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# Coping by family members of critically ill hospitalised patients: An integrative review

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ABSTRACT

*Objectives:* To provide a comprehensive integrative review of research literature on 1) the coping strategies that are reported by adult family members following admission of their adult loved ones to the intensive care unit (ICU), 2) identify which coping strategies are associated with psychological response during this stressful experience, and 3) the factors that are associated with coping strategies.
*Data sources:* Electronic databases: MEDLINE, PubMed, CINAHL, PsycINFO, and EMBASE; reference lists of journal publications.
*Review methods:* A total of 643 citations or abstracts were initially screened for content relevance, 15 were included in the integrative review, including 7 quantitative, 3 qualitative and 5 mixed methods studies. Included studies were all conducted in the hospital intensive care unit.
*Results:* Coping approaches such as self-distraction appear to be associated with lower psychological distress, and avoidant coping and denial associated with increased psychological distress including traumatic stress symptoms. Factors including social support, gender, age, relationship with the patient, decision maker role, and prior ICU experience can influence coping by family members. Uncertainty of the patient's prognosis and recovery heightens the intensity of the emotional response experienced by family members. Such family members appear at increased risk for experiencing depressive symptoms.
*Conclusions:* From the studies reviewed, it is unclear if coping approaches employed by family members mediate psychological responses such as anxiety and depressive symptoms, or whether coping is a response to psychological stress experienced following hospitalisation of their relative. Future research should focus on the relationship between coping and psychological, physiological and health related behaviours in family members following ICU admission that might contribute towards transient increased health risk during this time. Additionally, future research should explore potential interventions to modify coping and promote family well-being following hospitalisation.


## What is already known about the topic?

- The family response to critical illness and hospitalisation of a relative includes development of adverse psychological outcomes including anxiety, acute stress disorder, post-traumatic stress disorder, depression, and complicated grief, especially following unexpected admission to hospital.
- The plethora of measurement tools for assessing coping, makes both the comparison of studies difficult to comprehensively explore coping strategies used by family members following hospitalisation.

## What this paper adds

- Six major factors appear to influence coping strategies utilized by family members of hospitalised relatives include social support, gender, age, relationship with the patient, decision maker role, and prior ICU experience.
- Coping influences the ability for rational and proactive decision making by family members, with disengaged copers being twice as likely to refuse medical treatments for their hospitalised relative, compared to adaptive copers.

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- Uncertainty of the patient's prognosis and recovery heightens the intensity of the emotional response experienced by family members. Such family members appear at increased risk for experiencing depressive symptoms.

## 1. Introduction

When a patient is hospitalised, it is often a stressful time for the patient's family members, with increased psychological morbidity including symptoms of anxiety and depression and post-traumatic stress symptoms during and following the hospitalisation experience, especially following unexpected admission to the intensive care unit (ICU) (Pochard et al., 2005; Azoulay et al., 2005). This psychological morbidity is likely to contribute to increased cardiovascular risk that has been reported in family members of hospitalised patients (Christakis and Allison, 2006). However, it is likely that the experience of psychological stress by family members may not completely relate to the environmental stressors of the hospital but also be mediated by individual perception and coping with the patient's hospitalisation. Insight into the mechanisms of the psychological responses among family members and potential preventative approaches to their psychological morbidity and increased cardiovascular risk can therefore be gained by a clearer understanding of the role of coping following admission with unexpected illness.

Coping is defined as a person's cognitive and behavioural efforts in response to stressors that determine how those stressors will affect physical and emotional well-being (Lazarus and Folkman, 1984). It is a process of change that entails intentional efforts to mitigate the effects of stressors and is not simply miscellaneous responses that occur (Litt and Tennen, 2015). Although over 100 category systems of coping exist in the literature (Skinner et al., 2003), a model of coping by Lazarus and Folkman (1984) is widely discussed, and conceptualises coping based on four major assumptions: (a) coping is a process or interaction involving individuals and their environment; (b) the function of coping is to manage, rather than control or dominate stressful situations; (c) coping presupposes the notion of evaluation (i.e., how the phenomenon is perceived and cognitively interpreted in an individual's mind); and (d) coping involves the mobilisation of behavioural and cognitive efforts to manage (i.e., reduce, tolerate, and minimize) internal or external demands that arise from the interaction between individuals and their environment.

A plethora of measurement tools used in research studies, describing various constructs of coping behaviours and strategies associated with coping can be an inhibitor to clinicians understanding of how family members may be coping following admission of their loved one. Although there are several ways of categorising coping, most coping responses are considered to broadly encompass Lazarus and Folkman's (1980) problem-focused or emotion-focused coping strategies (Carver and Scheier, 1994; Lazarus and Folkman, 1984). Problem-focused coping involves a conscious effort aimed at altering or managing the situation through highly action focused strategies that will help eliminate the perceived stressor by increasing control over it (Lazarus and Folkman, 1984). Problem-focused strategies include resolving interpersonal conflicts, active planning and making decisions and seeking of resources and information to become better educated about the stressor (Lazarus and Folkman, 1984). In contrast, emotion-focused coping involves cognitive and behavioural efforts to regulate and overcome anxious emotion reactions to stressors (Lazarus and Folkman, 1984). Emotion-focused coping can be further classified into active processes of coping strategies

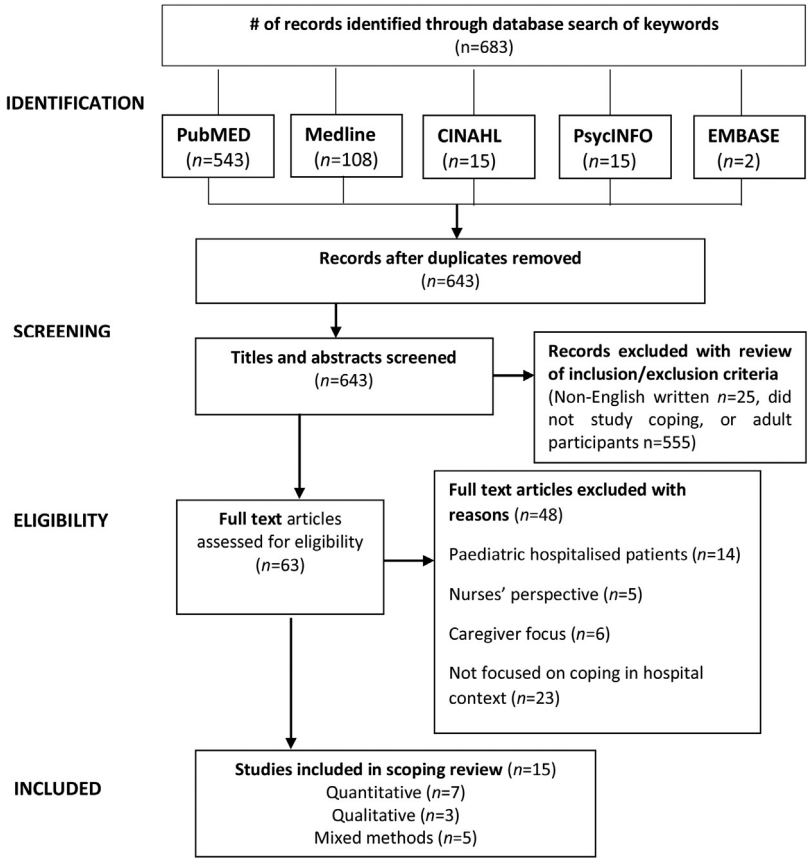


**Fig. 1.** Flow chart of literature review method.

aimed at changing a negative emotional response, and avoidant processes that involves efforts to minimize the impact of negative emotional responses (Holahan and Moos, 1987). Active processes can include religion, positive reframing, or acceptance; Avoidant activities can include denial, self-distraction, or substance abuse (Holahan and Moos, 1987). Both problem-focused and emotion-focused coping may be used in tandem, with different strategies predominating at different times based on the stressor, the individual, and the situation (Lazarus and Folkman, 1984).

The aim of this review is to determine 1) the coping strategies that are reported by adult family members following admission of their loved ones to the ICU, 2) identify which coping strategies are associated with psychological response during this stressful experience, 3) the factors that are associated with coping strategies. Findings on coping strategies that are reported by adult family members following unexpected admission of their adult loved ones to the critical care unit will inform current clinical practice and future research in assisting family members during the stress of hospital admission.

## 2. Methods

An integrative literature review was conducted (Whittemore and Knafl, 2005) using five steps starting with problem identification, followed by systematic literature searching, data evaluation, data analysis and presentation. The review question: "What is known about the coping strategies used by adult family members of hospitalised adult relatives to ICU?" identifies the variables of interest including target population (adult family members), concept (coping) and context (ICU hospitalisation of adult patients). An integrative review process was chosen to facilitate integration of both quantitative and qualitative data related to the review question and aims in order to generate a framework of family member coping following admission to hospital with unexpected critical illness.

### 2.1. Inclusion/exclusion criteria

Studies were included based on the following inclusion criteria: (1) focus of the study was on hospital care settings, as coping with illness in the community may not involve separation from loved ones; (2) specifically focused on coping strategies of adult family members of hospitalised adult patients, which is likely to be different to the response of separation of children during hospitalisation and (3) publications reporting research findings. Exclusion criteria included: (1) non-English manuscripts; (2) manuscripts focused on family members of hospitalised children; (3) focused on children under age 18 whose family member was hospitalised, due to the likely difference in coping and the lack of evidence of increased health risk in this population that has been reported in the adult population. Assessment against these inclusion and exclusion criteria was undertaken by the first and last author at all stages of screening and selection.

### 2.2. Search strategy

The following databases were used to search for primary empirical research: PubMED, CINAHL, PsycINFO, EMBASE, and MEDLINE. The initial literature search was performed in March and April 2017, and the search was updated in December 2017 and April 2018. The keywords and MeSH terms (used in PubMED, MEDLINE, CINAHL and PsycINFO) were determined by existing literature and included: *family; family member; relative; extended family; adult; *coping; coping behaviours; adaptation, psychological; hospital*; intensive care, critical care, with the use of Boolean operators AND/OR. See Table A1 in Appendix for an example of one database search terms and yield numbers.

### 2.3. Screening and eligibility

The PRISMA diagram (Moher et al., 2009) illustrated in Fig. 1 gives an overview of the search findings. A two-stage screening process was used to determine the eligibility of the articles identified in the search. All authors participated in the review of potentially relevant manuscripts. The initial search identified 683 articles, which were reduced to 643 after removing duplicates and then reduced to 63 after review of titles for relevancy and review of abstracts with the inclusion and exclusion criteria applied. Reference lists of identified articles were also searched but did not provide additional papers.

### 2.4. Data quality evaluation

The Critical Appraisal Skills Program (CASP) for quantitative cohort and qualitative studies was used to evaluate the quality of the selected articles (strengths and weaknesses) for inclusion in the integrative review (Critical Appraisal Skills Program, 2018). The appraisal process involves evaluating the validity of the articles, evaluating the summary of study results; and determining the usefulness of the results. The appraisal forms for quantitative cohort and qualitative studies have 12 and 9 questions respectively. Each question is answered and assigned a numeric value: 'yes = 2,' 'can't tell = 1,' and 'no = 0.' The included screening questions appraise the clarity of the research question, the appropriateness of methodology, sample recruitment, presence of ethical consideration, degrees of bias, identification of confounding factors, follow-ups of subjects, rigor of data analysis, precision and usefulness of results, and implication for practice (Table 3 and Tables A2 and A3 Appendix)

### 2.5. Data analysis

In undertaking the analysis, we used a deductive theoretical approach to answer the 3 review aims. Data analysis proceeded in a number of steps in order to sort, categorize, and summarize data, facilitating the drawing of sound conclusions from the synthesis (Whittemore and Knafl, 2005). Initially data was organized into matrix tables to allow for comparison of characteristics and findings, that were then clustered into grouped themes. These matrix tables allowed for the synthesis of common coping strategies and outcomes. Analysis was conducted by authors (MR, GT, and TB) until consensus was arrived. There were no outstanding disagreements at the end of the analysis phase. It was identified in doing this that studies tended to report coping at different time points either early after admission, at time of discharge and/ or following discharge. As such, findings were presented in relation to these time points as well as changes over time, when reported.

## 3. Findings

### 3.1. Overview of study characteristics

Characteristics of the final 15 studies that were included in this review are presented in Table 1. Fourteen studies that met study inclusion criteria were conducted in the intensive care setting and one other was a vignette-based simulated ICU study (Butler et al., 2016). The definitions of "family member" differed between studies and are presented in Table 2. Individual characteristics of the included studies (n = 15) examining coping strategies by family members is presented in Table 3. Studies reported using

**Table 1**
Characteristics of included studies ($n = 15$).

| Characteristics | *n* |
|---|---|
| **Country** | 8 |
| USA | 3 |
| Europe | 2 |
| Hong Kong | 1 |
| UK | 1 |
| Brazil | |
| **Number of participants** | 11 |
| <100 | 2 |
| 100–200 | 2 |
| >200 | |
| **Study design** | 5 |
| Mixed | 5 |
| Quantitative | 2 |
| Descriptive survey | 3 |
| Descriptive longitudinal | |
| Qualitative- interview | |
| **Study sites** | 11 |
| Single site | 3 |
| Multi-site | 5 |
| **Study Hospital setting** | 5 |
| University hospital | 3 |
| Tertiary general/regional hospital | 1 |
| Medical centre | 3 |
| Community hospital | 3 |
| **ICU specialty** | 6 |
| Medical | 2 |
| Surgical | |
| Neurosurgical | |
| Cardiac | |
| **Response rate** | 5 |
| <50% | 4 |
| >51% | 3 |
| Not reported | 3 |
| Convenience sampling | |
| **Coping Instruments** | 4 |
| Quantitative/Mixed studies | 1 |
| Brief COPE | 2 |
| COPE[a] | 1 |
| F-COPES | 1 |
| WCQ | 2 |
| WCCL[b] | 2 |
| JCS | |
| Miller Behavioural scale | |

COPE = Crisis Oriented Personal Evaluation.
[a] COPE = 26 item abbreviated version; F-COPES = Family Crisis Oriented Personal Evaluation; JCS = Jalowiec Coping Scale; WCQ = Ways of Coping Questionnaire.
[b] WCCL = Ways of Coping Checklist (revised version, Vitaliano et al. (1985)).

the full version of the following coping instruments: the Brief Crisis Oriented Personal Evaluation (COPE) scale; Family Crisis Oriented Personal Evaluation (F-COPE) scale; the Jalowiec Coping Scale (JCS) (Koller, 1991; Reider, 1994; Twibell, 1998; Chui and Chan, 2007; Petrinec et al., 2015; Turner-Cobb et al., 2016; Nadig et al., 2016); and the modified and abridged versions of the COPE scale, Ways of Coping Questionnaire (WCQ), Ways of Coping Checklist (WCCL), and the Miller Behavioural Scale in the remaining 5 quantitative studies (Acaroğlu et al., 2008; Casarini et al., 2009; Wartella et al., 2009; Hickman et al., 2010; Butler et al., 2016).

### *3.2. Coping strategies that are reported by adult family members following admission of their adult loved ones to ICU*

#### *3.2.1. Coping immediately following hospital admission*

Family members report moderate to high use of personal strategies to cope, beginning within 24–48 h of hospital ICU admission of their relatives (Chui and Chan, 2007; Turner-Cobb et al., 2016). Reframing appears the most frequently reported, which involves family members redefining the stressful event of hospitalisation to make it more manageable (Chui and Chan, 2007). Acceptance and seeking of support through advice and information are also reported by family members within the first 48 h of ICU admission (Turner-Cobb et al., 2016). The least utilized coping strategy reported appears to be passive appraisal, that involves a cognitive minimisation or denial of a problem (Chui and Chan, 2007).

#### *3.2.2. Coping in the first week following hospital admission*

Supportant, optimistic, and confrontive coping strategies, that all include efforts to cognitively manage the threat of critical illness, are utilised more frequently and perceived as most effective by family members over the first 7 days from admission (Koller, 1991; Twibell, 1998). Emotive and evasive coping are reportedly least utilised by family members and perceived as ineffective for coping with their relative's hospitalisation (Twibell, 1998). The perceived effectiveness of both optimistic and supportant coping strategies appears to be influenced by the patient's expected recovery (Twibell, 1998).

In this study by Twibell (1998), the use of the JCS has an important advantage over other coping scales with the inclusion of ratings of perceived efficiency for each coping strategy (Jalowiec, 2003). Although there is no one accepted theory of coping effectiveness (Jalowiec et al., 2007) the JCS defines *perceived coping effectiveness* as the person's assessment of how helpful specific strategies are in dealing with stressors (Jalowiec, 2003). Expectant recovery of the patient, as opposed to further deterioration was associated with optimistic (positive thinking) and supportant (use of supportive resources) coping strategies by family members (Twibell, 1998).

Interviews of family members within 4 days of the patient's admission identified the importance of maintaining hope, the comfort of prayer and religious beliefs, and the need to understand and objectively manage the hospitalisation situation (Chan and Twinn, 2007; Casarini et al., 2009). Emotive and evasive coping, in the form of distraction and seeking of social support was also reported as frequently employed in the first week following admission of their family member (Chan and Twinn, 2007; Casarini et al., 2009).

#### *3.2.3. Longitudinal evaluations of coping (2 days admission to 30 days post discharge)*

Two longitudinal evaluations of family members reported higher use of problem-focused coping compared to emotion-focused coping during and after their relative's ICU hospitalisation (Wartella et al., 2009; Petrinec et al., 2015). In one study, family members of patients admitted to a medical, surgical, and neurological ICU reported problem-focused and emotion-focused coping mean scores that progressively lessened from the first week of admission to 30 days following hospital discharge whereas avoidant coping mean scores remained unchanged over time (Petrinec et al., 2015). According to the authors, this finding is suggestive of problem and emotion-focused coping strategies being insufficient or ineffective to fully meet and counter the stress demands of hospitalisation and post-hospitalisation (Petrinec et al., 2015). These findings contrast however with a study of family members of traumatic brain injury patients who reported increased usage of both problem-focused and emotion-focused coping mean scores over time from admission to 30 days following hospital discharge, suggesting that the patient diagnosis and/or prognosis greatly influences family members coping (Wartella et al., 2009). With the changing nature of the patient's recovery circumstances, so does the family member's usage and reliance on specific coping strategies.

**Table 2**
Definitions of study participants of included studies ($n = 15$).

| # | Study | Definition |
|---|---|---|
| 1 | Koller (1991) | A person who is part of an interrelated group of two or more individuals interacting with one another in an interdependent and open system. Relationships included spouses, adult children, sibling, and others. |
| 2 | Reider (1994) | Not formally defined. Relationships included parents, siblings, adult children, spouses, and others significant to the patient. |
| 3 | Twibell (1998) | Not formally defined. Relationships included spouses, significant others, adult child, sibling, parent, adult grandchild, and grandparent. |
| 4 | Johansson et al. (2002) | Definition included spouses, partners living together, parents, adult children, siblings, and close friend of the patient. Relationships included in study were spouses, partners, siblings, adult children, parents, and friend. |
| 5 | Chan and Twinn (2007) | Not formally defined. Relationships included spouses. |
| 6 | Chui and Chan (2007) | A family member who was the primary caregiver. Relationships included spouses, adult children, siblings, parents, others (adult nieces, adult nephews, and adult grandchildren). |
| 7 | Agård and Harder (2007) | A relative of the patient. Relationships included spouses and parents. |
| 8 | Acaroğlu et al. (2008) | Not formally defined. Relationships included spouses, and adult children. |
| 9 | Casarini et al. (2009) | Relative directly involved with the patient and their hospitalisation. Relationships included spouse/partner, adult child, parent, sibling, and other. |
| 10 | Wartella et al. (2009) | A relative who had the greatest frequency of contact with the patient and self-identifies as the primary future caregiver. Relationships included were not reported. |
| 11 | Hickman et al. (2010) | Identified by family members as the primary decision maker for the patient. Relationships included spouses, adult children, parents, and other relative. |
| 12 | Petrinec et al. (2015) | A family member previously designated by the patient as the legal durable power of attorney; OR a family member verbally chosen by the patient; OR a relative or friend who is available and assumes the role of decision maker; OR a legal guardian. Relationships included spouses, adult children, parents, and others. |
| 13 | Turner-Cobb et al. (2016) | Not formally defined. Relationships included parents, siblings, and adult children. |
| 14 | Butler et al. (2016) | Not formally defined. Two thirds of participants had a relative previously hospitalised in ICU; more than half had experience with hospitalisation as a patient. |
| 15 | Nadig et al. (2016) | Self-described caregiver of the patient. Relationships included spouses, adult children, parent, sibling, or other family. |

*3.2.4. Coping and family needs*

The need for support by family members of ICU patients has been reportedly associated with higher use of optimistic, confronting, supportive, and emotive coping strategies and perceived to be effective to them for handling the stress of their situation (Koller, 1991). In this study, family members of patients admitted to medical-surgical ICU reported perceived uncertainty of prognosis and waiting as most stressful, although waiting was not defined further in this study (Koller, 1991).

To cope with the uncertainty of prognosis and the hospital situation, family members interviewed one week after hospitalisation, report suppressing their own anxiety and sorrow, and using emotional distancing from their relative to limit their feelings of suffering (Agård and Harder, 2007). Alleviation through diversion is another coping approach identified by family members interviewed between one week and four months of their relative's discharge from ICU (Johansson et al., 2002). Alleviation in this study involved a tendency to either not accept the reality of the patient's situation or purposeful engagement in activities for diversion, to isolate and suppress feelings (Johansson et al., 2002).

Uncertainty has been identified as a significant stressor for spouses of hospitalised ICU patients (Chan and Twinn, 2007). Three subcategories of uncertainty have been reported, including the suddenness of the hospitalisation, the outcome of the illness, and anxiety (Chan and Twinn, 2007). In a study of families in a regional ICU in Hong Kong, uncertainty was reported to contribute to the intensity of their emotional response and acted as a trigger for seeking information and emotional support to reduce their levels of stress (Chan and Twinn, 2007). Participants described feelings of confusion, worry, fear and guilt that contributed to their anxiety and for some manifested in the additional experience of physical symptoms such as dizziness and shortness of breath (Chan and Twinn, 2007). Similar to Koller (1991), participants reported feeling anxious while waiting to speak to a doctor about their partner's condition (Chan and Twinn, 2007).

Family members also report feelings of illegitimacy regarding their own needs and expectations and report a second coping strategy of using cognitive and behavioural actions directed at putting aside attention on themselves and any thoughts related to the patient's clinical condition or potential negative future outcomes (Agård and Harder, 2007; Casarini et al., 2009). Although these coping actions appear aimed at emotional control, by balancing the potential threat with hopeful outcomes for their relative, they also may imply progressive distortions in the perceived reality of the situation that may lead to confusion, emotional distancing, or denial of the real situation to gain control (Casarini et al., 2009).

A family member's ability to cope may also centre around the predominant need to know what is happening to their hospitalised relative (Agård and Harder, 2007). Family members report a coping strategy of forming personal cues regarding their relative's situation from the ICU environment, such as looking at monitors, contents of drainage bags, and watching the nurses (Agård and Harder, 2007). Making assessments of the patients' condition by forming personal cues becomes fundamental as an important daily activity for the relative's ability to cope and function (Agård and Harder, 2007). Family members describe behaviours directed at understanding the need for the relative's hospitalisation in ICU and looking for actions that might contribute to their recovery such as observing for changes in the patient and actively participating in their care (Agård and Harder, 2007). It is proposed that when family members reach a more realistic evaluation of their hospitalised relative, their coping responses can become more adjusted to realistic outcomes and they are then able to master the situation due to their perceived self-control in terms of care involvement (Johansson et al., 2002; Casarini et al., 2009).

*3.2.5. The relationship between coping and psychological stress*

In a study of patient's relatives in a neurological ICU, within 24 h of ICU admission, higher use of emotion-focused coping by family members was associated with higher psychological distress (as measured by the General Severity index of the Brief Symptom Inventory) and was largely accounted for by denial (Wartella et al., 2009). At 30 days following patient discharge, this denial

**Table 3**
Individual characteristics of included studies ($n = 15$) on coping strategies by family members of hospitalised patients.

| | Study | Design | Participants and setting | Sample size | Coping instrument used | Time of coping measure | Purpose | Key Findings | CASP score |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Koller (1991) | Mixed methods descriptive study: Questionnaires; Structured interview | Family members; Mean Age 51.5yrs Age Range: 27-76 Medical-surgical ICU in US tertiary hospital | 30 | Jalowiec coping scale | Within 24 hrs to no longer than 6 days in ICU | Identify & explore interrelationship between family needs & coping behaviours | Confronting & optimistic coping most useful and effective overall. Emotive & fatalistic coping styles used less frequently. Association between use of optimistic coping style with need for support ($R^2 = 0.45$, $p<0.05$). No significant association for coping styles and the need domains of information, proximity, and assurance. | 14 |
| 2 | Reider (1994) | Quantitative descriptive study: questionnaire | Family members; Age range: 19-83 Critical care units in 2 US community hospitals | 75 | F-COPES | Within 1st 48-96 hrs of admission | Examine coping and anxiety levels | Coping subscale of passive appraisal was inversely related to anxiety level (r=-.26 ($R^2 = 0.07$), $p<0.05$) while the remaining subscales of reframing, acquiring social support, seeking spiritual support, and mobilizing of the family to acquire and accept help were unrelated to anxiety. | 15 |
| 3 | Twibell (1998) | Quantitative descriptive study: questionnaire | Family members; Mean Age: 52yrs Critical care unit in US medical centre | 59 | Jalowiec coping scale | Within 7 days of admission | Examine the use and effectiveness of coping styles. | Supportant, optimistic, & confrontive styles used most frequent; emotive & evasive styles used the least. Perception of patient's recovery directly related to effectiveness of optimistic ($r = .30$, $p < 0.01$), supportant ($r = .27$, $p < 0.05$), and palliative ($r = .23$, $p < 0.05$) coping styles. Age and relationship ($r = .31$, $p < 0.01$) to the patient correlated with effectiveness of coping responses. | 14 |
| 4 | Johansson et al. (2002) | Qualitative descriptive study using grounded theory methodology: interview | Relatives/close friends; Mean Age (SD): 50.8yrs ± 15.4 Age Range: 22-72 ICUs in a Sweden tertiary hospital | 18 | N/A | Interviewed between 7 days & 4 months following discharge from ICU | To explore coping strategies & factors determining choice. | Individual's external and internal resources influenced coping approach including social background, previous ICU experience and perception of hospitalisation situation. Relative/close friends alleviated, recycled, mastered, or excluded their feelings. | 17 |
| 5 | Chan and Twinn (2007) | Qualitative descriptive study: semi-structured interview | Family members; Age range: 18-75 ICU in regional general hospital in Hong Kong | 10 | N/A | Within 2 to 4 days of admission | Identify major stressors and coping strategies used. | Coping strategies identified: Seeking of information and support; reliance and use of cultural and religious beliefs; maintenance of hope; and acceptance of illness. | 16 |
| 6 | Chui and Chan (2007) | Cross sectional descriptive study: Mixed methods: Questionnaires; semi-structured interview | Family member; Mean Age (SD): 44.9yrs ± 14 Age Range: 18-76 ; 2 ICUs in regional general hospital in Hong Kong | 133 | F-COPES | Within 24 hours of admission | Investigate the relationship between stress & coping strategies. | Stress level correlates with coping strategy utilization ($r = 0.5$, $p<0.001$). Reframing most used; Passive appraisal least used. Moderate negative correlation between level of stress and passive appraisal strategy ($r$=-.6, $p<0.001$). Traumatic or emergency admission resulted in higher stress and increased use of passive appraisal coping ($t = 1.9$; d.f. = 1,131; $p = 0.05$). | 19 |
| 7 | Agård and Harder (2007) | Qualitative explorative study; in-depth interview using grounded Theory methodology | Family members; Age Range: 39-72 2 ICUs, University hospital, Denmark | 7 | N/A | After 7 days of hospitalisation | Explore & describe coping experiences | Identified coping strategies: enduring uncertainty; putting self aside; and forming personal cues. Uncertainty influenced their chosen coping strategy. | 17 |

**Table 3** (*Continued*)

| | Study | Design | Participants and setting | Sample size | Coping instrument used | Time of coping measure | Purpose | Key Findings | CASP score |
|---|---|---|---|---|---|---|---|---|---|
| 8 | Acaroğlu et al. (2008) | Descriptive study: Quantitative: questionnaire | Family members; Mean Age (SD): 34.7yrs ± 11.1 Age Range: 19-66 Neurosurgery ICU; Hospital, Turkey | 120 | WCQ (Abridged Turkish version) | Within hospitalisation period (8 ± 15 days) | Evaluate levels of anxiety and ways of coping | Coping styles in ranking order of use: self-confident approach, helpless approach, optimistic approach, seeking of social support, submissive approach. Trait anxiety associated with submissive ($r = 0.38$, $p = 0.002$) and helpless ($r = 0.40$, $p = 0.002$) approaches. | 12 |
| 9 | Casarini et al. (2009) | Descriptive study: Mixed: Questionnaires; semi-structured interview | Relatives; Mean Age (SD): 43.8yrs ± 13.6 Age Range: 21-65 ICU; University Hospital, Brazil | 41 | WCCL (revised Vitaliano et al., 1985) version | Within first 96 hrs of hospitalisation | Describe coping strategies used. | Frequent use of coping strategies based on problem, religiosity/fantasy thinking, and seeking for social support. Four main themes of coping: emotional control strategies; psychological and instrumental support; understanding and resolution of situation; and religious responses. | 18 |
| 10 | Wartella et al. (2009) | Quantitative: longitudinal study; questionnaire | Primary relatives; Mean Age: 43.7yrs Age Range: 19-84 Neuroscience ICU; US Medical trauma centre | 51 | COPE (26-item abbreviated form) | 3 time-points: Within 2 days of admission; prior to patient discharge; 30 days following patient discharge | Evaluate association between coping strategy use and emotional distress. | Problem-focused strategies used relatively more than emotion-focused strategies at each time point (all t's>2.7, all $p$'s<0.01), however both problem-focused and emotional-focused coping strategies increased in use from admission through to follow-up at 30 days post-discharge. Emotional distress associated with emotion-focused coping at admission and discharge, was largely accounted for by the Denial subscale. | 18 |
| 11 | Hickman et al. (2010) | Quantitative: secondary data analysis | Family decision makers; Mean Age (SD): 51.4yrs ± 12.9 5 ICUs; 2 US medical centre | 210 | Miller Behavioural Style scale (abbreviated version) | Within hospitalisation period | Described associations and patterns of informational coping styles | No associations between demographic characteristics and informational coping styles: blunters (information avoidance) or monitors (information seeking). Both information coping styles and information satisfaction influenced experience of depressive symptoms. | 18 |
| 12 | Petrinec et al. (2015) | Quantitative: longitudinal correlational design; questionnaire | Family decision makers; Mean Age: 57yrs Age Range: 21-86 neurological ICUs; US tertiary hospital | 77 | Brief COPE | 2 time-points: 5 days post admission; and 30 days after discharge or death of patient | Assess coping strategies in relation to post-traumatic stress symptoms following hospitalisation. | Problem-focused and active-emotion focused coping use decreased over time, while avoidant-emotion focused coping use remained stable. Coping strategies 30 days post discharge ($R^2 = 0.50$, $p < 0.001$) predicted post-traumatic stress symptoms more than at 5 days post ICU admission ($R^2 = 0.30$, $p = 0.001$) controlling for patient and decision maker characteristics. | 20 |
| 13 | Turner-Cobb et al. (2016) | Mixed concurrent triangulation study: Questionnaires, semi-structured interviews, biological sampling | Relatives; Age Range: 25-64 ICU, UK district general hospital | 6 | Brief COPE | Within 48 hours of admission | Examine the acute psycho-biological impact of ICU experience | Common utilized coping techniques: acceptance; seeking support through advice and information; and substance use. Depressed mood and avoidance were linked to greater mean cortisol levels across the day. Greater social network and coping via self-distraction were related to lower evening cortisol, indicative of their protective influence in the ICU context. | 10 |

**Table 3** (*Continued*)

| | Study | Design | Participants and setting | Sample size | Coping instrument used | Time of coping measure | Purpose | Key Findings | CASP score |
|---|---|---|---|---|---|---|---|---|---|
| 14 | Butler et al. (2016) | Mixed: Questionnaires, vignette-based simulated ICU experience | Past or potential ICU family members; Age Range: 19-73 University community sample, US study | 343 | Brief COPE; Miller Behavioural Style scale | N/A | Identify differences in coping and stress presentation preferences to a simulated ICU experience | Three distinct coping profiles identified: adaptive copers (45%), maladaptive copers (23%), and disengaged copers (32%). Disengaged copers (15% 0 more likely to elect to refuse dialysis for an adult sibling in the surrogate decision vignette, compared to adaptive copers (7%) or maladaptive copers (5%). Prior experience of ICU did not influence differences in decision making by coping profile. | 13 |
| 15 | Nadig et al. (2016) | Quantitative: cross sectional survey; questionnaire | Family members; Age Range: 18-80 ICU transfer to hospital ward in US hospital | 56 | Active coping domain of the Brief COPE scale | At time of transfer from ICU to the general ward | Explore relation between intensity of coping & psychological stress | Intensity of coping determined from the Active coping domain of the Brief COPE inversely correlated with anxiety and depression, measured by the Hospital Anxiety and Depression scale ($r=-0.32$, $p < 0.05$) and post-traumatic stress ($r = 0.12$, $p < 0.05$). | 20 |

COPE = Crisis Oriented Personal Evaluation; F-COPES = Family Crisis Oriented Personal Evaluation; WCQ = Ways of Coping Questionnaire; WCCL = Ways of Coping Checklist.

continued to contribute to psychological distress, whereas neither problem-focused nor emotion-focused coping was associated with psychological distress scores (Wartella et al., 2009).

The contributing effect of denial on psychological stress was similarly reported in family members assessed within 2–4 days of ICU admission who by increasing their use of passive appraisal strategies experienced a reduction in their experience of anxiety symptoms (Reider, 1994). Passive appraisal, that involves minimisation or denial of a problem, is suggested to reduce anxiety by increasing the amount of time available for family members to deal with an unexpected stressful event, or by preventing negative emotions from becoming overwhelming (Chui and Chan, 2007). This appears particularly true for family members who experience traumatic or emergency admissions of their relative, who report higher use of passive appraisal strategies with high levels of stress (Chui and Chan, 2007). However, another study reported avoidant coping may be associated with increased experience of traumatic stress symptoms, measured with the Impact of Events Scale, in family members of ICU patients in the first week of ICU admission and at 30 days post discharge, highlighting how different coping approaches, or coping styles may result in different outcomes for different individuals (Petrinec et al., 2015).

Dispositional coping, a variation of approach and avoidance coping that describes an individual's disposition for processing information as either 'monitors' (information seeking) or 'blunters' (information avoidance) was examined in family decision makers of cognitively impaired ICU patients within the first week of admission in one study (Hickman et al., 2010). Family decision makers classified as monitors reported significantly higher depressive symptoms compared with blunters on admission to ICU of patients requiring at least 72 h of mechanical ventilation (Hickman et al., 2010). Higher informational satisfaction was significantly associated with lower depressive symptoms (Hickman et al., 2010). In this sample, greater levels of perceived stress and loss of predictability, control, and certainty was reported, when the information was limited, or their information needs were not satisfied (Hickman et al., 2010).

At time of transfer from ICU to the general ward, active coping by family members has been associated with lower symptoms of anxiety, depressive and post-traumatic symptoms (Nadig et al., 2016). Among family member greater optimism, resilience, and social support were reported to be potentially protective and associated with lower psychological stress at this time of transfer from ICU (Nadig et al., 2016).

#### *3.2.6. Coping and physiological stress response*

Self-distraction as a coping strategy may have some beneficial protective effects as it has been associated with lower cortisol response in one study of family members of ICU patients, assessed within 24 h of hospital admission (Turner-Cobb et al., 2016). In this study, family members recorded their medication and sleep details as well as their salivary sampling times of awakening, noon, afternoon, and evening (Turner-Cobb et al., 2016). With values following a typical diurnal decline, a significant association was observed between the Brief COPE subscale of self-distraction and evening cortisol with greater use of self-distraction being associated with lower evening cortisol (Turner-Cobb et al., 2016). Although sample size was small in this study ($n = 6$), the authors propose that self-distraction may represent an adaptive coping approach for family members when confronted with the acute intensive care setting (Turner-Cobb et al., 2016).

### *3.3. Factors associated with coping in adult family members*

Six major factors appear associated with coping strategies utilized by family members in the studies reviewed; social support, gender, age, relationship with the patient, decision maker role, and prior ICU experience.

#### *3.3.1. Social support*

Social support contributes to both the re-evaluation of the hospitalisation situation and maintenance of emotional equilibrium for family members of ICU hospitalised patients (Casarini et al., 2009). Social support in the form of effective information exchange

and understanding with hospital staff, especially nursing staff (Koller, 1991), appears to reduce ambiguity mediated by the degree of severity of the patient's clinical condition (Casarini et al., 2009), especially among family members of lower education level (Verhaeghe et al., 2007). In a study of family members assessed within 4 days of hospitalisation, reliable access to intelligible information about the hospital environment and the patient's condition by trustworthy hospital staff contributed by reducing uncertainty and allowed participants to adjust their coping responses to realistic outcomes for family members (Casarini et al., 2009). There also appears to be interplay between hope and support provided, in which family members progress through stages in learning to cope with the information provided (Verhaeghe et al., 2007).

*3.3.2. Gender*

Among family decision-makers of adult critical care patients, females reported higher use of avoidant coping compared to men in the early days following admission, but not following discharge (Petrinec et al., 2015). This relationship may help explain why female family members of general ICU patients frequently report higher levels of psychological distress and are more likely to report persistent symptoms of anxiety, depression, and post-traumatic stress, compared to men as avoidant coping strategies appear associated with higher psychological stress (Paparrigopoulos et al., 2006). In addition to higher use of avoidant coping, female family members of patients hospitalized in a neurological ICU, also reported actively seeking social support more frequently than men, with women in this study also reporting higher states of anxiety than males (Acaroğlu et al., 2008).

*3.3.3. Age*

In one study, older family members report optimistic and self-reliance as the strategy most effective for coping, as measured by the JCS (Twibell, 1998). Additionally, in this study of family members of critically hospitalised patients, effectiveness of coping responses was correlated with the age, with older participants reportedly coping more effectively than younger participants, as measured by the JCS (Twibell, 1998). These findings are suggestive of older people using less interpersonal problem-oriented forms of coping to deal with the ICU hospitalisation of a relative.

*3.3.4. Relationship with the patient*

Effectiveness of coping responses appears related to the relationship of the participant to the patient with evidence that spouses and adult children cope less effectively than more distant related family members including siblings, grandchildren, and grandparents (Twibell, 1998). In this study of 59 family members of ICU patients assessed within 7 days of admission, perceived effectiveness was measured using the JCS, which has been shown to be associated with lower life satisfaction, more stress and psychosocial symptoms and perception of poor ability to cope with the situation (Jalowiec, 2003). The increased sense of actual or potential loss was identified as an influencing factor and coping effectiveness was more when these primary relational commitments were threatened (Twibell, 1998).

*3.3.5. Decision maker role*

Family members who act as surrogate decision makers on behalf of their cognitively impaired critically hospitalised relative often report experiences of numerous conflicting emotions and tension due to a need to comprehend complex clinical information and make treatment decisions that are consistent with the patients' preferences (Schenker et al., 2012,2013; Hickman et al., 2010). Reported independent predictors of low confidence as surrogate decision makers include: lack of prior decision-making experience; lack of prior discussions with the patient about treatment preferences; and poor quality of communication with ICU physicians (Majesko et al., 2012). Coping with situational and role uncertainty may reduce the family member's ability to make appropriate treatment decisions and can further increase their risk for impaired psychological well-being (Hansen et al., 2004; Hickman et al., 2010). To make informed decisions family members report needing and valuing structured communication systems in hospital settings that can provide sufficient informational support (Pochard et al., 2001; Nelson et al., 2005). The family member's role in the communication process therefore influences their ability to make a rational and informed decision (Hickman et al., 2010).

A vignette-based simulated ICU experience study identified different decision-making responses associated with three distinct coping profiles: adaptive, maladaptive, and disengaged (Butler et al., 2016). In this study of participants' decision whether to refuse ventilation and dialysis treatment for their family member, disengaged copers were more than twice as likely to refuse dialysis treatment on behalf of an adult sibling, compared to adaptive copers, who rated higher satisfaction with shared decision making (Butler et al., 2016). Interestingly, the respondent's prior ICU experience did not appear to influence treatment decision making but instead, coping styles appeared to be influenced by personality attributes including neuroticism and agreeableness as well as religious beliefs (Butler et al., 2016).

*3.3.6. Prior ICU experience*

Although prior ICU was not associated with treatment decisions making in one study (Butler et al., 2016), previous experience of ICU-care has been reported as an influencing factor of choice of coping strategy by family members (Johansson et al., 2002). In a study of patients hospitalised in ICU, family members who described being both more conscious of their previous experience and emotional reactions, as well as their own capacity and needs, reported mastering their feelings and not feeling pressured to become overly engaged in their relative's hospital care (Johansson et al., 2002). Due to their previous ICU experience, these family members reported being more likely to take conscious command of their situation and be aware of the necessity to take personal time for relaxation and stimulation, to better manage the whole period of illness (Johansson et al., 2002). This coping behaviour is in accordance with problem-focused coping theory, through which previous experience with ICU informs the use cognitive problem-solving efforts and behavioural strategies to cope (Johansson et al., 2002).

## 4. Discussion

The findings of this review highlight the myriad combinations of coping strategies reported by family members of ICU hospitalised patients from admission to post discharge. In the studies reviewed, family members report experiencing numerous stressors such as uncertainty of patient treatment outcomes, communication difficulties, changes in relationship roles and responsibilities, difficulties in decision making, and financial strain (Chan and Twinn, 2007). Themes were extracted and synthesised from the literature in line with the objectives of this review.

To understand the concept of coping within the framework of personality, coping has been further conceptualised to encompass two main concepts that aim to differentiate between coping "strategies" and coping "styles". The first concept is that of a stable coping style that characterises an individual's interaction with his or her stressful environment; and the second involves coping skills or techniques that people use to manage specific stressful situations (Beutler and Moos, 2003; Moos and Holahan, 2003; Shikai et al.,

2014). Therefore coping "strategies" are concerned with the cognitive or behavioural actions that are performed during an episode of stress; and conversely, coping "styles" are related to an individual's personality traits and dispositional factors.

The question of whether the coping style that individuals think they will use when encountering stressful situations may differ from actual coping responses in real situations, is influenced by perspective which may be viewed as dispositional and interpreted as part of an individual's personality (Shikai et al., 2014). Perceived coping style and actual coping responses are moderately correlated for problem and emotion-focused coping, implying that actual coping is additionally determined by the variability of stressors that individuals encounter, such as environmental factors (Shikai et al., 2014). Considering that the effectiveness of a given coping strategy is both context-dependent and subject to stable traits and circumstances (Litt and Tennen, 2015), an understanding of family member's subjective perception of hospital stressors and how they adapt and cope, may provide insight for interventions aimed at reducing their experience of psychological reactions related to the specific situation of hospitalisation itself.

Within the first hours of admission, it would appear that family members tend to gravitate more towards problem-focused coping strategies (Wartella et al., 2009; Petrinec et al., 2015) including positive reframing (Chui and Chan, 2007), which is a cognitive adaptive strategy involving reappraisal of a negative situation as benign, beneficial, and/or meaningful (Lambert et al., 2009). Positive reframing is reportedly associated with reduced psychological distress and improved mental health outcomes including reduced depressive symptoms (Lambert et al., 2012). Early in the hospitalisation experience, family members who utilize positive reframing, can remain involved in the stressful situation while still reducing their experience of negative emotion, allowing them to actively seek informational support.

Emotive and evasive forms of coping, including passive appraisal, are notably reported least and frequently perceived as ineffective by family members, despite being associated with lower anxiety levels (Reider, 1994; Chui and Chan, 2007; Wartella et al., 2009; Petrinec et al., 2015). Passive appraisal, which involves minimisation or denial of the problem, may provide a potential short-term protective buffering effect during the early stages of hospitalisation by increasing the amount of time available for the family members to accept the situation and thereby prevent experiencing overwhelming negative emotions (McCubbin and McCubbin, 1993). Longer-term however, denial loses this initial protective effect resulting in depressogenic and anxiogenic consequences as well as higher risk of post-traumatic stress disorder (PTSD) (Kendler et al., 1991; Wartella et al., 2009; Petrinec et al., 2015). In the general PTSD literature, avoidance is suggested to play a pivotal role in PTSD symptom maintenance and avoidant coping is reportedly associated with PTSD symptom severity both concurrently and longitudinally (Pineles et al., 2011). An overreliance on avoidant coping strategies may impede the natural recovery process where symptoms of heightened arousal, including difficulty sleeping, and irritability should normally decrease over time (Pineles et al., 2011).

In studies reviewed, females report both higher initial use of avoidant coping upon ICU admission compared to men (Petrinec et al., 2015) and report higher levels of anxiety symptoms than men (Acaroğlu et al., 2008). Females in general have been reported to score higher in items assessing anxiety compared to men, possibly because of increased anxiety sensitivity heritability (i.e., worry about fear and its consequences); gender socializing that encourages men to adopt self-assertive attitudes; and increased willingness to admit helplessness (Bekker and van Mens-Verhulst, 2007; Jang et al., 1999; McLean and Anderson, 2009). Helpless coping involves negative secondary appraisal and prevents the family member from initiating a constructive coping response (Lazarus and Folkman, 1984). High levels of trait anxiety in family members appears to be associated with an increased usage of submissive and helpless coping (Acaroğlu et al., 2008), that are both considered to be maladaptive approaches to coping (Lazarus and Folkman, 1984).

Removed from their social context and placed in a strange environment, family members can appear to be in a state of suspended animation where they become unaware of their own needs (Jamerson et al., 1996). The theme of putting oneself in second place and constantly ignoring their own needs (Engström and Söderberg, 2004; Agård and Harder, 2007) may result in a state of exhaustion whereby family members become incapable of coping with the hospital situation (Delva et al., 2002). To sustain the capacity to cope, family members report their dependence on hope to deal with uncertainty in patient outcome (Chan and Twinn, 2007). Hope provides a calming effect reinforced by other emotion-focused strategies, such as distraction, that are considered appropriate for managing anxiety in long waiting situations (Folkman, 2010). Coping plays a critical role in fostering hope and hope in turn can sustain coping when the family member moves forward to deal with the demands of their new reality (Folkman, 2010). Therefore, health professionals should provide accurate and complete information to reduce uncertainty for family members that additionally fosters realistic hope.

The assumption of seeking information is embedded in the Uncertainty Reduction Theory, also known also known as Initial Interaction Theory (Berger and Calabrese, 1975). This theory asserts that people need information to reduce their uncertainty that in turn is beneficial in reducing psychological distress and anxiety (Brashers et al., 2002). However, in family members of hospitalised patients, information does not always reduce uncertainty and may even add higher risk for experiencing depressive symptoms, especially in those involved in decision making and if information is limited in volume and detail (Hickman et al., 2010). This appears most apparent in high information seekers, or "monitors", who generally hold heightened expectations of medical outcomes (Hickman et al., 2010). Health professionals should be vigilant of family members who may be information seekers as comprehension of information can assist with the formation of reasonable expectations by increasing their subjective control of the situation and reducing the risk of depressive symptoms. Fig. 2, is our diagrammatic representation of the various coping responses used by family members of ICU hospitalised patients as identified from the literature, highlighting coping as a function of their personality, perceptions of the situation, available moderators, and the context of the stressor.

Health professionals play an important role in assisting families to manage stress and cope in the hospital environment (Chui and Chan, 2007; Engström and Söderberg, 2007). Approaches aimed at fostering increased use of problem-focused coping and promoting a sense of control are proposed to be most effective in lowering family member distress levels and enhancing subsequent adjustment to the role of caregiver following hospitalisation (Wartella et al., 2009). In a study of trauma stressed women, cognitive behaviour therapy reduced the usage of avoidant coping and reported traumatic stress (Sikkema et al., 2013). To reduce the use of avoidant coping, the intervention involved participants acquiring cognitive skills to accurately appraise stressors, break stressors down into manageable pieces, assess whether current coping strategies were maladaptive, appropriately matching coping strategies to specified stressors, and in the process decreasing the experience of traumatic stress (Sikkema et al., 2013).

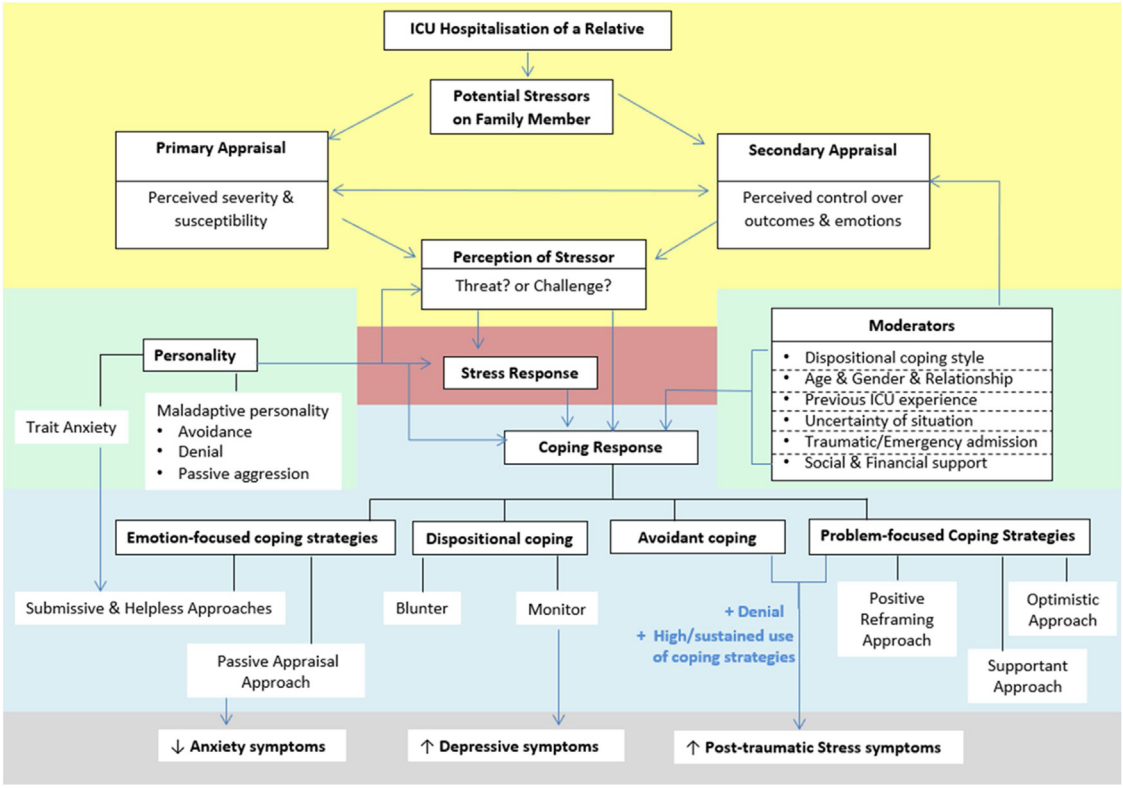


**Fig. 2.** Representation of the various coping responses used by family members of ICU hospitalised patients.

Another study that tested a bundle of care, implemented by the nurse when the family member was first met, consisting of five principles: evaluate, plan, involve, communicate, and support, significantly resulted in greater distancing and accepting responsibility by family members compared to study controls, (Knapp et al., 2013). By receiving adequate and relevant information family members were able to become more focused on the health care plan of the patient and felt more actively involved in their care as opposed to simply being bystanders, although stress levels did not differ after 8 weeks (Knapp et al., 2013). Further studies evaluating direct impact of informational interventions on coping were not found in the literature, that highlights the need for its further research in assessing interventions to promote adaptive coping.

### 4.1. Limitations

Firstly, by its fundamental nature, our keyword search of *coping* may have inadvertently sharply focused and limited the diversity of our retrieved studies. Secondly, coping strategies used by the family members were identified through use of numerous coping measurement tools including the WCQ, Brief COPE, F-COPE, and JCS. The lack of standardisation in measurement tools for assessing coping, makes both the comparison of studies difficult and may also explain the variation in coping strategies reported and associated confounders. Caution should be used when interpreting results of any coping measure tool, as these measures assume that individuals are accurate reporters of their own coping styles. Such accuracy depends, in part, on self-awareness as well as the impact of social desirability on item responses (Crowne and Marlowe, 1960). Our understanding of coping responses by family members is derived from single timepoints that encourages the view that coping is static and trait-like (Litt and Tennen, 2015). The dynamism of coping appears not captured well in studies to date, and neither is its transactional property, whereby the occurrence of a coping strategy at one point of time is dependent on its success at a previous time point (Litt and Tennen, 2015). Additionally, a limitation of this review is the inclusion of only English language published articles, which may not be representative of research from non-English speaking regions.

### 4.2. Implications of findings for future research

Further clarification is needed of the specific contribution of coping strategies by family members to their health and well-being. Comparison of family members recruited from non-ICU settings may also help reveal different choices and usage of coping strategies in contrast to the ICU-setting findings presented in this review. This may also help to extend identification of predictors of perceived coping effectiveness by family members. Longitudinal studies are needed to evaluate the effectiveness of coping over time that may help determine the best timing for intervention approaches aimed to help family members adapt and cope with the hospitalisation experience as well as capture the potential dynamism of coping. Additionally, future studies should focus on determining what other modifiable factors could be instigated by the healthcare team in the ICU and post ICU hospital environment to promote adaptive coping responses and promote wellbeing of family members during this stressful period.

### 4.3. Implications of findings for clinical practice

This review identifies several implications for clinical practice. Firstly, coping approaches by relatives of ICU patients may be highly individual and change over the course of admission and following discharge. In this review, younger family members, spouses, and parents of hospitalised adult children; emergency

admissions; females and family members with no prior experience of the intensive care setting were more likely to adopt avoidant coping strategies, which initially may form as a buffer against the stress of hospitalisation but may be associated with longer term psychological stress. Secondly, the health professionals who are in a position to provide particular attention to family members following patient admission, should be vigilant to identify relatives who are exhibiting information-seeking behaviours and ensure that their informational needs are met, as well as respect those who may appear to be 'blunters' (Hickman et al., 2010), and who avoid seeking information as a coping strategy. Thirdly, health professionals should assess family members health literacy, and prior ICU experience to best determine how to meet the information needs of the family member and how this information can be best delivered. The level and delivery of information should not be overwhelming to cause further uncertainty and increase the experience of anxiety or depressive symptoms for the family member. For instance, family members identified as physically or emotionally distancing themselves, mediated by denial or guilt, may benefit from more active involvement in their relatives' care to potentially promote hope and sustain coping through long periods of waiting for their desired outcome for their relative. However, health professionals should be aware that guilt can also negatively impact a family member to demonstrate exaggerated emotional responses involving detrimental self-sacrificing health behaviours in that the patient's needs become their top priority. Finally, health professionals should engage with family members to share their perceptions of the impact of their relative's critical hospitalisation, and their actions and statements should not diminish hope and should be realistic.

## 5. Conclusion

The aim of this review is to determine 1) the coping strategies that are reported by family members following admission of their adult loved ones to ICU 2) identify which coping strategies are associated with psychological response during this stressful experience, 3) the factors that are associated with coping strategies.

Our review highlights the complexity of coping and its impact on family members in the ICU environment. Coping strategies such as self-distraction appear to be associated with lower psychological distress, and avoidant and denial associated with increased psychological distress including traumatic stress symptoms. It is however unclear if coping strategies employed by family members mediate psychological responses such as anxiety and depressive symptoms, or whether coping is a response to psychological stress experienced following hospitalisation of their relative. However, the potential for interventions to modify coping following admission is highlighted with some evidence suggesting that modifying coping can result in improvements in the management and experience of stress symptoms. Future research should focus on the relationship between coping and psychological, physiological and health related behaviours in family members following ICU admission that might contribute towards transient increased cardiovascular risk during this time. Additionally, future research should explore potential interventions to modify coping and promote family well-being following hospitalisation.

## Author contributions

All authors have contributed equally with the drafting and revising of this integrative review.

## Conflict of interest

No conflict of interest has been declared by the authors.

## Appendix A

**Table A1**
Electronic database search strategy: PsycINFO.

| Search | Query | Items found |
|---|---|---|
| #1 | *COPING BEHAVIOUR/ (MeSH) | 36459 |
| #2 | coping.mp. (keyword) | 83967 |
| #3 | exp *FAMILY/ or *EXTENDED FAMILY/ or *FAMILY MEMBERS/ (MeSH) | 40872 |
| #4 | *INTENSIVE CARE/ or *HOSPITALIZATION/ (MeSH) | 8029 |
| #5 | Search (#1 or #2) | 83967 |
| #6 | Search (#3 and #4 and #5) | 15 |

**Table A2**
Quality appraisal of the selected quantitative studies using the Critical Appraisal Skills Program (CASP).

| Author (year) | Did the study address clearly focused issues? | Did the authors use an appropriate method to answer their question? | Was the sample recruited in an acceptable way? | Was the follow up of subjects complete enough? | Was the exposure/ outcome accurately measured to minimize bias? | Was the appropriate theoretical framework used? | Have the authors identified all important confounding factors? | Were the main study outcome measures clearly described and appropriate? | Were the main study findings clearly described? | Were the methods of data analysis adequately described and appropriate? | Were the conclusions supported by results? | Can the results be applied to the local population? | Quantitative score (max = 24) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Koller (1991) | 2 | 2 | 2 | 0 | 1 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 14 |
| Reider (1994) | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 15 |
| Twibell (1998) | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 14 |
| Chui and Chan (2007) | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 2 | 2 | 2 | 2 | 0 | 19 |
| Acaroğlu et al. (2008) | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 12 |
| Casarini et al. (2009) | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 0 | 18 |
| Wartella et al. (2009) | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 1 | 18 |
| Hickman et al. (2010) | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 2 | 2 | 2 | 2 | 1 | 18 |
| Petrinec et al. (2015) | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 20 |
| Turner-Cobb et al. (2016) | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 10 |
| Butler et al. (2016) | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 2 | 0 | 13 |
| Nadig et al. (2016) | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 20 |

**Table A3**
Quality appraisal of the selected qualitative studies.

| Author (year) | Was there a clear statement of the aims of the research? | Is a qualitative methodology appropriate? | Was the research design appropriate to address the aims of the research | Was the recruitment strategy appropriate to the aims of the study? | Was the data collected in a way that addressed the research issue? | Was the data analysis sufficiently rigorous? | Has the relationship b/t researcher and participants been adequately considered | Have ethical consideration been taken into consideration? | Is there a clear statement of findings? | Qualitative score (max = 18) |
|---|---|---|---|---|---|---|---|---|---|---|
| Koller (1991) | 2 | 2 | 2 | 2 | 2 | 1 | 0 | 1 | 1 | 13 |
| Johansson et al. (2002) | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 17 |
| Chan and Twinn (2007) | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 16 |
| Agård and Harder (2007) | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 17 |
| Chui and Chan (2007) | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 16 |
| Casarini et al. (2009) | 2 | 2 | 2 | 2 | 2 | 2 | 0 | 2 | 2 | 16 |
| Turner-Cobb et al. (2016) | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 10 |
| Butler et al. (2016) | 2 | 1 | 1 | 1 | 1 | 1 | 0 | 2 | 2 | 11 |

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