



Interpersonal emotion regulation and mental health among cancer survivors: A systematic review

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ABSTRACT

Objective: Cancer and its treatment can cause significant emotional distress, adversely affecting mental health. Interpersonal emotion regulation, the process by which individuals regulate emotions through social interactions, plays a critical role in cancer survivorship. This study systematically reviews evidence on the associations between interpersonal emotion regulation and mental health outcomes among cancer survivors, along with the theoretical models guiding this research.

Methods: A systematic search was conducted in PubMed, Embase, Web of Science, and Scopus databases, yielding 6928 records. After applying inclusion and exclusion criteria, 86 studies involving 67,592 cancer survivors were included. Various aspects of interpersonal emotion regulation (e.g., emotional support, social constraints, affectionate support) and mental health indicators (e.g., depression, anxiety, quality of life) were evaluated. Quality assessments and data synthesis were performed in accordance with PRISMA guidelines.

Results: Interpersonal emotion regulation was consistently associated with mental health outcomes. Emotional support, affectionate support, and dyadic coping showed small-to-moderate positive associations with improved mental health (e.g., reduced depression, anxiety, and distress, and enhanced quality of life). Conversely, social constraints and ambivalence over emotional expression were negatively associated with mental health. Less than one-third of studies referenced theoretical models, the most frequent being the social-cognitive processing model and the stress-buffering hypothesis.

Conclusion: Interpersonal emotion regulation significantly influences mental health among cancer survivors, with distinct strategies yielding varying impacts. Future research should integrate theoretical frameworks and longitudinal designs to better elucidate causal mechanisms and optimize interventions targeting interpersonal dynamics in survivorship care.

Cancer and its treatment often have adverse impacts on the mental health of cancer survivors (Baziliansky et al., 2023). After primary treatment, survivors may still face long-term effects, daily limitations, and existential concerns, which become more prominent during survivorship (Arthur, 2024; Greinacher et al., 2023). One mitigating factor

against such adverse impacts is formed by the emotional support that cancer survivors receive from their interpersonal relations such as their partner, family and friends (Fong et al., 2017; Harms et al., 2019; Li et al., 2018). Interpersonal emotion regulation theory states that people may engage in various activities to regulate their emotions in

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interpersonal contexts, such as emotional expression, sharing emotions, and co-rumination (Koole & Tschacher, 2016; Rimé, 2009; Zaki & Williams, 2013).

The study of interpersonal emotion regulation has emerged as a distinct domain of scientific inquiry over the past two decades (Dixon-Gordon et al., 2015; Niven, 2017; Rimé, 2007; Zaki & Williams, 2013). Theoretically, interpersonal emotion regulation is conceptualized as an overarching process through which individuals manage their emotional experiences by engaging with others. Rather than existing in isolation, interpersonal emotion regulation draws upon and integrates a range of established psychological constructs. For example, social support theory (Cohen & Wills, 1985; Lakey & Cohen, 2000) posits that receiving emotional support can buffer stress and enhance psychological well-being. Within the interpersonal emotion regulation framework, this type of support functions as a regulatory mechanism, whereby others help modulate emotional states. Similarly, research on emotional sharing (Rimé, 2009; Koudenburg et al., 2014) demonstrates how verbal disclosure of emotional experiences facilitates insight, validation, and co-regulation, aligning with interpersonal emotion regulation as a verbal interpersonal strategy. Dyadic coping theory (Bodenmann, 1997; Lyons & Lee, 2018) contributes further by highlighting how romantic partners coordinate their responses to shared stress, which often involves alignment of emotional regulation efforts—an example of mutual, relational interpersonal emotion regulation. Theories of emotional coregulation (Butler & Randall, 2013; Koole & Tschacher, 2016) and interpersonal synchrony emphasize the dynamic and reciprocal nature of emotional processes across time and individuals. In addition, role-based models distinguish between individuals who provide emotional regulation (the “regulators”) and those who receive it (the “regulated”), offering a nuanced understanding of asymmetry in interpersonal emotion regulation processes (Niven, 2017; Levy-Gigi & Shamay-Tsoory, 2017).

As a meta-construct, interpersonal emotion regulation encompasses both deliberate and incidental emotional exchanges, whether verbal or nonverbal, symmetrical or asymmetrical. While constructs such as social support, emotional sharing, and dyadic coping each capture specific facets of emotion-related social interaction, interpersonal emotion regulation offers a more unified conceptual lens by integrating these perspectives within a regulatory framework. For instance, social support extends beyond emotion to include instrumental and informational aid, whereas interpersonal emotion regulation focuses specifically on emotional modulation. Emotional sharing emphasizes verbal expression, while interpersonal emotion regulation also involves nonverbal modalities such as interpersonal touch (Suvilehto et al., 2023; Sin & Koole, 2013). Coregulation within close relationships reflects just one mode of interpersonal emotion regulation, which can also occur unidirectionally between strangers, professionals, or caregivers and patients. Thus, interpersonal emotion regulation helps to uncover shared regulatory mechanisms across previously siloed domains, allowing for a more comprehensive understanding of how emotions are socially shaped, supported, or constrained.

Over the last few decades, a growing number of studies has investigated aspects of interpersonal emotion regulation on outcomes such as quality of life (Moura et al., 2021), well-being (Strayhorn et al., 2021), and psychological symptoms of distress (Fagundes et al., 2012) and depression (Darabos et al., 2022) among cancer survivors. Lepore and Revenson (2007) explored social constraints, such as expected criticism on disclosing cancer-related thoughts and feelings, examining their influence on coping behaviours, and psychological adjustment. Other researchers investigated dyadic coping in couples affected by cancer, such as open communication (Regan et al., 2015).

In conclusion, interpersonal emotion regulation is an emerging integrative construct that captures a broad array of social processes through which individuals influence their own and others' emotional experiences. These processes appear to be vital to the mental health of cancer survivors, yet to date, no systematic review has specifically

synthesized findings on the associations between interpersonal emotion regulation and mental health outcomes in this population. While prior reviews have addressed related constructs, such as social support (Deegan et al., 2023) or dyadic coping (Chen et al., 2022), these reviews have typically examined individual mechanisms in isolation and have not framed them within a unified theoretical lens of emotion regulation. Our primary aim in this article is therefore to systematically identify, evaluate, and integrate existing empirical evidence on how interpersonal emotion regulation, conceptualized broadly, relates to mental health among cancer survivors.

In doing so, we adopt an inclusive scope, examining both how cancer survivors engage in interpersonal emotion regulation (e.g., emotional expression, suppression, sharing), and how others' regulatory behaviors (e.g., partner support, protective buffering, social constraints) shape survivors' emotional adjustment. We also include constructs such as coping and suppression when they are explicitly embedded in interpersonal contexts, as these reflect key facets of interpersonal emotion regulation in the cancer literature. Furthermore, we go beyond synthesis of outcomes by documenting the theoretical models that underpin existing studies, offering insights into how interpersonal emotion regulation has been conceptualized and operationalized across the field. By drawing together these diverse strands, we aim to provide a theoretically grounded and comprehensive overview that distinguishes this review from previous literature and clarifies the unique contribution of interpersonal emotion regulation research in the context of cancer survivorship.

Method

We conducted a systematic review of studies investigating associations between interpersonal emotion regulation and mental health among cancer survivors. The study was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (See Appendix A PRISMA_2020_checklist, Moher et al., 2009) and preregistered in PROSPERO (registration no.: CRD42023370318).

Inclusion and exclusion criteria

We included studies on associations between interpersonal emotion regulation and mental health in cancer survivors. While the American Cancer Society (ACS) defines a cancer survivor as anyone ever diagnosed with cancer, our review focused on those who had completed active treatment (i.e., surgery, radiation, and/or chemotherapy) with a curative purpose, in line with the focus of most included studies (e.g., Arthur, 2024; Greinacher et al., 2023). This subgroup is often considered ‘post-treatment survivors,’ facing distinct psychosocial adjustment processes. This focus was deliberately chosen to emphasize the long-term psychological and emotional adjustments experienced by survivors, as distinct from the acute effects of ongoing treatment. Cross-sectional studies, longitudinal studies, randomized controlled trials and qualitative studies reporting on original data were all included. Exclusion criteria were: (1) non-English-language articles; (2) articles that were not specific to cancer survivors; and (3) literature reviews, systematic reviews, meta-analyses, books, unpublished articles, doctoral theses, commentaries, abstracts of conferences and congresses, and case-reports. Because of our focus on interpersonal emotion regulation, we did not include research on general social support (e.g. studies that did not separate emotional support from practical or financial support). We also included support that indicated a specific source (partner, family, and friend support).

Search strategy

An information specialist conducted systematic searches in PubMed, Embase, Web of Science, and Scopus, using a combination of controlled

vocabulary terms (e.g., MeSH in PubMed, Emtree in Embase) and theory-informed free-text keywords. Terms related to cancer (e.g., cancer*, neoplas*, oncolog*) and survivorship (e.g., “cancer survivors,” surviv*) were combined with a broad set of keywords reflecting interpersonal emotion regulation processes. These included both general terms (e.g., “social support”, “emotional expression”, empath*), and more specific constructs identified in theoretical models of interpersonal emotion regulation (e.g., dyadic coping, affectionate support, protective buffering, self-disclosure). Controlled vocabulary terms such as “Neoplasms” [MeSH], “Cancer Survivors” [MeSH], and “Social Support” [MeSH] were also incorporated to increase the sensitivity and coverage of the search.

We included studies assessing either cancer survivors’ own interpersonal emotion regulation strategies, or regulatory behaviors enacted by others (e.g., caregivers, family members, partners). Mental health outcomes were defined broadly to capture the full range of survivors’ emotional adjustment. This included not only psychiatric diagnoses (e.g., depressive disorder, anxiety disorder, obsessive-compulsive and related disorders, trauma- and stressor-related disorders) and subclinical symptoms (e.g., distress, fatigue, sleep problems), but also psychosocial constructs such as resilience, acceptance, and fatalism, which reflect cognitive-emotional adaptation to cancer and are increasingly recognized as important indicators of psychological functioning in survivorship research. The full search strings are provided in **Appendix B**. The initial search was conducted from the earliest records available until November 11th, 2022, with updates on September 25th, 2023, and a final search on April 18th, 2024.

Title, abstract and full text screening

The information specialist (GB) removed duplicates using Covidence (Covidence systematic review software) and three authors (ZZ, SLK, IV) conducted title and abstract screening using Rayyan for Systematic Reviews (Ouzzani et al., 2016). ZZ scanned all records, SLK, and IV each scanned half of them ensuring that all records were independently evaluated by two authors. Full texts of the remaining references were evaluated by two authors (ZZ, IV) and reasons for exclusion were registered. Then, ZZ and Xiaoyi Zhang (XZ) performed the title, abstract and full text screening of the search update. Disagreements in title and abstract screening and full text screening were discussed with a third author (KH) until consensus was reached.

Data extraction

Data regarding study characteristics were extracted by two authors (ZZ and XJ) and checked by a third author (KH). When two or more studies reported data on the same study population, we extracted data from the study with the largest sample size, or if equal, the one providing more detailed outcome information. Studies were coded according to a priori-specified characteristics, comprising of (1) study characteristics: author, year of publication, country and study design; (2) study population characteristics: sample size, age (mean (SD) years), sex, type of cancer, time since diagnosis, time since treatment; (3) study outcomes: a) type of interpersonal emotion regulation, including its measure, Cronbach’s α , mean, and standard deviation; b) type of mental health outcome, measure, Cronbach’s α , mean and standard deviation, and c) correlation coefficient between the measured type of interpersonal emotion regulation and the mental health outcome reported in the study. If instead of a correlation coefficient another statistic was reported (i.e. regression coefficient or odds ratio) only the significance (yes, no) and direction (positive, negative) of that statistic was extracted. For qualitative studies only the direction of the association was extracted.

Data on the theories or models of interpersonal emotion regulation in relation to mental health used in the included articles were extracted and analyzed by two authors (ZZ and XJ).

Quality assessment

Study quality was assessed by two authors (ZZ and XJ), using Joanna Briggs Institute critical appraisal tools (checklists for cross-sectional and qualitative studies) (Lockwood et al., 2020). Three levels were used to assess the strength of the evidence and the degree to which findings can be considered reliable. Level 1 evidence is considered the highest quality of evidence and is often used to inform clinical guidelines and decision-making (e.g., high quality randomized controlled trials (RCTs) or meta-analyses). Level 2 evidence is generally considered to be of moderate quality (e.g. well-designed cohort studies and case-control studies). Level 3 evidence is considered the lowest quality of evidence. It includes opinion-based evidence, cross-sectional studies and reviews that do not follow a systematic methodology. The checklist comprised 8 items for cross-sectional studies and 10 items for qualitative research (see the Appendix A). A scoring system was used: “yes” to a question from the checklist scored 2, “unclear” scored 1 and “no” or “not applicable” scored 0. Each score was then converted into an overall percentage to harmonize the scoring system (Jud et al., 2020). A higher percentage indicates a higher study quality and less risk of bias.

Data analysis

We provided a general summary of the characteristics of the included studies, the study populations, the types of interpersonal emotion regulation, mental health outcomes and their association, risk of bias, and the theoretical models that were reported in the included studies. In the synthesis of evidence regarding the role of interpersonal emotion regulation on mental health of cancer survivors, data from qualitative and quantitative studies were integrated.

Results

Selection of studies

A total of 13,358 records were identified by searching the four selected databases. After the removal of duplicates, title and abstract were screened of 6928 records. Out of these, 6430 were excluded, according to the inclusion and exclusion criteria. The remaining 443 papers qualified for full text screening. After exclusion of a further 357 articles for not meeting the criteria, 86 studies were included in this review (see Fig. 1). The included papers and their main characteristics are presented in Table 1.

Study characteristics

Of the 86 included studies, 79 were quantitative, of which 61 had a cross-sectional design and 18 a longitudinal design., and 3 had mixed-methods. Most studies focused on emotional support ($n = 19$), social constraints ($n = 17$), (ambivalence over) emotional expression ($n = 14$) and affectionate support ($n = 14$). Some studies specifically focused on family support ($n = 11$), while others focussed on dyadic coping ($n = 7$). Other interpersonal emotion regulation strategies included support from friends ($n = 5$), self-disclosure ($n = 3$), positive social interaction ($n = 2$), appraisal and belonging ($n = 1$), social network orientation (i.e. a person’s attitudes, beliefs and perceived value of his or her social connections) ($n = 1$), negative caregiver response ($n = 1$), positive support ($n = 1$), detrimental interaction ($n = 1$)

Of the 86 studies, 49 originated from the USA, nine from China, three from UK and South Korea, two from Taiwan, Turkey, Switzerland, Iran, Canada and Germany, one study each from Spain, Lebanon, Israel, Greece, France, Finland, Austria, Japan, Slovakia, and Australia. The studies included a total of 67,592 cancer survivors. Sample sizes ranged from 15 to 23,939, with a median of 151. Mean age ranged from 24 to 74 years, with a median of 54 years old. Sixty-five studies included only women, 28 studies both sexes and 3 studies only men. Cancer types

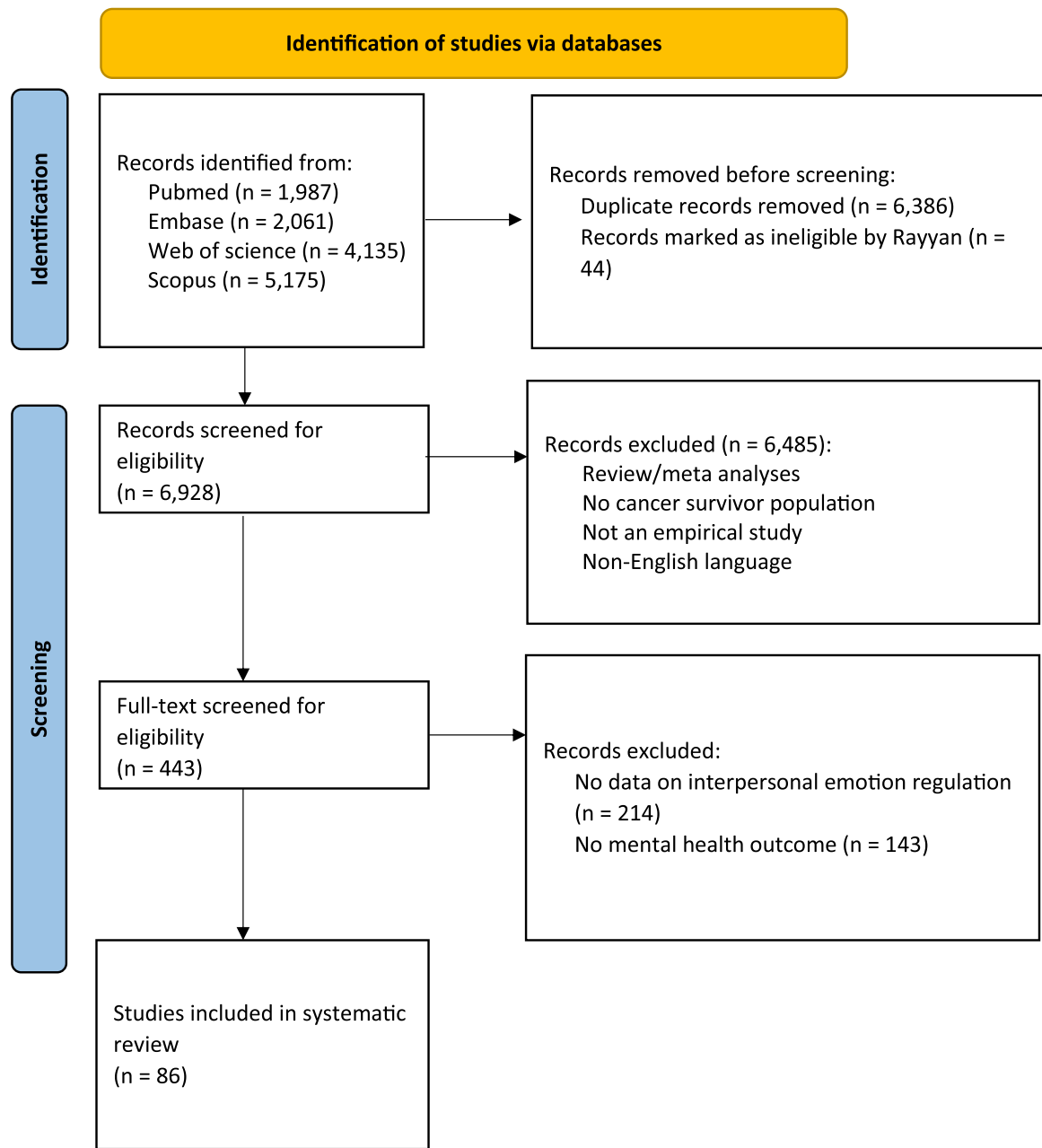


Fig. 1. The PRISMA Flow Diagram and the Total Number of Studies after Identification, Screening and Final Inclusion.

included breast cancer ($n = 49$), hematologic cancer ($n = 7$), colorectal cancer ($n = 4$), gynecologic cancer ($n = 3$), prostate cancer ($n = 2$), ovarian cancer ($n = 2$), bladder cancer ($n = 1$), cervical cancer ($n = 1$), head and neck cancer ($n = 1$), multiple myeloma ($n = 1$) and mixed cancer types ($n = 7$) or not reported ($n = 8$).

Risk of bias

The percentages representing the risk of bias score of each study are shown in Table 1 and further details about the quality appraisal can be found in Appendix A. This systematic review only included cross-sectional, longitudinal, and qualitative studies. All evidence in this study was categorized as Level 3 (e.g. cross-sectional studies, studies with methodological limitations). There were 82 quantitative studies with an average score 91 % (range 75–100 %). The qualitative studies ($n = 4$) had an average score of 88 % (range 83–93 %).

Evidence synthesis

We performed the evidence synthesis separately for the seven types of interpersonal emotion regulation that were studied in the included studies: 1) emotional support, 2) social constraints, 3) (ambivalence over) emotional expression, 4) affectionate support, 5) family support, 6) dyadic coping and 7) other strategies. Table 2 provides a summary of the main types of interpersonal emotion regulation and their correlations with mental health outcomes. We ranked the frequencies of the seven types of interpersonal emotion regulation, and conducted a narrative review for each type's association with mental health outcomes. Within each section, our discussion starts with the most frequently researched mental health outcome and proceeds with successively less studied mental health outcomes, accompanied by provided correlation coefficients (e.g. r s ranging from 0.15 to 0.42; if not reported, marked as "not reported"), number of participants (e.g., $n = 1383$), and study identifiers (e.g. [15, 18, 23]).

Table 1
Overview of study characteristics.

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
1	Acquati, 2019 USA	Cross- sectional N = 86	Female Breast cancer	Dyadic coping (DCS)	Quality of Life (FACT) Relational Mutuality (MPDQ)	Yes (pos) Yes (pos)	-	93.80 %	–
2	Acquati, 2020 USA	Cross- sectional N = 96	Female 54 Breast cancer	Social constraints (SCS)	Posttraumatic stress symptoms (PSS-SR) Mental component summary (MOS) Quality of life (SF-12)		0.56 –0.47	89.60 %	–
3	Agarwal, 2010 USA	Cross- sectional N = 50	16 female 34 male 63 Head and neck cancer	Coping 1 others there for me 2 helping others 3 others distract me 4 church family upport 5 being strong for			0.16 0.12 –0.18 –0.02 –0.10	85.40 %	–
4	Altschuler, 2009 USA	N = 30	Female Colorectal cancer	Husbands' or partners' support	Psychosocial adjustment	Yes (pos)	-	86.70 %	–
5	Arthur 2024 USA	Cross- sectional N = 9807	Female 65 Breast cancer	Social limitation	Quality of life (MCS)	Yes (neg)	–	95.83 %	–
6	Bellur, 2018 Turkey	Cross- sectional N = 134	Female 45 Breast cancer	Dyadic coping (RDA)	Posttraumatic growth (PTGI)		0.19	83.30 %	Model of posttraumatic growth (Calhoun & Tedeschi, 2014)
7	Best, 2021 USA	Cross- sectional N = 7543	4155 female 3388 male 66	Negative caregiver response (PRCI)	Quality of life (SF-36) Spirituality (FACIT-SP)	Yes (pos) Yes (pos)	-	91.70 %	–
8	Boinon, 2014 France	Longitudinal N = 102	Female 52 Breast cancer	Emotional expression (SSM) Emotional support (SSQ-6)	Depressive symptoms (BDI) Cancer-related psychological distress (IES)	Yes (all neg)	–	93.80 %	–
9	Bourdeau, 2024 Canada	Longitudinal N = 92	45 female 47 male 24 Hematologic cancer	Expression suppression (EAC)	Well-being (WHO-5)	Yes (neg)	–	95.83 %	–
10	Carpenter, 2010 USA	Cross- sectional N = 260	Female 56 Gynaecologic cancer	Family support (PSS-Fa) Friend support (PSS-Fr)	Cancer-specific traumatic stress (IES-R) Depressive symptoms (CES-D) Cancer-specific traumatic stress Depressive symptoms PTSD symptoms (PSS-SR)		0.16 –0.07 –0.25 –0.3	97.90 %	Stress buffering hypothesis (Cohen & Wills, 1985)
11	Chu, 2021 China	Cross- sectional N = 136	Female 57 Breast cancer	Social constraints (SCS) Affectionate support (MOS)			0.58 –0.52	93.80 %	Stress buffering hypothesis (Cohen & Wills, 1985),
12	Clifton, 2022 USA	Mixed methods N = 100	58 female 42 male 74 Mixed cancer	Social constraints (PROMIS)	Loneliness (UCLA)	Yes (pos)	–	93.80 %	Model of loneliness (Cacioppo et al., 2006)

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Table 1 (continued)

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
13	Cohee, 2021 USA	Cross- sectional N = 1127	Female 57 Breast cancer	Social constraints (SCS)	Depression (CES-D) Anxiety (STAI-S) Avoidant coping (COPE) Fear of recurrence (CARS) Attention function (AFI)		0.40 0.41 0.43 0.32 -0.29	83.30 %	–
14	Coleman, 2022 USA	Mixed methods N = 103	44 female 53 male Cervical cancer	Emotional support (I have someone who will listen to me when I need to talk)	Fatigue (PROMIS)	Yes (neg)	–	93.80 %	–
15	Darabos, 2022 USA	Cross- sectional N = 59	57 female 2 male 35 Mixed cancer	Social isolation (PROMIS)	Depressive symptoms (CES-D)	Yes (pos)	–	83.30 %	Social-cognitive processing theory (Lepore, 2001)
16	Dědová, 2023 Slovakia	Cross- sectional N = 696	463 female 233 male 53 Mixed cancer	Family support (MSPSS) Friends support (MSPSS)	Pain (WBFRS)		-0.10 -0.10	100 %	–
17	Doran, 2019 UK	Longitudinal N = 533	328 female 205 male 66 Mixed cancer	Emotional support (ELSA)	Quality of life (CASP-19)	Yes (pos)	–	81.30 %	–
18	Ernst, 2017 Germany	Longitudinal N = 217	82 female 135 male 57 Hematologic cancer	Dyadic coping (DCI)	Quality of life (SF-12)	Yes (pos)	–	95.80 %	–
19	Escalera, 2019 USA	Cross- sectional N = 151	Female 50 Breast cancer	Emotional support (MOS) Affectionate support (MOS) Positive social interaction (MOS)	Intrusive thoughts (ITS) Psychological distress (BSI)	Yes (all neg)	–	91.70 %	Stress buffering hypothesis (Cohen & Wills, 1985)
20	Fagundes, 2012 USA	Cross- sectional N = 132	Female 51 Breast cancer	Emotional support (ISEL)	Psychological distress (IES) Quality of life (FACT)	Yes (neg) Yes (pos)	–	93.80 %	–
21	Fang, 2015 Taiwan	Cross- sectional N = 151	Female 48 Breast cancer	Empathy (ODPT)	Depression (CES-D)		-0.36	93.80 %	–
22	Feng, 2024 China	Cross- sectional N = 771	Female 49 Gynecological cancer	Family support (MSPSS) Friend support (MSPSS)	Post-traumatic growth (PTGI)		0.25 0.19	95.83 %	Model of post-traumatic growth (Tedeschi et al., 2004)
23	Goldblatt, 2016 Israel	N = 40	Female 43–61 Breast cancer	Emotional expression	Quality of life	Yes (pos)	-	93.30 %	Emotional-motivational life-span development theory (Scheibe & Carstensen, 2010)
24	Gonzales, 2016 USA	Longitudinal N = 150	Female 50 Breast cancer	Emotional support (MOS)	Fatalism (PFI) Acceptance (BFS) Emotional well-being (FACT)		-0.24 0.30 0.23	95.80 %	–
25	Gonzalez-Saenz, 2017 Spain	Longitudinal N = 947	344 female 603 male 67 Colorectal cancer	Affective support (FSSQ)	Anxiety (EORTC) Depression (EORTC)	Yes (neg) Yes (neg)	–	93.80 %	–

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Table 1 (continued)

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
26	Greinacher 2023 Germany	Cross- sectional N = 126	72 female 54 male 64 Multiple myeloma	Positive support (ISSS) Detrimental interaction (ISSS)	Quality of life (EORTC)	Yes (pos) Yes (neg)	–	95.83 %	–
27	Gu, 2023 China	Cross- sectional N = 522	Female Breast cancer	Social constraints (SCS)	Depression (SDS)		0.38	95.83 %	Social-cognitive processing model (Lepore, 2001)
28	Gudina, 2021 USA	Cross- sectional N = 23,939	14,255 female 9684 male 60	Emotional support	Quality of life	Yes (pos)	–	95.80 %	–
29	Haviland, 2017 UK	Longitudinal N = 756	40 % female 60 % male 68 Colorectal cancer	Emotional support (MOS) Affectionate support (MOS) Positive social interaction (MOS)	Quality of life (EQ-5D) Well-being (PWI-A) Anxiety (STAI) Depression (CES-D)	Yes (all pos) Yes (all pos) Yes (all neg) Yes (all neg)	–	77.10 %	–
30	Holzner, 2003 Austria	Cross- sectional N = 98	Female 57 ovarian cancer	Emotional support (F-SOZU)	Fatigue (MFI-20) Quality of life (FACT) Anxiety (EORTC) Depression (EORTC) Mental adjustment (MAC)	Yes (neg) Yes (pos) Yes (neg) Yes (neg) Yes (neg)	–	89.60 %	–
31	Hurtado-de-Mendoza, 2021 USA	Cross- sectional N = 545	Female Breast cancer	Emotional support (MOS)	Well-being (FACT)		0.42	100.00 %	–
32	Ji, 2019 China	Cross- sectional N = 327	Female 49 Breast cancer	Ambivalence over emotional expression (AEQ)	Anxiety (SAS) Depressive symptoms (SDS) Quality of life (FACT)		0.26 0.23 –0.34	95.80 %	–
33	Joulaei, 2024 Iran	Cross- sectional N = 311	Female 52 Breast cancer	Family support (MSPSS) Friend support (MSPSS)	Depression (DASS-21) Anxiety (DASS-21) Stress (DASS-21)	Yes (all neg)	–	91.67 %	–
34	Katapodi, 2018 Switzerland	Cross- sectional N = 310	Female 51 Breast cancer	Family support (Open communication)	Anxiety Depression Fear of cancer recurrence (CARS) Self-efficacy	Yes (neg) Yes (neg) Yes (neg) Yes (pos)	–	85.40 %	Theory of family systems in genetic illness (Rolland & Williams, 2005)
35	Koutrouli, 2016 Greece	Cross- sectional N = 202	Female 60 Breast cancer	Social constraints (SCS)	Posttraumatic growth (PTGI) Psychological distress (MHI)		0.02 0.55	89.60 %	Model of posttraumatic growth (Calhoun & Tedeschi, 2014)
36	Kroenke, 2013 USA	Cross- sectional N = 3139	Female Breast cancer	Affectionate support (MOS)	Quality of life (FACT)	Yes (pos)	–	87.50 %	–
37	Lee, 2011 South Korea	Longitudinal N = 286	Female 47 Breast cancer	Affectionate support (MOS)	Depressive symptoms (SDS) Quality of life (EORTC)	Yes (neg) Yes (pos)	–	89.60 %	–
38	Lee, 2022 South Korea	Cross- sectional N = 359	98 female 261 male	Self-disclosure (SS)	Well-being (FACT)	Yes (pos)	–	95.83 %	Disclosure process model (Chaudoir & Fisher, 2010)

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Table 1 (continued)

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
39	Leung, 2014 Australia	Longitudinal N = 412	43 Mixed cancer Female Breast cancer	Affectionate support (MOS)	Quality of life (SF-36)	Yes (pos)	–	81.30 %	–
40	Levine, 2017 USA	Longitudinal N = 116	57 Female Breast cancer	Affectionate support (MOS)	Well-being (FACT)		0.35	83.30 %	–
41	J.W. Lim, 2014 USA	Mixed methods N = 189	55 Female Breast cancer	Family communication (FACES IV)	Quality of life (SF-36)		0.40	85.40 %	–
42	Lim, 2013 USA	Cross- sectional N = 157	53–55 Female Breast cancer	Family communication (FACES IV)	Quality of life (MCS)	Yes (pos)	–	95.80 %	–
43	J.W. Lim, 2014 USA	Cross- sectional N = 91	33 female 58 male 64	Family coping (F-COPES)	Psychological distress (BSI)		–0.29 –0.36	93.80 %	–
44	Lu, 2017 USA	Cross- sectional N = 118	54 Female Breast cancer	Ambivalence over emotional expression (AEQ)	PTSS—arousal (PSS-SR) PTSS—avoidance (PSS-SR)		0.46 0.41	93.80 %	–
45	Lu, 2018 USA	Longitudinal N = 103	58 Female Breast cancer	Ambivalence over emotional expression (AEQ)	Quality of life (FACT)		–0.39	85.40 %	–
46	Lu, 2015 USA	Cross- sectional N = 118	54 Female Breast cancer	Ambivalence over emotional expression (AEQ)	Depression (BSI) Intrusive thoughts (IES)		0.45 0.44	93.80 %	–
47	Lyon, 2022 USA	Cross- sectional N = 49	34 female 15 male 43	Active engagement (DCM) Protective buffering (DCM)	Depressive symptoms (CES-D)	Yes (neg) Yes (neg)	–	97.90 %	Theory of dyadic illness management (Lyons & Lee, 2018)
48	Manne, 2010 USA	Cross- sectional N = 75	59 Male Prostate cancer	Self-disclosure	Distress (BSI)		–0.16	93.80 %	–
49	Margolis, 2019 USA	Cross- sectional N = 275	154 female 121 male 54 Hematologic cancer	Emotional support (SSE)	Psychiatric distress (BSI)		– 0.24	95.80 %	Social support effectiveness framework (Gleason et al., 2008)
50	Marroquín, 2016 USA	Longitudinal N = 390	57 Female Breast cancer	Explicit emotional expression (EAC) Implicit emotional expression (LIWC)	Depressive symptoms (CES-D)	Yes (neg) Yes (neg)	–	97.90 %	–
51	Martin, 2020 USA	Cross- sectional N = 64	57 Female Breast cancer	Social constraints (SCS)	Fear of recurrence (CARS)		0.51	93.80 %	Social-cognitive processing theory (Lepore, 2007)
52	Matsui, 2023 Japan	Cross- sectional N = 212	76 female 236 male Mixed cancer	Peer support	Posttraumatic growth (PGI)	Yes (pos)	–	93.80 %	–
53	Matulonis, 2008 USA	Cross- sectional N = 58	56 Female Ovarian cancer	Emotional support (MOS)	Quality of life (EORTC) Mental health (MHI) Fears of cancer recurrence	Yes (pos) Yes (pos) Yes (neg)	–	87.50 %	–

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Table 1 (continued)

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
					(FRRS) Posttraumatic stress disorder (PCL-C) Posttraumatic growth (PTGI) Spirituality (FACT) Distress (BSI) Intrusive thoughts and avoidance (IES) Loneliness (UCIA)	Yes (neg) Yes (pos) Yes (pos)			
54	Mosher, 2012 USA	Cross- sectional N = 195	97 female 98 male 54 Hematologic cancer	Social constraints (SCS) Emotional support (PNSES)		Yes (all pos) Yes (all neg)	–	91.70 %	Social-cognitive processing theory (Lepore, 2001)
55	Nakamura, 2023 USA	Longitudinal N = 272	Female 68 Breast cancer	Affectionate support (MOS)	Depressive symptoms (CES-D)	Yes (neg)	–	95.83 %	–
56	Nenova, 2013 USA	Cross- sectional N = 49	26 female 23 male 49 Hematologic cancer	Emotional support (PRCI) Social constraints (SCS)	Posttraumatic growth (PTGI) Distress (PTSD) Posttraumatic growth Distress		0.30 –0.22 –0.12 0.34	95.80 %	Social-cognitive processing model (Lepore, 2001)
57	Peng, 2023 China	Cross- sectional N = 517	253 female 264 male 40–71	Emotional support (MOS)	Emotional health		0.37	100 %	Social support theory (Kahn, 1979)
58	Rini, 2016 USA	Longitudinal N = 255	147 female 108 male 54 Hematologic cancer	Social network orientation (NOS)	Quality of life (FACT)		0.24	93.80 %	–
59	Rizalar, 2014 Turkey	Cross- sectional N = 100	Female 52 Breast cancer	Emotional support (C-SSSS)	Psychological distress (PAIS)		–0.08	75.00 %	–
60	Salonen 2013 Finland	Longitudinal N = 79	Female Breast cancer	Emotional support (SNSSN)	Quality of life	No	–	79.20 %	Social support theory (Kahn, 1979).
61	Sawma, 2022 Lebanon	Cross- sectional N = 62	Female 51 Breast cancer	Family support (FACES IV)	Fear of cancer recurrence (FCRI)	Yes (neg)	–	81.30 %	–
62	Schnoll, 2002 USA	Cross- sectional N = 109	83 female 26 male 60	Emotional support (COPE) Social support-companionship (ISEL)	Adjustment (PAIS) Meaning in life (PIL) Optimism (LOT)	Yes (all pos)	–	93.80 %	Stress-illness vulnerability theory (Holahan & Moos, 1994)
63	Song, 2022 China	Cross- sectional N = 400	Female 47 Gynecological cancer	Self-disclosure (DDI)	Posttraumatic growth (PTGI) Intrusive rumination (ERRI) Deliberate rumination (ERRI)		0.63 –0.05 0.30	95.80 %	Systemic-transactional model (Bodenmann, 1997)
64	Stinesen, 2018 Switzerland	Longitudinal N = 3478	Male 63 Prostate cancer	Social constraints (SCS)	Well-being	Yes (neg)	–	93.80 %	–
65	Strayhorn 2021 USA	Cross- sectional N = 100	Female 66 Breast cancer	Positive support (HRSPLBPLQ) Negative support (HRSPLBPLQ)	Well-being (SF-12)	Yes (pos) Yes (neg)	–	91.70 %	–

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Table 1 (continued)

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
66	Su, 2017 Taiwan	Cross- sectional N = 300	Female 48 Breast cancer	Family support (APGAR)	Depressive symptoms (MINI)	Yes (neg)	–	83.30 %	–
67	Sutton, 2006 USA	N = 31	Female 49 Breast cancer	Mutual dyad support	Quality of Life	Yes (pos)	–	88.30 %	–
68	Swartzman, 2017 UK	Cross- sectional N = 205	39 % female 60 % male 71 Colorectal cancer	Family constraints (SCS)	Posttraumatic stress (PCL- C) Family identification (GIS)		0.62 –0.39	87.50 %	–
69	Tao, 2024 China	Cross- sectional N = 341	Female Breast cancer	Self-disclosure (DDI)	Well-being (FACT)		0.50	91.67 %	Adult attachment theory (Hazan & Shaver, 2017)
70	W. Tsai, 2019 USA	Cross- sectional N = 112	Female 58 Breast cancer	Ambivalence over emotional expression (AEQ)	Quality of life (FACT)		–0.39	85.40 %	–
71	Tsai, 2017 USA	Cross- sectional N = 96	Female 54 Breast cancer	Ambivalence over emotional expression (AEQ)	Depressive symptoms (CES-D) Quality of life (FACT)		0.35 –0.35	91.70 %	–
72	W. Tsai, 2019 USA	Cross- sectional N = 112	Female 54 Breast cancer	Ambivalence over emotional expression (AEQ)	Depressive symptoms (CES-D)		0.51	95.80 %	–
73	Tsai, 2018 USA	Longitudinal N = 96	Female 54 Breast cancer	Ambivalence over emotional experience (AEQ)	Quality of Life (FACT)		–0.31	87.50 %	–
74	Tulk, 2023 Canada	Cross- sectional N = 379	333 female 45 male 32 Mixed cancer	Emotional support (MOS) Affectionate support (MOS)	Distress (KPDS-10)		–0.21 for rural –0.33 for urban –0.19 for rural –0.16 for urban –0.05	87.50 %	–
75	Utley, 2022 USA	Cross- sectional N = 173	Female 73	Emotional support (MOS)	Mental health composite score (RAND-36)			93.80 %	–
76	Wells, 2009 USA	Longitudinal N = 212	101 female 113 male 51 Hematologic cancer	Appraisal (ISEL) Belonging (ISEL)	Depression (CES-D) Anxiety (STAI) Depression Anxiety		–0.25 –0.21 –0.25 –0.24	91.70 %	–
77	White, 2012 USA	N = 15	Female 52 Breast cancer	Female partners' support	Stress	Yes (neg)	–	83.30 %	–
78	Wong, 2017 USA	Cross- sectional N = 123	Female 54 Breast cancer	Affectionate support (MOS)	Well-being (FACT)		0.37	93.80 %	–

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Table 1 (continued)

	First author Year Country	Study design Sample size	Sex Mean age Cancer type	Interpersonal emotion regulation types (Questionnaire)	Mental health outcome (Questionnaire)	Statistically significant association (direction) in case of no reported correlation	Correlation coefficient	Quality appraisal	Theory/Model
79	Wong 2018 USA	Cross- sectional N = 96	Female 54 Breast cancer	Social constraints (SCS) Ambivalence over emotional expression (AEQ)	Depressive symptoms (CES-D)		0.45 0.37	81.30 %	Social-cognitive processing model (Lepore, 2001)
80	Yeung 2022 USA	Cross- sectional N = 136	Female 57 Breast cancer	Social constraints (SCS) Ambivalence over emotional expression (AEQ)	Fear of recurrence Self-stigma (SSS-SF) Fear of recurrence Self-stigma		0.31 0.36 0.40 0.42	85.40 %	Social-cognitive processing model (Lepore, 2001)
81	Yoo 2017 South Korea	Cross- sectional N = 1818	852 female 966 male 59	Affectionate support (FSSQ)	Depressive symptoms (PHQ-9) Quality of life (EORTC)	Yes (neg) Yes (pos)	–	89.60 %	–
82	You 2014 USA	Cross- sectional N = 120	Female 54 Breast cancer	Social constraints (SCS)	Intrusive thoughts (IES) Positive and negative affect (PANAS) Quality of life (FACT)		0.37 –0.24 0.47 0.57	93.80 %	–
83	You 2018 USA	Cross- sectional N = 96	Female 54 Breast cancer	Social constraints (SCS)	Well-being (FACT)	Yes (neg)	–	91.70 %	Biopsychosocial model (Adler & Stewart, 2010)
84	You 2023 China	Cross- sectional N = 202	Female 50 Breast cancer	Affectionate support (MOS)	Depressive symptoms (CES-D) Anxiety (BSI)		–0.66 –0.52	91.67 %	
85	Yu 2023 China	Cross- sectional N = 232	43 female 189 male 74 Bladder cancer	Family support (CD-RISC) Friends support (CD-RISC)	Quality of life (COH)	Yes (pos) Yes (pos)	–	95.80 %	Stress social networks theory (Gottlieb & Bergen, 2010)
86	Zamanian 2021 Iran	Cross- sectional N = 221	Female 47 Breast cancer	Affectionate support (MOS)	Depression (DASS-21) Anxiety (DASS-21)		–0.35 –0.26	85.40 %	–

Note. Relevant information not presented indicates that it was not reported in the article, and "–" also indicates that it was not reported. Emotional Expressivity Questionnaire (AEQ); Center for Epidemiologic Studies Depression Scale (CES-D); PTSD Symptom Scale- Self-Report (PSS-SR); Patient-Reported Outcomes Measurement Information System (PROMIS); Medical Outcomes Study Social Support Survey (MOS); Duke-UNC Functional Social Support Questionnaire (FSSQ); Social Support Questionnaire Short Form (SSQ6); The Interpersonal Support Evaluation List (ISEL); Impact of Events Scale (IES); The Family Adaptability and Cohesion Evaluation Scale IV—Family Communication Scale (FACES IV); Medical Outcome Study SF-36 (SF-36); Short Form 12 Health Survey Questionnaire (SF-12); Psychological Adjustment to Illness Scale (PAIS); Purpose in Life Test (PIL); The Life Orientation Test (LOT); The Perceived Social Support from Family (PSS-Fa), Friends (PSS-Fr); State-Trait Anxiety Inventory—State Anxiety Subscale (STAI); Benefit Finding Scale (BFS); Dyadic Coping Inventory (DCI); Functional Assessment of Cancer Therapy (FACT); Mutual Psychological Development Questionnaire (MPDQ); The Distress Disclosure Index (DDI); The Posttraumatic Growth Inventory (PTGI); The Event Related Rumination Inventory (ERRI); The Cancer-Specific Social Support Scale (C-SSSS); Ferrans and Powers Quality of Life Index (QLI-CV); the European Organisation for Research and Treatment of Cancer Quality of Life Group Core Quality of life questionnaire the EORTC QLQ Breast Cancer Module (EORTC); Brief Symptom Inventory (BSI); Social Constraintss Scale (SCS); subscale of Mental Health Inventory (MHI); Social support questionnaire (F-SOZU); Multidimensional Fatigue Inventory (MFI-20); Hospital Anxiety and Depression Scale (HADS); Mental Adjustment to Cancer Scale (MAC); Network Orientation Scale (NOS); Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-Sp); Emotional Approach Coping scales (EAC); Linguistic Inquiry and Word Count (LIWC); Emotion Regulation Questionnaire (ERQ); Mental Component Summary (MCS); The Revised Dyadic Adjustment scale (RDA); Patient Health Questionnaire (PHQ-9); Depression, Anxiety and Stress Scales (DASS-21); Partner Responses to Cancer Inventory (PRCI); Concerns About Recurrence Scale (CARS); Self-Stigma Scale-Short Form (SSS-SF); Positive and Negative Affect Schedule (PANAS); Intrusive Thoughts Scale (ITS); Personal Wellbeing Index—Adult (PWI-A); RAND 36-Item Health Survey (RAND-36); Self-rating Anxiety Scale (SAS); Self-rating Depression Scale (SDS); Family Crisis Oriented Personal Evaluation Scales (F-COPES); Brief Resilience Scale (BRS); Fear of Cancer Recurrence Inventory (FCRI); Attentional Function Index (AFI); Other Dyadic Perspective-Taking scale (ODPT); Health and Retirement Study Psychosocial Leave-Behind Participant Lifestyle Questionnaires (HRSLBPLQ); Post-Traumatic Stress Checklist (PCL-C); Group Identification Scale (GIS); Dyadic Coping Measure (DCM); Social sharing measurement (SSM); Beck Depression Inventory (BDI); Quality of Life Instrument (QLI); Dyadic Coping Scale (DCS); Social Network and Social Support from Nurses scales (SNSN); 25-item Social Support Effectiveness—Questionnaire (SSE); Fear of Relapse or Recurrence Scale (FRRS); Positive and Negative Social Exchanges Scale (PNSES); UCLA Loneliness Scale (UCLALS); The Patient-Reported Outcomes Measurement Information System (PROMIS), multidimensional scale of perceived social support (MSPSS), Wong–Baker faces pain rating scale (WBFPRS), The Kessler Psychological Distress Scale-10 (KPDS-10), 10-item Connor–Davidson Resilience Scale (CD-RISC), City of Hope Quality of Life Ostomy Questionnaire (COH); The World's Health Organization Well-Being Index (WHO-5); Illness-specific Social Support Scale (ISSS); The Self-disclosure Scale (SS).

Emotional support

Emotional support refers to providing assistance to others by expressing compassion, concern, sympathy, respect, and active listening (Cohen & Wills, 1985). Nineteen studies with a total of 28,443 participants investigated the association between emotional support and mental health [8, 14, 17, 19, 20, 24, 28, 29, 30, 31, 49, 53, 54, 56, 57, 59, 62, 74, 75]. The most frequently used measure of emotional support was the MOS (Sherbourne & Stewart, 1991), which was used in 8 studies (40 %). All other validated measurement instruments were used only once, and two studies used an ad hoc questionnaire.

Seven studies reported that emotional support had a significant positive association with quality of life (r s not reported, $n = 25,595$) [17, 20, 28, 29, 30, 53, 60]. Seven studies found that emotional support had a small to moderate negative association with distress (r s ranging from -0.33 to -0.08 , $n = 1383$) [8, 19, 20, 54, 56, 59, 74]. Two studies observed that emotional support had a significant positive association with well-being (r s from 0.15 to 0.42 , $n = 1372$) [24, 29]. Cancer survivors with more emotional support had a lower risk of anxiety and depression (r not reported, $n = 854$) [29, 30] and less depressive symptoms (r s not reported, $n = 102$) [8]. In addition, emotional support was negatively associated with fatalism ($r = -0.24$, $n = 351$) [14, 24, 30] and positively associated with acceptance ($r = 0.30$, $n = 150$) [24], posttraumatic growth ($r = 0.30$, $n = 107$) [53, 56], but had no association with a mental health composite score ($r = -0.05$, $n = 173$) [75]. One study found that emotional support from a partner and family/friends was negatively associated with loneliness (r s = -0.39 , -0.42 , $n = 195$) [54] but not with intrusive thoughts and avoidance (r s = -0.04 , 0.03 , $n = 195$) [54]. Another study similarly found that seeking emotional social support was associated with adjustment, meaning in life, optimism (r s not reported, $n = 109$) [62]. Finally, one study found that emotional support was associated with emotional health ($r = 0.37$, $n = 517$) [57].

Taken together, all studies included in this review examined emotional support as received by cancer survivors—that is, the emotional support they perceived or reported receiving from others (e.g., partners, family, or friends). Although existing research suggests that receiving and providing emotional support may contribute differently to mental health, the focus on received support in the current literature may reflect the fact that cancer survivors are typically the target of support within the context of illness. Across these studies, received emotional support showed small-to-moderate positive associations with indicators of mental health, such as quality of life and resilience, and small-to-moderate negative associations with mental health problems, including distress, fatigue, depressive symptoms, and loneliness.

Social constraints

Social constraints relate to both objective and subjective social conditions that lead individuals to refrain from or modify their disclosure of stress- and trauma-related thoughts, feelings, or concerns (Lepore & Revenson, 2007). According to the social-cognitive processing model (Lepore, 2001), emotional self-disclosure (e.g., disclosure of cancer-related thoughts, concerns and feelings) is likely to improve psychological adjustment to cancer, but only in the context of a receptive social environment. When cancer survivors face social constraints, such as others' criticism, denial or withdrawal, cancer survivors' willingness and ability to communicate with others are likely to be affected, which can lead to more negative outcomes (Lepore & Revenson, 2007). In the present review, we found 17 studies [2, 5, 11, 12, 13, 15, 27, 35, 51, 54, 56, 64, 68, 79, 80, 82, 83] with a total of 16,479 participants that investigated the association between social constraints and mental health. Almost all studies (15 out of the 17 studies) used the 15-item SCS (Lepore & Ituarte, 1999).

Three studies reported a significant negative association between social constraints and quality of life ($r = -0.57$, $n = 9927$) [5, 73] and

psychological well-being (r not reported, $n = 3574$) [64, 83]. Significant positive associations between social constraints and depressive symptoms (r s from 0.38 to 0.45 , $n = 1947$) [13, 15, 27, 79], distress (r s ranging from 0.34 to 0.55 , $n = 447$) [35, 54, 56] and fear of recurrence (r s from 0.31 to 0.51 , $n = 1327$) [13, 51, 80 respectively] were reported. Similarly, three studies found that social constraints had a sizable positive association with posttraumatic stress symptoms (r s from 0.56 to 0.62 , $n = 437$) [2, 11, 68]. Two additional studies reported that social constraints had a small association with posttraumatic growth (r s ranging from 0.02 to -0.12 , $n = 251$) [35, 56]. Two studies found a significant positive association between social constraints and intrusive thoughts (r s = 0.37 , $n = 315$) [54, 82]. Significant positive association were observed between social constraints and, on the other hand, self-stigma ($r = 0.36$, $n = 136$) [80], loneliness (r not reported, $n = 295$) [12, 54] and anxiety ($r = 0.41$, $n = 1127$) [13]. One study showed that higher social constraints were associated with lower family identification ($r = -0.39$, $n = 205$) [68]. Another study reported a significant association between social constraints and positive affect ($r = -0.24$) and negative affect ($r = 0.47$) ($n = 120$) [82].

In sum, small to moderate positive associations were observed between social constraints and depressive symptoms and distress, stigma, loneliness, anxiety, and intrusive thoughts.

(Ambivalence over) emotional expression

In emotional expression, a person overtly expresses their experienced emotions to one or more others, through verbal statements and/or nonverbal behaviour such as facial expressions, vocal pitch, posture, and/or gestures (Charles & Carstensen, 2007). Psychologists generally believe that emotional expression has beneficial effects, in the same vein that social constraints have negative effects for mental health. Controlled experiments with healthy volunteers have shown rather mixed effects of talking about one's emotions on emotional wellbeing (Rimé, 2009). Still, it seems plausible that cancer survivors would have an enhanced need for emotional expression compared to the general population. Consistent with this, a qualitative study among breast cancer survivors emphasized that emotional expression improved quality of life (r not reported, $n = 132$) [9, 23]. In a related vein, one study reported a negative relationship between emotional expression and cancer-related psychological distress (r not reported, $n = 102$) [8] and depressive symptoms (r not reported, $n = 492$) [8, 50].

In the general population, individuals high (rather than low) in ambivalence over emotional expression tend to respond more intensely to emotional events and take longer to recover (King, 1998). Ambivalence over emotional expression reflects a relatively stable individual difference characterized by internal conflict, tension, and hesitation about whether or how to express one's emotions to others (King & Emmons, 1990). Although ambivalence over emotional expression is often conceptualized as a trait rather than a discrete behavior, it has direct implications for interpersonal emotion regulation, as it shapes how individuals engage in—or withdraw from—emotional communication in social contexts. Rather than representing the act of expression itself, ambivalence over emotional expression can be understood as an inhibitory or conflicted mode of interpersonal emotion regulation, potentially limiting effective emotional disclosure and support-seeking. In total, ten studies investigated the association between AEE and mental health among cancer survivors [32, 44, 45, 46, 70, 71, 72, 73, 79, 80; $n = 1314$]. All studies used the Ambivalence over Emotional Expressiveness Questionnaire (AEQ; King & Emmons, 1990), though some used adapted or shortened versions.

Five studies reported a significant positive association between ambivalence over emotional expression and depressive symptoms (r s ranging from 0.23 to 0.51 , $n = 749$) [32, 46, 71, 72, 79]. Moreover, four studies found that ambivalence over emotional expression had a moderate to large negative association with quality of life (r s ranging from -0.39 to -0.31 ; $n = 638$) [32, 45, 70, 73]. A study observed that breast

Table 2
Correlations Between Aspects of Interpersonal Emotion Regulation and Mental Health Outcomes.

Mental health outcome	Key types of interpersonal emotion regulation (r)					
	Emotional support	Social constraints	(Ambivalence over) emotional expression	Affectionate support	Family support	Dyadic coping
Depression	Yes (neg); 2	.40 to 0.45; 4	.23 to 0.51; 5	−0.66 to −0.35; 8	−0.07; 4	−0.36; 2
Quality of life	Yes (pos); 7	−0.57; 2	−0.39 to −0.31; 4	.35 to 0.54; 7	.40; 4	Yes (pos); 3
Distress	−0.33 to −0.08; 7	.34 to 0.55; 3	Yes (pos); 1		Yes (neg); 1	Yes (pos); 1
Anxiety	Yes (neg); 2	.41; 1		−0.52 to −0.26; 5	Yes (neg); 1	
Fear of recurrence		.31 to 0.51; 3	.40; 1		Yes (neg); 2	
Posttraumatic stress symptoms		.56 to 0.62; 3	.41 to 0.46; 1	−0.52; 1		
Posttraumatic growth	.30; 2	.02 to −0.12; 2			.25; 1	.19; 6
Intrusive thoughts and avoidance	−0.04 to 0.03 (ns); 1	.37; 2	.44; 1			
Well-being	.15 to 0.42; 2	Yes (neg); 2				
Loneliness	−0.42 to −0.39; 1	Yes (pos); 2				
Self-stigma		.36; 1	.42; 1			
Fatalism	−0.24; 3					
Acceptance	.30; 1					
Mental health composite score	−0.05 (ns); 1					
Adjustment	Yes (pos); 1					
Meaning in life	Yes (pos); 1					
Optimism	Yes (pos); 1					
Emotional health	.37; 1					
Family identification		−0.39; 1				
Positive affect		−0.24; 1				
Negative affect		.47; 1				
Pain					−0.10; 1	
Resilience						Yes (pos); 1

Note. ‘Yes (pos/neg)’ indicates a significant positive or negative association without a reported correlation coefficient (e.g., reported via regression models). ‘ns’ indicates a non-significant association. Correlations are shown only when explicitly reported. Ambivalence over emotional expression and emotional expression are grouped together due to their shared focus on interpersonal emotional expression. While conceptually distinct, ambivalence over emotional expression reflecting hesitation and conflict, and emotional expression reflecting active disclosure, both relate to how individuals regulate emotions in social contexts.

cancer survivors who are highly ambivalent about emotional expression had higher posttraumatic stress symptoms ($r = 0.41$ for posttraumatic stress symptoms-avoidance, 0.46 for posttraumatic stress symptoms-arousal, $n = 118$) [44]. In addition, ambivalence over emotional expression had moderate positive associations with fear of recurrence and self-stigma ($rs = .42$, $n = 136$) [80]. Similarly, ambivalence over emotional expression was positively related to intrusive thoughts ($r = 0.44$, $n = 118$) [46].

In sum, small-to-moderate positive associations were observed between ambivalence over emotional expression and depressive symptoms, fear of cancer recurrence, self-stigma, intrusive thoughts, posttraumatic stress, and lower quality of life.

Affectionate support

Affectionate support involves receiving support from others through physical demonstrations of love and affection (Peter et al., 2016). People with higher levels of affectionate support feel that they have someone who shows affection and love and provides them with a feeling of being wanted (Laugen et al., 2016). This more embodied orientation can be contrasted with cognitive and verbal processes in interpersonal emotion regulation (Dixon-Gordon et al., 2015; Rimé, 2009). In the present review, we found 14 studies [11, 19, 25, 29, 36, 37, 39, 40, 55, 74, 78, 81, 84, 86] with a total of 8579 participants that investigated the relationship between affectionate support and mental health. The most frequently used measure was the MOS (Sherbourne & Stewart, 1991; $n = 11$ studies; 78.6 %).

Seven studies reported a positive association between affectionate support and quality of life (rs ranging 0.35 to 0.54, $n = 6650$) [29, 36, 37, 39, 40, 69, 72]. Moreover, eight studies found that affective support had a negative association with depressive symptoms (r ranging from -0.66 to -0.35 $n = 4587$) [17, 22, 24, 31, 55, 72, 76, 84]. Also, five

studies found that affective support was significantly negatively related to anxiety (r ranging from -0.52 to -0.26 , $n = 2277$) [17, 22, 24, 76, 84]. Finally, one study showed that breast cancer survivors who experience more affective support tend to have lower posttraumatic stress symptoms ($r = -0.52$, $n = 136$) [9].

Small-to-moderate positive associations were found between affectionate support and quality of life, lower depressive symptoms, lower anxiety, and fewer posttraumatic stress symptoms.

Family support

Family support is when family members care for each other and provide one another with emotional support and practical assistance (Chambers et al., 2001). All previously examined types of interpersonal emotion regulation can play a role in the context of a family. In this review, 11 studies [4, 10, 16, 22, 33, 34, 41, 42, 61, 66, 85] with a total of 3318 participants investigated the relationship between family support and mental health. The most often used measure of family support was the MSPSS ($n = 3$).

Four studies reported a significant positive association between family support and quality of life ($r = 0.40$, $n = 638$) [4, 41, 42, 85]. A negative relationship was reported between family support and depressive symptoms ($r = -0.07$, $n = 1181$) [10, 33, 34, 66], fear of recurrence (r not reported, $n = 372$) [34, 61], distress (r not reported, $n = 311$) [33], and pain ($r = -0.10$, $n = 696$) [16]. Moreover, one study showed that family support was associated with greater self-efficacy managing breast cancer and reduced risk of anxiety (r not reported, $n = 621$) [33, 34]. A study reported a positive relationship between family support and post-traumatic growth ($r = 0.25$, $n = 771$) [22].

In sum, the construct of family support captures how interpersonal emotion regulation extends beyond dyadic relationships. Small-to-moderate positive associations were observed between family support

and quality of life post-traumatic growth, lower depressive symptoms and anxiety, lower fear of recurrence, less pain, and less distress.

Dyadic coping

During dyadic coping, partners within a close relationship cope with stress jointly as a dyad, invoking shared coping resources, common concerns, and relationship maintenance (Randall & Bodenmann, 2009). When one partner has dealt with cancer, a couple may adopt various dyadic coping strategies to reduce the impact of the stressful event, such as empathic responding or emotional support (Falconier & Kuhn, 2019). Our literature search identified 7 studies ($n = 647$) [1, 6, 18, 21, 43, 47, 67] investigating the relationship between dyadic coping and mental health. Dyadic coping was assessed with various measures in these studies.

Three studies found that constructive dyadic coping strategies -such as stress communication and common coping- were positively associated with quality of life (r not reported, $n = 334$) [1, 18, 67]. Two studies observed that three different dyadic coping strategies (perceived partner empathy ($r = -0.36$), active engagement and protective buffering (r not reported, $n = 97$)) were associated with reduced depressive symptoms [21, 47]. Similarly, a study found that enhancing cancer survivors' and partners' positive thoughts and available external resources was associated with more resilience and reduced psychological distress (rs not reported, $n = 91$) [43]. Finally, one study reported a significant positive association between dyadic adjustment and posttraumatic growth ($r = 0.19$, $n = 134$) [6].

In sum, small-to-moderate positive associations were observed between constructive dyadic coping strategies and quality of life, less depressive symptoms, resilience, reduced psychological distress, and post-traumatic growth.

Other aspects of interpersonal emotion regulation

Sixteen studies [3, 7, 10, 19, 22, 26, 29, 33, 38, 48, 58, 62, 63, 69, 76, 85, $n = 11,987$] investigated the association between various other aspects of interpersonal emotion regulation strategies. A cross-sectional study among head and neck cancer survivors found that receiving emotional support, as well as engaging in distracting activities with family and friends (a peripheral form of socially facilitated emotion regulation), were positively associated with quality of life (rs not reported, $n = 50$) [3]. Significant positive relationships between social support-companionship and adjustment, meaning in life, and optimism were reported in another study (r not reported, $n = 109$) [62]. Also, a significant negative relationship between friend support and cancer-specific traumatic stress ($rs = -0.25$, $n = 571$) [10, 33], depressive symptoms ($rs = -0.30$, $n = 571$) [10, 33] and anxiety (r not reported, $n = 311$) [33] was reported.

Three studies reported a significant association between friend support and pain ($r = -0.10$, $n = 696$) [16], posttraumatic growth ($rs = 0.19$, $n = 983$) [22, 52], and quality of life (r not reported, $n = 232$) [85]. Another study ($n = 212$) [76] reported that a survivor's positive appraisal of support and belonging was related to decreased anxiety ($rs = -0.21$, -0.24) and depression ($r = -0.25$). A significant relationship between positive support study (r not reported, $n = 126$) [26] and detrimental interaction (r not reported, $n = 126$) [26] and quality of life was reported. Also, a study found that positive support was associated with better mental well-being, while negative support was associated with worse mental well-being, albeit weaker (r not reported, $n = 100$) [65]. Significant relationships between self-disclosure and well-being ($rs = 0.50$, $n = 700$) [38, 69], distress ($r = -0.16$, $n = 75$) [48], post-traumatic growth ($r = 0.63$, $n = 400$) [63], intrusive rumination ($r = -0.05$, $n = 400$) [63] and deliberate rumination ($r = 0.30$, $n = 400$) [63] were observed. Two studies reported significant associations between positive social interaction and intrusive thoughts, psychological distress, quality of life, well-being, anxiety and depression (rs not reported, $n =$

907) [19, 29]. Another study showed that more negative social network orientation, reflecting individuals' beliefs, attitudes, and expectations about seeking support from others, was associated with lower quality of life ($r = -.24$, $n = 255$) [58]. While not a direct regulatory behavior, social network orientation represents a dispositional form of interpersonal emotion regulation, as it influences how individuals engage with their social environment to manage emotional experiences. Finally, one study reported that survivors who rated their caregiver's response to their cancer diagnosis more negatively reported worse physical and mental health (r not reported, $n = 7543$) [7].

In sum, small-to-moderate positive associations were observed between this miscellaneous group of interpersonal emotion regulation (friend support, positive appraisal, belonging, positive support, self-disclosure, social interaction, social network orientation and caregiver's response) and positive indicators of mental health. Small-to-moderate negative associations were observed between this miscellaneous group of interpersonal emotion regulation (negative support) and negative indicators of mental health.

Theories and models

Less than one out of three studies (30.2 %, 26 studies) [6, 10, 11, 12, 15, 19, 22, 23, 27, 34, 35, 38, 47, 49, 51, 54, 56, 57, 60, 62, 63, 69, 79, 80, 83, 85] explicitly mentioned the theoretical framework that guided the research: 9 studies on social support [10, 11, 19, 49, 57, 60, 62, 83, 85], 8 studies on social constraints [12, 15, 27, 51, 54, 56, 79, 80], 4 studies on emotional expression and family support [23, 34, 38, 69], 3 studies [6, 22, 35] on the developmental mechanisms of posttraumatic growth and 2 studies on dyadic coping [47, 63]. An overview of the used theories and studies is provided in Table 3.

The social-cognitive processing model (Lepore, 2001) [15, 27, 51, 54, 56, 79, 80], emerged as the most frequently mentioned theory in studying interpersonal emotion regulation among cancer survivors. The theory was used in all studies exploring the role of social constraints in coping among cancer survivors. According to this model, emotional distress associated with a traumatic experience, largely emerges from the discrepancy between people's mental representations of themselves and the world and the meaning inherent in the trauma (Lepore, 2001). Engaging in supportive social interactions, such as empathetic listening and encouraging acceptance, is likely to enhance cognitive processing of cancer experiences and adaptation. Social constraints can affect adjustment to cancer by inhibiting supportive social interactions. These constraints thereby alter how people feel about themselves (e.g., self-worth, self-identity). Social constraints were also investigated within other theoretical contexts. One study [12] investigated social constraints within a model of loneliness and another study [83] approached social constraints from the background of the biopsychosocial model.

Theories on social support were originally developed as an extension of the traditional model of stress and coping (Folkman & Lazarus, 1985). A theory of social support was mentioned by only two study in this review [57, 60], but many studies seemed to use this theory tacitly, without explicitly referring to it. According to theories on social support, people derive benefits not only from the tangible help they receive but also from their perception of the support available to them (Lakey & Cohen, 2000). Within this general theory of social support, various more specific theories were reported. The stress-buffering hypothesis [10, 11, 19] holds that social support protects people from the pathogenic effects in of stress. The disclosure process model [38] examines when and why self-disclosure may benefit well-being (Chaudoir & Fisher, 2010). Moreover, stress social networks theories [85] focus on structural properties of an individual's social network, such as number of connections, their strength, or number of different roles within a network. The social support effectiveness framework [49] states that social support enhances relationship closeness, but that an imbalance, in which one receives more support than one can return, leads to distress.

The model of posttraumatic growth (Tedeschi & Calhoun, 2014) [6, 22, 35] and the stress-illness vulnerability theory (Holahan & Moos, 1994) [62] extend the traditional model of stress and coping to the context of coping with trauma and illness. Posttraumatic growth is defined as the experience of positive change that occurs as a result of the struggle with a highly challenging life crisis (Tedeschi & Calhoun, 2014). According to the model of posttraumatic growth [6, 22, 35] self-disclosure and social support play an essential role in perceiving positive changes. The illness-stress vulnerability theory emphasizes the role of social and personality variables in adjustment to cancer survivorship. The theory of family systems in genetic illness (Rolland & Williams, 2005) [34] assists healthcare providers to help women with a risk of genetic cancer balance their personal and family responsibilities, taking into account the degree of genetic risk the illness has, its potential severity, age of clinical onset and whether treatment can alter the onset or course of the disease.

The theory of dyadic illness management (Lyons & Lee, 2018) [47] and the systemic-transactional model (Bodenmann, 1997) [63] move beyond an individual perspective of, in this case a cancer survivor, to the couple as the unit of focus. The theory of dyadic illness management approaches the dyad as an interdependent team. In the same vein, the systemic-transactional model focusses on the reciprocal and dynamic interplay between the stress signals of one partner and the coping reactions of the other.

Finally, the adult attachment theory (Hazan & Shaver, 2017) [69] and the emotional-motivational life-span development theory (Scheibe & Carstensen, 2010) [23] take a lifespan perspective. The adult attachment theory holds that attachment styles of adults are guided by childhood attachment styles and influence adult interpersonal behaviors, such as self-disclosure. The emotional-motivational life-span development theory (Scheibe & Carstensen, 2010) [23] assumes that people with a limited future time perspective, such as the elderly and people with cancer, become more motivated to focus on emotional satisfaction in the present moment.

Discussion

In this systematic review, we examined the association between various aspects of interpersonal emotion regulation and mental health among cancer survivors. Our literature search identified 86 relevant studies with a combined total of 67,592 cancer survivors. Indicators of interpersonal emotion regulation were generally found to be associated with markers of better mental health among cancer survivors. The strength of this association was, statistically speaking, in the small-to-moderate range.

The studies in the present review investigated various aspects of

interpersonal emotion regulation, including emotional support, ambivalence over emotional expression, social constraints, affectionate support, family support and dyadic coping. Emotional support was most often studied, but a lot of attention was given to social constraints and ambivalence over emotional expression in cancer survivors. Affectionate support, a more embodied form of interpersonal emotion regulation, was also often examined. Some studies particularly focused on the family as a source of support and others took dyads as the unit of investigation. We also searched for less studied but potentially transformative aspects of interpersonal emotion regulation, such as co-reappraisal and co-rumination, but these subtle forms of emotional communication have not received much attention yet. Moreover, the included studies assessed a wide range of aspects of mental health, including distress, anxiety, depression, fear of recurrence, quality of life, and well-being.

One striking aspect of the evidence on the association between interpersonal emotion regulation and mental health is its consistency and generality. Each indicator of interpersonal emotion regulation was reliably positively associated with an indicator of better mental health in every study. This generality across different indicators of interpersonal emotion regulation fits with the notion of interpersonal emotion regulation as a process that involves patterns of emotional responding that cut across specific relationships. The generality of our findings across different indicators of mental health and be seen as further support for the universal human significance of interpersonal relationships (Leary & Baumeister, 1995; Seeman, 1996; Uchino, 2006). Alternatively, it may reflect the added significance of interpersonal emotion regulation for cancer survivors. Surviving cancer and its aftermath puts great emotional burdens on cancer survivors. It thus stands to reason that cancer survivors stand to gain considerably -perhaps, like few other groups- from the emotion-regulatory functions of interpersonal relationships.

Strengths and limitations

The overall body of research identified in the present systematic review is sizable, spanning 86 studies and tens of thousands of cancer survivors. However, it should be kept in mind that the evidence is limited in important ways. Among the included studies, the methodological quality was mostly low. Moreover, 79 out of the 86 studies (85 %) had a correlational and/or cross-sectional design, which cannot speak to the causal impact of interpersonal emotion regulation on mental health or vice versa. Although there are many RCT intervention studies on social support (Zhang et al., 2017), these studies were not included in the research because they did not report specific data on interpersonal emotion regulation. Additionally, support was frequently measured based on general perceptions, but specific sources such as partners, family members, or friends were sometimes explicitly identified, underscoring the variety in research methodologies.

Future research should address this limitation by using more longitudinal and experimental designs. In longitudinal research, researchers can determine whether an interpersonal emotion regulation process predicts subsequent changes in mental health. For instance, one study among 164 breast cancer survivors observed that perceived social support predicted changes in quality of life 6 months later (Salonen et al., 2013). Yet stronger causal conclusions can be drawn from experimental studies, where cancer survivors are randomly assigned to different types of interpersonal emotion regulation interventions. For instance, a systematic review of spousal couple-based intervention studies for couples coping with cancer found that these interventions can improve communication, dyadic coping and quality of life in both patients and partners (Li & Loke, 2014). Conducting more experimental studies would enhance the scientific understanding of interpersonal emotion regulation among cancer survivors.

Future research should address this limitation by using more longitudinal, experimental, and dyadic research designs. In longitudinal

Table 3
Overview of Theories Used in the Studies on Interpersonal Emotion Regulation among Cancer Survivors.

Theories	Number of studies [study identifier]
Social-cognitive processing model	7 [15, 27, 51, 54, 56, 79, 80]
Stress buffering hypothesis	3 [10, 11, 19]
Model of posttraumatic growth	3 [6, 22, 35]
Theories of social support	2 [57, 60]
Adult attachment theory	1 [69]
Biopsychosocial model	1 [83]
Disclosure process model	1 [38]
Emotional-motivational life-span development theory	1 [23]
Model of loneliness	1 [12]
Social support effectiveness framework	1 [49]
Stress social networks theory	1 [85]
Stress-illness vulnerability theory	1 [62]
Systemic-transactional model	1 [63]
Theory of dyadic illness management	1 [47]
Theory of family systems in genetic illness	1 [34]

research, researchers can determine whether an interpersonal emotion regulation process predicts subsequent changes in mental health. For instance, one study among 164 breast cancer survivors observed that perceived social support predicted changes in quality of life six months later (Salonen et al., 2013). Yet stronger causal conclusions can be drawn from experimental studies, where cancer survivors are randomly assigned to different types of interpersonal emotion regulation interventions. For example, a systematic review of spousal couple-based intervention studies for couples coping with cancer found that these interventions can improve communication, dyadic coping, and quality of life in both patients and partners (Li & Loke, 2014). In addition to these approaches, dyadic analytic methods, such as the actor-partner interdependence model (APIM; Kenny, 1996; Kenny et al., 2006), could be used to examine how each partner's emotion regulation strategies influence not only their own but also their partner's psychological outcomes. Collectively, incorporating these methodological advancements will greatly enhance the scientific understanding of interpersonal emotion regulation among cancer survivors.

A second limitation is that the observed statistical associations between interpersonal emotion regulation and mental health among cancer survivors were statistically in the small-to-medium range. Notably, statistical effect size should not be equated with clinical relevance (Cuijpers et al., 2014). Because processes of interpersonal emotion regulation are pervasive and recurring on a daily basis, even a statistically small effect may translate into meaningful real-life benefits for cancer survivors. However, both interpersonal emotion regulation and mental health are broad constructs. Future research could focus on more specific aspects of these constructs, which may allow for a more targeted analysis on, for example, symptoms of depression, anxiety, or fear of cancer recurrence. As the field continues to evolve, conducting a meta-analysis could be a valuable next step to synthesize findings more quantitatively. Our review represents a first step, and a meta-analysis would be particularly useful once more research becomes available. Still, more work is needed to determine the minimally important differences that processes of interpersonal emotion regulation make for cancer survivors and the reliable clinical change that enhancing interpersonal emotion regulation in a therapeutic setting may bring. Most included studies viewed cancer survivors primarily as recipients of interpersonal emotion regulation, such as received emotional support. While this reflects common survivor roles, it limits understanding of support provision, which may also impact well-being. Future research should consider both perspectives.

A third limitation is that the value of the evidence identified in the present review is hampered by some methodological shortcomings. Aside from 24 studies with larger samples (N s between 300 and 23,939), most studies used relatively small samples (N s between 15 and 286), which means they had insufficient statistical power to detect statistically small effects. Moreover, the available studies employed diverse (mostly self-report) outcome measures, which makes it difficult to compare findings between studies. For example, many studies used instruments that did not distinguish between emotional support and affectionate support. In addition, although we grouped ambivalence over emotional expression and emotional expression under the same thematic domain due to their shared relevance to interpersonal emotional processes, we acknowledge that ambivalence over emotional expression is conceptually distinct as a dispositional tendency reflecting emotional conflict, while emotional expression often reflects situational coping behavior. This categorization choice, while theoretically justified, may obscure important differences in how these constructs function and should be interpreted cautiously. Future research may benefit from analyzing these constructs separately to clarify their unique roles in interpersonal emotion regulation.

A fourth and last limitation is that the present systematic review only included peer-reviewed articles published in English, which predominantly had Western populations as participants. The present findings may hence may not be applicable to interpersonal emotion regulation

among cancer survivors in other cultural spheres. For instance, expressive suppression, which has generally negative effects among Western populations, has in some studies been found to reduce depressive feelings and related physiological activity among Chinese people (Yuan et al., 2014). Notably, the nature of these cultural differences is such that interpersonal emotion regulation appears to be equally, if not more, important within non-Western cultures. Still, the forms that interpersonal emotion regulation takes in non-Western cultures may differ from those in Western cultures. An important agenda for future research lies hence in collecting more evidence on interpersonal emotion regulation among cancer survivors to non-Western cultures.

A fourth and final limitation is that the present systematic review only included peer-reviewed articles published in English, and the majority of included studies were conducted in Western cultural contexts. As such, the generalizability of our findings to cancer survivors from non-Western cultures remains limited. This is important because interpersonal emotion regulation strategies, such as emotional expression, support-seeking, or suppression, are shaped by cultural norms and relational expectations. For example, expressive suppression, typically associated with negative outcomes in Western samples, has been found to reduce depressive symptoms and physiological reactivity among Chinese individuals (Yuan et al., 2014). These findings suggest that while interpersonal emotion regulation may be equally important, or even more central, in collectivistic and interdependent cultures, the forms, functions, and meanings of these strategies can differ substantially. Therefore, future research should aim to include more culturally diverse populations and examine how interpersonal emotion regulation is experienced and enacted across different cultural settings, especially among underrepresented non-Western cancer survivor groups.

Theories of interpersonal emotion regulation among cancer survivors

In the present systematic review, we explored which theories were used in studies on interpersonal emotion regulation and mental health. Perhaps surprisingly, over two-thirds of the examined studies did not mention any specific theoretical framework. The lack of explicit theory mentions does not necessarily mean that most research in this field is atheoretical. Instead, it seems plausible that many researchers rely on theoretical assumptions that are widely held, so that researchers do not feel the need to refer to a specific model or framework. In particular, it appears that much research is guided by the general idea that social-emotional support has a protective influence on mental health. In one way or another, this notion emerges in various theoretical models, such as the social-cognitive processing model and the stress-buffering hypothesis (Cohen & Wills, 1985).

Although it is understandable that researchers do not always engage in explicit theorizing, we would still encourage more efforts toward explicit theory development. The latter involves identifying specific pathways, mediating factors, and moderating variables that influence the relationship between interpersonal emotion regulation and mental health. Such theoretical work provides a roadmap for designs that optimize interpersonal emotion regulation for cancer survivors. More specifically, the field of psycho-oncology may be enriched by various notions in interpersonal emotion regulation research. For instance, recent work has seen a push toward formal mathematical models, such as a system of differential equations developed for dyadic research, that model the dynamics of interpersonal emotion regulation (Ferrer & Helm, 2013; Sels et al., 2018). Likewise, recent theoretical work suggests that interpersonal emotion regulation is not always driven by empathy, but may also originate from more self-serving motives, such as empathy fatigue or the wish not to be confronted with the survivor's distress (Zaki, 2020). These self-serving motives seems potentially relevant to interpersonal emotion regulation among caregivers of cancer survivors (Zeng et al., 2024).

Conversely, theories developed in the domain of psycho-oncology may inform more general theories of interpersonal emotion

regulation. For instance, the present research revealed that psycho-oncological research has devoted considerable attention to psychological impediments to emotion expression, such as ambivalence over emotional expression (e.g., Lu et al., 2015) and social constraints (Lepore & Revenson, 2007). Similar kinds of impediments are likely to be influential in many other real-life contexts, where they have received much less theoretical attention. These and other insights from psycho-oncological research may enrich the understanding of interpersonal emotion regulation.

Clinical implications

This systematic review highlights the significant role of interpersonal emotion regulation in shaping mental health outcomes among cancer survivors. The consistent associations between interpersonal emotion regulation-related constructs, such as emotional support, social constraints, dyadic coping, and ambivalence over emotional expression, and indicators of psychological well-being underscore the need to systematically integrate interpersonal processes into clinical care. Survivorship care plans should go beyond individual coping strategies and explicitly incorporate interpersonal emotion regulation-focused interventions, such as communication skills training, structured emotional disclosure, and relational coping strategies. Healthcare providers, including mental health professionals and oncology teams, should be equipped to foster emotionally supportive environments and to help patients and their close others navigate interpersonal emotional dynamics throughout the cancer journey.

Moreover, specific barriers such as social constraints (e.g., feeling discouraged from discussing cancer-related emotions) and ambivalence over emotional expression may prevent patients from accessing the emotional support they need. Addressing these barriers through psychoeducation, counseling, or therapeutic group settings could improve emotional openness and regulation, ultimately enhancing mental health outcomes. Future interventions should also involve caregivers and partners, not only as supporters but as active participants in mutual emotional regulation. Training programs that help caregivers recognize, respond to, and co-regulate the emotional needs of patients may strengthen dyadic resilience and improve well-being in both members of the caregiving relationship. Importantly, these efforts should be culturally sensitive and adapted to the diverse interpersonal norms and emotion regulation preferences of different populations.

Conclusions

The current systematic review revealed a sizable body of evidence converging on the notion that interpersonal emotion regulation is meaningfully associated with the mental health of cancer survivors. Much remains unknown about the mechanisms where interpersonal emotion regulation becomes connected with cancer survivors' mental health. Future research should therefore aim to develop more standardized methods, more integrative theorizing, and evidence-based interventions. Despite these challenges, the present article highlights the importance of interpersonal emotion regulation for cancer survivors.

CRedit authorship contribution statement

Zihao Zeng participated in design, data screening, evaluation, and drafted the manuscript; Karen Holtmaat participated in its data screening, helped draft the manuscript and provided reviews; Xihan Jia participated in data screening and evaluation; George L. Burchell helped search; Sander L. Koole and Irma M. Verdonck-de Leeuw conceived of the study, provided reviews and funds. All authors read and approved the final manuscript.

Author Note: This paper is dedicated in loving memory to Marjolein Vermeeren (1968–2013); Thanks to Xiaoxia Zhang for help in updating the search results.

Declaration of competing interest

The authors declare that they have no conflicts of interest to report regarding the present study.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.ijchp.2025.100592.

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