0,051	0,169
Essex et al. (1999) b	Active second-order	-0,090	-0,256	0,081	0,304
Hodgson et al. (2021)	Active second-order	-0,514	-0,785	-0,078	0,023
Hu et al. (2017)	Active second-order	-0,345	-0,486	-0,186	0,000
Intrieri and Rapp (1994)	Active second-order	-0,640	-0,787	-0,424	0,000
Khalaila and Cohen (2015)	Active second-order	-0,210	-0,382	-0,024	0,027
Kim et al. (2003) a	Active second-order	-0,130	-0,251	-0,005	0,042
Kim et al. (2003) b	Active second-order	0,130	-0,102	0,348	0,271
Kim et al. (2007)	Active second-order	0,030	-0,126	0,184	0,707
Ma et al. (2014)	Active second-order	-0,418	-0,542	-0,276	0,000
McConaghy and Caltabiano (2005)	Active second-order	-0,432	-0,651	-0,147	0,004
Nafiah (2015)	Active second-order	-0,389	-0,545	-0,207	0,000
Papastavrou et al. (2009)	Active second-order	-0,210	-0,369	-0,039	0,016
Papastavrou et al. (2011)	Active second-order	-0,200	-0,339	-0,052	0,008
Shafran (2001)	Active second-order	0,160	0,025	0,289	0,020
Sinha (1996)	Active second-order	-0,030	-0,311	0,256	0,840
Zhu et al. (2022)	Active second-order	0,080	-0,020	0,179	0,117
		-0,213	-0,316	-0,105	0,000
Del Pino et al. (2019)	Dysfunctional coping	0,232	0,096	0,359	0,001
López-Martínez (2019)	Dysfunctional coping	0,234	0,016	0,430	0,035
Pérez-Cruz et al. (2019)	Dysfunctional coping	0,238	0,102	0,365	0,001
Brashares and Catanzaro (1994)	Dysfunctional coping	0,290	0,064	0,488	0,012
Essex et al. (1999) a	Dysfunctional coping	0,580	0,455	0,683	0,000
Essex et al. (1999) b	Dysfunctional coping	0,550	0,419	0,659	0,000
Hodgson et al. (2021)	Dysfunctional coping	0,508	0,070	0,782	0,025
Hu et al. (2017)	Dysfunctional coping	0,044	-0,127	0,212	0,614
Khalaila and Cohen (2015)	Dysfunctional coping	0,290	0,109	0,453	0,002
Kim et al. (2003) a	Dysfunctional coping	0,490	0,389	0,580	0,000
Kim et al. (2003) b	Dysfunctional coping	0,550	0,368	0,692	0,000
Kim et al. (2007)	Dysfunctional coping	0,433	0,298	0,551	0,000
Ma et al. (2014)	Dysfunctional coping	0,613	0,502	0,704	0,000
Nafiah (2015)	Dysfunctional coping	0,321	0,131	0,488	0,001
Shafran (2001)	Dysfunctional coping	0,520	0,414	0,612	0,000
Sinha (1996)	Dysfunctional coping	0,400	0,131	0,614	0,004
Zhu et al. (2022)	Dysfunctional coping	0,170	0,071	0,265	0,001
Muscat and Scerri (2018)	Dysfunctional coping	0,422	0,188	0,611	0,001
Bianchi et al. (2016)	Dysfunctional coping	0,440	0,284	0,573	0,000
Chronister et al. (2010)	Dysfunctional coping	0,520	0,367	0,646	0,000
Cooper et al. (2008)	Dysfunctional coping	0,580	0,427	0,701	0,000
Faronbi (2018)	Dysfunctional coping	-0,430	-0,515	-0,337	0,000
Gallaguer et al. (2011)	Dysfunctional coping	0,440	0,249	0,598	0,000
Geiger et al. (2014)	Dysfunctional coping	0,226	0,061	0,379	0,008
Cooper et al. (2010)	Dysfunctional coping	0,540	0,439	0,627	0,000
Grant (2022)	Dysfunctional coping	0,540	0,383	0,666	0,000
Jones et al. (2017)	Dysfunctional coping	0,700	0,581	0,790	0,000
Kramer (1992)	Dysfunctional coping	0,350	0,129	0,538	0,002
Lau and Cheng (2017)	Dysfunctional coping	0,370	0,188	0,527	0,000
Lloyd et al. (2018)	Dysfunctional coping	0,444	0,238	0,612	0,000
O'Dwyer et al. (2016)	Dysfunctional coping	0,560	0,501	0,614	0,000
Olin (1994)	Dysfunctional coping	0,560	0,263	0,760	0,001
O'Rourke (1998)	Dysfunctional coping	0,460	0,224	0,645	0,000
Pérez-Ordóñez et al (2016)	Dysfunctional coping	0,350	0,079	0,573	0,012
Rodriguez-Pérez et al. (2017)	Dysfunctional coping	0,250	0,040	0,439	0,020
Sun et al. (2010)	Dysfunctional coping	0,270	0,110	0,417	0,001
Yi et al. (2021)	Dysfunctional coping	0,394	0,270	0,505	0,000
		0,400	0,315	0,478	0,000
Rammohan et al. (2002)	Seeking social support	-0,420	-0,609	-0,186	0,001
Bradley (2000)	Seeking social support	0,268	0,057	0,456	0,013
Felipe-Silva et al. (2021)	Seeking social support	-0,201	-0,482	0,118	0,215
Kazemi et al. (2021)	Seeking social support	0,165	-0,023	0,342	0,085
Sinha (1996)	Seeking social support	0,080	-0,209	0,356	0,591
Mulhinch (2016)	Seeking social support	0,058	-0,254	0,359	0,720
Navarro-Arquelladas (2011)	Seeking social support	-0,182	-0,553	0,249	0,410
Visser-Meily et al. (2005)	Seeking social support	-0,030	-0,173	0,114	0,684
Wilcox et al. (2001) a	Seeking social support	0,280	-0,039	0,547	0,084
Wilcox et al. (2001) b	Seeking social support	0,050	-0,304	0,392	0,788
Rodriguez-Pérez et al. (2017)	Seeking social support	0,070	-0,144	0,278	0,523
Van den Heuvel et al. (2001)	Seeking social support	0,130	-0,005	0,260	0,059
		0,036	-0,075	0,145	0,525

FIGURE 3 Forest plot of coping dimensions and subjective burden.

between studies ($Q = 25.04$; df = 34; $p = 0.87$; $I^2 = 0\%$). The funnel plot (Appendix D—Figure 2) was asymmetric, with an Egger's test *p*-value of 0.66 and no variation when correcting using the Trim and Fill method (estimated $\bar{r} = -0.014$). With respect to sensitivity analyses when eliminating one study at a time, we found a variation of 550%. We found no differences in subgroup analysis.



Study name	Comparison	Correlation	Lower limit	Upper limit	p-Value
Del Pino et al. (2019)	Active coping	-0,052	-0,189	0,087	0,465
Jathanna et al. (2010)	Active coping	-0,052	-0,226	0,125	0,565
López-Martínez (2019)	Active coping	-0,143	-0,350	0,078	0,203
Pérez-Cruz et al. (2019)	Active coping	0,074	-0,066	0,211	0,301
Wartella et al. (2009)	Active coping	-0,340	-0,563	-0,071	0,014
		-0,071	-0,184	0,045	0,231
Del Pino et al. (2019)	Planning	0,013	-0,126	0,151	0,855
Jathanna et al. (2010)	Planning	-0,094	-0,265	0,083	0,298
Lim et al. (2011)	Planning	0,280	0,095	0,446	0,003
López-Martínez (2019)	Planning	0,149	-0,072	0,356	0,185
Pérez-Cruz et al. (2019)	Planning	0,063	-0,077	0,201	0,378
Wartella et al. (2009)	Planning	-0,230	-0,475	0,049	0,105
Bradley (2000)	Planning	0,245	0,032	0,436	0,024
Muscat and Scerri (2018)	Planning	0,427	0,194	0,614	0,001
Yeung et al. (2019)	Planning	-0,450	-0,561	-0,324	0,000
		0,040	-0,145	0,223	0,671
Del Pino et al. (2019)	Problem-focused	-0,007	-0,146	0,132	0,922
López-Martínez (2019)	Problem-focused	0,060	-0,160	0,275	0,596
Pérez-Cruz et al. (2019)	Problem-focused	-0,024	-0,163	0,116	0,737
Rammohan et al. (2002)	Problem-focused	-0,370	-0,570	-0,128	0,003
Wartella et al. (2009)	Problem-focused	-0,410	-0,616	-0,152	0,003
Felipe-Silva et al. (2021)	Problem-focused	-0,070	-0,373	0,247	0,670
Kazemi et al. (2021)	Problem-focused	0,078	-0,111	0,261	0,419
Sinha (1996)	Problem-focused	-0,140	-0,408	0,150	0,344
Barber (1988)	Problem-focused	-0,320	-0,449	-0,178	0,000
Mulhinch (2016)	Problem-focused	-0,029	-0,334	0,281	0,858
Navarro-Arquelladas (2011)	Problem-focused	-0,415	-0,706	-0,003	0,048
Visser-Meily et al. (2005)	Problem-focused	-0,020	-0,163	0,124	0,786
Wilcox et al. (2001) a	Problem-focused	0,320	0,005	0,577	0,047
Wilcox et al. (2001) b	Problem-focused	0,040	-0,313	0,383	0,829
Chronister et al. (2010)	Problem-focused	0,360	0,184	0,514	0,000
Cooper et al. (2008)	Problem-focused	0,460	0,283	0,607	0,000
Faronbi (2018)	Problem-focused	-0,700	-0,752	-0,640	0,000
Gallaguer et al. (2011)	Problem-focused	0,150	-0,067	0,353	0,174
Geiger et al. (2014)	Problem-focused	-0,053	-0,218	0,115	0,538
Grant (2022)	Problem-focused	-0,200	-0,382	-0,003	0,047
Jones et al. (2017)	Problem-focused	0,530	0,369	0,660	0,000
Kramer (1992)	Problem-focused	-0,200	-0,413	0,033	0,092
Lau and Cheng (2017)	Problem-focused	0,190	-0,006	0,372	0,057
Olin (1994)	Problem-focused	-0,320	-0,602	0,032	0,074
O'Rourke (1998)	Problem-focused	0,300	0,040	0,522	0,024
Pérez-Ordóñez et al (2016)	Problem-focused	0,430	0,172	0,633	0,002
Rodriguez-Pérez et al. (2017)	Problem-focused	-0,090	-0,296	0,124	0,411
Guedes and Pereira (2013)	Problem-focused	0,210	-0,073	0,461	0,144
Pinto and Barham (2014)	Problem-focused	-0,104	-0,522	0,355	0,667
Tartaglini et al. (2010)	Problem-focused	-0,177	-0,308	-0,039	0,012
Patrick and Hayden (1999)	Problem-focused	0,200	0,122	0,276	0,000
Schwarz and Roberts (2000)	Problem-focused	-0,090	-0,281	0,108	0,374
Van den Heuvel et al. (2001)	Problem-focused	0,120	-0,015	0,251	0,081
Van Den Wijngaart et al. (2014)	Problem-focused	0,200	-0,002	0,386	0,052
Webb et al. (1998)	Problem-focused	-0,110	-0,356	0,150	0,409
		-0,006	-0,122	0,110	0,924
Del Pino et al. (2019)	Seeking instrumental support	0,028	-0,111	0,166	0,694
Jathanna et al. (2010)	Seeking instrumental support	-0,133	-0,302	0,044	0,139
Lim et al. (2011)	Seeking instrumental support	0,250	0,063	0,420	0,009
López-Martínez (2019)	Seeking instrumental support	0,133	-0,088	0,341	0,237
Pérez-Cruz et al. (2019)	Seeking instrumental support	-0,186	-0,317	-0,048	0,009
Wartella et al. (2009)	Seeking instrumental support	-0,360	-0,578	-0,094	0,009
Papastavrou et al. (2011)	Seeking instrumental support	-0,030	-0,179	0,120	0,696
Chakrabarti and Gill (2002)	Seeking instrumental support	0,330	0,078	0,542	0,011
Claar et al. (2005)	Seeking instrumental support	0,050	-0,169	0,264	0,656
Goetzinger et al. (2012)	Seeking instrumental support	-0,040	-0,118	0,039	0,320
Montoro-Rodríguez and Gallagher-Thompson (2009)	Seeking instrumental support	0,140	-0,004	0,279	0,057
Tartaglini et al. (2010)	Seeking instrumental support	0,117	-0,022	0,252	0,099
		0,023	-0,064	0,110	0,603

FIGURE 4 Forest plot of problem-focused coping and subjective burden.

3.2.2 | Problem-focused coping—Individual strategies

Active coping was not statistically associated with subjective caregiver burden ($\bar{r}$ = –0.071; 95% CI = –0.184, 0.045; 5 samples; *N* = 655) with low statistical heterogeneity across studies (*Q* = 4.57; df = 4; *p* = 0.33; I^2 = 12.4%) and low robustness (66.2% variance when removing one study at a time). There was risk of publication bias after obtaining an Egger's test *p*-value of 0.05 together with an asymmetric funnel plot (Appendix D—Figure 3), although when correcting using the Trim and Fill method we obtained no variation (estimated $\bar{r}$ = –0.071). In subgroup analysis, we found that higher use of active coping in longitudinal studies was related to lower subjective caregiver burden ($\bar{r} = -0.226$; 95% CI = −0.407, −0.027; 2 samples; $N = 132$).

We found no significant association between subjective caregiver burden and the strategies of seeking instrumental support ($\bar{r} = 0.023$; 95% CI = −0.064, 0.110; 12 samples; $N = 2080$) and planning ($\bar{r} = 0.040$; 95% CI = −0.145, 0.223; 9 samples; $N = 1082$). For both strategies, statistical heterogeneity was low with overall weak robustness in the results after eliminating one study at a time. For publication bias, analysis of instrumental support seeking showed an asymmetric funnel plot (Appendix D—Figure 4) with an Egger's test *p*-value of 0.49 and a variance of 87% when correcting using the Trim and Fill method (estimated $\bar{r} = 0.003$). Planning also showed an asymmetric funnel plot (Appendix D—Figure 5) but no variation when correcting using the Trim and Fill method (estimated $\bar{r} = 0.040$) and an Egger's test *p*-value of 0.3.

3.3 | Emotion-focused coping

Results of the analyses examining the association between emotion-focused coping (and its different individual strategies) and subjective caregiver burden are represented in Figure 5.

3.3.1 | Emotion-focused coping as a dimension

We found no statistical association between emotion-focused coping and subjective caregiver burden ($\bar{r} = -0.130$; 95% CI = −0.280, 0.026; 15 samples; $N = 1695$), with no statistical heterogeneity between study results ($Q = 9.\ 9$; df = 14; $p = 0.77$; $I^2 = 0\%$) and risk of publication bias overall low (Appendix D—Figure 6; Egger test *p*-value = 0.03; Trim and Fill method estimated = −0.052; variation of 60%). In sensitivity analysis eliminating one study at a time, variation was 33.1%. However, when analysing these results by subgroups, we found that greater use of emotion-focused coping was associated with lower subjective burden in carers of frail older people ($\bar{r} = -0.278$; 95% CI = −0.475, −0. 056; 5 samples; $N = 890$); this effect remained after controlling for confounding bias ($\bar{r} = -0.258$; 95% CI = −0.441, −0.055; 6 samples; $N = 940$), and probability sampling ($\bar{r} = -0.186$; 95% CI = −0.297, −0.070; 2 samples; $N = 281$).

3.3.2 | Emotion-focused coping - individual strategies

Positive reappraisal was statistically associated with lower subjective burden ($\bar{r} = -0.178$; 95% CI = −0.255, −0.099; 17 samples; $N = 1735$); with no statistical heterogeneity between studies ($Q = 15.4$; df = 16; $p = 0.\ 5$; $I^2 = 0\%$), and low risk of publication bias evident in the funnel plot (Appendix D—Figure 7; Egger's test *p*-value of 0.79). There was no variation after correcting with the Trim and Fill method (estimated $\bar{r} = -0.178$). In sensitivity analysis, the variation when eliminating one study at a time was 15.2%. In subgroup analysis, we found no statistical differences.

We found no statistical association between acceptance and levels of subjective caregiver burden ($\bar{r} = -0.135$; 95% CI = −0.238, −0.028; 8 samples; $N = 998$), with no statistical heterogeneity between studies ($Q = 6.36$; df = 7; $p = 0.5$; $I^2 = 0\%$). There was an asymmetric funnel plot (Appendix D—Figure 8) with an Egger's test *p*-value of 0.62, and a variance of 60.7% after correcting for the Trim and Fill method (estimated $\bar{r} = -0.053$). Sensitivity analysis yielded a variance of 36.3% when eliminating one study at a time. We found no differences in subgroup analysis.

The relationship between religion and subjective caregiver burden was also statistically significant ($\bar{r} = -0.083$; 95% CI = −0.162, −0.002; 13 samples; $N = 2481$), with statistical heterogeneity absent ($Q = 9.9$; df = 12; $p = 0.62$; $I^2 = 0\%$). There was evidence of publication bias after analysing the funnel plot skewness (Appendix D—Figure 9); this was consistent with the Egger's test (*p*-value = 0.01), and corrections using the Trim and Fill method (estimated $\bar{r} = -0.160$; variance of 92.8%). When removing one study at a time, analysis showed a variance of 33.7%. In subgroup analysis, we found no statistically significant differences.

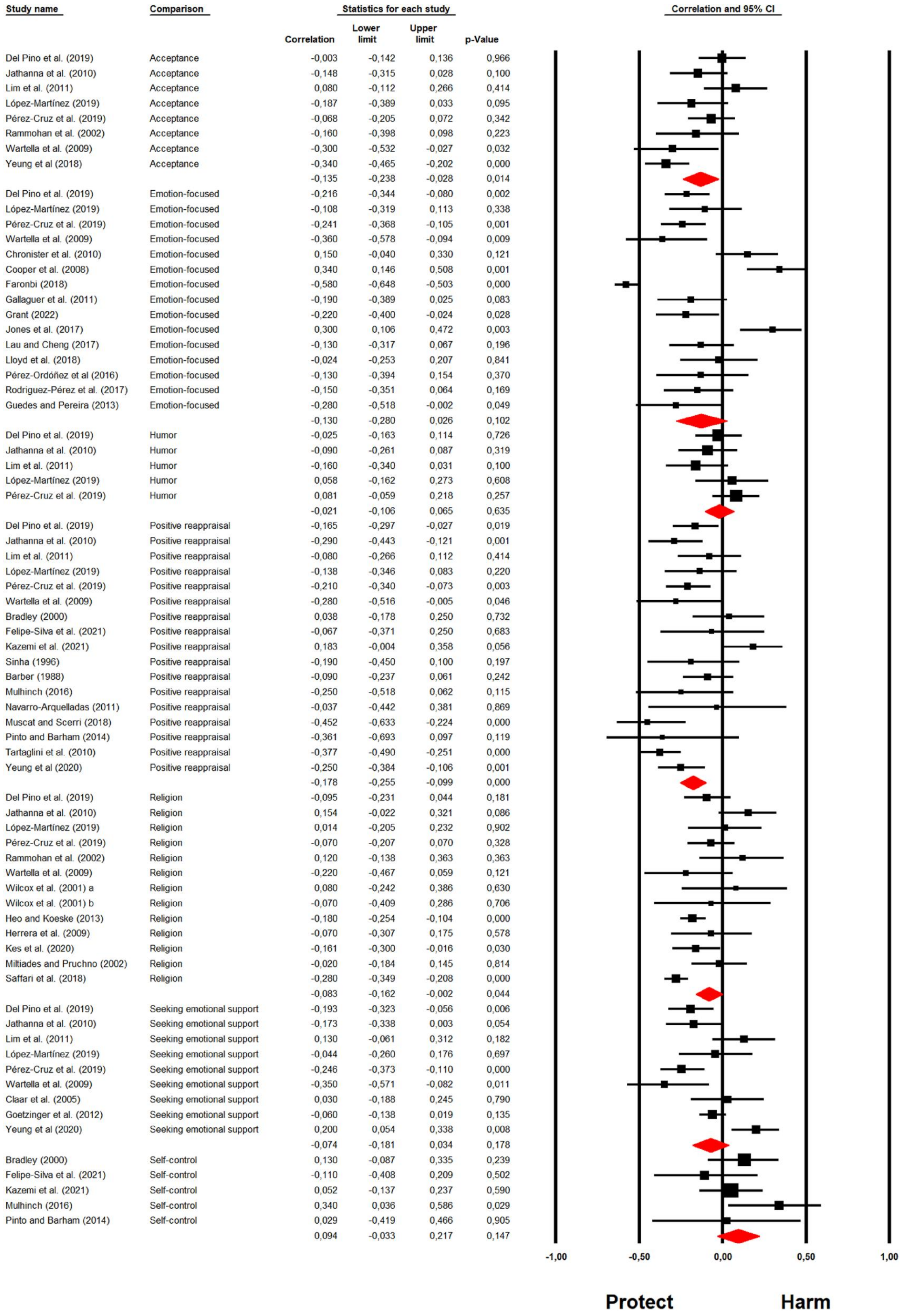
The strategies of humour ($\bar{r} = -0.021$; 95% CI = −0.106, 0.065; 5 samples; $N = 711$), seeking emotional support ($\bar{r} = -0.074$; 95% CI = −0.181, 0.034; 9 samples; $N = 1641$) and self-control ($\bar{r} = 0.094$; 95% CI = −0.033, 0.217; 5 samples; $N = 295$) were not associated with levels of subjective caregiver burden. However, in subgroup analyses, we found that carers of frail older people had less subjective caregiver burden when seeking emotional support ($\bar{r} = -0.188$; 95% CI = −0.282, −0.089; 3 samples; $N = 479$).

3.4 | Seeking social support as a dimension

We found no statistical association between subjective caregiver burden and social support seeking, or for any of the individual strategies for this dimension ($\bar{r} = 0.036$; 95% CI = −0.075, 0.145; 12 samples; $N = 962$; see Figure 3). Statistical heterogeneity between studies was low ($Q = 12.16$; df = 11; $p = 0.35$; $I^2 = 9.56\%$), with high variance (136.1%) when removing one study at a time. The funnel plot was asymmetric (Appendix D—Figure 10), with a *p*-value in the Egger's Test of 0.48 and a variance of 51.4% (estimated $\bar{r} = 0.018$) in the Trim and Fill method.

3.5 | Dysfunctional coping

The results of the analyses on the association between the dimension of dysfunctional coping, and its individual strategies, and subjective caregiver burden are represented in Figures 3 and 6, respectively.

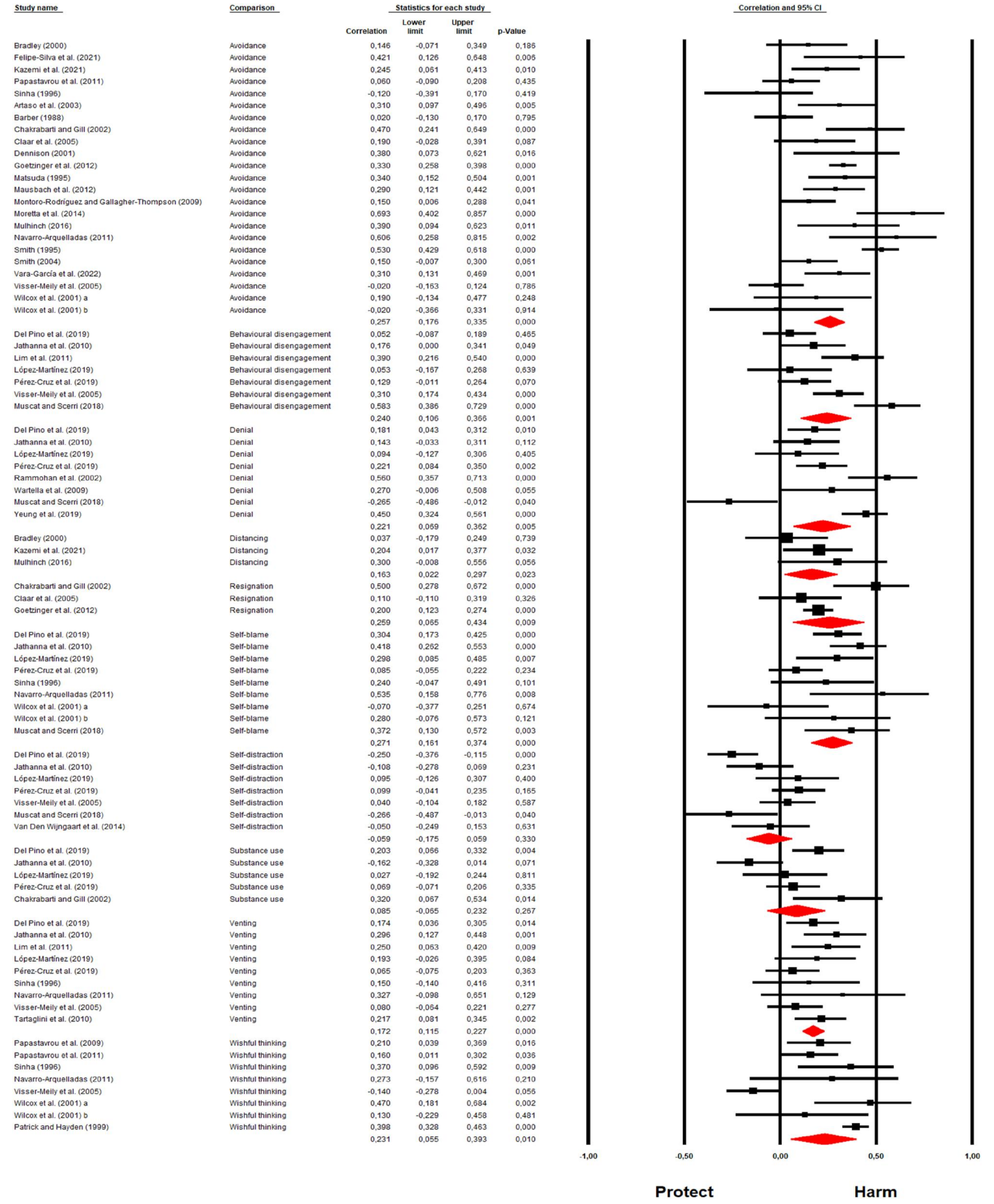


Study name	Comparison	Correlation	Lower limit	Upper limit	p-Value
Del Pino et al. (2019)	Acceptance	-0,003	-0,142	0,136	0,966
Jathanna et al. (2010)	Acceptance	-0,148	-0,315	0,028	0,100
Lim et al. (2011)	Acceptance	0,080	-0,112	0,266	0,414
López-Martínez (2019)	Acceptance	-0,187	-0,389	0,033	0,095
Pérez-Cruz et al. (2019)	Acceptance	-0,068	-0,205	0,072	0,342
Rammohan et al. (2002)	Acceptance	-0,160	-0,398	0,098	0,223
Wartella et al. (2009)	Acceptance	-0,300	-0,532	-0,027	0,032
Yeung et al (2018)	Acceptance	-0,340	-0,465	-0,202	0,000
		-0,135	-0,238	-0,028	0,014
Del Pino et al. (2019)	Emotion-focused	-0,216	-0,344	-0,080	0,002
López-Martínez (2019)	Emotion-focused	-0,108	-0,319	0,113	0,338
Pérez-Cruz et al. (2019)	Emotion-focused	-0,241	-0,368	-0,105	0,001
Wartella et al. (2009)	Emotion-focused	-0,360	-0,578	-0,094	0,009
Chronister et al. (2010)	Emotion-focused	0,150	-0,040	0,330	0,121
Cooper et al. (2008)	Emotion-focused	0,340	0,146	0,508	0,001
Faronbi (2018)	Emotion-focused	-0,580	-0,648	-0,503	0,000
Gallaguer et al. (2011)	Emotion-focused	-0,190	-0,389	0,025	0,083
Grant (2022)	Emotion-focused	-0,220	-0,400	-0,024	0,028
Jones et al. (2017)	Emotion-focused	0,300	0,106	0,472	0,003
Lau and Cheng (2017)	Emotion-focused	-0,130	-0,317	0,067	0,196
Lloyd et al. (2018)	Emotion-focused	-0,024	-0,253	0,207	0,841
Pérez-Ordóñez et al (2016)	Emotion-focused	-0,130	-0,394	0,154	0,370
Rodriguez-Pérez et al. (2017)	Emotion-focused	-0,150	-0,351	0,064	0,169
Guedes and Pereira (2013)	Emotion-focused	-0,280	-0,518	-0,002	0,049
		-0,130	-0,280	0,026	0,102
Del Pino et al. (2019)	Humor	-0,025	-0,163	0,114	0,726
Jathanna et al. (2010)	Humor	-0,090	-0,261	0,087	0,319
Lim et al. (2011)	Humor	-0,160	-0,340	0,031	0,100
López-Martínez (2019)	Humor	0,058	-0,162	0,273	0,608
Pérez-Cruz et al. (2019)	Humor	0,081	-0,059	0,218	0,257
		-0,021	-0,106	0,065	0,635
Del Pino et al. (2019)	Positive reappraisal	-0,165	-0,297	-0,027	0,019
Jathanna et al. (2010)	Positive reappraisal	-0,290	-0,443	-0,121	0,001
Lim et al. (2011)	Positive reappraisal	-0,080	-0,266	0,112	0,414
López-Martínez (2019)	Positive reappraisal	-0,138	-0,346	0,083	0,220
Pérez-Cruz et al. (2019)	Positive reappraisal	-0,210	-0,340	-0,073	0,003
Wartella et al. (2009)	Positive reappraisal	-0,280	-0,516	-0,005	0,046
Bradley (2000)	Positive reappraisal	0,038	-0,178	0,250	0,732
Felipe-Silva et al. (2021)	Positive reappraisal	-0,067	-0,371	0,250	0,683
Kazemi et al. (2021)	Positive reappraisal	0,183	-0,004	0,358	0,056
Sinha (1996)	Positive reappraisal	-0,190	-0,450	0,100	0,197
Barber (1988)	Positive reappraisal	-0,090	-0,237	0,061	0,242
Mulhinch (2016)	Positive reappraisal	-0,250	-0,518	0,062	0,115
Navarro-Arquelladas (2011)	Positive reappraisal	-0,037	-0,442	0,381	0,869
Muscat and Scerri (2018)	Positive reappraisal	-0,452	-0,633	-0,224	0,000
Pinto and Barham (2014)	Positive reappraisal	-0,361	-0,693	0,097	0,119
Tartaglini et al. (2010)	Positive reappraisal	-0,377	-0,490	-0,251	0,000
Yeung et al (2020)	Positive reappraisal	-0,250	-0,384	-0,106	0,001
		-0,178	-0,255	-0,099	0,000
Del Pino et al. (2019)	Religion	-0,095	-0,231	0,044	0,181
Jathanna et al. (2010)	Religion	0,154	-0,022	0,321	0,086
López-Martínez (2019)	Religion	0,014	-0,205	0,232	0,902
Pérez-Cruz et al. (2019)	Religion	-0,070	-0,207	0,070	0,328
Rammohan et al. (2002)	Religion	0,120	-0,138	0,363	0,363
Wartella et al. (2009)	Religion	-0,220	-0,467	0,059	0,121
Wilcox et al. (2001) a	Religion	0,080	-0,242	0,386	0,630
Wilcox et al. (2001) b	Religion	-0,070	-0,409	0,286	0,706
Heo and Koeske (2013)	Religion	-0,180	-0,254	-0,104	0,000
Herrera et al. (2009)	Religion	-0,070	-0,307	0,175	0,578
Kes et al. (2020)	Religion	-0,161	-0,300	-0,016	0,030
Miltiades and Pruchno (2002)	Religion	-0,020	-0,184	0,145	0,814
Saffari et al. (2018)	Religion	-0,280	-0,349	-0,208	0,000
		-0,083	-0,162	-0,002	0,044
Del Pino et al. (2019)	Seeking emotional support	-0,193	-0,323	-0,056	0,006
Jathanna et al. (2010)	Seeking emotional support	-0,173	-0,338	0,003	0,054
Lim et al. (2011)	Seeking emotional support	0,130	-0,061	0,312	0,182
López-Martínez (2019)	Seeking emotional support	-0,044	-0,260	0,176	0,697
Pérez-Cruz et al. (2019)	Seeking emotional support	-0,246	-0,373	-0,110	0,000
Wartella et al. (2009)	Seeking emotional support	-0,350	-0,571	-0,082	0,011
Claar et al. (2005)	Seeking emotional support	0,030	-0,188	0,245	0,790
Goetzinger et al. (2012)	Seeking emotional support	-0,060	-0,138	0,019	0,135
Yeung et al (2020)	Seeking emotional support	0,200	0,054	0,338	0,008
		-0,074	-0,181	0,034	0,178
Bradley (2000)	Self-control	0,130	-0,087	0,335	0,239
Felipe-Silva et al. (2021)	Self-control	-0,110	-0,408	0,209	0,502
Kazemi et al. (2021)	Self-control	0,052	-0,137	0,237	0,590
Mulhinch (2016)	Self-control	0,340	0,036	0,586	0,029
Pinto and Barham (2014)	Self-control	0,029	-0,419	0,466	0,905
		0,094	-0,033	0,217	0,147

FIGURE 5 Forest plot of emotion-focused coping and subjective burden.

3.5.1 | Dysfunctional coping as a dimension

Higher use of dysfunctional coping was statistically associated with higher levels of subjective caregiver burden in family carers ($\bar{r}$ = 0.400; 95% CI = 0.315, 0.478; 37 samples; *N* = 5174); there was no statistical heterogeneity (*Q* = 22.6; df = 36; *p* = 0.96; I^2 = 0%) and a variance of 5.3% was observed in the sensitivity analysis. Regarding publication bias, Egger's test gave a *p*-value of



Study name	Comparison	Statistics for each study			
		Correlation	Lower limit	Upper limit	p-Value
Bradley (2000)	Avoidance	0,146	-0,071	0,349	0,186
Felipe-Silva et al. (2021)	Avoidance	0,421	0,126	0,648	0,006
Kazemi et al. (2021)	Avoidance	0,245	0,061	0,413	0,010
Papastavrou et al. (2011)	Avoidance	0,060	-0,090	0,208	0,435
Sinha (1996)	Avoidance	-0,120	-0,391	0,170	0,419
Artaso et al. (2003)	Avoidance	0,310	0,097	0,496	0,005
Barber (1988)	Avoidance	0,020	-0,130	0,170	0,795
Chakrabarti and Gill (2002)	Avoidance	0,470	0,241	0,649	0,000
Claar et al. (2005)	Avoidance	0,190	-0,028	0,391	0,087
Dennison (2001)	Avoidance	0,380	0,073	0,621	0,016
Goetzinger et al. (2012)	Avoidance	0,330	0,258	0,398	0,000
Matsuda (1995)	Avoidance	0,340	0,152	0,504	0,001
Mausbach et al. (2012)	Avoidance	0,290	0,121	0,442	0,001
Montoro-Rodríguez and Gallagher-Thompson (2009)	Avoidance	0,150	0,006	0,288	0,041
Moretta et al. (2014)	Avoidance	0,693	0,402	0,857	0,000
Mulhinch (2016)	Avoidance	0,390	0,094	0,623	0,011
Navarro-Arquelladas (2011)	Avoidance	0,606	0,258	0,815	0,002
Smith (1995)	Avoidance	0,530	0,429	0,618	0,000
Smith (2004)	Avoidance	0,150	-0,007	0,300	0,061
Vara-García et al. (2022)	Avoidance	0,310	0,131	0,469	0,001
Visser-Meily et al. (2005)	Avoidance	-0,020	-0,163	0,124	0,786
Wilcox et al. (2001) a	Avoidance	0,190	-0,134	0,477	0,248
Wilcox et al. (2001) b	Avoidance	-0,020	-0,366	0,331	0,914
		0,257	0,176	0,335	0,000
Del Pino et al. (2019)	Behavioural disengagement	0,052	-0,087	0,189	0,465
Jathanna et al. (2010)	Behavioural disengagement	0,176	0,000	0,341	0,049
Lim et al. (2011)	Behavioural disengagement	0,390	0,216	0,540	0,000
López-Martínez (2019)	Behavioural disengagement	0,053	-0,167	0,268	0,639
Pérez-Cruz et al. (2019)	Behavioural disengagement	0,129	-0,011	0,264	0,070
Visser-Meily et al. (2005)	Behavioural disengagement	0,310	0,174	0,434	0,000
Muscat and Scerri (2018)	Behavioural disengagement	0,583	0,386	0,729	0,000
		0,240	0,106	0,366	0,001
Del Pino et al. (2019)	Denial	0,181	0,043	0,312	0,010
Jathanna et al. (2010)	Denial	0,143	-0,033	0,311	0,112
López-Martínez (2019)	Denial	0,094	-0,127	0,306	0,405
Pérez-Cruz et al. (2019)	Denial	0,221	0,084	0,350	0,002
Rammohan et al. (2002)	Denial	0,560	0,357	0,713	0,000
Wartella et al. (2009)	Denial	0,270	-0,006	0,508	0,055
Muscat and Scerri (2018)	Denial	-0,265	-0,486	-0,012	0,040
Yeung et al. (2019)	Denial	0,450	0,324	0,561	0,000
		0,221	0,069	0,362	0,005
Bradley (2000)	Distancing	0,037	-0,179	0,249	0,739
Kazemi et al. (2021)	Distancing	0,204	0,017	0,377	0,032
Mulhinch (2016)	Distancing	0,300	-0,008	0,556	0,056
		0,163	0,022	0,297	0,023
Chakrabarti and Gill (2002)	Resignation	0,500	0,278	0,672	0,000
Claar et al. (2005)	Resignation	0,110	-0,110	0,319	0,326
Goetzinger et al. (2012)	Resignation	0,200	0,123	0,274	0,000
		0,259	0,065	0,434	0,009
Del Pino et al. (2019)	Self-blame	0,304	0,173	0,425	0,000
Jathanna et al. (2010)	Self-blame	0,418	0,262	0,553	0,000
López-Martínez (2019)	Self-blame	0,298	0,085	0,485	0,007
Pérez-Cruz et al. (2019)	Self-blame	0,085	-0,055	0,222	0,234
Sinha (1996)	Self-blame	0,240	-0,047	0,491	0,101
Navarro-Arquelladas (2011)	Self-blame	0,535	0,158	0,776	0,008
Wilcox et al. (2001) a	Self-blame	-0,070	-0,377	0,251	0,674
Wilcox et al. (2001) b	Self-blame	0,280	-0,076	0,573	0,121
Muscat and Scerri (2018)	Self-blame	0,372	0,130	0,572	0,003
		0,271	0,161	0,374	0,000
Del Pino et al. (2019)	Self-distraction	-0,250	-0,376	-0,115	0,000
Jathanna et al. (2010)	Self-distraction	-0,108	-0,278	0,069	0,231
López-Martínez (2019)	Self-distraction	0,095	-0,126	0,307	0,400
Pérez-Cruz et al. (2019)	Self-distraction	0,099	-0,041	0,235	0,165
Visser-Meily et al. (2005)	Self-distraction	0,040	-0,104	0,182	0,587
Muscat and Scerri (2018)	Self-distraction	-0,266	-0,487	-0,013	0,040
Van Den Wijngaart et al. (2014)	Self-distraction	-0,050	-0,249	0,153	0,631
		-0,059	-0,175	0,059	0,330
Del Pino et al. (2019)	Substance use	0,203	0,066	0,332	0,004
Jathanna et al. (2010)	Substance use	-0,162	-0,328	0,014	0,071
López-Martínez (2019)	Substance use	0,027	-0,192	0,244	0,811
Pérez-Cruz et al. (2019)	Substance use	0,069	-0,071	0,206	0,335
Chakrabarti and Gill (2002)	Substance use	0,320	0,067	0,534	0,014
		0,085	-0,065	0,232	0,267
Del Pino et al. (2019)	Venting	0,174	0,036	0,305	0,014
Jathanna et al. (2010)	Venting	0,296	0,127	0,448	0,001
Lim et al. (2011)	Venting	0,250	0,063	0,420	0,009
López-Martínez (2019)	Venting	0,193	-0,026	0,395	0,084
Pérez-Cruz et al. (2019)	Venting	0,065	-0,075	0,203	0,363
Sinha (1996)	Venting	0,150	-0,140	0,416	0,311
Navarro-Arquelladas (2011)	Venting	0,327	-0,098	0,651	0,129
Visser-Meily et al. (2005)	Venting	0,080	-0,064	0,221	0,277
Tartaglini et al. (2010)	Venting	0,217	0,081	0,345	0,002
		0,172	0,115	0,227	0,000
Papastavrou et al. (2009)	Wishful thinking	0,210	0,039	0,369	0,016
Papastavrou et al. (2011)	Wishful thinking	0,160	0,011	0,302	0,036
Sinha (1996)	Wishful thinking	0,370	0,096	0,592	0,009
Navarro-Arquelladas (2011)	Wishful thinking	0,273	-0,157	0,616	0,210
Visser-Meily et al. (2005)	Wishful thinking	-0,140	-0,278	0,004	0,056
Wilcox et al. (2001) a	Wishful thinking	0,470	0,181	0,684	0,002
Wilcox et al. (2001) b	Wishful thinking	0,130	-0,229	0,458	0,481
Patrick and Hayden (1999)	Wishful thinking	0,398	0,328	0,463	0,000
		0,231	0,055	0,393	0,010

FIGURE 6 Forest plot of dysfunctional coping strategies and subjective burden.

0.32 with a funnel plot that appeared asymmetric (Appendix D—Figure 11), and a variance of 19.5% when correcting using the Trim and Fill method (estimated $\bar{r} = 0.322$). We found no differences in subgroup analysis.

3.5.2 | Dysfunctional coping - individual strategies

We found a statistically significant association between avoidance and subjective caregiver burden ($\bar{r} = 0.257$; 95% CI = 0.176, 0.335;

23 samples; $N = 2754$), representing a robust result (variance of 8.6% when removing one study at a time). Statistical heterogeneity was overall low ($Q = 23.97$; df = 22; $p = 0.35$; $I^2 = 8.2\%$). The funnel plot was asymmetric (Appendix D—Figure 12), with an Egger's test p-value of 0.87 and overall small variation (5.1%) when correcting using the Trim and Fill method (estimated $\bar{r} = 0.244$). There were no differences in subgroup analysis.

We found a statistically significant association between subjective caregiver burden and denial ($\bar{r} = 0.221$; 95% CI = 0.069, 0.362; 8 samples; $N = 951$), wishful thinking ($\bar{r} = 0.231$; 95% CI = 0.055, 0.393; 8 samples; $N = 1227$), self-blame ($\bar{r} = 0.271$; 95% CI = 0.161, 0.374; 9 samples; $N = 806$), venting ($\bar{r} = 0.\ 172$; 95% CI = 0.115, 0.227; 9 samples; $N = 1169$), behaviour disengagement ($\bar{r} = 0.240$; 95% CI = 0.106, 0.366; 7 samples; $N = 958$), distancing ($\bar{r} = 0.163$; 95% CI = 0.022, 0.297; 3 samples; $N = 235$), and resignation ($\bar{r} = 0.259$; 95% CI = 0.065, 0.434; 3 samples; $N = 761$), but no statistical association for substance use ($\bar{r} = 0.085$; 95% CI = −0.065, 0.232; 5 samples; $N = 662$), and self-distraction ($\bar{r} = -0.059$; 95% CI = −0.175, 0.059; 7 samples; $N = 946$).

4 | DISCUSSION

This review makes a unique contribution to the current evidence base by systematically evaluating the association between subjective caregiver burden and coping responses, across all family carers of dependants adults and older people. In addition, it is the first systematic review to provide a quantitative estimate of the association of different coping strategies, and levels of subjective caregiver burden in informal caregiving populations. An important strength of our review is that we have been able to additionally assess the effect of several factors that may be influencing the predicted estimate such as study design, methodological quality and cause of care dependency.

Overall, our results indicate that dysfunctional coping is consistently related to higher levels of subjective caregiver burden. We found that emotion-focused coping was significantly associated with lower levels of subjective caregiver burden when objective burden variables were controlled for, and several individual strategies of this coping dimension such as acceptance, positive reappraisal and religion were also significantly associated with lower burden. By contrast, neither problem-focused coping nor individual strategies of this dimension were significantly associated with levels of subjective caregiver burden, whereas using a combination of problem-focused and emotion-focused coping strategies (second-order active coping) was associated with less perceived burden overall.

4.1 | Second-order active coping as a dimension

Family carers who employed more second-order active coping, which integrates both problem-focused and emotion-focused coping strategies, reported lower levels of burden. Although the strength of the association was small, results were precise and consistent. This finding coincides with the findings of Muñoz-Cruz et al. (2023a) reporting that the use of specific individual strategies that seek to re-evaluate, modify, and resolve a stress-causing situation are associated with better outcomes in family carers such as lower depressive symptoms. Therefore, combining both problem-focused and emotion-focused strategies to promote more adaptive responses in response to caregiving stressors may be important for future interventions (Miller et al., 2020).

4.2 | Problem-focused coping

Despite current theories highlighting that problem-focused coping strategies are important in reducing stress for family carers (Carver, 1997), empirical studies are less clear (Del-Pino-Casado et al., 2011). An important strength of our review is that we found no statistical association between problem-focused coping, or any of the individual strategies of this dimension, and levels of subjective caregiver burden, pooling data across 35 studies. This finding is consistent with prior reviews reporting that problem-focused coping is generally not associated with caregiver mental health outcomes such as anxiety and depression (Li et al., 2012; Muñoz-Cruz et al., 2023a, Muñoz-Cruz et al., 2023a).

However, recent reviews (Muñoz-Cruz et al., 2023a, Muñoz-Cruz et al., 2023a) have highlighted that this form of coping could be effective in reducing psychological distress in carers of frail older people but not in carers of people with dementia. In our analyses, we found no differences between problem-focused coping and subjective caregiver burden for the different causes of care dependency; however, results for family carers of frail older people approached significance. This could be due to the prevalence of more unpredictable and uncontrollable stressors in dementia caregiving compared to other care settings, such as distressing behavioural symptoms experienced by care-recipients, which are key contributors of high levels of subjective caregiver burden (Pinquart & Sörensen, 2003b; van der Lee et al., 2014). Therefore, our results are in line with the hypothesis that problem-focused coping may be more effective in situations that are controllable (Wartella et al., 2009), and that longitudinal investigations of the relationship between different stressors and problem-focused coping will be key in understanding the contribution of this form of coping to the different phases of the caregiving process.

Another explanation for the lack of a significant association between problem-focused coping and subjective caregiver burden may be that the relationship is mediated by individual differences in cognitive function (Kumar-Bhattacharyya et al., 2023). Using problem-focused coping depends on cognitive skills which may decline for some caregivers over time due to stress associated with caregiving (Aneshensel et al., 1995; Pinquart & Sörensen, 2003a). This may therefore affect key skills involved in caregiving duties and problem solving such as planning, and reasoning. It will be important that future studies examine specific hypotheses of how individual differences in cognitive function may explain the complex relationship between coping responses and levels of caregiver burden experienced by carers (Bertrand et al., 2012; Kumar-Bhattacharyya et al., 2023).

4.3 | Emotion-focused coping

We found NS association between the dimension of emotion-focused coping and subjective caregiver burden, combining all 15 studies conducted to date. However, we found that family carers who used more emotion-focused coping reported experiencing less subjective burden in studies that controlled for confounding variables. These results coincide with those of Muñoz-Cruz et al. (2023a), reporting that this form of coping is a significant predictor of carer depressive symptoms, and has protective effects for other carer mental health outcomes such as anxiety (Li et al., 2012; Muñoz-Cruz et al., 2023b).

When studying the individual coping strategies that constitute this dimension, we found that not all coping responses of this dimension were significantly associated with caregiver burden. We found that accepting the caregiving situation by positively re-evaluating it was associated with lower burden overall. These findings are consistent with both theory and empirical work that acceptance and positive re-appraisal are strategies that generally support adaptation for family carers, by reducing negative outcomes associated with caregiving stressors (Muñoz-Cruz et al., 2023a, Muñoz-Cruz et al., 2023a).

We found that religious coping was an adaptive strategy in the face of subjective burden; however, this result should be treated with caution due to the risk of publication bias observed in our analyses. This finding may be explained by the fact that family carers who approach stressful situations using religious coping may be more likely to experience a sense of satisfaction in providing care and feelings that this help will be returned to them (Küçükgüçlü et al., 2017). Overall, our results support the study of both individual coping strategies as well as more general dimensions of coping in order to fully understand the complex association between coping responses and subjective caregiver burden.

4.4 | Dysfunctional coping

We found that family carers who employed more dysfunctional coping reported experiencing higher levels of subjective caregiver burden. This association was precise and robust with a moderate effect size. Most of the individual strategies of this dimension (avoidance, denial, wishful thinking, self-blame, venting, resignation, behavioural disengagement, or distancing) were also consistently associated with higher subjective caregiver burden. These results are similar to those obtained by Muñoz-Cruz et al. (2023a) and (2023b) who reported that use of dysfunctional coping is a strong predictor of both depressive and anxiety symptoms in carers. Therefore, we can conclude that dysfunctional coping, which often involves strategies such as denial or avoidance coping, is an important predictor of mental distress in family carers, and could potentially contribute to maintaining burden or distress over time. Interventions that prevent the use of dysfunctional coping and promote the use of acceptance and positive reappraisal strategies could be key in reducing subjective caregiver burden long-term.

In our review, all longitudinal studies conceptualized subjective caregiver burden as an outcome of family caregiving (dependent variable), however, other studies have considered subjective caregiver burden as a mediator between coping and mental health effects such as anxiety (del-Pino-Casado et al., 2014). Since the Multidimensional Stress Process Model of Pearlin et al. (1990) has not specified a causal order between subjective burden and coping, we were able to test several different hypotheses regarding this relationship. In our analysis by subgroups, we found no statistical differences (except for active coping) between cross-sectional and longitudinal studies. Therefore, it is possible that subjective burden is influenced and, in turn, influences coping strategies employed by family carers.

4.5 | Limitations

Despite the important results of our review, there are several limitations. Firstly, it is possible that, despite our efforts to include all existing studies on this research topic, our search may have still missed studies meeting inclusion criteria. Despite the steps taken to reduce the influence of heterogeneity on our results (such as use of a random effects model, and conducting several subgroup analyses), it is still likely that the variety of designs employed across different studies influenced our reported estimates. Given that most of the studies included in our review were cross-sectional, our findings remain limited and cannot inform conclusions around causality. Most of the studies employed non-probability sampling, limiting the extrapolation of our results more widely. When analysing the effect of publication bias, we found that publication bias influenced results in several of our analyses. For several coping strategies, meta-analyses were based on a low number of studies overall, making results potentially less reliable and robust. We were also not able to use adjusted estimators, so the risk of confounding bias could not be controlled for. Finally, many results reported in the various subgroup analyses were imprecize due to the low number of studies, with effect sizes observed small limiting the clinical significance of our results.

5 | CONCLUSIONS

Our review contributes to theoretical and empirical work of several decades reporting on the association between coping strategies employed by carers and levels of subjective caregiver burden. We found that family carers who employed more dysfunctional coping overall reported higher levels of caregiver burden. Results showed this is a consistent association of moderate effect size. On the contrary, emotion-focused coping was significantly associated with lower levels of subjective caregiver burden only when objective burden variables were controlled for. Several individual strategies of this coping dimension such as acceptance, positive reappraisal and religion were also significantly associated with lower burden indicating that these strategies are likely to be adaptive in stressful caregiving situations. Neither problem-focused coping nor individual coping strategies of this dimension were significantly associated with subjective caregiver burden, whereas using a combination of problem-focused and emotion-focused coping strategies (second-order active coping) was associated with overall less perceived burden.

6 | RELEVANCE FOR CLINICAL PRACTICE

Greater use of dysfunctional coping strategies is associated with greater subjective burden in family carers, whereas second-order active coping, comprising mainly of emotion-focused strategies, is associated with lower levels of caregiver burden. These results could be useful in guiding future research focusing on developing interventions aimed at preventing high levels of burden in carers. Given that coping strategies influence carers' levels of subjective caregiver burden, future policies should be implemented in providing carers access to interventions that promote positive outcomes, and support them to cope with stressful situations associated with caring for a dependent person. These policies could prevent the risk of family carers losing the ability to provide care at home, whilst reducing the burden on formal health care systems (Fields et al., 2021).

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CONFLICT OF INTEREST STATEMENT

Professor del-Pino-Casado R., López-Martínez C. and Orgeta V. are authors of one study that met the inclusion criteria for this review. Professor del-Pino-Casado R. and López-Martínez C. are authors of two studies more that met the inclusion criteria for this review.

DATA AVAILABILITY STATEMENT

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

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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