# Examining the Conceptual Model of Compassion Fatigue in Spouse Caregivers of Women with Breast Cancer

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## Abstract

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**Purpose**: The overall purpose of the dissertation was to develop a comprehensive theoretical framework of compassion fatigue in family caregivers, with three specific aims addressed through separate manuscripts. Specific Aim 1 involved synthesizing a conceptual definition of compassion fatigue in family caregivers by reviewing relevant literature. Specific Aim 2 focused on evaluating a measurement model of compassion fatigue in spouse caregivers of women with breast cancer. Specific Aim 3 examined the structural model of compassion fatigue in spouse caregivers by testing the hypothesized relationships between antecedent and consequent variables.

**Methods**: *Study 1* employed a scoping review approach, incorporating Rodgers' Evolutionary Model for concept analysis, to identify essential properties, antecedents, and consequences of

compassion fatigue in family caregivers from existing literature. *Study 2* and *Study 3* utilized secondary data from the Family Home Visitation Program, a randomized controlled trial of a couple-focused cognitive-behavioral intervention for spouse caregivers and women with newly diagnosed breast cancer. The analyses included baseline data from 214 spouse caregivers. *Study 2* utilized exploratory and confirmatory factor analysis to evaluate the proposed measurement model for compassion fatigue. *Study 3* evaluated a measurement model of caregiver's empathic response and used structural equation modeling to examine the relationships among caregiver's empathic response, compassion fatigue, and depressed mood and physical symptoms in spouse caregivers.

**Results**: *Study 1* established an integrated conceptual framework of compassion fatigue in family caregivers, serving as a foundation for the dissertation study. *Study 2* confirmed a three-factor model had the best fit for the data, indicating that powerlessness, emotional isolation, and emotional disengagement significantly contributed to the level of compassion fatigue experienced by spouse caregivers. *Study 3* revealed that spouse caregivers' empathic response could be organized into three domains: empathic ability, emotional contagion, and empathic concern. Spouse caregivers' empathic response predicted compassion fatigue, and subsequently led to caregivers' depressed mood and physical symptoms. The impact of empathic response on the two negative outcomes was fully mediated by compassion fatigue, highlighting the risk factor nature of empathic response in caregiving.

**Conclusion**: This dissertation addressed an important gap in the literature by providing a comprehensive understanding of compassion fatigue in spouse caregivers. The derived Empathic Response measure (9-item) and Compassion Fatigue measure (16-item) contribute to the development and validation of family caregiver-specific instruments for assessing empathic

response and compassion fatigue. Future studies should explore potential moderators and thresholds of compassion fatigue, include diverse caregiving populations, and consider the influence of social determinants of health on compassion fatigue in family caregivers. Early detection and intervention in family caregivers experiencing compassion fatigue can effectively alleviate compassion stress, enhance family coping, and ultimately improve the quality of care family members provide to their loved ones.

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## Abstract

**Background:** Compassion fatigue is a public health issue for both healthcare professionals and family caregivers, yet research on compassion fatigue in family caregivers remains limited. Developing a conceptual framework specific to compassion fatigue in family caregivers is crucial for organizing existing literature and informing the development of future support programs and services. **Objective:** To identify the core elements of compassion fatigue in family caregivers and to propose a comprehensive conceptual model based on an integrative scoping review. **Methods:** The analysis was guided by Rodger's Evolutionary Model and Morse's concept analysis method. The literature synthesis followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist. **Results:** A total of 66 studies were included in the analysis, and the findings were synthesized using a standardized matrix. The integrated conceptual framework of compassion fatigue in family caregivers included its antecedents, mediators, moderators, attributes, and potential consequences. **Discussion:** This study provided a comprehensive understanding of compassion fatigue experiences in family caregivers. The results highlighted the need for future research in several areas: 1) descriptive studies to identify the potential causes of compassion fatigue; 2) investigations into the consequences of compassion fatigue in family caregivers; 3) the development of a standardized measure of compassion fatigue in family caregivers; and 4) the design of interventions to minimize compassion fatigue in family caregivers.

## Introduction

According to the Caregiving in the United States report by the National Alliance for Caregiving (NAC) and AARP (2020), the number of individuals providing care to adults with special needs through sickness or disability in the past 12 months has reached approximately 47.9 million, with the prevalence of caregivers rising from 16.6% in 2015 to 19.2% in 2020. The significant cost of caregiving can have a profound impact on caregivers, affecting their physical, psychological, spiritual, social and economic well-being. Rohleder et al. (2009) found that family caregivers of cancer patients experience physiological changes such as increased sympathetic nervous system activity, systemic inflammation, reduced function of anti-inflammatory signaling molecules, and diminished leukocyte IL-6 production compared to non-caregivers with similar demographic characteristics. Furthermore, the 2020 NAC and AARP Caregiving in the U.S. report (2020) revealed that 40% of caregivers were in high-intensity situations, as measured by the number of hours of care provided and the number of activities of daily living (ADLs) and instrumental activities of daily living (IADLs) performed.

The terms ‘primary caregiver syndrome’ or ‘caregiver’s stress’ have been used in some studies to describe a syndrome that includes emotional exhaustion, loss of energy, depersonalization, and low personal accomplishment (Robinson, 1983; Schulz & Beach, 1999; Veloso & Tripodoro, 2016). This physical and psychological impact is commonly observed among those who care for individuals with serious medical conditions such as cancer, dementia, and immobility syndrome. However, the experience of caregiving is multifaceted and challenging to define precisely.

A growing body of research shows that family caregivers not only struggle with their role and with their own self-care, but they also reach critical levels of distress that are best labeled as

compassion fatigue. According to the Oxford English Dictionary online version ("Compassion," 2018), compassion is “The feeling of emotion, sympathetic pity and concern for the sufferings when a person is moved by the distress of another, and by the desire to alleviate the suffering.” Compassion fatigue, like compassion, is currently understood by the dictionary definition: “apathy or indifference towards the suffering of others or to charitable causes acting on their behalf, typically attributed to numbingly frequent appeals for assistance; hence a diminishing public response to frequent charitable appeals.” ("Compassion fatigue," 2002). While a dictionary definition may provide a general understanding, it fails to capture the complex reality of what family caregivers go through (Morse, 1995).

Researchers have found that compassion fatigue can affect not only healthcare professionals, but also caregivers without formal training (Blair & Perry, 2017; Day & Anderson, 2011; Lynch & Lobo, 2012; Perry et al., 2010; Ward-Griffin et al., 2011). This effect can lead to similar psychological responses, such as withdrawal from work duties. Although various definitions of compassion fatigue have been proposed for healthcare professionals, the concept was introduced by Joinson (1992) and further developed into an etiological model by Figley (1995). In the professional healthcare setting, compassion fatigue is often used interchangeably with terms like secondary traumatic stress, secondary traumatic stress disorder, and vicarious stress. However, the literature generally defines compassion fatigue as a state of exhaustion resulting from the demands of caring relationships that can become a barrier to one's ability to provide care (Day & Anderson, 2011; Veloso & Tripodoro, 2016).

A conceptual framework of compassion fatigue for family caregivers is needed to organize the extant literature and to inform the development of future programs and services for family caregivers. Although compassion fatigue in health care professionals has gained

substantial attention over the past decades, very little attention has been paid to family caregivers (Nolte et al., 2017). The overall purpose of the current paper is to broaden our understanding of compassion fatigue in family caregivers and to explore the potential relationship between compassion fatigue and psychological responses to the caregiving role. The specific aim of the current study is to delineate the core elements of the concept of "compassion fatigue" in family caregivers and to propose a comprehensive conceptual model derived from an integrative scoping review.

## Method

Rodger's Evolutionary Model and Morse's concept analysis method were used to guide the structure for the current analysis. The Evolutionary Model (Rodgers, 2000) includes seven steps: (1) identify and name the concept of interest, (2) identify surrogate terms and relevant uses of the concept, (3) identify and select an appropriate sample for data collection, (4) identify attributes of the concept, (5) identify references, antecedents, and consequences of the concept, (6) identify concepts that are related to the concept of interest, and (7) identify a model case of the concept. The first six steps were applied in the current study since a model case was not applied in this literature review. Morse (1995) proposed a 3-step approach in a concept analysis model, which includes (1) a review the literature; (2) identification of the relationships among concepts; and (3) identification of concept commonalities and contrasting differences (Morse, 1995; Richard & Shea, 2011). In addition to the above mentioned concept analysis structures, we also incorporated the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guideline for its systematic approach of synthesizing knowledge and reporting findings from the literature review (Tricco et al., 2018).

The objectives of this analysis were to (1) identify the conceptual definition of compassion fatigue from the literature; (2) identify its critical attributes, antecedents, mediators, moderators, and consequences of compassion fatigue in family caregivers; and (3) extract the characteristics of the pool of studies, such as country of origin, year of data collection, study design, analysis methods, sample size, mean age, and study measures (Table 1.1).

**2.1 Literature search**

Hereafter in this paper, family caregivers will be used to refer to family, friend, or informal caregivers. The search initially targeted family caregiver studies using the terms “compassion fatigue” in PubMed, CINAHL, and PsycINFO databases, resulting in only seven articles published within the past 10 years. To expand the search, terms such as "emotional isolation," "emotional exhaustion," and "powerlessness" were included. Original research studies from the informal caregivers’ perspective were included. The final search included English-language studies published between 1995 and June 2020. Studies were excluded if they involved: (1) non-adult care recipients in pediatric settings, (2) professional healthcare providers without dual duty as an informal caregiver, (3) occupational health, or (4) only care recipient experiences. Search results were imported to EndNote 20 (Philadelphia, PA) bibliographic management software. After removing duplicated articles, abstracts of all records were reviewed for their fitness to the core concept based on the eligibility criteria. Further review of the full text took place when the article’s abstract did not provide enough information addressing the criteria (Figure 1.1).

**2.2 Data extraction**

Data extracted from primary study articles included country of origin, year of data collection, study design, analysis methods, sample characteristics (sample size, age, gender,

relationship to patient, and patient illness if applicable), measures, key findings and compassion fatigue attributes mentioned in the articles. For each included study, we created a synthesis of results using a standardized matrix (Table 1.1).

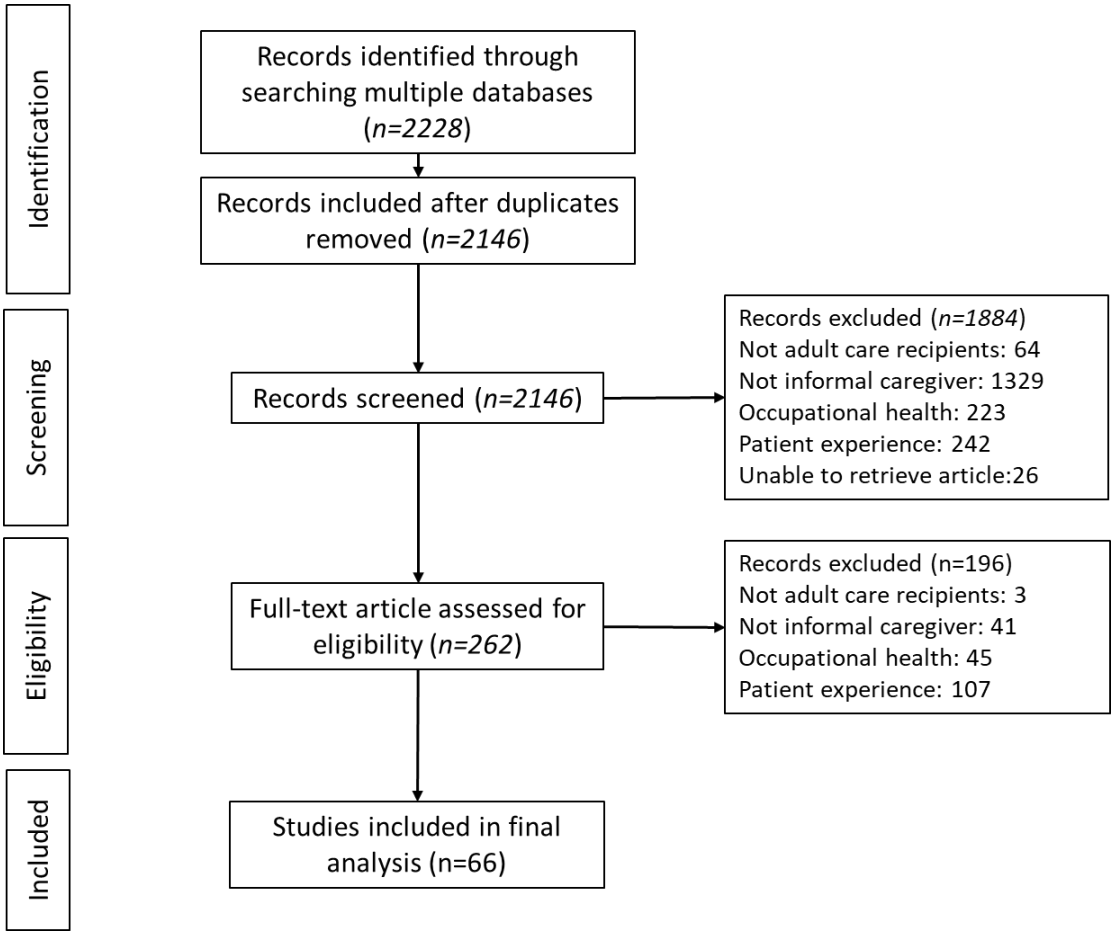


*Figure 1. 1* Flow Diagram of Included and Excluded Articles

## Results

A total of 2228 research articles were initially identified from the databases, with 82 duplicated records were removed. After screening abstracts, a total of 2146 articles were excluded, because they did not relate to adult care recipients (n = 64); focused on professional, not family, healthcare providers (n = 1329); were occupational health studies (n = 223); reported on care recipients' experience, not caregivers' experience as the primary outcomes (n = 242); or the article was not retrievable (n = 26). The remaining 262 articles' full texts were further screened to see if they meet the eligibility criteria. This resulted in a final sample of 66 articles that were included for the final analysis (Figure 1.1).

Most studies in the final analysis involved cross-sectional descriptive designs (n = 25, 38%) and qualitative studies (n = 27, 41%). There were five studies that involved longitudinal descriptive designs, five mixed methods, and two psychometric testing. There was one pilot study of a randomized controlled trial and there was one concept analysis publication. The majority of articles were conducted in the United States (n = 12) followed by Sweden (n =11), Israel (n = 5), and Canada (n = 4).

### 3.1 Measures of Compassion Fatigue in Quantitative Studies

Several measures were utilized in quantitative studies to assess the characteristics of compassion fatigue in the literature. Of these measures, the Maslach Burnout Inventory (MBI) was used in 11 articles to measure emotional exhaustion in family caregivers. The MBI contains 22 items that measure emotional exhaustion, depersonalization, and reduced personal accomplishment subscales. The 9-item emotional exhaustion subscale assesses the feelings of being emotionally overextended and exhausted by one's work (Maslach et al., 1997). The higher mean scores of this subscale correspond to higher degrees of burnout. The 5-item

depersonalization subscale measures an unfeeling and interpersonal response toward care recipients. These two components are related but separate aspects of burnout. Eight items in the personal accomplishment subscale assess the feelings of competence and successful achievement in one's work with people. The personal accomplishment subscale is independent of the other two subscales.

Two studies utilized the Professional Quality of Life Scale (ProQOL) to measure compassion fatigue (Lynch et al., 2017; Thorson-Olesen et al., 2019). ProQOL comprises three subscales: compassion satisfaction, secondary traumatic stress, and burnout. This 30-item self-report measure evaluates how frequently an individual has experienced specific antecedents of compassion fatigue and compassion satisfaction regarding their role as a care provider over the past 30 days (Burnett, 2017; Stamm, 2010). The compassion satisfaction subscale measures the sense of fulfillment derived from being able to do one's work well. The secondary traumatic stress subscale measures work-related secondary exposure to extremely or traumatically stressful events. The burnout subscale measures feelings of hopelessness that an individual's efforts do not make a difference, workloads that surpass tolerate limits, or an unsupportive work environment.

Other measures related to compassion fatigue in the literature were the PTSD Inventory (n = 2) and the work-family conflict scales (n = 3, the Work–Family Integration-Blurring Scale, and the Work-privacy conflict scale) (Levin et al., 2017; Richter et al., 2015).

### 3.2 Definitions from Literature

Galang et al. (2021) summarized a general definition for empathy from prior studies that it is the capacity to share and comprehend the emotional state of others. Compassion, on the other hand, encompasses cognitive, emotional and motivational components. According to

Schulz's definition (2007), compassion involves taking action to alleviate or eliminate another person's suffering or pain. When it comes to caregiving, compassion arises when witnessing patient's distress and motivates the desire to assist (Schulz et al., 2007). Only a few studies provided a definition of compassion fatigue (Boumans & Dorant, 2014; Day et al., 2014; Ferrell et al., 2019; Lynch et al., 2017; Perry et al., 2010; Thorson-Olesen et al., 2019; Ward-Griffin et al., 2011).The term "compassion fatigue" was first applied to describe the nature of burnout among nurses in acute care by Joinson (1992). Compassion fatigue is described as the phenomenon where caregivers become disengaged from caring for others while feeling trapped in the caregiver's role. This phenomenon often results in a reduced ability or inability to feel empathy toward patients and provide appropriate compassionate care (Coetzee & Klopper, 2010). In summary, compassion fatigue in the family caregiver is a state of emotional exhaustion characterized by disengagement in the caregiving role and emotional isolation in which the caregiver is unable to disentangle themselves from a patient's suffering.

### 3.3 Attributes

The attributes of compassion fatigue in health care providers in the formal health care setting incorporate the inability to process emotional stress related to caring for traumatized or suffering individuals, and emotional exhaustion. After comparing findings across the 66 studies on family caregivers' compassion fatigue, three attributes of compassion fatigue in family caregivers were identified: **(a) emotional exhaustion; (b) powerlessness; (c) emotional disengagement.**

*Emotional exhaustion*

A total of 24 articles (36%) mentioned emotional exhaustion and 11 (17%) of these used emotional exhaustion as one of the primary outcomes of a study (Table 1.1). Ward-Griffin et al.

(2011) discovered in a study of nurse-daughter caregivers that all participants who had dual caregiving roles reported feeling emotionally drained and exhausted. In a phenomenological study, Perry et al. (2010) found that family caregivers who assisted with the care of older relatives in long-term care facilities experienced role engulfment, extreme tiredness, and felt torn between their responsibilities. Family caregivers who were interviewed reported that the lack of supportive resources resulted in emotional exhaustion, which made them feel trapped in various roles and like a scapegoat within their family (Rahmani et al., 2018). Another study found that having difficulty describing feelings and depressed mood were predictors of emotional exhaustion in family caregivers (Katsifaraki & Wood, 2014). The decline in the quality of care due to worsening patient health, excluding medical causes and disease progression, has been found to be related to emotional exhaustion in family caregivers (Cuijpers & Stam, 2000; Truzzi et al., 2012).

*Powerlessness*

The feeling of powerlessness can be devastating for family caregivers, as they may feel the need to protect their loved ones from suffering but are unable to see any progress despite all their efforts (Ekdahl et al., 2011; Ward-Griffin et al., 2011). This feeling is often accompanied by helplessness and hopelessness, and can lead to physical and psychological symptoms such as muscle tension, sleeplessness, anxiety, and depression (Bartek et al., 1999; Eckert & Jones, 2002; Hedman et al., 2011; Milberg et al., 2004; Siu, 2017; Yang, 2015). Situations that can cause family caregivers to feel powerless include caring for noncompliant patients (Kogan et al., 2013), lacking control over the unpredictability and trajectory of the illness (Day & Anderson, 2011; Eckert & Jones, 2002), limited decision-making abilities (Fernandez et al., 2006), and changes to home care from the hospital (Rahmani et al., 2018).

*Emotional disengagement*

Emotional disengagement is an action where the caregivers bottle up their emotions and become unable to provide compassionate care due to compassion stress (Day et al., 2014; Rahmani et al., 2018; Ward-Griffin et al., 2011). This pattern of response is characterized by a desire to withdraw, disinclination towards caregiving tasks, and lack of communication with the patient (Day et al., 2014; Lynch & Lobo, 2012; Rahmani et al., 2018). A participant in a qualitative study expressed how her caregiver responsibilities caused tiredness and reluctance to visit the patient in a care facility (Perry et al., 2010). Emotional disengagement is related to relationship failure and the formation of pity for the patients, also known as "emotional detachment" or "emotional isolation" (Katsifaraki & Wood, 2014; Rahmani et al., 2018). Female spouses, in particular, have reported gradually losing the emotional aspect of their relationships with their husbands (Rahmani et al., 2018).

**3.4 Antecedents of Compassion fatigue in Family Caregivers**

According to Figley's (2002) etiological model of compassion fatigue, the process of forming compassion fatigue is in accordance with the reviewed studies of compassion fatigue in family caregivers in many aspects. These studies have presented the distinct experiences, reactions, and feelings of family caregivers who are at risk of or experiencing compassion fatigue. Through this literature review, several antecedents were identified, including: (a) exposure to sufferer; (b) empathic concern; (c) empathic ability/perceived suffering; (d) empathic response; and (e) residual compassion stress, each of which is described below.

*Exposure to sufferer*

The process leading to compassion fatigue in family caregivers begins with exposure to the patient's suffering. As per Figley's model, witnessing the patient's pain starts consuming the

caregiver's emotional energy (Figley, 2002). What sets the family caregiver-patient relationship apart is the close bond that puts the caregiver at a heightened risk of developing compassion fatigue. Compassion fatigue arises when caregivers simultaneously experience emotional pain while being exposed to the suffering of the care recipient (Lynch & Lobo, 2012).

*Empathic concern*

According to Figley's model, empathic concern is the motivation to respond to the sufferer and often manifests as being eager to protect someone they love from illness or pain. Primary caregivers in the family differ from professional caregivers in that they are part of a social-family network (Veloso & Tripodoro, 2016), which means that the assessment of relationships and responsibilities is unavoidable in the process of compassion fatigue. The previous relationship between the caregiver and care recipient is essential in determining the caregiver's empathic ability. The strong personal connections and shared worldviews between the caregiver and care recipient play a critical role in a caregiving context (Schulz et al., 2017).

Lynch and Lobo (2012) proposed that an established relationship between the caregiver and care recipient is related to their emotional attachment. The affectionate ties between the family caregiver and the care recipient are different than the relationship between health care providers and patients (Blair & Perry, 2017; Schulz et al., 2007). Schulz, Savla, Czaja, and Monin (2017) claimed that relationship characteristics contribute to the caregiver's response to the care recipient's pain. Those relationship characteristics include attachment style, relationship orientation, closeness, intimacy, and marital satisfaction between spouses. An interview on adult children caregivers who were unable to detach from caregiving was interpreted to mean that they wanted to protect their parents from their suffering, so they could not leave the caregiver position (Day et al., 2014). This finding demonstrates the unique connection in the family caregiver-

patient relationship that is not presented in a professional care provider's situation. Furthermore, having a strong feeling of affection for the care recipient may moderate compassion fatigue (Schulz et al., 2007).

Some family caregivers may view taking care of their parents as an opportunity to repay them for raising them, while others may not hold this perspective. According to Perry et al. (2010), family caregivers often describe the difficulties in a caregiving role as "tug or torn between responsibilities". Similar experience was shown in palliative care or dementia care settings, where primary family caregivers are expected to make decisions for the patient. This expectation forced them to take more responsibility with no choice and increases compassion stress. The constant pressure to maintain a high level of care can exacerbate stress in caregivers (Blair & Perry, 2017). Additionally, family caregivers may feel obliged to take responsibility for their family members' care, even in situations where they lack the necessary knowledge and skills (Ward-Griffin et al., 2011).

*Empathic ability/Perceived suffering*

Empathic ability is a sympathetic consciousness of others who are suffering or in distress. Compassion is a sense of shared suffering with a desire to alleviate suffering (Schulz et al., 2007). Figley (2002) suggested that without empathy there will be little if any empathic response to the suffering clients, and no compassion stress and compassion fatigue would occur. Thus, the ability to empathize is foundational to both helping others and being vulnerable to the costs of caring (Schulz et al., 2007; Schulz et al., 2017).

Coetzee and Laschinger (2017) integrated a model that combines Figley's framework with the conservation of resources theory (Figley, 1995). Coetzee and Laschinger's model explains how caregivers perceive another's suffering through compassion thinking. The model

proposes that when caregivers are facing care tasks, caregivers appraise their own resource balance (e.g., personal skills, traits, energy, health condition) to determine whether care demands are a threat to their resources. Caregivers can provide compassionate care when care demands are not a threat, enabling their empathic responses. However, when care demands are a threat, caregivers switch to a "self-focus" mode and become unable to provide compassionate care.

*Empathic response*

An empathic response, also known as empathic distress, is when caregivers make an effort to absorb or lessen the pain of the care recipient through empathic understanding. This is carried out by projecting oneself into the perspective of others and having insight into feelings, thoughts, and behaviors of the others (Figley, 2002). It includes cognitive, emotional, and motivational aspects. A caregiver must be able to recognize and feel the attachment toward the patient, then experience both positive (e.g., concern, intimacy, meaningful) and negative (e.g., anger, fear, distress) effects and be motivated to relieve that suffering of the care recipient (Schulz et al., 2007). Empathic response can bring the focus back onto the caregivers themselves rather than focus on others (Goldsmith & Ragan, 2017).

*Residual compassion stress*

The state of the continuation of empathic response and the demand to reduce the suffering of a care recipient is the residual compassion stress. Figley (2002) claimed that with sufficient intensity, residual compassion stress can have a negative impact on the human immune system and quality of life. Ward-Griffin et al. (2011) found that daughter caregivers were experiencing feelings of inadequacy, frustration, and anger while trying to keep unrealistic care expectations. Day et al. (2014) also pointed out in a study of caregivers of family members with dementia that the discrepancy between expectations from the family and actual care contributes

to compassion fatigue. These negative feelings are the manifestation of compassion stress, which will further lead to compassion fatigue.

### 3.5 Consequences of Compassion Fatigue in Family Caregivers

Compassion fatigue has been associated with numerous negative psychological symptoms, including nightmares, distressing emotions, and intrusive thoughts, as well as affective states such as sadness and anxiety (Bercier & Maynard, 2015). These symptoms have been observed in caregivers who work with patients who have experienced trauma (Archbold et al., 1990). Family caregivers who are at high risk for compassion fatigue often report physical health problems, psychological distress, and social dysfunction, which can be grouped into three categories: biological, psychological, and social (Lynch et al., 2017).

*Physical symptoms*

Family caregivers have reported physical health issues, including extreme physical exhaustion, sleep disturbance, hypertension, and weight change (Ward-Griffin et al., 2011). One survey on ambulatory oncology caregivers' compassion fatigue found that while both compassion satisfaction and burnout did not contribute to sleep disturbance or diminished sleep quality, secondary traumatic stress was associated with poorer sleep quality (Bellicoso et al., 2017). Schulz et al. (2017) found that husbands caring for their wives had a higher incidence of cardiovascular disease when their wives reported high levels of suffering. Moreover, experimental laboratory research provides evidence of an increased risk of cardiovascular disease among spouse caregivers who witness their partners experiencing an increase in heart rate and blood pressure (Monin et al., 2010).

*Psychological symptoms*

Psychological symptoms related to compassion fatigue were commonly reported in

studies that we reviewed. These symptoms included psychological dysfunction, caregiver burden, depression, guilt, caregiver strain, depersonalization of the patient, lack of patience, and being critical of others (Blair & Perry, 2017). Moreover, the stress response related to compassion fatigue may deteriorate and cause the caregiver to become "dispassionate," and apathetic (Blair & Perry, 2017; Day & Anderson, 2011; Lynch & Lobo, 2012). Meyer, McCullough and Berggren (2016) conducted a descriptive phenomenological study of spouses' experiences with a partner with dementia. The spouse caregivers in Meyer's study described that they "reached a point where they felt they could not cope for a single minute longer" (Meyer et al., 2016, p.28). Blair and Perry (2017) found that caregivers may feel abandoned and assume sole responsibility for decisions that make them fall into a depressed mood. Similar to the findings from the study by Day and Anderson (2011), professional caregivers who are at risk of compassion fatigue may suffer depression. This depression is related to the feeling of hopelessness and being unable to find respite support for the caregiving role. Furthermore, perceived patient suffering has contributed to caregiver depression independently, after controlling for the care recipient's disability and the amount of care provided (Schulz et al., 2007). Schulz et al. (2009) found a dose-response relationship between a spouse's suffering and their partner's simultaneous depression. Caregiver depression is also highly related to the burden of caregivers for family members with dementia (Day & Anderson, 2011). Rumination, self-criticism, and feelings of separation have been shown to be highly associated with maladaptive outcomes such as depression (Neff, 2003). Other emotional responses, such as sadness, were amplified when the family caregivers lost hope of a better future for their family member or for themselves (Perry et al., 2010). A nurse-daughter caring for an elderly parent described the feeling of being unable to protect their parent when needed as devastating and frustrating (Ward-

Griffin et al., 2011). Furthermore, feelings of guilt were also reported by more than half of Korean family caregivers who were at risk of compassion fatigue and were no longer able to take care of a family member with dementia (Park et al., 2004). Those family caregivers felt guilty because they assumed the patient would blame and hate them for abandonment. However, they had to make the decision for the patient because they couldn't provide care anymore due to their avoidance and disengagement from caregiving activities. Interestingly, caregiver burden did not correlate with abuse of the care recipient, but it is related to the caregiver's resentful feeling (Day & Anderson, 2011).

*Social symptoms*

Social symptoms from family caregivers suffering from compassion fatigue include loneliness in the spousal relationship, superficial communication style, and a decline in quality of relationship and mutuality. Figley (1995) suggested that relational disturbances are one of the consequences of caregiver exposure to a patient's traumatic experiences. Day and Anderson (2011) proposed consequences of compassion fatigue in informal caregivers that included decreased quality in a relationship with the care recipient. Blair and Perry (2017) found that family caregivers of older adults who are at risk of psychological morbidities such as depression, strain, may lead to neglect, abuse, or premature admission to a residential facility. Meyer et al. (2016) stated that the communication between the family caregiver and the partner with dementia disappeared as the disease progressed, and conversations changed to a monologue. Consequently, family caregivers may be at risk of losing their ability to effectively support the needs of the older adults who were receiving care (Lynch & Lobo, 2012).

**3.6 Moderators**

The primary stressors that contribute to compassion fatigue for caregivers can be patient-

related factors and the caregiver's own perception of the challenges involved in providing care. These stressors can directly or indirectly affect the caregiver's health outcomes. However, there are also protective factors that can help caregivers recover from residual compassion stress. These protective factors include compassion satisfaction, resilience, and mutuality, which are described below (Karlstedt et al., 2018; Lynch et al., 2017).

*Compassion satisfaction*

Satisfaction derives from being able to provide care and has also been implicated as a potential protective factor of compassion fatigue in caregivers (Figley, 2002; Stamm, 2010). It is the feeling of pleasure and valuing their own effort from taking care of the patient. Research by Lynch (2015) provides evidence that compassion satisfaction is positively related to caregiving demands or tasks, which implies that satisfaction is acquired from the effort of taking care of others. Day and Anderson (2011) also claimed that satisfaction and affection can help with reducing the caregivers' strain and protect them from compassion fatigue. However, the caregiver's attachment and affection toward the family member may influence their emotional response to the person who is suffering and increase the risk of compassion fatigue. Makic (2015) described compassion satisfaction as the ability to experience feelings of gratification, joy, and fulfillment, and to recognize the positive aspects of caregiving work, including the sense of purpose it provides. Compassion satisfaction manifests in health care providers as healthy coping mechanisms and supporting resources to deal with secondary traumatic events during the episodes of care. Lynch and colleagues (2017) suggested that the caregivers' appraisal of stressors and availability of resources play an intermediary role in the stressors' effects on the caregivers. On the other hand, the positive consequences of caregiving could make a connection between appraisal and higher compassion satisfaction.

*Other life demands*

Lynch and Lobo (2012) identified other life demands as a significant stressor in the process of compassion fatigue. Competing life demands and role overload are more common among spouse caregivers or adult child caregivers who are employed or have other family members to take care of (Day et al., 2014). Work-privacy conflict arises when work and private life roles are incompatible (Netemeyer et al., 1996). These competing life demands can increase the burden and strain of caregiving (Blair & Perry, 2017; Day & Anderson, 2011), especially for family caregivers who also work as healthcare providers (Ward-Griffin et al., 2011). Häusler et al. (2017) found that work-privacy conflict significantly increases the risk of burnout in healthcare professionals who were also adult caregivers and parents (triple-duty caregivers). However, family caregivers who receive enough support from the healthcare system, share responsibilities with other family members, or receive support from their employers can regain the energy needed to sustain the caregiving role (Angermeyer et al., 2006; DePasquale et al., 2018; Hedman et al., 2011; Rahmani et al., 2018).

*Detachment*

Professional caregivers can experience heightened levels of compassion fatigue due to prolonged exposure to traumatic memories. Figley (1995, 2002) recommended detachment as a means of preventing compassion fatigue in professional caregivers. However, in many cases, the primary caregiver is the only person in the family who can provide care to the patient. Respite care can provide short-term relief for primary caregivers (Blair & Perry, 2017; Perry et al., 2010; Ward-Griffin et al., 2011). Increasing the accessibility of respite care through the healthcare system has a potential to help family caregivers avoid compassion fatigue.

*Emotional vitality*

Emotional vitality, also known as “emotional reserve” or “emotional resiliency,” is a potentially positive aspect of the evolving compassion fatigue model in the current study. It comprises the core values related to an inner psychological resource that individuals can use to regulate emotion effectively; cope with major stressors such as health events, physical decline, or life-changing experiences; and actively engage in the world (Barbic et al., 2013; Barbic et al., 2014). According to a comprehensive summary of definitions by Barbic and colleagues (2014) from various studies, emotional vitality encompasses a boarder perspective compared to the positive aspect of “compassion satisfaction” in the professional caregiver measure (PorQOL) developed by Stamm (2010). Several scales had been used in prior studies to assess the level of emotional vitality and its characteristic defined by researchers, such as Mental Vitality Instrument, General Well-Being Schedule, and the four positively worded items in the Center for Epidemiological Studies-Depression Scale (CES-D) (Fredman et al., 2006; Kubzansky & Thurston, 2007; Richman et al., 2009). Emotional vitality has been applied in rehabilitation to determine whether unpaid caregivers can successfully adopt and carry out their roles (Barbic et al., 2014). It has the potential to protect family caregivers from developing compassion fatigue and help them adopt the caregiving role successfully. However, family caregivers often experience negative impacts on their physical and emotional health, loneliness and isolation, and decreased intimacy. Losing the capacity to participate in meaningful activities can hinder emotional vitality, and prolonged exposure to suffering can contribute to increased caregiver strain (Barbic et al., 2015). Strategies to enhance emotional vitality include mastering the caregiving role and new skills and recognizing support from others (Barbic et al., 2013, 2015; Barbic et al., 2014). Although the relationship between emotional vitality and the empathic response is unclear, exploring the positive effect of emotional vitality in confronting compassion

fatigue in family caregivers could be beneficial.

## Discussion of Results

A clear definition of the concept of compassion fatigue in family caregivers does not exist in the published literature. A recent study by Jütten et al. (2019) used the Interpersonal Reactivity Index (Davis, 1980) as a measure of empathy in informal caregivers of dementia patients. They found that the ability of a person to adopt the point of view of others (perspective taking) and to experience feelings of warmth, compassion and concern for others undergoing negative experiences (empathic concern) failed to predict caregiver burden. While empathic concern was positively correlated with anxiety symptoms, a higher level of perspective taking predicted a lower level of depression. Their findings support our point that compassion fatigue and caregiver burden are distinct concepts.

Our findings highlighted the lack of appropriate measures for compassion fatigue designed specifically for family caregivers. The Professional Quality of Life Scale (Stamm, 2010), a widely used measure for compassion fatigue, primarily focuses on care workers which emphases the impact of work environment and burnout on job performance. While burnout is considered an element of compassion fatigue in ProQOL (Stamm, 2010), there are distinct differences between the two concepts. Burnout typically develops gradually, whereas literature suggests that compassion fatigue exhibits a faster onset of symptoms (Figley, 2002; Sorenson et al., 2017). Compassion fatigue is characterized by feeling of helplessness and confusion, which are not essential attributes of burnout (Figley, 2002). Unlike burnout, which may require job changes or reduced workload to alleviate symptoms, compassion fatigue can be highly treatable once individuals recognize the symptoms and take appropriate action. These findings imply that providing proper support and assistance to caregivers can effectively address and treat

compassion fatigue.

Additionally, the items in the ProQOL assume that work is a personal choice, and that involves trauma victims, which is not the case for most family caregivers. Measures for PTSD may not fully capture the experiences of caregivers under all conditions. Although many studies address PTSD in caregivers who witnessed a rapidly progressive disease or death, the term "trauma" was not commonly used to describe the caregiving experience. Some signs of PTSD in caregivers, such as helplessness and uncertainty, are similar to those seen in compassion fatigue (Sanderson et al., 2013). Future research is needed to clarify the relationship between compassion fatigue and PTSD in family caregivers and to explore the limitations of PTSD measures in assessing compassion fatigue. The studies we reviewed highlight the unique challenges faced by family caregivers, which may differ from those of professional caregivers. Many family caregivers are unprepared for the physical and emotional demands of the role, including personal care and medication management, while also dealing with expectations from suffering relatives and a sense of moral duty (Linderholm & Friedrichsen, 2010). Participants in some studies reported feelings of doubt, uncertainty, frustration, and fear regarding the patient's unpredictable health condition, as well as intrusive thoughts that preceded compassion fatigue if the situation was prolonged (Linderholm & Friedrichsen, 2010). Additionally, Rahmani et al. (2018) noted that family caregivers may experience vanishing love in their relationship with the patient, replaced by feelings of pity. Furthermore, it may be particularly important to focus on compassion fatigue in certain areas of healthcare, such as hospice care and dementia care, where the demands on family caregivers are particularly high and the illness is progressive (Goldsmith & Ragan, 2017; Wittenberg-Lyles et al., 2012).

### 4.1 Integrated New Conceptual Framework of Compassion Fatigue in Family Caregivers

This study presents an integrated conceptual framework of compassion fatigue in family caregivers (Figure 1.2). First, the sequential empathic responses before developing compassion fatigue start from the exposure to the patient's suffering experience and being aware of the pain from the patient, which evokes the urge to protect someone they love from the illness. An empathic response involves cognitive, emotional, or motivational reactions after the exposure to a sufferer, perceiving suffering and being motivated to relieve the pain from the patients. Caregivers often experience both positive and negative feelings from their actions in trying to help patients, such as increasing intimacy, finding meaning to their efforts, anger, and uncertainty. The caregiver-patient relationship and the caregiver's own resources are key factors in determining the caregiver's empathic response to the patient's suffering. The prior relationship between the caregiver and the care recipient is related to the magnitude of the perceived suffering from the patient by the caregiver (Schulz et al., 2007). Individuals' coping ability and resources supporting those caregivers may help them mitigate the negative effects. Coetzee and Laschinger (2017) proposed an integrated model that claims the appraisal of caregivers' own resource balance (e.g., personal skills, traits, energy, condition) will determine whether they are able to handle the care demands or turn into a "self-focus" mode that will stop them from providing compassionate care. Studies found that care providers with a higher level of compassion satisfaction have a lower risk of experiencing compassion fatigue (Day & Anderson, 2011; Lynch, 2015). Respite care and other family members' support could also help the primary family caregivers dealing with the stress from care (Blair & Perry, 2017; Perry et al., 2010; Ward-Griffin et al., 2011). However, continuous negative responses will turn into residual compassion stress and further lead to compassion fatigue.

Three attributes of compassion fatigue in family caregivers were identified in the analysis. First, emotional exhaustion in family caregivers is often described as extremely tired and feeling torn between responsibilities with the family matters. Second, powerlessness is a devastating feeling when the caregivers know they do not have the ability to protect the patient from suffering despite all the efforts they did for the patient. Powerlessness is often accompanied by feelings of helplessness and hopelessness. Emotional disengagement is the third attribute, which is a state when the family caregiver bottles up emotions and is no longer able to treat the patient with compassion. As a result, the caregiver fails to emotionally connect to the patient.

The consequences of compassion fatigue in family caregivers can be classified into physical health impacts, psychological symptoms, social symptoms. Physical health impacts include but are not limited to sleep disturbance, hypertension, and physical exhaustion. Depression, feeling of guilt, and burden are psychological symptoms. Some common social symptoms in family caregivers experiencing compassion fatigue are depersonalizing the patient, loneliness in a spousal relationship, superficial communication, and decline in the quality of mutuality.

Although Figley (1995) provided the foundational knowledge of compassion fatigue, "traumatic memory," which was highlighted in Figley's model was not present in the studies we reviewed. One possible explanation would be that family caregivers did not describe their caregiving experience as a traumatic event as opposed to the frequent used of the term "secondary trauma" by professional healthcare workers. Another dimension that was absent in Figley's framework is the potential protective factors, or moderators, that can mitigate or eliminate risks of compassion fatigue. For example, open communication style (Büchner, 2009a) and emotional vitality (Barbic et al., 2013; Barbic et al., 2014) are found in studies and could

possibly play a role in protecting family caregivers from compassion fatigue. In summary, our findings suggest that future studies should investigate the impacts of relationship attributes, such as attachment style, relationship orientation, level of kinship, and intimacy between the caregiver and the care recipient (Campos-Puente et al., 2019; Day et al., 2014; Schulz et al., 2017).

Overall, the findings provide a novel perspective on the hypothetical mechanism of compassion fatigue in family caregivers and can serve as a basis for developing a conceptual framework of compassion fatigue based on their experiences.

**4.2 Limitations**

Although the structural basis of this scoping review used a systematic approach to search and captured the characteristic of compassion fatigue in the literature, results are limited by the sensitivity of our search strings and databases because we did not include articles from the grey or unpublished literature.

The time providing care is a potential factor that is related to the development of compassion fatigue in family caregivers. However, most of the data did not include the caregiving time component in their study results. Additionally, the relationship between the caregiver and the care recipient is another potential risk factor that is worthwhile to study further. According to Braun et al. (2007), a spouse caregiver's attachment orientation toward the patient is related to caregiver depression, caregiving burden and marital satisfaction.

Finally, another major concept related to our findings is caregiver burden, which has been extensively studied in the family caregiving field. This review has provided clarification that compassion fatigue and caregiver burden are distinct constructs. In the current study, studies focusing on caregiver burden and caregiver stress were initially excluded from the search based on specific search strings. However, it is acknowledged that some researchers may have used

these terms interchangeably to describe a boarder range of caregiver distress experiences; these studies were excluded from the current search pool despite their potential in capture compassion fatigue experiences in family caregivers.

## Conclusion

This scoping review shifts the focus from compassion fatigue in professional caregivers to family caregivers and raises awareness of a previously under-examined aspect of caregiving. However, limited studies have reported on the prevalence of compassion fatigue in family caregivers or its physiological outcomes. Moreover, current measures for compassion fatigue mainly focus on care professionals, placing excessive emphasis on their work obligations and the impacts from work environment and trauma victims. Results of this scoping review suggest that future research is needed to include: 1) descriptive studies to identify the potential causes of compassion fatigue; 2) studies that examine the consequences of compassion fatigue in family caregivers; 3) the development of a standardized measure of compassion fatigue in family caregivers; and 4) the design of interventions to minimize compassion fatigue in family caregivers. Future research in these directions could aid in the early detection and protection of family caregivers who are at risk of or experiencing compassion fatigue, ultimately ensuring the continuity of high-quality care for the care recipient. Additionally, such research can help to allocate public health resources, such as respite care, skill training, and mental health service, to those family caregivers in the greatest need.

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## Appendix

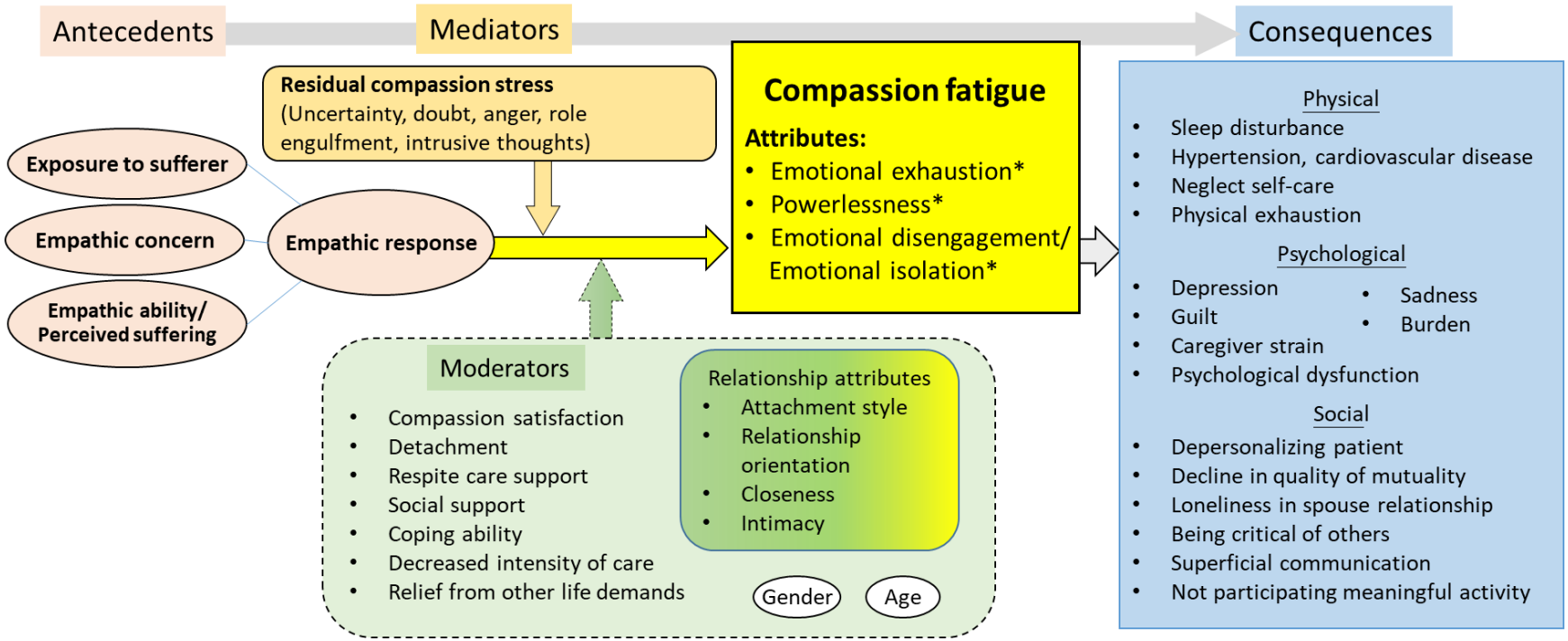


*Figure 1. 2.* The Conceptual Framework of Compassion Fatigue in Family Caregivers

Table 1.1. Standardized Matrix of Synthesis of Results (n = 66)

| | Country of origin | Year of data collection | Study design | Analysis methods | Sample size | Mean age | Study measures |
|---|---|---|---|---|---|---|---|
| Angermeyer et al. (2006) | Germany | 2002-2004 | Cross-sectional survey | Multiple Regression | 133 partners of depressive patients, 128 nurses | 52.8 | Maslach Burnout Inventory |
| Anker-Hansen et al. (2019) | Norway | 2012-2016 | Qualitative | Gadamer's hermeneutics | 6 male care partners of older people with mental health problems | 61.3 | Interview |
| Bachner et al. (2009a) | Israel | 2003-2004 | Cross-sectional survey | Hierarchical multivariate regression analysis | 236 primary caregivers of terminal cancer patients | 55.4 | Openness to Discuss Cancer in the Nuclear Family Scale; Sense of Coherence Scale; Life Orientation Test; Pearlin-Schooler Mastery Scale; General Self Efficacy Scale; fear of death and dying, Emotional exhaustion-Maslach Burnout Inventory; Beck Depression Inventory* |
| Bachner et al.(2009b) | Israel | - | Cross-sectional survey | Path analytic | 231 family caregivers of cancer patients | 56.6 | Caregiver Communication with Patients about Illness and Death (CCID) Scale; Maslach Burnout Inventory; Beck Depression Inventory; General Self-Efficacy Scale |
| Boumans et al. (2013) | Netherlands | 2011 | Cross-sectional survey | Descriptive statistics, ANCOVA | 93 healthcare workers with informal care duty | 47 | Job satisfaction, Presenteeism; self-rated burden of caring |
| Campos-Puente et al.(2019) | Spain | - | Cross-sectional survey | SEM, MANOVA and a univariate analysis. | 97 housewives, 96 Alzheimer's patient caregiver-housewives | 49 | Sociodemographic/working data questionnaire; Maslach Burnout Inventory (MBI); Goldberg General Health Questionnaire (GHQ-28) |
| Cuijpers et al. (2000) | Netherlands | 1997 | Cross-sectional survey | Regression | 164 caregivers of patients with serious mental illness | 49.6 | Maslach Burnout Inventory and the Involvement Evaluation Questionnaire |
| Day (2013) | USA | - | Mixed methods | Literature review, qualitative | 18 adult daughter caregivers of patients with dementia | - | Semi-structured interview |
| Day et al.(2014) | USA | - | Qualitative | Content analysis | 12 adult daughter caregivers of a parent with dementia | 47-65 | Semi-structured interview |
| DePasquale (2018a) | USA | 2013 | Cross-sectional survey | ANOVA, multiple linear regression models | 123 men support double-duty nursing home workers | 36.7 | Subjective stress; Family-to-work conflict and work-to-family conflict scales; schedule control scale* |

Notes: Openness to Discuss Cancer in the Nuclear Family Scale (Mesters et al., 1997), Sense of Coherence Scale (Antonovsky, 1993), Life Orientation Test (Scheier & Carver, 1985), Pearlin-Schooler Mastery Scale (Pearlin & Schooler, 1978), General Self Efficacy Scale (Sherer et al., 1982), Fear of death and dying (Carmel & Mutran, 1997), Emotional exhaustion- Maslach Burnout Inventory (Maslach, 1978), Beck Depression Inventory (Beck & Steer, 1984); Schedule control (Thomas & Ganster, 1995).

| | Country of origin | Year of data collection | Study design | Analysis methods | Sample size | Mean age | Study measures |
|---|---|---|---|---|---|---|---|
| DePasquale et al. (2018b) | USA | 2013 | Cross-sectional survey | Regression, moderation analysis | 546 double-duty women employed in nursing homes | 37-49 | Michigan Organizational Assessment Questionnaire reflecting global, affective job satisfaction; Turnover intentions; Obligation to work while sick; Maslach Burnout Inventory (emotional exhaustion) |
| Dorell et al. (2016) | Sweden | - | Qualitative | Content analysis | 24 family members of residents in residential homes | 39-84 | Semi-structured group interviews |
| Dunn et al. (2019) | USA | 2015-2016 | Mixed methods | Community-based participatory approach | N/A (Family members and elders in Navajo Nation) | Patients 88 | Interview |
| Eckert et al.(2002) | Australia | - | Qualitative | Interpretative phenomenology | 3 implantable cardioverter defibrillator (ICD) patients, 3 family members | 35-70 | Single unstructured interview |
| Edem Iniedu (2010) | USA | - | Mixed methods | Phenomenological approach | 10 wives of veterans with PTSD | 23-32 | Secondary Traumatic Stress Scale; semi-structured interview |
| Ekdahl et al.(2011) | Sweden | 2005 | Qualitative | Content analysis | 19 significant others to patients with borderline personality disorder | 43–75 | Open question questionnaire; group interview |
| Ewertzon et al. (2010) | Sweden | - | Cross-sectional survey | Wilcoxon–Mann–Whitney Test. | 70 family members of patients with schizophrenia or other psychotic illnesses | 65.8 | Family Involvement and Alienation Questionnaire (FIAQ) |
| Farran et al. (1999) | USA | - | Psychometric testing | CFA | 46 family caregivers of person with Alzheimer's disease, 215 spouse caregivers | 65.53; 71.67 | Study 1: Non-Death Grief Experience Inventory-Form B (GEI-B), Life Attitude Profile-Revised (LAP-R), Ladder of Life Index (LOLI), Public and Private Religiosity, Finding Meaning Through Caregiving Scale (FMTCS). Study 2: Frequency of Behavior Problems Scale, Center for Epidemiological Studies-Depression Scale (CES-D), Global Role Strain, Marital Tension, Marital Satisfaction, Caregiver Satisfaction, Religiosity, Finding Meaning Through Caregiving Scale (FMTCS), |
| Fernandez et al. (2006) | Australia | - | Mixed methods | Thematic analysis, | 16 male partners of women with endometriosis | 40.6 | Forced-choice response questionnaires; semi-structured interview |

| | Country of origin | Year of data collection | Study design | Analysis methods | Sample size | Mean age | Study measures |
|---|---|---|---|---|---|---|---|
| Ferrell et al. (2019) | USA | 2012-2017 | Qualitative | Content analysis | 345 posts from 233 informal caregivers of PTSD person | - | Posts from online support forum |
| Gilbert et al. (2014) | Australia | - | Qualitative | Narrative analysis (Riessman's dialogic/performative) | 1 male cancer care partner | 51 | Interview |
| Greene et al. (2014) | Israel | 1991, 2003, 2008–2011 | Longitudinal study | ANOVA | 172 wives of veterans with PTSD | - | PTSD inventory; wives only: Functional disability, Symptom Checklist 90, self-rated general health Medical Outcomes Short-Form Health Survey (SF–36) |
| Halbesleben et al. (2010) | USA | - | Longitudinal study | General linear modeling, multiple regression, path analysis | 103 nurses, 484 working adults | 41 | Spouse workplace and occupation; Work–Family Integration-Blurring Scale (WFIBS); Spouse instrumental support; Maslach Burnout Inventory–General Scale (MBI-GS) |
| Häusler et al. (2017) | Switzerland | 2015-2016 | Cross-sectional survey | Linear mixed regression models (Mediation analyses) | 1406 hospital employees (work-privacy conflict) | - | Copenhagen Burnout Inventory (CBI); work-privacy conflict scale (WPC) from the Copenhagen Psychosocial Questionnaire (COPSOQ) |
| Hedman et al. (2011) | Sweden | - | Qualitative | Content analysis | 11 family members of hip fracture patients | 37-73 | Diaries written by family members |
| Heid et al. (2016) | USA | 2012-2013 | Qualitative | Content analysis | 10 dyads of an older adult and adult daughter. | 30-62 | Semi-structured interview |
| Jakobsen et al. (2019) | Norway | - | Qualitative | Phenomenological–hermeneutical method | 8 reletives (non-spouse) of residents in nursing home | - | Interview |
| Johansson et al. (2012) | Sweden | 2007-2008 | Qualitative | Inductive content analysis | 10 fathers of adult child who suffers from long-term mental illness | 63 | Semi-structured interview |
| Katsifaraki et al. (2014) | UK | - | Cross-sectional survey | t-test, hierarchical multiple regressions | 60 relatives of patients with TBI | 45.9 | Toronto Alexithymia Scale-20; Maslach Burnout Inventory-Human Services; Estonian COPE Dispositional Inventory and Beck Depression Inventory-II |
| Kogan et al. (2013) | Canada | 2007-2008 | Qualitative | Morrow qualitative approach (2005). | 16 family caregivers of advanced cancer patients in denial | 56 (37-80) | Field notes, reflexive journals memos |

| | Country of origin | Year of data collection | Study design | Analysis methods | Sample size | Mean age | Study measures |
|---|---|---|---|---|---|---|---|
| Kumpula et al. (2013) | Sweden | 2010 | Qualitative | Latent content analysis, Graneheim & Lundman approach | 6 male caregivers in providing care for patients in forensic psychiatric care | 25-60 | Interview |
| Larson et al. (2005) | Sweden | 2001-2002 | Psychometric testing | EFA, item analysis | 99 spouses of stroke survivors | 67.4 | Life Situation among Spouses after a Stroke Event; Care Burden Scale for Relatives |
| Levin et al. (2017) | Israel | - | Longitudinal study | Actor–partner interdependence model, multiple step mediation | 225 Israeli veterans from the 1973 Yom Kippur War and their wives | 58.3 | PTSD Inventory (PTSD-I); Dyadic Adjustment Scale*; Adapting Caregiving in Couple Relationships Questionnaire |
| Linderholm et al. (2010) | Sweden | - | Qualitative | Hermeneutic approach | 14 family members in palliative home care | 58 (38-78) | Interview |
| Lindhardt et al. (2018a) | Denmark | 2003, 2005-2007 | Cross-sectional survey | CFA | 388 relatives of elderly patients in acute hospital wards | 60.5 | Family Collaboration Scale (FCS) |
| Lindhardt et al. (2018b) | Denmark | 2005-2006 | Cross-sectional survey | EFA, multivariate stepwise logistic regression | 156 relatives of frail elderly patients in acute hospital wards | 60.8 | Self-developed instrument including collaboration, prerequisites, barriers, and outcomes. |
| Lynch et al. (2012) | USA | 1980-2010 | Concept analysis | Wilsonian approach | N/A | N/A | N/A |
| Lynch et al. (2017) | USA | - | Cross-sectional survey | Hierarchical regression | 168 family caregivers of cancer, ALS, MS | - | Caregiver Burden Interview; Brief COPE Inventory; Professional Quality of Life (ProQOL) |
| Matsuda (2001) | Japan | 1995 | Cross-sectional survey | Descriptive statistics, main component analysis | 67 caregiver of the family with dementia | 57 | Maslach Burnout Inventory |
| Metcalfe et al. (2019) | England, France, Germany | - | Pilot randomised controlled trial | Wilcoxon rank sum test, thematic analysis | 61 caregivers for adults with young onset Alzheimer's disease or frontotemporal degeneration | 57 | Caregiver Perceived Stress Scale (PSS); Revised Scale for Caregiving Self Efficacy (RSCSE) |
| Meyer et al. (2016) | Sweden | - | Qualitative | Phenomenological reduction | 7 spouses of persons affected with dementia. | 69-92 | Interview |
| Milberg et al. (2004) | Sweden | - | Cross-sectional survey | Content analysis | 233 responding next of kin of cancer patients in advanced palliative home care | 65 (31–91) | Open-ended question survey |
| Milberg et al. (2011) | Sweden | - | Cross-sectional survey | Manifest Content Analysis | 233 responding next of kin of cancer patients in advanced palliative home care | 66 (31–91) | Open-ended question survey |
| Notes: Dyadic Adjustment Scale (Spanier, 1976) | | | | | | | |

| | Country of origin | Year of data collection | Study design | Analysis methods | Sample size | Mean age | Study measures |
|---|---|---|---|---|---|---|---|
| Neufel et al. (2008) | Canada | - | Qualitative | Ethnographic, thematic and constant comparative analysis | 34 women in response to nonsupportive interactions with health service professionals. | - | Interview |
| O'Callaghan et al. (2013) | Australia | 2008 | Qualitative | Grounded theory | 8 informal caregivers of people who died from cancer | 21-70+ | Semi-structured interview |
| Onwumere et al. (2017) | UK | 2011-2012 | Cross-sectional survey | Multiple Regression | 72 psychosis carers | 52.1 | Maslach Burnout Inventory-Human Services Survey (MBI); COPE Inventory; Illness Perception Questionnaire for Schizophrenia-Relatives Version (IPQS-RV); Hospital Anxiety and Depression Scale |
| Onwumere et al. (2018) | UK | - | Cross-sectional survey | Multiple Regression | 169 early psychosis carers | Patients 24.4 | Maslach Burnout Inventory; Experience of Caregiving Inventory; Hospital Anxiety and Depression Scale; Psychological General Wellbeing Index |
| Orrevall et al. (2004) | Sweden | 2001-2002 | Qualitative | Constant comparative method | 13 advanced cancer patients, 11 family members | 65 | Semi-structured interview |
| Perry et al. (2010) | Canada | - | Qualitative | Phenomenology | 5 family carers who assist staff with care of older relatives in long-term settings. | 48-82 | Interview |
| Potvin et al. (2018) | USA | - | Qualitative | Constructivist grounded theory | 14 bereaved informal hospice caregivers | - | Interview |
| Rahmani et al. (2018) | Iran | 2015-2016 | Qualitative | Conventional content analysis | 14 female spousal caregivers of people with mental illness | 41.7 | Semi-structured interview |
| Richter et al. (2015) | Sweden | 2006-2008 | Longitudinal study | Cross-lagged model analysis | 3387 working men and women | 47.4 | Work-family conflict; Maslach Burnout Inventory–General Survey; Performance-based self-esteem |
| Rubino et al. (2009) | USA | - | Cross-sectional survey | Hierarchical OLS regression, mediation path analysis | 284 self-employed individuals | - | Maslach Burnout Inventory (MBI); Intrinsic Motivation Scale; Perceived Similarity subscale; Role Ambiguity Scale. |
| Ruppert (1996) | USA | 1994-1995 | Qualitative | | 68 lay caregivers | 25-75 | Group interview |
| Rydahl-Hansen et al. (2013) | Denmark | - | Qualitative | Grounded theory, abductive and inductive analysis | 12 relatives of people who died from advanced cancer | 50-56 | Semi-structured interview |
| Sand et al. (2010) | Sweden | - | Qualitative | Hermeneutic approach | 20 family members of patients in palliative care | 58 | Interview |
| Notes: Intrinsic Motivation Scale (Pelletier & Tuson, 1995); | | | | | | | |

| | Country of origin | Year of data collection | Study design | Analysis methods | Sample size | Mean age | Study measures |
|---|---|---|---|---|---|---|---|
| Siminoff et al. (2007) | USA | - | Mixed methods | Thematic analysis, logistic regression | 420 family decision makers of donor-eligible patients | Donated 37, refused 44 | Interview |
| Siu (2017) | China HK | 2013 | Qualitative | Phenomenological approach | 35 family caregivers working with patients with overactive bladder | 30-68 | Interview |
| Sugihara et al. (2004) | Japan | 1996 | Longitudinal study | Latent growth modeling | 807 caregivers of frail elderly persons | 62.2 | Family Caregiver's Burnout Scale*; CES-D; Checklist for Dementia Rating; ADL; service utilization; caregiving duration |
| Thorson-Olesen et al. (2019) | USA (online) | - | Cross-sectional survey | Covariance matrices, MANOVA | 87 caregivers to an individual 65 years of age or older (formal/informal) | 30-69 | Stamm's Professional Quality of Life Scale (ProQOL) |
| Tranva°g et al. (2008) | Norway | - | Qualitative | Ricoeur's phenomenological hermeneutics | 8 spouses/cohabitants od dementia | 31-85 | Interview |
| Truzzi et al. (2012) | Brazil | 2005-2010 | Cross-sectional survey | Student's t-test and the Mann-Whitney U test, Spearman's rank correlation, multiple linear regression | 145 caregivers and dementia patients dyads | 56.6 | Maslach Burnout Inventory; Beck Depression Inventory; Beck Anxiety Inventory and a Sociodemographic Questionnaire |
| Valente et al. (2011) | Brazil | 2008-2010 | Cross-sectional survey | Logistic regression models | 137 family caregivers and dementia patients dyads | 56.8 | Beck Depression and Anxiety Inventories; Zarit Burden Interview and Maslach Burnout Inventory |
| Ward-Griffin et al. (2011) | Canada | - | Qualitative | Feminist approach | 20 nurse-daughter caregivers of elderly parents | 52 | Interview |
| Weinberg (2011) | Israel | - | Cross-sectional survey | Hierarchical regression analysis | 72 spouses of terror victims | 43.7 | Posttraumatic Stress Symptom Scale–Self-Report (PSS-SR); Hebrew version of COPE Inventory |
| Wood et al. (2019) | Germany, Italy, France | 2015-2016 | Cross-sectional survey | Mann-Whitney U, Fisher's exact test | 427 caregivers of patients with NSCLC | 53.5 | Work Productivity and Activity Impairment (WPAI) questionnaire; Zarit Burden Interview (ZBI) |
| Notes: Family Caregiver's Burnout Scale (Nakatani, 1992, 1996) was translated from Maslach Burnout Inventory (Maslach & Jackson, 1981). | | | | | | | |

# Chapter 2. Compassion Fatigue in Spouse Caregivers: An Exploratory and Confirmatory Factor Analysis


## Abstract

**Objective:** To develop a measurement model of caregiver compassion fatigue and assess its reliability using empirical data and statistical methods. **Methods:** The study included baseline data from 214 spouse caregivers who participated in a randomized controlled trial. Items for the measurement model were extracted from the Cancer Self-Efficacy Scale and the Mutuality and Interpersonal Sensitivity Scale. Exploratory and confirmatory factor analyses were conducted to evaluate the hypothesized measurement model, and composite reliability was calculated to assess the internal consistency of the item scores. **Results:** The three-factor hierarchical model demonstrated a satisfactory fit to the data ($X^2 = 145.5, df = 101$, CFI = .953, RMSEA = .064, SRMR = .053). Compassion fatigue experienced by spouse caregivers of women with breast cancer was organized by three distinct domains: powerlessness (8 items), emotional isolation (4 items), and emotional disengagement (4 items). **Discussion:** The derived Compassion Fatigue measure contributes to the development and validation of family caregiver-specific instruments for assessing empathic response and compassion fatigue. Although the model of compassion fatigue was developed to rigorously reflect the literature, it is important to acknowledge that the model may not fully apply to caregiving for other types of cancer, late-stage disease, or other types of illness in the care recipient. Future studies should explore the conceptual framework of compassion fatigue in family caregivers of care recipients across various illness conditions and investigate the antecedents and thresholds of compassion fatigue to enable early detection and targeted support for families in need.

## Introduction

Compassion fatigue is a term that started to emerge in the early 1990s to describe the negative psychological impact of occupational stress. Most literature on compassion fatigue at that time was carried out with various helping professions, including nurses, physicians, psychotherapists, and emergency service workers (Coetzee & Laschinger, 2017; Figley, 1995, 2002).

McCann and Pearlman (1990) first defined the term "vicarious traumatization" as a transformation in the cognitive scheme of therapists in response to traumatic materials that their clients presented. They argued that such exposure could result in significant disruptions in one's sense of meaning, connection, identity, affect tolerance, and interpersonal relationships (McCann & Pearlman, 1990). Later, Figley (1995) proposed "secondary traumatic stress" to refer to a person's cognitive or belief system altered due to exposure to another person's traumatic experience and the stress in wanting to help that other suffering person. Compassion fatigue is a reaction to secondary traumatic stress (Figley, 2002). Professional caregivers who experience compassion fatigue have difficulty feeling empathy and continuously providing compassionate care to the care recipients (Beaton & Murphy, 1995). Klimecki and Singer (2012) described compassion fatigue as pathological altruism in caregivers.

### *Family Caregivers and Compassion Fatigue*

Studies on family caregivers often focus on caregivers' negative experiences and psychosocial symptoms. Some studies used 'primary caregiver syndrome' and 'caregiver's stress' to describe the composite syndrome of emotional exhaustion, loss of energy, depersonalization, and low personal accomplishment (Robinson, 1983; Schulz & Beach, 1999; Veloso & Tripodoro, 2016). Although only a few studies examined compassion fatigue in family

caregivers, they are at high risk for developing compassion fatigue due to the unprepared, unpredictable, and stressful situation in which they care for family members (Lynch et al., 2017). Family caregivers are more sensitive to patients' suffering when they have established relationships and emotional attachments compared to the professional caregivers (Lynch & Lobo, 2012). The prior relationship between family caregivers and patients can also contribute to the caregiver's response to a person suffering pain (Schulz et al., 2017). Studies found that spouse caregivers who take a caregiving role with patients with mental illness were affected in many aspects, such as a loss of companionship and intimacy, marital dissatisfaction, and disruption (Mannion, 1996). Rahmani et al. (2018) identified three traits of spousal caregivers who had psychological distress from providing care to their mentally ill husbands: emotional detachment, emotional exhaustion, and feelings of loss of self. Even though Rahmani did not label these three traits as signs of compassion fatigue, those traits are similar to the signs of compassion fatigue discovered in previous studies on psychotherapists (Craig & Sprang, 2010).

According to the reviewed literature, compassion fatigue in family caregivers can be characterized as emotional exhaustion, emotional disengagement, emotional isolation, and feeling of powerlessness and hopelessness.

*Emotional exhaustion*

A phenomenological study found that family caregivers who assisted staff with the care of older relatives in long-term settings experienced being extremely tired and felt torn between daily responsibilities and the caregiver role (Perry et al., 2010). Family caregivers stated that lack of supportive resources was the reason they felt trapped in various positions, and they felt like a scapegoat in the family, further leading to emotional exhaustion (Rahmani et al., 2018).

*Emotional disengagement*

Emotional disengagement was characterized by caregivers bottling up their emotions, manifesting an inability to provide compassionate care due to compassion stress in caregiver studies (Day et al., 2014; Rahmani et al., 2018; Ward-Griffin et al., 2011). This pattern of response was marked by a desire to withdraw, a disinclination towards caregiving tasks, and a lack of communication with the patient (Day et al., 2014; Lynch & Lobo, 2012; Rahmani et al., 2018). O'Farrell et al. (2000) found that spouses with distress from caregiving were more likely to use disengagement coping strategies than those who were not distressed. Adult child caregivers that held negative emotions, such as disgust, shame, and embarrassment, to care for the parent who had dementia, reported a decrease in involvement with the sick parent (Werner et al., 2010). Moreover, Rahmani et al. (2018) discovered in a study that spouse caregivers of husbands with severe mental illness had lost their interest in doing what they enjoyed before. Being busy with caregiving tasks and other problems in life had caused a loss of motivation.

*Emotional isolation*

Emotional isolation, also known as "emotional detachment," is a state where emotional connections are lost between caregivers and care recipients (Rahmani et al., 2018). Family caregivers from a study described their relationship failure and the formation of pity for the patients (Katsifaraki & Wood, 2014). Rahmani and colleagues (2018) found that caregivers of patients with mental illness experienced a decline in reciprocal relationships due to the patient's inability to express their feelings as the mental illness progressed.

*Powerlessness*

Powerlessness and helplessness were commonly observed in family caregivers when they feel unprepared and incompetent to fulfill the caregiving needs and miscommunicate with the healthcare providers (Jakobsen et al., 2019; Rahmani et al., 2018; Ruppert, 1996). Participants in

studies described that powerlessness was a devastating feeling when the family caregiver has a sense of need to do something to protect the patient from suffering, but there was nothing they could do to help, or the patient did not recover despite all the efforts from the caregiver (Ekdahl et al., 2011; Ward-Griffin et al., 2011).

Furthermore, family caregivers experienced compassion fatigue reported negative consequences such as sleep disturbance (Ward-Griffin et al., 2011), depression (Schulz et al., 2017), feeling guilty (Ward-Griffin et al., 2011), loneliness in a married relationship (Meyer et al., 2016; Tranvåg & Kristoffersen, 2008), a decline in quality of mutuality (Lyons et al., 2009), or superficial communication (Bachner & Carmel, 2009; Bachner et al., 2009).

Conceptualization of compassion fatigue helps inform measurement and intervention development. There are conceptual frameworks of work-related compassion fatigue for care professionals. The earliest and most popular model is the *compassion stress and fatigue model* by Figley (1995) which explicitly described how a person could develop compassion fatigue. Figley proposed a series of reactions from caregivers exposed to the client's traumatic experience, the caregiver's empathic responses to residual compassion stress, and subsequently led to compassion fatigue.

In addition to proposing a conceptual model of compassion fatigue for care professionals, Figley (1995) developed the Compassion Fatigue Self Test, presenting a bifocal-dimensional (compassion fatigue and compassion satisfaction) measurement for compassion fatigue for helping professionals such as mental health professionals, medical professionals, and counselors. Figley's measurement model later inspired Stamm (2010) to modify the Compassion Fatigue Self Test and rename it the Professional Quality of Life Scale (ProQOL) with three theoretical dimensions: compassion satisfaction, secondary traumatic stress, and burnout. ProQOL is now

one of the most used measures for healthcare professionals' compassion fatigue. However, those scales are focused on occupational health among professional care workers who provide services to a wide variety of traumatized clients (Bride et al., 2007).

Many instruments are designed to measure different aspects of psychological distress in family caregivers. Most of the literature is focused on other constructs, not compassion fatigue, such as depression, anxiety, and burnout. Although few prior studies used qualitative interviews and observational designs in palliative and long-term care settings, the current literature on compassion fatigue in family caregivers lacks a conceptual foundation. The current study explores and examines a self-report measure of compassion fatigue within a larger conceptual framework of compassion fatigue in family caregivers.

**Study Purpose**

Despite the extensive research on compassion fatigue among professionals for over 30 years, there remains a dearth of research on compassion fatigue in family caregivers. However, it is crucial to recognize that compassion fatigue in caregivers poses a significant public health concern, as it can have deleterious effects on both the caregiver and the care recipient. Research on compassion fatigue in family caregivers is further constrained by the absence of a valid and reliable measure that is responsive to the key conceptual domains of the concept. Both descriptive and intervention studies are hampered as a result. The current study aims to generate a measurement model of caregiver compassion fatigue, evaluate the model through statistical methods with empirical data, and substantively add to the knowledge of compassion fatigue in family caregiving.

## Method

### 2.1. Sample

Data to be analyzed were obtained from a more extensive parent study, Family Home Visitation Program (FHV), a two-group randomized controlled trial of a couple-focused cognitive-behavioral intervention in spouse caregivers and women with newly diagnosed breast cancer (Lewis, 1996). The parent study aimed to evaluate a multicomponent home-delivered program to add to the couple's management of breast cancer. Although the database for this study was generated in 1996, treatment protocols for the disease staging of the study participants in the 1996 database are comparable to current treatment protocols. Additionally, no studies have examined a theoretical framework of compassion fatigue in this population. Therefore, the research question and the database are relevant to contemporary times and can contribute to science.

Study participants in the parent study were recruited from 70 health organizations, physician referrals, and university-affiliated clinics in the Pacific Northwest. Before data collection, the study was approved by the Institutional Review Boards at the study center and referring sites. Potential participants were reached initially by a site intermediary. Depending on their interest in the study, they were contacted by a research team member, who then explained the study in depth. Married couples were eligible if the woman was diagnosed with early-stage breast cancer (stage 0, I, IIA, or IIB); used English as her language of choice; lived within 100 miles of the study center; and had one or more dependent children. The couples were randomized into either the intervention condition or the control condition after enrollment. A total of 192 married couple dyads completed data collection at baseline and followed up at 3 and 6 months in the clinical trial. Data in the current study were limited to baseline data obtained before

randomization. A total of 214 husbands of women with breast cancer who had completed baseline data were included in this study. To perform exploratory factor analysis and confirmatory factor analysis on the same data might yield inflated estimates of model fit and parameter estimates (Anderson & Magruder, 2017; Fokkema & Greiff, 2017). To prevent such an overfitting issue, the dataset was randomly split into two halves by the following steps: 1) added a new column of a random value between 0 to 1 by using Excel's random number generator; 2) ranked the random number in the sequence from the smallest to the largest; 3) split the sample into halves that each contained 107 spouses (Dettori, 2010). The exploratory and confirmatory factor analyses were carried out on two independent samples.

### 2.2. Item Extraction from Measures

**Sub-study 1**: Cross-sectional baseline data were obtained from a brief battery of questionnaires as part of the FHV clinical trial. Using the conceptual definition of caregiver compassion fatigue, items were systematically extracted from two study measures, as detailed below. Items were extracted based on their fit with that conceptual definition.

Three theoretical domains were proposed to represent the level of compassion fatigue in family caregivers (Figure 2.1). These three domains were identified from a scoping review of published literature; see Study 1 of this dissertation. In brief, these three domains were 1) Powerlessness: caregivers feel unprepared and incompetent to fulfill care needs; 2) Emotional isolation: caregivers feel a decline in reciprocal relationships and lose emotional connection with the care recipients; 3) Emotional disengagement: caregivers' loss of interest and motivation in caregiving tasks, including performance avoidance, withdrawal in care, and withdrawal with communication.

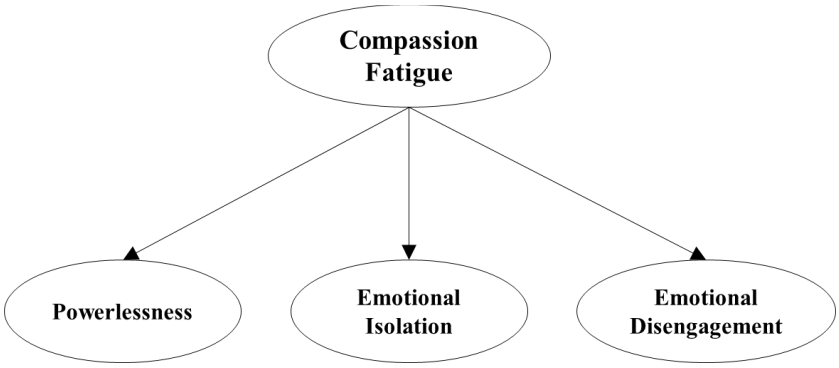


*Figure 2.1*. Hypothesized Second-order Model of Compassion Fatigue in Family Caregivers

Each of these three domains consisted of items drawn from two standardized questionnaires administered in the parent study: the Cancer Self-Efficacy Scale and the Mutuality and Interpersonal Sensitivity Scale. These parent scales are described below, followed by a description of the process used to extract candidate items for analysis in the CFA. In all cases, candidate items from each of the questionnaires were recoded so that higher scores reflected higher levels of powerlessness, emotional isolation, and emotional disengagement.

**Cancer Self-Efficacy Scale (CASE):** The CASE was designed to measure self-efficacy in cancer-related situations. This 20-item self-report measure captures the level of an individual's self-confidence in managing the impact that breast cancer has on the couple themselves. Items from this self-efficacy scale reflect some components of powerlessness in compassion fatigue. The theoretical origin of the CASE was Bandura's Social Cognitive Theory (Bandura, 1997). The items were derived from the interview responses from women with early-stage breast cancer and were rated from 1 "not at all confident" to 10 "very confident" to what extent do the respondents feel they were capable of the situation described in each statement (Lewis & Hammond, 1992; Lewis et al., 1993). The examples of the item are: "I have the ability to handle the challenges from cancer," and "I can help my spouse/partner cope with the pressures of the cancer." The internal consistency reliability for the total scale of the CASE was 0.973 in the FHV

study (Lewis, 1996).

**Mutuality and Interpersonal Sensitivity Scale (MIS)**: The MIS is a 32-item self-report measure that was initially designed to measure two theoretical dimensions: an individual's interpersonal sensitivity and mutuality about breast cancer (Lewis et al., 1993). Interpersonal sensitivity to breast cancer involves heightened levels of eliciting, attending to, and being aware of the other's feelings and thoughts about breast cancer or its impact. Mutuality about breast cancer involves commonly shared meanings, attitudes, and orientation toward breast cancer among the couple (Lewis et al., 1993). The respondents were asked to choose the level of truthfulness (from 1 "never true" to 5 "always true") to describe the extent to which the statement described their experience, e.g., "We approach the breast cancer with the same thoughts and feelings" and "We are aware of each other's feelings about the breast cancer, even when we don't have the same feelings." Responses were reverse coded so that higher scores indicate higher quality of interpersonal sensitivity and mutuality about breast cancer. The internal consistency reliability for the total scale of the MIS was 0.882 in the FHV study sample (Lewis, 1996).

Seventeen items were selected from the CASE and the MIS by two researchers who have content knowledge in spouse caregiving and the definition of the core construct of compassion fatigue in family caregivers. The retained items were considered the spouse caregivers' reactions and feelings when the caregiver experienced compassion fatigue.

### 2.3. Statistical analysis

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) are widely used in research for developing psychometric instruments and evaluating multifactor models (Van Prooijen & Van Der Kloot, 2001). EFA and CFA were carried out to test the hypotheses

relating the construct of compassion fatigue to the hypothesized three domains (Kline, 2015). Analyses were performed using statistical computing software R v.4.0.5 (lavaan package) and IBM SPSS v.26.

**Sub-study 1**: Exploratory factor analysis was applied to 107 spouses' baseline data to examine the selected items' psychometric properties in measuring the compassion fatigue of spouse caregivers. EFA was used to investigate indicators' loadings on the latent variable, which helps determine the item factor loading structure for further confirmatory analysis. EFA proceeded through five steps: 1) selection of suitable data for analysis; 2) decision about factor extraction method; 3) determining the factor extraction criteria; 4) selection of the rotational method; and 5) interpretation and labeling the factors (Williams et al., 2010).

In the initial factor analysis phase, the sample was screened by the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy statistical test, which indicates the level of adequacy of the EFA application to the data. More specifically, KMO suggests the proportion of the item variance that can be explained by a latent variable. The KMO index ranges from 0 to 1, and values between 0.5 to 0.7 are considered reasonable; values above 0.8 are considered excellent for EFA (Williams et al., 2010; Yong & Pearce, 2013). The Bartlett Sphericity test evaluates to what extent the variance matrix is similar to an identity matrix. A significant Bartlett Sphericity test ($p < 0.05$) indicates that the sample has patterned relationships (Nunes et al., 2020; Williams et al., 2010; Yong & Pearce, 2013).

Descriptive statistics of the 17 items extracted from the CASE and the MIS were computed. To assess the linear relationship between variables from different scales, a correlation matrix was generated for reference in subsequent analysis (Kline, 2015; Yong & Pearce, 2013). According to Yong and Pearce (2013), a factor with fewer than three variables can be considered

reliable if the variables exhibit high correlation ($r > .70$). The "principal axis factoring" extraction method in SPSS was selected due to the non-normal distribution of data (Costello & Osborne, 2005). The factor extraction determination was based on Kaiser's criterion, which suggests retaining factors with a factorial load eigenvalue greater than 1 (Kaiser, 1960). A scree plot was also generated to inspect the eigenvalues and the percentage of variance explained by the corresponding factors to extract (Williams et al., 2010; Yong & Pearce, 2013).

To simplify the factor structure of a group of items, rotation was applied to produce a more interpretable solution (Nunnally, 1975, 1994). The rotation method can maximize the high item loadings and minimize the low item loadings on the remaining factor solutions (Williams et al., 2010). We used promax rotation due to the potential correlations between factors (oblique) (Costello & Osborne, 2005; Williams et al., 2010; Zuccaro, 2010).

The attributable group of items was later labeled for that factor through a theoretical and inductive reasoning process (Williams et al., 2010). Three meaningful latent factor labels were generated based on Study 1 on the concept of "compassion fatigue" in family caregivers.

**Sub-study 2**: Confirmatory factor analysis was performed to examine a hypothetical second-order structure by evaluating the goodness of fit indices on 107 spouses' baseline data. Each item (indicator) was allowed to load on only one first-order factor (Cheung, 2000). The first-order latent variables were the core attributes of compassion fatigue that contributed to the level of compassion fatigue (Anderson and Gerbing, 1988).

CFA involved three steps: 1) specifying the model, 2) fitting the model, and 3) viewing the summary statistics (Huang, 2017; Kline, 2015). The specified model was fit using the *cfa()* function in the lavaan package. To determine the fit of the model, four fit indices were examined. We evaluated the overall model fitness by $X^2$ statistic, which should have a $p$-value < 0.05

(Kline, 2015). We also calculated the comparative fit index (CFI), which should be > 0.95 to be considered a good-fitting model (Bentler, 1990). We also examined the root mean square error of approximation (RMSEA) and the standardized root mean square residual (SRMR), both of which are preferred to be < 0.08 (Steiger, 1990).

After evaluating the model fit indices, the model was respecified in order to improve the model fit between the hypothesized factorial structure and the empirical data (Kline, 2015). Model respecification included three steps: 1) calculation of the modification indices; 2) adding a theoretically meaningful path or free parameter constraint based on the modification index results; and 3) evaluation of the respecified model fit indices.

The $X^2$ modification index suggested that adding a particular path or freeing a constraint parameter could improve the model fit. More specifically, $X^2$ values above 3.84 indicate that adding a path between a parameter and the latent variable would reach statistical significance at the .05 level (p-value < .05) (Lei & Wu, 2007). The statistical criteria of a modification index and theoretical knowledge about compassion fatigue were considered when making the respecification decision.

**Sub-study 3**: Composite reliability is an indicator commonly used in factor analysis to estimate measurement reliability of the total score. It shared variance among the observed variables used as an indicator of a latent construct (Fornell & Larcker, 1981). According to Schuberth (2021), the coefficient of composite reliability is inherently tied to the reflective measurement model. It assumes that the measures of a latent variable are prone to random measurement errors. Composite reliability equals the ratio of the square of sum of standardized loading and the square of sum of standardized loading plus the sum of variance of the error term of the indicator. The acceptable value of composite reliability should range from 0.7 to 0.95,

which indicates all the items constantly measure the same construct (Hair Jr et al., 2010). See Figure 2.2 for details of the calculation of the composite reliability.

$$Composite\ reliability = \frac{(\sum_{i=1}^{p} \lambda_i)^2}{(\sum_{i=1}^{p} \lambda_i)^2 + (\sum_{i=1}^{p} Var(\varepsilon_i))}$$

λ = The standardized factor loading for the indicator

$Var(\varepsilon_i)$= variance due to the measurement error = $1 - {\lambda_i}^2$

p = number of indicators

*Figure 2.2.* Calculation Algorithm for Composite Reliability

## Results

### 3.1. Sample characteristics

Spouse caregivers averaged 45.40 years of age (SD 7.42), ranging from 26 to 72 years. On average couples were married 16.91 years (SD 8.19). The majority (61.6%) of household incomes were $50,000 and above. The average time since diagnosis of breast cancer in the women was 4.96 months (SD = 2.65), ranging from 1 to 13 months. The majority, 190 (87.2%), of the spouses were Caucasian. Patients averaged 43.19 years of age (SD 6.02), ranging from 29 to 59 years. Women were surgically treated by a variety of surgeries: 44.9% had a modified radical mastectomy, 33.3% had nodal dissection, and 10.3% had a simple mastectomy. A total of 85 (39.7%) women had a lumpectomy, and 128 (59.8%) had a mastectomy (Table 2.1).

Table 2.1. Sample Characteristics of the Couples with Breast Cancer (N = 214)

| | | Mean (SD) | Range |
|---|---|---|---|
| Age | Spouse | 45.4 (7.42) | 26 – 72 |
| | Patient | 43.19 (6.02) | 29 – 59 |
| Education (Years) | | 15.32 (2.36) | 9 – 20 |
| Married (Years) | | 16.91 (8.20) | 1 – 38 |
| Time since diagnosis (Months) | | 4.96 (2.65) | 1 – 13 |
| | | n | % |
| Race | Caucasian | 190 | 88.8 |
| | Non-Caucasian | 22 | 10.2 |
| Employment | Not employed | 21 | 9.6 |
| | Full/part-time employed | 193 | 88.5 |
| Most invasive type of surgery | Lumpectomy | 14 | 6.6 |
| | Nodal dissection | 71 | 33.3 |
| | Partial mastectomy | 8 | 3.8 |
| | Simple mastectomy | 22 | 10.3 |
| | Modified radical mastectomy | 96 | 44.9 |
| | Radical mastectomy | 2 | 0.9 |

### 3.2. Exploratory Factor Analysis

The zero-order correlation matrix (Table 2.2) indicated that most variables were highly correlated. However, some of the variables that came from different scales had low correlations ($r < 0.3$), which indicates weak patterned relationships between those variables (Tabachnick et al., 2013). We also evaluated sampling adequacy for each variable in the model. Our sample KMO of Sampling Adequacy was .883, which is considered excellent and suitable for factor analysis with a cut-off above .50 (Williams et al., 2010; Yong & Pearce, 2013). Bartlett's Test of Sphericity ($X^2$ (136) =1210.88, $p < .001$) indicated that the sample had patterned relationships among the variables (Yong & Pearce, 2013).

Skewness ranged between .10 and 1.27, and kurtosis ranged between -.021 and 2.09 on CASE scale items. MIS scale items' skewness value ranged between .10 and 1.74, and kurtosis ranged between -.93 and 2.8. The descriptive statistics (Table 2.3) and histograms (Figure 2.3) of the skewed items (skewness > 1) are shown below.

Table 2.3. Descriptive Statistics of the Skewed Items

| Item | Casep4r | Casep7r | Casep18r | Casep22r | MIS10r | MIS14r |
|---|---|---|---|---|---|---|
| Mean | 1.78 | 1.93 | 1.75 | 2.24 | 1.45 | 1.8 |
| Median | 1 | 2 | 1.50 | 2 | 1 | 2 |
| Skewness | 1.10 | 1.16 | 1.16 | 1.27 | 1.74 | 1.11 |
| Kurtosis | 1.10 | 1.75 | 1.25 | 2.09 | 2.80 | 0.73 |

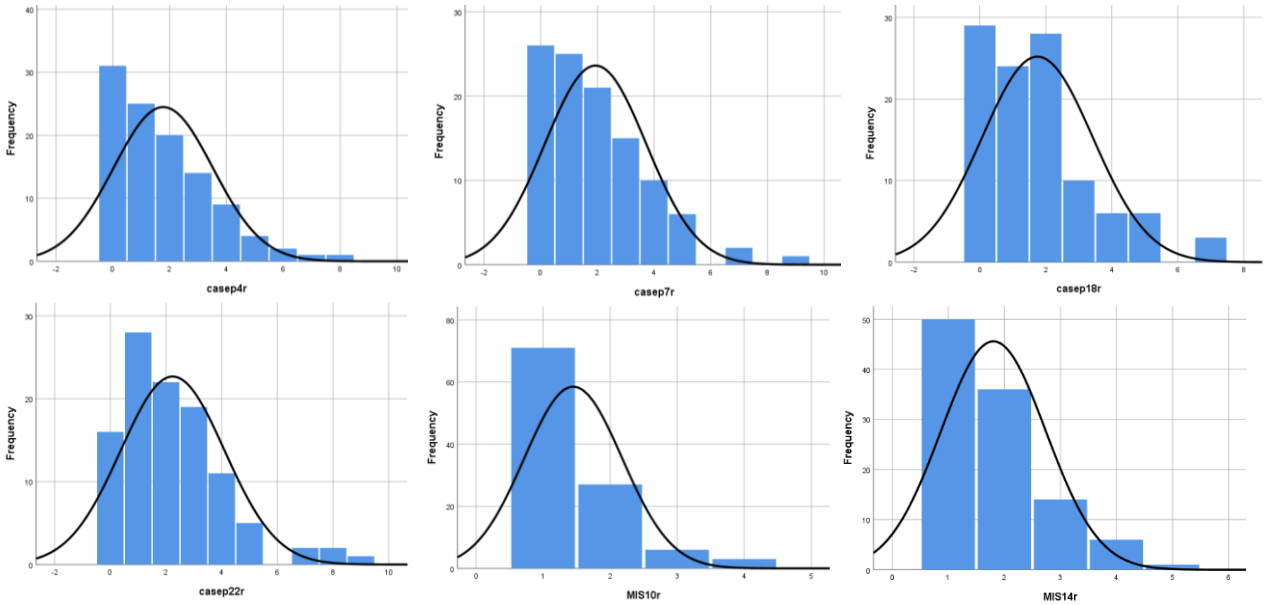


*Figure 2.3.* Histograms of Skewed Items

According to Kaiser's criterion, we chose the number of factors with eigenvalues greater than 1 in agreement with the scree plot (Figure 2.4). We tested 1, 2, 3, and 4-factor models. Results showed that the 3-factor model was the best model among the 1, 2, 3, and 4-factor models. Three primary factors in the 3-factor model accounted for 67.10% of the total variance. Item loadings in the first factor explained 45.09% of the total variance; the second explained 14.82% variance, and the third explained 7.19% of the variance (Table 2.4).

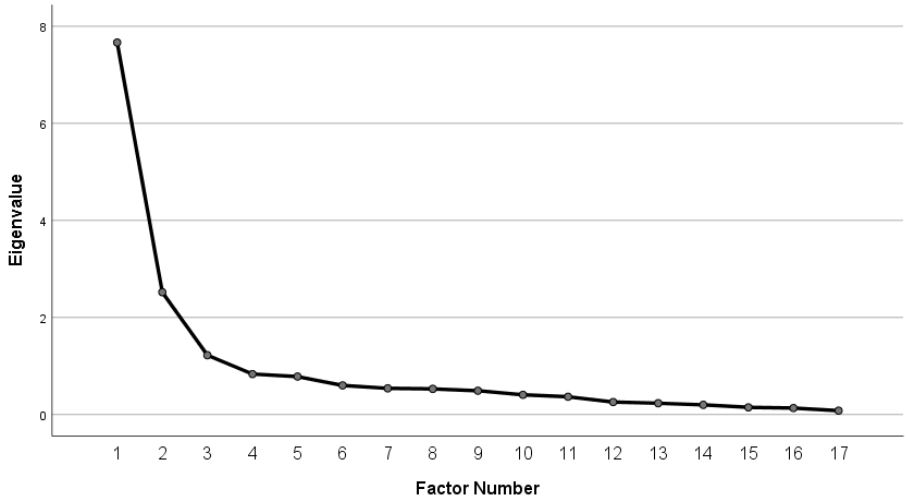


*Figure 2.4* Scree Plot of Eigenvalues

Table 2.4. Total Variance Explained by Each Factor to Extract

| Factor | Eigenvalue | % of Variance | Cumulative % | Eigenvalue after rotation |
|---|---|---|---|---|
| **Factor 1** | 7.665 | 45.090 | 45.090 | 6.948 |
| **Factor 2** | 2.520 | 14.823 | 59.913 | 4.309 |
| **Factor 3** | 1.222 | 7.190 | 67.103 | 3.604 |

Extraction method: Principal axis factoring

All items in the 3-factor model reflected the initial hypothesized dimensions of compassion fatigue derived from an analysis of the literature. Table 2.5 shows the factor loadings after rotation using a significant factor criterion of .30. Factor 1 consisted of nine items from the CASE Scale (CASE 1, 3, 4, 7, 10, 12, 18, 19, and 22 with reverse scoring) and measured the degree to which caregivers were not able to draw on their own strength and were not able to use resources and help the family through cancer. Factor loadings ranged from .505 to .989. This factor was designated as "***powerlessness***."

Factor 2 consisted of four items from the MIS scale (MIS 12, 16, 28, and 31); factor loadings ranged from .641 to .874. These items reflected the spouses' feelings of not being able to communicate, share feelings, fears, and sadness specifically, and thoughts about breast cancer with his wife. These behaviors represented the propensity for spouse caregivers to have bottled-up emotions. This factor denotes "***emotional isolation***."

Factor 3 consisted of four items from the MIS scale (MIS 5r, 7r, 10r, and 14r with reversed scores) with factor loadings between .351 and .757. These items reflected the spouse caregivers' reflections on whether they, as a couple, were able to support their partner's feelings about breast cancer. Higher scores on these items reflected less time spouse caregivers checked in with each other or confided about their feelings about breast cancer. This factor is referred to as "***emotional disengagement***."

Table 2.5. Factor Loadings in Exploratory Factor Analysis (Model 1)

| | Item | Label | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|---|---|
| 1 | I am able to use information and resources to cope with the demands of cancer. | casep1r | .505 | | |
| 2 | I am able to call on my inner strengths to pull myself through the cancer. | casep3r | .908 | | |
| 3 | I have what it takes to help my family through this cancer. | casep4r | .833 | | |
| 4 | I have the ability to take the necessary steps to work through the demands from the cancer. | casep7r | .900 | | |
| 5 | I have the ability to handle the challenges from the cancer. | casep10r | .989 | | |
| 6 | I have ways to manage the uncertainty brought on by the cancer. | casep12r | .768 | | |
| 7 | I am able to deal with the physical changes caused by the cancer. | casep18r | .579 | | |
| 8 | I am able to draw on my own strengths to get through this cancer. | casep19r | .947 | | |
| 9 | I am able to manage what is being asked of me despite the cancer. | casep22r | .846 | | |
| 10 | We don't talk together about the sadness I feel about the breast cancer. | MIS12 | | .641 | |
| 11 | My personal feelings about the breast cancer are not what we talk about together. | MIS16 | | .644 | |
| 12 | Sad thoughts about the breast cancer are hard for us to talk about together. | MIS28 | | .828 | |
| 13 | We avoid discussing our fears about the breast cancer. | MIS31 | | .874 | |
| 14 | We check in with each other to see how we are doing about the breast cancer. | MIS5r | | | .757 |
| 15 | We spend a lot of time talking about how things are going with the breast cancer. | MIS7r | | | .639 |
| 16 | We try to support each other's feelings about the breast cancer. | MIS10r | | | .351 |
| 17 | We confide in each other about the breast cancer. | MIS14r | | | .600 |

1. Partial standardized regression coefficients are reported for oblique rotation method.
2. Reverse scoring items (label with “r”) were coded for the directional consistency.
3. Factor 1 is powerlessness; Factor 2 is emotional isolation; Factor 3 is emotional disengagement.

### 3.3. Confirmatory Factor Analysis

A hypothesized 3-factor hierarchical model of compassion fatigue was next tested by CFA. Figure 2.1 depicts the hypothesized 3-factor model, consisting of four latent variables, including three first-order factors and one second-order factor. CFA with a maximum-likelihood estimation procedure was used to test the 3-factor second-order model. The results indicated a good fit for this sample with model fit indices: $\boldsymbol{X^2} = 196.4;\ df\ =\ 116$; RMSEA = .078; and SRMR = .057. However, Model 1 did not have an optimum fit for this sample because of its CFI = .932 (Table 2.6).

An analysis of the modification indices suggested allowing covariance between the item "I am able to draw on my own strengths to get through this cancer" (casep19r) and Factor 2 and Factor 3. However, incorporating these paths recommended by the modification indices did not align with the theoretical interpretation of compassion fatigue. Upon further review of items, it was noted that item *casep3r* ("I am able to call on my inner strengths to pull myself through the cancer.") expressed a similar concept to item *casep19r*. In other words, by removing item *casep19r*, the content retained in the model remained comparable to Model 1, leading to an improved fit ($\boldsymbol{X^2} = 145.5;\ df\ =\ 101$; CFI = .953; RMSEA = .064; and SRMR = .053). Model 2, incorporating the revised set of manifest variables, provided the best explanation for the characteristics of powerlessness (Factor 1). When item *casep19r* was removed, the model had an improved fit. Model 2, with the new set of manifest variables, best explained the characteristics of powerlessness (Factor 1).

Table 2.6. Model Fit Indices of the Tested Compassion Fatigue Models

| Model Fit Indicators | $X^2$ | CFI (> .95) | RMSEA (< .08) | SRMR (< .08) | BIC |
|---|---|---|---|---|---|
| **Model 1** | $X^2(116) = 196.4$ $p < .001$ | .932 | .078 (90% CI .058 - .098) | .057 | 5165.57 |
| **Model 2** | $X^2(101) = 145.5$ $p = .002$ | .953 | .064 (90% CI .039 - .086) | .053 | 4902.66 |

$X^2$: Chi-square test; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual; BIC: Bayesian Information Criterion.

Results from CFA present a hierarchical model of compassion fatigue in which the higher-order factor influenced all three first-order factors (Figure 2.5) with a standardized solution. Each first-order trait is modeled as a linear function of the second-order compassion fatigue attribute with an error term (Cheung, 2000). The composite reliability for the total scale is .961; the powerlessness subscale (8 items) composite reliability is 0.948; the emotional isolation subscale (4 items) composite reliability is .87; and the emotional disengagement subscale (4 items) composite reliability is .746 for the total sample (n = 214). A three-factor, 16-item self-report measure of compassion fatigue in spouse caregivers of women with breast cancer is empirically supported with a good model fit and has an acceptable composite reliability. Table 2.7 presents the retained items of Model 2 and the corresponding factors.

Table 2.7. Final Items of the Compassion Fatigue Model (Model 2)

| | | Item label |
|---|---|---|
| **Factor 1: Powerlessness** | | |
| 1 | I am able to use information and resources to cope with the demands of cancer. | casep1r |
| 2 | I am able to call on my inner strengths to pull myself through the cancer. | casep3r |
| 3 | I have what it takes to help my family through this cancer. | casep4r |
| 4 | I have the ability to take the necessary steps to work through the demands from the cancer. | casep7r |
| 5 | I have the ability to handle the challenges from the cancer. | casep10r |
| 6 | I have ways to manage the uncertainty brought on by the cancer. | casep12r |
| 7 | I am able to deal with the physical changes caused by the cancer. | casep18r |
| 8 | I am able to manage what is being asked of me despite the cancer. | casep22r |
| **Factor 2: Emotional isolation** | | |
| 9 | We don't talk together about the sadness I feel about the breast cancer. | MIS12 |
| 10 | My personal feelings about the breast cancer are not what we talk about together. | MIS16 |
| 11 | Sad thoughts about the breast cancer are hard for us to talk about together. | MIS28 |
| 12 | We avoid discussing our fears about the breast cancer. | MIS31 |
| **Factor 3: Emotional disengagement** | | |
| 13 | We check in with each other to see how we are doing about the breast cancer. | MIS5r |
| 14 | We spend a lot of time talking about how things are going with the breast cancer. | MIS7r |
| 15 | We try to support each other's feelings about the breast cancer. | MIS10r |
| 16 | We confide in each other about the breast cancer. | MIS14r |

## Discussion of Results

### 4.1 Summary of study results

This study first examined the structure model of compassion fatigue in spouse caregivers of women with early-stage breast cancer. The results of EFA showed that three factors represented the attributes of compassion fatigue: Powerlessness (Factor 1); Emotional isolation (Factor 2); Emotional disengagement (Factor 3). All three factors contributed 67.1% of the overall variance in this sample.

Powerlessness was reflected by spouses with less confidence to call on inner strengths, to handle the challenges of breast cancer. Spouse caregivers with compassion fatigue had a decreased perceived belief that they could take the necessary steps to work through the demands of cancer. "**Emotional isolation**" reflected in spouse caregivers when they avoided discussing negative thoughts with their diagnosed wife, such as fears and sadness about breast cancer. "**Emotional disengagement**" reflected by spouses' less frequently checking in with their partner to see how they were doing about breast cancer as a couple. Spouse caregivers with emotional disengagement were less able to confide in each other about breast cancer.

Confirmatory factor analysis was performed on 107 spouses' baseline data. We first tested the 17-item model (Model 1) with four model fit indices: $\boldsymbol{X^2}$, RMSEA, SRMR, and CFI. However, Model 1 did not have an optimum fit for this sample on its CFI. To improve the model fit, we examined modification indices and the results suggested adding paths between item casep19r and Factor 2 and Factor 3 in this sample. However, the paths recommended by the modification indices did not fit the theoretical interpretation of the relationships in the compassion fatigue model. We then reviewed the content of each item and found that removing casep19r, would enable us to retain content in the measure that was comparable to Model 1.

Therefore, we tested a second model (Model 2) with 16 items (Table 2.7) and got a satisfactory model fit (Table 2.6). The composite reliability of the total scale (16 items) was 0.961; powerlessness subscale (8 items) was .948; emotional isolation subscale (4 items) was .87; emotional disengagement subscale (4 items) was .746, computed on data from the total sample (n = 214).

We proposed a second-order structure model of compassion fatigue in spouse caregivers of women with breast cancer that consisted of three first-order factors (powerlessness, emotional isolation, and emotional disengagement) with 16 items extracted from the CASE and the MIS scales.

**4.2 Comparisons of current results against prior literature**

Compared to measures of professional caregiver compassion fatigue, the current study is the first study to propose a measurement model for compassion fatigue in family caregivers with a different focus from compassion fatigue screening tools for the care professionals. Bride et al. (2007) stated that the commonly used screening tools for compassion fatigue in clinicians who provide services to traumatized clients have the following assessment domains: compassion satisfaction, burnout, disruptions in psychological needs, PTSD symptoms (secondary traumatic stress, intrusion, avoidance, arousal) associated with working with traumatized populations. However, current study results suggested powerlessness, emotional isolation, and emotional disengagement were the more critical indicators of compassion fatigue reflecting family caregivers' experiences. The three attributes of compassion fatigue generated from the current study's analysis were similar to previous studies on family caregivers of cancer patients.

(1) Powerlessness

Powerlessness was represented by eight items extracted from the self-efficacy scale

(CASE). Additionally, the theme of powerlessness emerged in qualitative studies of family caregiver, where participants expressed frustration at their inability to observe any progress in their care recipient's health condition despite their best efforts (Ekdahl et al., 2011; Ward-Griffin et al., 2011). Milberg et al. (2004) highlighted that relatives providing care to a family member in palliative home care experienced feelings of powerlessness and helplessness in response to their perception of a patient's deteriorating health and suffering. Linderholm and Friedrichsen (2010) found that family caregivers in palliative care settings developed powerlessness when they felt inexperienced in handling care tasks and could not establish a good relationship with the care team. Family caregivers felt frustrated and lose control due to a lack of knowledge about the disease, and their inability to improve the patient's physical and emotional conditions (Ekdahl et al., 2011; Jakobsen et al., 2019; Siu, 2017).

(2) Emotional isolation

Spouse caregivers' emotional isolation (Factor 2) identified in this study is similar to alexithymia experienced by unpaid caregivers of patients with other types of disease (Ashley et al., 2011). People with alexithymia find it challenging to identify their feelings and verbally express them. A study on family caregivers of patients with traumatic brain injury also reported that caregivers with a deficit in processing emotions, or alexithymia, had a higher level of emotional exhaustion (Katsifaraki & Wood, 2014). Family caregivers who have difficulty describing feelings and exhibit an externally oriented thinking style are more likely to become emotionally exhausted. According to Khalaila and Cohen (2016), individuals with an emotional suppression style tend to influence how they experience or express negative emotions when coping with stressors. This trait was reflected in spouse caregivers in this current study by caregivers avoiding sharing negative thoughts about breast cancer with their partners.

(3) Emotional disengagement

Study findings indicated that emotional disengagement (Factor 3) was one of the attributes of compassion fatigue in spouse caregivers. Under stressful and difficult situations, caregivers may adopt different coping strategies, such as seeking support, positive reframing, and expression of emotion (Kershaw et al., 2004). However, some may adopt passive coping strategies and disengage in care. Those who take disengagement coping strategies perform avoidance, self-criticism, and social withdrawal under stressful circumstances (Khalaila & Cohen, 2016). A similar trait was found in family caregivers of patients with different diseases, such as dementia (Day & Anderson, 2011; García-Alberca et al., 2012), traumatic brain injury (Calvete & de Arroyabe, 2012), and parent-child relationship (Kretchmar & Jacobvitz, 2002).

**4.3 Study limitations**

We acknowledge four main limitations of the current study. First, the parent measures from which items were drawn to conceptually map the theoretical attributes of compassion fatigue were limited. The CASE scale was designed to measure cancer-specific coping behavior. A measure of coping is not a measure of an attribute of compassion fatigue; these items may not have captured all aspects of compassion fatigue.

Second, the study only involved self-report data from the spouse caregivers. Observational data were not available in this secondary data analysis. Partner-report data needs to be complemented by observational data in future studies. A combination of subjective, observable, and measurable biological data would provide a more informed claim to support the study findings. For example, neuroimaging studies can use functional magnetic resonance imaging (fMRI) to identify when a person is empathizing with another person's feelings by activating neural networks (Singer & Klimecki, 2014).

Third, the study involved spouse caregivers who were mostly Caucasian, well-educated, and fiscally resourced. Study results do not necessarily represent other spouse caregivers' experience. Despite these limitations, this study contributes to the literature by proposing the first factor structure model of compassion fatigue in spouse caregivers of women with breast cancer.

Fourth, study participants were spouse caregivers of women with newly diagnosed breast cancer. Although the model of compassion fatigue was developed to rigorously reflect the literature, it is always possible that the model does not fit caregiving for other types of cancer, late-stage disease, or other types of illness in the care recipient. Alternatively, it is possible that the model is robust enough to withstand those other conditions; only future research will tell.

**4.4 Recommendations for future research**

Future studies need to examine the conceptual framework of compassion fatigue in family caregivers of patients across various types of diseases and illness conditions, such as family caregivers who provide care for family members with a long-term illness, dementia, or using palliative care. Moreover, it is important to investigate the caregiving experience on non-spousal caregivers, such as care provided by adult-children or relatives, and individuals with double-duty caregiving roles. These diverse backgrounds and life experiences may result in varied responses to compassion fatigue, highlighting the necessity for a comprehensive understanding of this phenomenon.

Future studies should explore the antecedents and thresholds of compassion fatigue in family caregivers in order to facilitate early detection and enable efficient triaging of families into appropriate support services. By identifying the factors that contribute to the development of compassion fatigue, we have presented a potential assessment tool that can assist healthcare professionals in proactively intervening and offering targeted assistance to family caregivers in

need.

Future studies should also investigate the consequences of family caregiver's compassion fatigue, including short-term and long-term effects on both the caregiver and the care recipient. For example, studies need to explore the psychological and physical symptoms experienced by caregivers in relation to their caregiving role, as well as evaluate the impact on the quality of care provided to the care recipients.

Future instrument development and testing is warranted, given the study results. A self-report measure of compassion fatigue for family caregivers was generated, which had no precedent in the published literature. This measure included three domains, capturing the spouse caregiver's feelings of powerlessness in combating their wife's cancer, emotional isolation, and emotional disengagement while providing support. Although not included in the current study due to data limitations, emotional exhaustion emerged as another significant attribute in Paper 1. Therefore, it is recommended that future studies collect data on emotional exhaustion and test the extended measure to fully capture all aspects of compassion fatigue experiences in family caregivers.

Finally, the findings of this study carry important implications for the development of interventions aimed at reducing compassion fatigue in family caregivers. By presenting the core constructs that serve as indicators for compassion fatigue based on spouse caregivers' experiences, the current study offers valuable insights for designing future interventions that are better tailored to the unique needs of families, ultimately improving the overall well-being of both caregivers and care recipients.

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**Appendix**

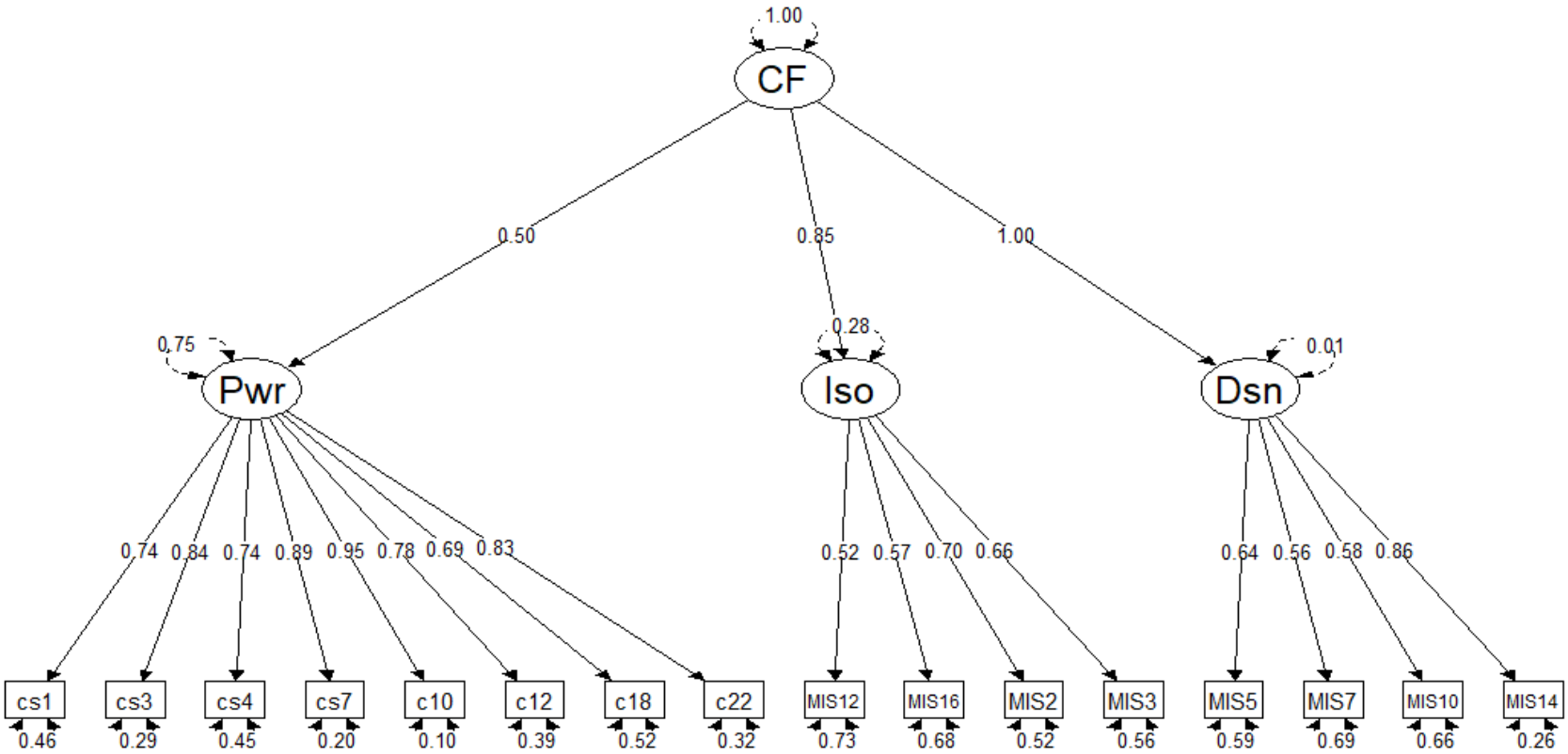



*Figure 2.5*. CFA Model 2: Compassion Fatigue in Spouse Caregivers of Women with Breast Cancer

Table 2.2. Zero-order Correlation Matrix of Extracted Items

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Use information/resources | 1.00 | | | | | | | | | | | | | | | | |
| 2 | Call on inner strengths | 0.53*** | 1.00 | | | | | | | | | | | | | | | |
| 3 | Help family through | 0.43*** | 0.75*** | 1.00 | | | | | | | | | | | | | | |
| 4 | Take necessary steps | 0.57*** | 0.80*** | 0.75*** | 1.00 | | | | | | | | | | | | | |
| 5 | Handle challenges | 0.60*** | 0.83*** | 0.78*** | 0.90*** | 1.00 | | | | | | | | | | | | |
| 6 | Manage uncertainty | 0.57*** | 0.64*** | 0.57*** | 0.69*** | 0.71*** | 1.00 | | | | | | | | | | | |
| 7 | Deal w/ physical changes | 0.49*** | 0.51*** | 0.51*** | 0.51*** | 0.53*** | 0.50*** | 1.00 | | | | | | | | | | |
| 8 | Draw on my strengths | 0.53*** | 0.78*** | 0.78*** | 0.79*** | 0.82*** | 0.68*** | 0.61*** | 1.00 | | | | | | | | | |
| 9 | Manage what's asked | 0.55*** | 0.67*** | 0.67*** | 0.76*** | 0.77*** | 0.76*** | 0.56*** | 0.79*** | 1.00 | | | | | | | | |
| 10 | Check in w/ each other | 0.33*** | 0.20* | 0.20* | 0.28** | 0.20* | 0.19* | 0.21* | 0.17* | 0.25** | 1.00 | | | | | | | |
| 11 | Spend time talking | 0.25** | 0.19* | 0.23* | 0.26** | 0.17* | 0.18* | 0.16* | 0.23* | 0.25** | 0.54*** | 1.00 | | | | | | |
| 12 | Support each other | 0.39*** | 0.24** | 0.23* | 0.32*** | 0.29** | 0.28** | 0.30** | 0.29** | 0.28** | 0.41*** | 0.43*** | 1.00 | | | | | |
| 13 | Confide in each other | 0.35*** | 0.22* | 0.26** | 0.38** | 0.24** | 0.34*** | 0.22* | 0.25** | 0.32** | 0.48*** | 0.52*** | 0.66*** | 1.00 | | | | |
| 14 | Don't talk sadness | 0.38*** | 0.28** | 0.28** | 0.32** | 0.26** | 0.38*** | 0.32** | 0.26** | 0.31** | 0.27** | 0.27** | 0.26** | 0.40*** | 1.00 | | | |
| 15 | Don't talk my feelings | 0.14 | 0.01 | -0.02 | 0.30 | 0.06 | -0.02 | 0.17** | -0.02 | 0.01 | 0.15 | 0.25** | 0.05 | 0.15 | 0.39*** | 1.00 | | |
| 16 | Hard to talk sad thoughts | 0.39*** | 0.35*** | 0.40*** | 0.37*** | 0.40*** | 0.37*** | 0.19* | 0.39*** | 0.47*** | 0.32*** | 0.32*** | 0.28** | 0.43*** | 0.43*** | 0.16* | 1.00 | |
| 17 | Avoid discussing fears | 0.47*** | 0.31** | 0.34*** | 0.42*** | 0.34*** | 0.30** | 0.35*** | 0.33*** | 0.31** | 0.44*** | 0.41*** | 0.35*** | 0.58*** | 0.57*** | 0.31** | 0.56*** | 1.00 |

* $p < .05$, ** $p < .01$, *** $p < .001$.

# Chapter 3. Compassion Fatigue: Test of a Structural Equation Model for Spouse Caregivers of Women with Breast Cancer


## Abstract

**Objective:** To develop a measurement model for family caregiver empathic response and examine relationships between empathic response, compassion fatigue, and negative health outcomes in family caregivers within a theoretical framework. **Methods:** Baseline data from 214 spouse caregivers participating in a randomized controlled trial were analyzed. Two sub-studies were conducted. Sub-study 1 involved exploratory and confirmatory factor analyses to evaluate empathic response items extracted from the Demands of Illness Inventory partner version. Sub-study 2 utilized structural equation modeling (SEM) to examine the theoretical framework of compassion fatigue. **Results:** *Sub-study 1*: The three-factor measurement model of empathic response demonstrated a satisfactory fit to the data ($X^2 = 43.11, df = 24$, CFI = .949, RMSEA = .087, SRMR = .047). Empathic response among spouse caregivers of women with breast cancer was organized into three distinct domains: empathic ability (5 items), emotional contagion (2 items), and empathic concern (2 items). *Sub-study 2*: Three structural models were evaluated by SEM. The final retained model had an acceptable data-fit ($X^2(317) = 541.19$, RMSEA = .058, CFI = .925, SRMR = .075). The findings indicated that empathic response in spouse caregivers predicted compassion fatigue, which in turn led to depressed mood and physical symptoms in spouse caregivers. The impact of empathic response on the negative outcomes was fully mediated by compassion fatigue. **Discussion:** Although the evaluation of empathic response as a predictor of depressed mood and physical symptoms did not yield significant direct paths, the absence of such direct relationships suggested that empathic response on the negative outcomes was fully mediated through compassion fatigue and highlighted that empathic response serves as a risk factor rather

than a positive attribute in caregiving. Future studies should explore potential moderators and thresholds of compassion fatigue in family caregivers, include diverse caregiving populations, and consider the influence of social determinants of health on compassion fatigue. Additionally, developing, and validating family caregiver-specific instruments for assessing empathic response and compassion fatigue would assist healthcare providers in identifying signs of compassion fatigue and offering timely support to prevent family caregivers from becoming overwhelmed and withdrawing from their caregiving responsibilities.

## Introduction

Multiple studies provide evidence that caring for family members with illness and disabilities can cause mental and physical distress in family caregivers (Schulz et al., 2017). Stress can stem from the struggle to readjust to living with the newly diagnosed disease, lack of proper training or success in care, and other life strains, such as time conflict and economic burden (Pearlin et al., 1981; Treanor et al., 2019). Research indicates that physical demands and prolonged stress of caregiving can negatively impact the physiological functioning of the caregiver (Schulz & Beach, 1999). Caregivers who experience elevated stress and serious autonomic imbalances are at risk for negative long-term outcomes such as cardiovascular disease, infectious diseases, and cancer progression (Teixeira et al., 2019). One literature review reported that an estimated 20% of caregivers reported high levels of distress, which was found to be associated with greater symptom distress in patients (Northouse et al., 2012). A meta-analyses indicated that there was no significant difference in the amount of distress experienced by patients and their caregivers, which underscores the reciprocal relationship between emotional distress in these two groups (Northouse et al., 2012).

Caregiving is a vital aspect of one's commitment to another's well-being and is intrinsic to their close relationship (Pearlin et al., 1981). Morse and Mitcham (1997) observed a phenomenon called "compathy," which involuntarily mirrors patient distress in caregivers who also experience physiological symptoms of others' suffering (Morse & Mitcham, 1997; Morse et al., 1998). Researchers recognize the role of witnessing patient suffering and caregiver compassion in response to illness-related challenges on family caregivers (Schulz et al., 2017). Schulz et al. (2007) note that compassion arises from affectional ties between individuals, caregiver awareness of patient suffering, and negative effects on the caregiver, which motivates

them to alleviate the observed suffering in others.

Figley (2002) proposed that the prolonged emotional energy drain from the ongoing demand for action to relieve the suffering generates residual compassion stress that can contribute to compassion fatigue over time. Care providers who work with traumatized patients with severe illness are vulnerable to compassion fatigue (Figley, 1995). The phenomenon of compassion fatigue is significant in oncology units due to numerous stressors, such as the nature of cancer, complex treatments, death, and intense involvement with patients and their families (Potter et al., 2010). Over the past 20 years, a growing body of studies has focused on compassion fatigue in healthcare professionals. Interventions and tools have been developed to address compassion fatigue, including the professional quality of life (ProQOL) scale, a well-established tool for measuring the level of compassion fatigue and compassion satisfaction in care providers. The ProQOL scare consists of two conceptual components: burnout and secondary traumatic stress (Stamm, 2010). A recent meta-analysis of 15 studies that used the ProQOL scale to measure burnout and secondary traumatic stress in oncology nurses found rates of 62.79% and 66.84%, respectively (Algamdi, 2022). However, since the ProQOL scale was designed for use with healthcare professionals and care providers who work with traumatized clients, such as social workers after the September 11 terrorist attack (Adams et al., 2008; Boscarino et al., 2004; Gentry, 2002), some of the questions may not be relevant to family caregivers.

The literature on fatigue in family caregivers includes physical, emotional, psychological, and spiritual exhaustion (Clark et al., 2014). However, few studies have investigated the impact of compassion fatigue on family caregiver (Schulz et al., 2017). Evidence suggests that family members may be exposed to prolonged suffering in their relatives, leading to compassion fatigue.

Perry et al. (2010) found that family caregivers of older relatives in long-term care settings reported feeling overwhelmed and consumed by their caregiving role, which affected their physical health and self-care. In the long-term, the family caregivers were unable to find balance and respite from the caregiver role. Day et al. (2014) interviewed adult daughter caregivers of a parent with dementia. The caregivers reported feeling overwhelmed by competing life demands and experiencing hopelessness, anger, and frustration toward providing care. Ward-Griffin et al. (2011) interviewed nurses who were also caregivers for their ill parents and found that they were at moderate to high risk for compassion fatigue, experiencing sleep disturbances, exhaustion, and guilt. As caregivers experience compassion stress over time, they may feel isolated and resentful (Blair & Perry, 2017). While these studies have identified signs and characteristics of compassion fatigue in family caregivers, none have examined a theoretical framework with empirical data. Although researchers have increasingly focused on healthcare professionals' compassion fatigue and interventions, there is still a lack of empirical studies exploring compassion fatigue in family caregivers of cancer patients. To fill this gap, this study proposes a theoretical model of compassion fatigue in spouse caregivers and tests it using empirical data. The study aims to establish links between empathic response, compassion fatigue, and negative health outcomes in family caregivers, providing a new perspective on why family caregivers may develop compassion fatigue and its outcomes in family caregivers.

## Research framework and hypotheses

The proposed theoretical framework to be tested in this study hypothesizes that empathic response can serve as a predictor of compassion fatigue, which in turn contributes to the development of depressed mood and physical symptoms among in spouse caregivers of women with breast cancer. Figure 3.1 presents a hypothesized theoretical framework of compassion fatigue.

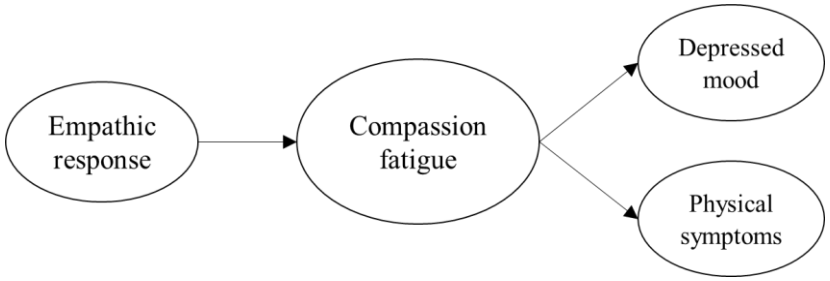



*Figure 3.1.* Hypothesized Theoretical Framework of Compassion Fatigue

The theoretical framework to be tested (Figure 3.1) comprised two second-order latent constructs: empathic response and compassion fatigue, along with two directly measured outcome indicators: caregiver's depressed mood and physical symptoms. The caregiver's depressed mood and physical symptoms were assessed using established scales.

The empathic response construct is the hypothesized antecedent of compassion fatigue in this framework; see Paper 1. To measure empathic response, we propose a two-domain measurement model comprising "empathic ability" and "empathic concern" (As shown in Figure 3.2). These domains capture the extent to which the spouse caregiver responds empathically to the ill partner. Empathic ability refers to the caregiver's awareness and understanding of the partner's suffering or in distress, while empathic concern pertains to the caregiver's motivation to respond to the sufferer and protect them from illness or pain (Figley, 1995, 2002).

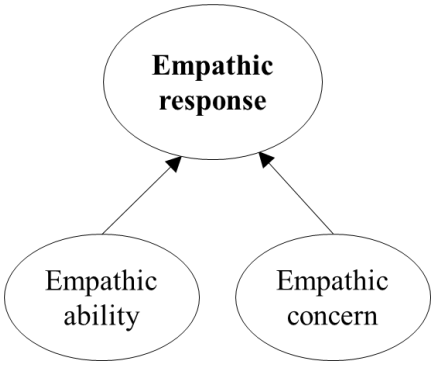



*Figure 3.2.* Hypothesized Model of Empathic Response in Family Caregivers

The second latent construct in the research framework is compassion fatigue. In caregivers, it is a state of emotional exhaustion characterized by disengagement in the caregiving role and emotional isolation in which the caregiver cannot disentangle themselves from a patient's suffering; see Papers 1 and 2. Compassion fatigue in family caregivers can manifest as emotional exhaustion, emotional disengagement, emotional isolation, and feeling of powerlessness and hopelessness; see Paper 2.

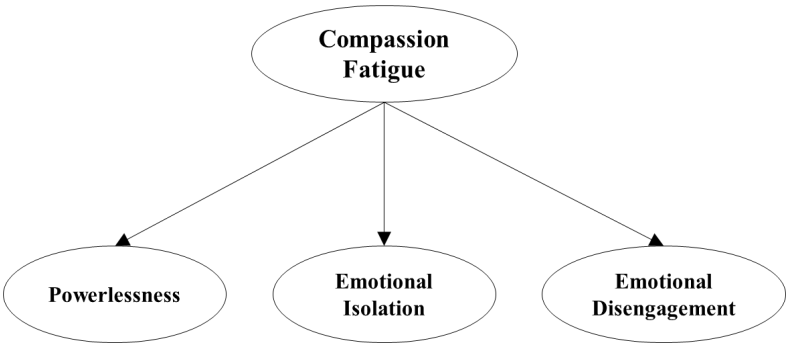



*Figure 3.3.* Conceptual Model of Compassion Fatigue in Family Caregivers

The measurement model of compassion fatigue in this study included three essential elements (Figure 3.3). The first element is powerlessness, reflected by spouses with less confidence in calling on their inner strengths to handle the challenges of breast cancer. The second element is emotional isolation, reflected by the spouse caregivers avoiding discussing negative thoughts about breast cancer with the patient, such as fears and sadness. The third

element is emotional disengagement, reflected by spouse caregivers less frequently checking in with their ill partners to see how they are doing as a couple regarding breast cancer; see Paper 2.

Figure 3.1 presented a hypothesized theoretical framework of the links between empathic response, compassion fatigue, depressed mood, and physical symptoms. The theoretical framework specifies the directionality between the core constructs toward the outcome variables, which were identified from a previous literature review; see Paper 1. The structure of the framework represents three research hypotheses (Table 3.1): (1) Compassion fatigue directly affects depressed mood (Blair & Perry, 2017; Day, 2013; Day & Anderson, 2011; Schulz et al., 2017) and physical symptoms (Blair & Perry, 2017; Day & Anderson, 2011; Day et al., 2014; Ward-Griffin et al., 2011) in spouse caregivers. (2) Empathic response has a direct effect on compassion fatigue (Figley, 1995, 2002). (3) The effects of empathic response on depressed mood and physical symptoms are hypothesized to be fully mediated through compassion fatigue (Figley, 1995, 2002).

Table 3.1. Summary of Hypotheses

| |
|---|
| Hypothesis 1:<br>Compassion fatigue → depressed mood and physical symptoms |
| Hypothesis 2:<br>Empathic response → compassion fatigue |
| Hypothesis 3:<br>Empathic response→ compassion fatigue → depressed mood and physical symptoms. |

## Methods

Study 3 is a secondary analysis of data for two sub-studies. In sub-study 1, a measurement model of caregiver's empathic response (ER) was evaluated using items from the battery of self-report questionnaires completed by spouse caregivers in the parent study. In sub-study 2, a structural model of compassion fatigue was evaluated, including its relationships with empathic response as the antecedent and depressed mood and physical symptoms as consequences in spouse caregivers; see Paper 2.

### 3.1. Sample

Data for this study were collected from the Family Home Visitation Program (FHV), which was a two-group randomized control trial of a couple-focused cognitive-behavioral intervention designed to improve breast cancer management (Lewis, 1996). The parent study was conducted in 1996, but the treatment protocols for disease staging in the database are comparable to current treatment protocols. Moreover, since no previous studies have explored the theoretical framework of compassion fatigue in this population, the research question and database remain relevant to contemporary times and can contribute to the scientific understanding of the topic.

The parent study recruited married couples from 70 health organizations, physician referrals, and university-affiliated clinics in the Pacific Northwest after obtaining IRB approval. Potential participants were reached initially by a site intermediary. To be eligible, the woman had to have been diagnosed with early-stage breast cancer, used English as her language of choice, lived within 100 miles of the study center, and had one or more dependent children. After enrollment, couples were randomly assigned to either the intervention group or control group. The current study used baseline data from 214 husbands of women with breast cancer who completed the baseline assessment before randomization.

The dataset was divided into two halves to mitigate inflated estimates of the model fit issue when performing EFA and CFA on the same data (Anderson & Magruder, 2017; Fokkema & Greiff, 2017). To achieve this, we added a new column of a random value between 0 to 1 using Excel's random number generator, ranked the random number in ascending order, and split the sample into two halves, each containing 107 spouses (Dettori, 2010). We conducted the exploratory factor analysis and confirmatory factor analysis on the resulting independent samples.

### 3.2. Measures

**Sub-study 1**: Items from a completed clinical trial's brief battery of questionnaires that aligned with the conceptual definition of caregiver empathic response were extracted. We identified two theoretical domains based on a scoping review of published literature to reflect an individual's empathic response level (Figure 3.2); see Paper 1. The first domain is empathic ability, which indicates a spouse caregiver's capacity for initiating sympathetic consciousness to the suffering or distress the ill partner is undergoing. The second domain is empathic concern, which suggests a spouse caregiver is motivated to help the ill partner and often shows eagerness to protect the ill partner or provide emotional support. Both domains were derived from items in the Demands of Illness Inventory (DOII) partner version, a self-report questionnaire measuring illness-related demands, concerns, and stressors perceived by women and their male spouse caregivers (Fletcher et al., 2010). The original scale of the DOII contained 125 items with seven dimensions: physical symptoms, personal meaning, family functioning, self-image, social relationships, monitoring symptoms, and treatment evaluation (Haberman et al., 1990). Respondents rated the extent to which they had experiences related to their partners' health problem over the last two weeks on a 5-point ordinal scale ("not at all" to "extremely"). DOII

total scale's internal consistency reliability was .96 in the parent study (Fletcher et al., 2010). To proceed with the factor analysis, two researchers with expertise in spouse caregiving carefully reviewed the items from the DOII and selected 12 that were deemed to be the most appropriate representation of empathic concerns and empathic ability in response to their partner's illness or treatment as defined above. The selection of the 12 items was based on researchers' content knowledge and mutual agreement. See Table 3.2 for the list of the 12 extracted items.

Table 3.2. Extracted Items from DOII

| | |
|---|---|
| 1. | DOII 28 I think about what has caused the illness. |
| 2. | DOII 50 I need to be more sensitive to my partners moods. |
| 3. | DOII 51 I need to provide more emotional support to my partner. |
| 4. | DOII 52 I need to protect my partner from stress. |
| 5. | DOII 54 I need to help my partner with her treatment. |
| 6. | DOII 85 I worry her illness may reoccur with its initial severity. |
| 7. | DOII 88 I wonder if her illness can be controlled in the future. |
| 8. | DOII 89 I wonder if the illness is spreading undetected. |
| 9. | DOII 93 I worry the illness will involve other parts of her body in the future. |
| 10. | DOII 113 I want more facts about the treatments. |
| 11. | DOII 123 I worry about the physical side effects of treatment. |
| 12. | DOII 125 I think she often feels worse rather than better after treatment. |

**Sub-study 2**: The structural model of compassion fatigue comprises two measurement models and two direct measured outcome indicators (Figure 3.4). The first measurement model was the empathic response identified in Sub-study 1 of the current study. The compassion fatigue measurement model, which consisted of items extracted from the Cancer Self-Efficacy Scale and the Mutuality and Interpersonal Sensitivity Scale, was identified in Paper 2. The two outcome indicators were depressed mood and physical symptoms, which were measured by the physical symptom subscale of the DOII and the Center for Epidemiologic Studies Depression Scale (CES-D), respectively.

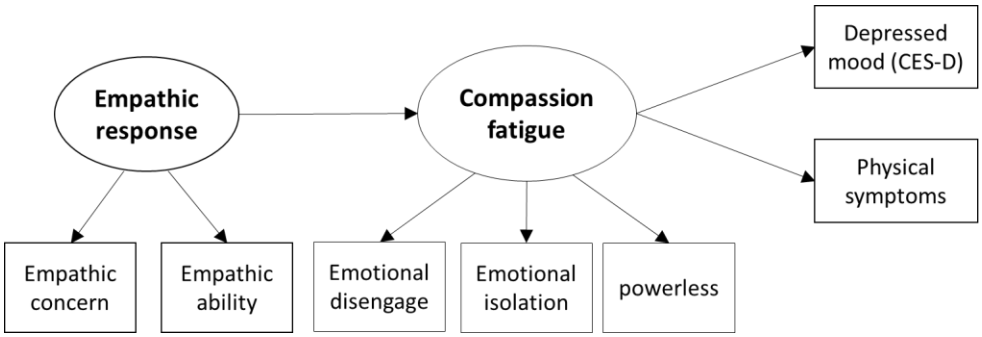



*Figure 3.4.* Structural Model of Compassion Fatigue in Family Caregivers

The Cancer Self-Efficacy Scale (CASE) is a 20-item self-report measure designed to assess an individual's level of self-confidence in managing breast cancer's impact on a couple. The items in CASE were derived from interview responses from women with early-stage breast cancer that reflect the components of powerlessness in compassion fatigue. The theoretical origin of the CASE is based on Bandura's Social Cognitive Theory (Bandura, 1997). Respondents were asked to rate each item on a scale from 1 (not at all confident) to 10 (very confident), indicating their perceived capability in managing the situation described in each statement (Lewis & Hammond, 1992; Lewis et al., 1993). Examples of items include "I have the ability to handle the challenges from cancer" and "I can help my spouse/partner cope with the pressures of the cancer." The CASE demonstrated high internal consistency reliability with a coefficient of .97 in the FHV study (Lewis, 1996).

The Mutuality and Interpersonal Sensitivity Scale (MIS) is a 32-item self-report measure that assesses two theoretical dimensions: interpersonal sensitivity and mutuality about breast cancer (Lewis et al., 1993). Interpersonal sensitivity involves heightened levels of attending to and being aware of the other's feelings and thoughts about breast cancer, while mutuality involves commonly shared meanings, attitudes, and orientations toward breast cancer (Lewis et al., 1993). Respondents were asked to rate their level of agreement on a Likert-type scale (from 1

"never true" to 5 "always true") with statements describing their experiences. Examples of statements include "We approach the breast cancer with the same thoughts and feelings" and "We are aware of each other's feelings about the breast cancer, even when we don't have the same feelings." Responses were reverse coded on some of the questions so that higher scores indicate greater interpersonal sensitivity and mutuality about breast cancer. The internal consistency reliability for the total scale of the MIS scale was .88 in the FHV study sample (Lewis, 1996).

The Demands of Illness Inventory (DOII) physical symptom subscale measures the spouse caregivers' somatic responses that were believed to be associated with their partner's cancer or its treatment in the past two weeks (Table 3.3) (Woods et al., 1993). The subscale comprises 12 items, each rated on a scale of 0 (Not at all) to 4 (Extremely). The total score was computed by summing the 12 items, with higher scores indicating greater physical symptoms experienced by the caregiver. This total score was used for structural equation modeling analysis. The internal consistency reliability for the physical symptoms subscale was .86 in FHV study sample.

Table 3.3. DOII Physical Symptoms Subscale (12-item)

| | |
|---|---|
| 1. Headaches | 7. Hot or cold spells |
| 2. Faintness or dizziness | 8. Numbness or tingling in parts of my body |
| 3. Pains in heart or chest | 9. Feeling weak in parts of my body |
| 4. Pains in lower back | 10. Heavy feelings in my arms or legs |
| 5. Nausea or upset stomach | 11. Feeling rundown |
| 6. Soreness of muscles | 12. Inability to stay at my usual weight |

The Center for Epidemiologic Studies Depression Scale (CES-D) measures self-reported depressive symptoms in general population, including components such as depressed mood, worthlessness, helplessness, loss of appetite, and sleep disturbance (Radloff, 1977). The 20-item

scale uses a scoring system ranging from zero (Rarely or none of the time) to three (Most or all of the time) to indicate the frequency of the symptoms experienced during the last week (Table 3.4). Responses were summed to provide a composite score, with higher scores indicating greater levels of depressive symptoms. The CES-D scale has high internal consistency (coefficient alpha .85) in the general population (Radloff, 1977).

Table 3.4. CES-D Scale (20-item)

| | |
|---|---|
| 1. I was bothered by things that usually don't bother me | 11. My sleep was restless |
| 2. I did not feel like eating; my appetite was poor | 12. I was happy |
| 3. I felt that I could not shake off the blues even with help from my family or friends | 13. I talked less than usual |
| 4. I felt that I was just as good as other people | 14. I felt lonely |
| 5. I had trouble keeping my mind on what I was doing | 15. People were unfriendly |
| 6. I felt depressed | 16. I enjoyed life |
| 7. I felt that everything I did was an effort | 17. I had crying spells |
| 8. I felt hopeful about the future | 18. I felt sad |
| 9. I though my life had been a failure | 19. I felt that people dislike me |
| 10. I felt fearful | 20. I could not get "going" |

**3.3. Statistical analysis**

**Sub-study 1**:

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to examine the hypothesized measurement model of empathic response. The first step was to perform a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy statistical test. KMO value indicates the level of adequacy of the EFA application to the data. The range of the KMO index is between 0 to 1, and acceptable values should fall between .5 to .7; preferable values are above .8 (Williams et al., 2010; Yong & Pearce, 2013). The Bartlett Sphericity test evaluates to

what extent the variance matrix is similar to an identity matrix. A significant Bartlett Sphericity test ($p < .05$) indicates that the sample has patterned relationships (Nunes et al., 2020; Williams et al., 2010; Yong & Pearce, 2013). After ensuring that the sample was suitable for performing EFA, a correlation matrix was generated to inspect the correlation coefficients of the 12 items extracted from DOII. The items with lower correlation coefficients ($r < .3$) were excluded in later analyses.

EFA was performed on the retained items using statistical computing software IBM SPSS v.26. and R (2021). Principal axis factoring in SPSS dimension reduction analysis was applied as the extraction method. The principal axis factoring method is desirable because of the small range of ordinal item responses (Costello & Osborne, 2005). Kaiser's criterion was applied for the factor extraction determination, which suggests retaining factors with a factorial load eigenvalue greater than 1 (Kaiser, 1960). The scree plot shows the eigenvalues and the percentage of variance explained by the corresponding factors to extract (Williams et al., 2010; Yong & Pearce, 2013). We used the promax rotation method due to the potential correlations between factors (oblique) with a significant level cutoff at 0.3 for factor loadings (Costello & Osborne, 2005; Williams et al., 2010; Zuccaro, 2010).

Confirmatory factor analysis was used (CFA) to examine the factor model acquired from EFA in a different data set. We compared 2-factor and 3-factor models with $X^2$ statistic and three model fit indices. The satisfactory levels of the goodness-of-fit and badness-of-fit indices are as follows: (1) the comparative fit index (CFI) should be > .95 (Bentler, 1990); (2) the root mean square error of approximation (RMSEA) and its 90% confidence interval should fall below .08; and (3) the standardized root mean square residual (SRMR) should fall below .08 (Steiger, 1990). We used Bayesian Information Criterion (BIC) in the model comparison (Raftery, 1995).

The model with a smaller BIC value has a relatively better fit than the competing model (Kline, 2015).

**Sub-study 2:**

Structural equation modeling (SEM) was used to examine a hypothesized theoretical framework of compassion fatigue (Figure 3.1). SEM analysis involved five steps in the current study. The first step involved specifying the theoretical framework by a hypothesized structural model that comprised multiple constructs and presented the relationships among constructs in a graphic form. The second step involved translating the graphical structural model into a set of equations for statistical analysis, incorporating model parameters to establish relationships among variables (Kline, 2015). In step three, data cleaning was conducted, and composite scores were generated for analysis. Step four involved assessing model fit using lavaan package in R (2021) version 4.1.2. Lastly, in step five, alternative models were compared to see if the initial model needed respecification to improve model fit.

The $X^2$ statistic at a significance level of .05 was used to test the exact-fit hypothesis of the difference between the covariances predicted by the model and the population covariance matrix. We also examined three model fit indices, CFI, RMSEA, and SRMR, to evaluate the discrepancy between observed and implied covariance matrices (Kline, 2015). After acquiring the satisfactory fit of the specified model, we interpreted the parameter estimates. One alternative model was compared with the original model using the Bayesian Information Criterion (BIC), for which the model with a smaller information criterion value is preferred over the model with a larger information value (Hancock et al., 2010; Raftery, 1995). We applied the $X^2$ difference test (Hancock et al., 2010; Houghton & Jinkerson, 2007) on another nested alternative model to

examine the relationship between empathic response and depressed mood and physical symptoms.

## Results

### 4.1. Sample characteristics

The spouse caregivers had an average age of 45.40 years (SD = 7.42), with an age range of 26 to 72 years. The couples had an average marriage duration of 16.91 years (SD = 8.19). The women diagnosed with breast cancer had an average time since diagnosis of 4.96 months (SD = 2.65), with a range of 1 to 13 months. The majority (88.8%) of spouses were Caucasian. The patients had an average age of 43.19 years (SD = 6.02), ranging from 29 to 59 years. Various surgical procedures were used, with 44.9% undergoing a modified radical mastectomy, 33.3% undergoing nodal dissection, and 10.3% undergoing a simple mastectomy. Of the patients, 85 (39.7%) had a lumpectomy, and 128 (59.8%) had a mastectomy. See Table 3.5 for the sample characteristics.

### 4.2. EFA and CFA of the empathic response measurement model

In sub-study 1, we developed the measurement model of empathic response using EFA and CFA on two halves of the data. In the EFA, the KMO of Sampling Adequacy was .840, considered excellent for factor analysis (Williams et al., 2010; Yong & Pearce, 2013). Bartlett's test of sphericity ($X^2$ (66) = 556.62, $p < .001$) suggested that the sample had patterned relationships among the variables (Yong & Pearce, 2013). The zero-order correlation matrix of the selected 12 items (Table 3.6) showed that DOII 28 and DOII 113 had lower correlation coefficients ($r < .3$) than most of the other items in this data. Therefore, we removed these two items in further analysis.

Table 3.5. Sample Characteristics of the Couples with Breast Cancer (N = 214)

| | | Mean (SD) | Range |
|---|---|---|---|
| Age | Spouse | 45.4 (7.42) | 26 – 72 |
| | Patient | 43.19 (6.02) | 29 – 59 |
| Education (Years) | | 15.32 (2.36) | 9 – 20 |
| Married (Years) | | 16.91 (8.20) | 1 – 38 |
| Time since diagnosis (Months) | | 4.96 (2.65) | 1 – 13 |
| | | n | % |
| Race | Caucasian | 190 | 88.8 |
| | Non-Caucasian | 22 | 10.2 |
| Employment | Not employed | 21 | 9.6 |
| | Full/part-time employed | 193 | 88.5 |
| Most invasive type of surgery | Lumpectomy | 14 | 6.6 |
| | Nodal dissection | 71 | 33.3 |
| | Partial mastectomy | 8 | 3.8 |
| | Simple mastectomy | 22 | 10.3 |
| | Modified radical mastectomy | 96 | 44.9 |
| | Radical mastectomy | 2 | 0.9 |

Table 3.6. Correlation Matrix of Empathic Response Items (N = 107)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. DOII 85 | 1.00 | | | | | | | | | | | |
| 2. DOII 88 | 0.60 | 1.00 | | | | | | | | | | |
| 3. DOII 89 | 0.76 | 0.60 | 1.00 | | | | | | | | | |
| 4. DOII 93 | 0.79 | 0.59 | 0.77 | 1.00 | | | | | | | | |
| 5. DOII 123 | 0.50 | 0.36 | 0.42 | 0.39 | 1.00 | | | | | | | |
| 6. DOII 125 | 0.40 | 0.19 | 0.29 | 0.30 | 0.33 | 1.00 | | | | | | |
| 7. DOII 50 | 0.30 | 0.25 | 0.31 | 0.25 | 0.21 | 0.22 | 1.00 | | | | | |
| 8. DOII 51 | 0.39 | 0.33 | 0.34 | 0.32 | 0.35 | 0.28 | 0.74 | 1.00 | | | | |
| 9. DOII 52 | 0.36 | 0.25 | 0.36 | 0.32 | 0.31 | 0.12 | 0.44 | 0.58 | 1.00 | | | |
| 10. DOII 54 | 0.45 | 0.26 | 0.38 | 0.42 | 0.42 | 0.16 | 0.39 | 0.45 | 0.50 | 1.00 | | |
| 11. DOII 28 | 0.39 | 0.20 | 0.31 | 0.36 | 0.07 | 0.16 | 0.04 | 0.08 | 0.12 | 0.16 | 1.00 | |
| 12. DOII 113 | 0.35 | 0.11 | 0.12 | 0.08 | 0.35 | 0.11 | 0.12 | 0.08 | 0.17 | 0.20 | 0.13 | 1.00 |

Note: Item 11 (DOII 28) and item 12 (DOII 113) had lower correlation with other items

The scree plot (Figure 3.5) indicated that two factors, which had an eigenvalue > 1, were obtained. The two primary factors accounted for 61.54% of the total variance. Item loadings in the first factor explained 46.51% of the total variance, and the second factor explained 15.03% of the total variance (Table 3.7).

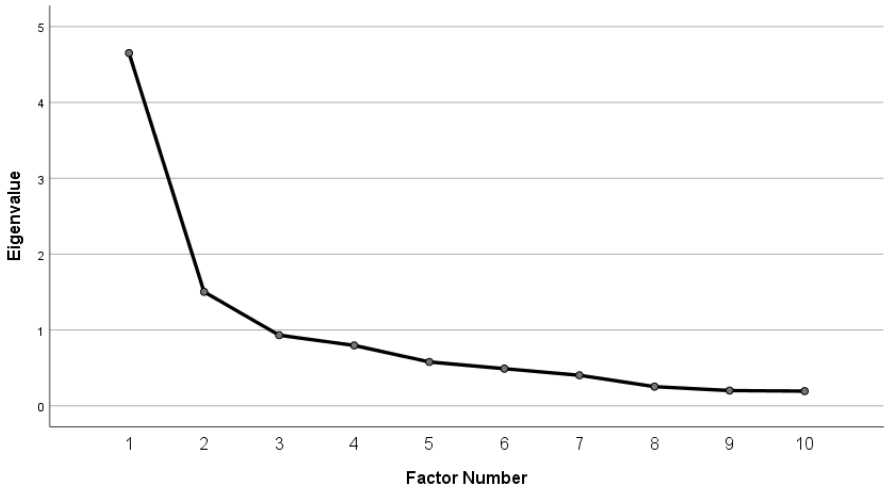



*Figure 3.5*. Scree Plot of Eigenvalues for ER model 1

Table 3.7. Total Variance Explained by Each Factor (ER Model 1)

| Factor | Eigenvalue | % of Variance | Cumulative % | Eigenvalue after rotation |
|---|---|---|---|---|
| Factor 1 | 4.651 | 46.514 | 46.514 | 3.865 |
| Factor 2 | 1.503 | 15.028 | 61.541 | 3.020 |
| Extraction method: Principal Axis Factoring | | | | |

Table 3.8 shows the factor loadings after rotation. The results suggested no cross-loading item using a significant factor criterion of .30. Factor 1 consisted of six items (DOII 85, 88, 89, 93, 123, and 125) with factor loadings ranging from .312 to .914. The second factor consisted of four items (DOII 50, 51, 52, and 54), with factor loadings ranging from .430 to .954. The 2-factor model with ten items was ER Model 1.

Table 3.8. Factor Loadings of ER Model 1 (N =107)

| | Factor 1 | Factor 2 |
|---|---|---|
| DOII 85 I worry her illness may reoccur with its initial severity. | **.914** | .001 |
| DOII 88 I wonder if her illness can be controlled in the future. | **.650** | .021 |
| DOII 89 I wonder if the illness is spreading undetected | **.856** | -.012 |
| DOII 93 I worry the illness will involve other parts of her body in the future. | **.901** | -.068 |
| DOII 123 I worry about the physical side effects of treatment. | **.445** | .182 |
| DOII 125 I think she often feels worse rather than better after treatment. | **.312** | .119 |
| DOII 50 I need to be more sensitive to my partners moods. | -.048 | **.774** |
| DOII 51 I need to provide more emotional support to my partner. | -.044 | **.954** |
| DOII 52 I need to protect my partner from stress. | .125 | **.578** |
| DOII 54 I need to help my partner with her treatment. | .274 | **.430** |

Extraction Method: Maximum Likelihood.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

We examined ER Model 1 using CFA on a different data set. However, the results indicated unsatisfactory data-model fit (CFI = .834, RMSEA = .141 (90% CI .111 - .172), SRMR = .083). The modification index method did not suggest adding a path in the current model. We then re-specified the model by dropping the low factor loading item in Model 1 (Costello & Osborne, 2005). The removed item was DOII 125 ("I think she often feels worse rather than better after treatment"). The scree plot (Figure 3.6) suggested three factors to be extracted with an eigenvalue > 1. The 3-factor structure accounted for 71.4% of the total variance (Table 3.9).

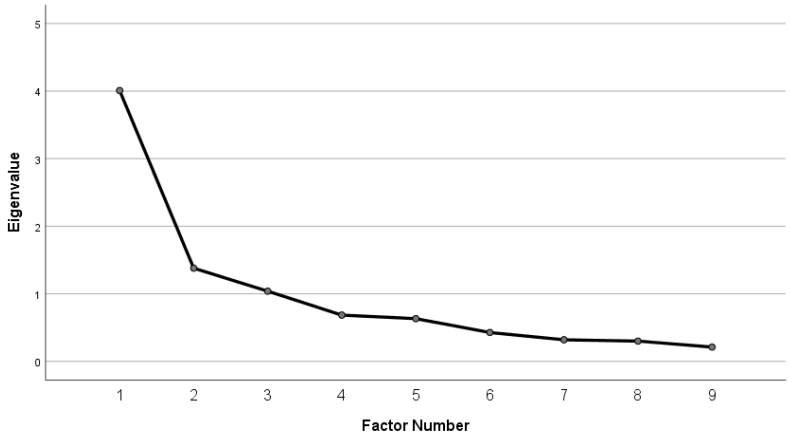



*Figure 3.6.* Scree Plot of Eigenvalues for ER Model 2

Table 3.9. Total Variance Explained by Each Factor (ER Model 2)

| Factor | Eigenvalue | % of Variance | Cumulative % | Eigenvalue after rotation |
|---|---|---|---|---|
| Factor 1 | 4.008 | 44.537 | 44.537 | 3.342 |
| Factor 2 | 1.379 | 15.325 | 59.862 | 1.876 |
| **Factor 3** | 1.038 | 11.538 | 71.400 | 2.132 |

Extraction method: Principal Axis Factoring

The evidence showed no cross-loading item (minimal cross-factor loading greater than .18) nor low-loading item among the nine items at a significant factor criterion of .30 (Table 3.10). The first factor included five items with loadings ranging from .496 to .847. The second factor consisted of two items with high loadings (.639 and .882). The last two items loaded at .649 and .784 on the third factor. The new 3-factor model with nine items is ER Model 2. ER Model 2 demonstrated a satisfactory fit to the data ($X^2 = 43.11, df = 24$, CFI = .949, RMSEA = .087, SRMR = .047).

Table 3.10. Factor Loadings of ER Model 2 (N =107)

| | 1 | 2 | 3 |
|---|---|---|---|
| DOII 85 I worry her illness may reoccur with its initial severity. | **0.799** | 0.058 | -0.131 |
| DOII 88 I wonder if her illness can be controlled in the future. | **0.745** | -0.005 | -0.007 |
| DOII 89 I wonder if the illness is spreading undetected | **0.847** | -0.075 | 0.076 |
| DOII 93 I worry the illness will involve other parts of her body in the future. | **0.812** | 0.024 | -0.010 |
| DOII 123 I worry about the physical side effects of treatment. | **0.496** | 0.001 | 0.160 |
| DOII 50 I need to be more sensitive to my partners moods. | 0.001 | **0.882** | -0.108 |
| DOII 51 I need to provide more emotional support to my partner. | 0.007 | **0.639** | 0.172 |
| DOII 52 I need to protect my partner from stress. | 0.030 | 0.127 | **0.649** |
| DOII 54 I need to help my partner with her treatment. | -0.017 | -0.084 | **0.784** |

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.

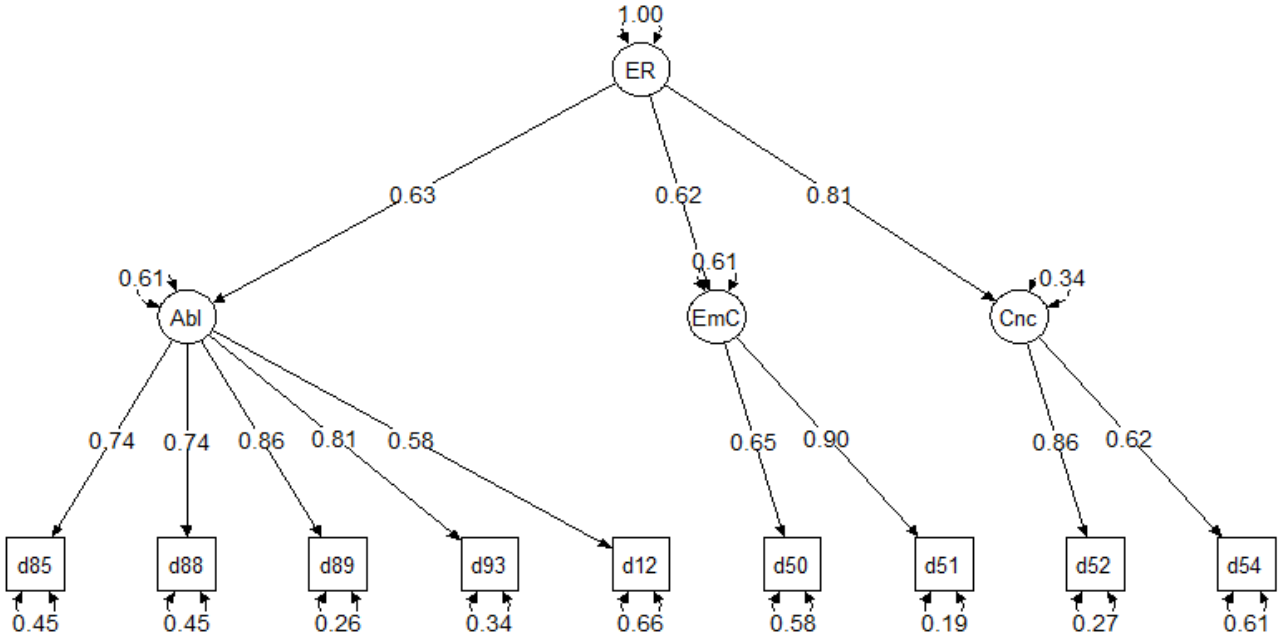
We compared ER Model 1 and ER Model 2 by model fit indices (Table 3.11). The evidence suggested that ER Model 2 had a better data-model fit than Model 1 in this sample. Hence, the 3-factor empathic response model was retained for further analysis.

Table 3.11. Model Fit Indices for ER Model 1 and ER Model 2 (N =107)

| Model Fit Indicators | $\boldsymbol{X^2}$ | CFI | RMSEA | SRMR | BIC |
|---|---|---|---|---|---|
| **Model 1** | $X^2(34) = 105.93$ $p < .001$ | .834 | .141 (90% CI .111 - .172) | .083 | 2999.14 |
| **Model 2** | $X^2(24) = 43.11$ $p = .01$ | .949 | .087 (90% CI .042 - .128) | .047 | 2638.09 |

$\boldsymbol{X^2}$: Chi-square test; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation; SRMR: Standardized Root Mean Square Residual; BIC: Bayesian Information Criterion.

The items in ER Model 2 were grouped by the attribute of the first-order factor according to a theoretical and inductive reasoning process (Williams et al., 2010). Factor 1 consisted of five items (DOII 85, 88, 89, 93, and 123) that represented the caregiver's ability to generate empathetic feelings for his ill partner and was designated as "***empathic ability***." Four items (DOII 50, 51, 52, 54) that reflected the spouse caregivers' motivation to help the ill partner were divided into two factors in ER Model 2. Factor 2 included DOII 50 ("I need to be more sensitive to my partner's moods.") and DOII 51 ("I need to provide more emotional support to my partner."). Hence, we labeled factor 2 "***emotional contagion***" to represent a person's susceptibility to the sufferer's feelings. We designated factor 3 as "***empathic concern***" for its two items, DOII 52 ("I need to protect my partner from stress.") and DOII 54 ("I need to help my partner with her treatment."). These three first-order factors were modeled as a linear function to account for the second order factor, empathic response with an error term (Cheung, 2000). Figure 3.7 shows ER Model 2 with standardized estimates.




Note: ER: Empathic response; Abl: empathic ability; EmC: Emotional contagion; Cnc: empathic concern

*Figure 3.7.* The Final Empathic Response Measurement Model (N = 107)

### 4.3. Structural model of compassion fatigue

Hypotheses were tested using structural equation modeling with maximum likelihood techniques in R. Structural regression model 1 (SR Model 1; Figure 3.8) was examined using fit indices, which suggested an acceptable data-fit for the hypothesized model ($X^2(317) = 541.19$, RMSEA = .058 (90% CI .050 - .067), CFI = .925, SRMR = .075) (Table 3.12). The standardized solution for SR Model 1 is shown in Figure 3.9, with measurement error effects omitted for clarity. Significant hypothesized paths were found between compassion fatigue, physical symptoms and depressed mood ($p < .001$), fully supporting hypothesis 1 and hypothesis 2.

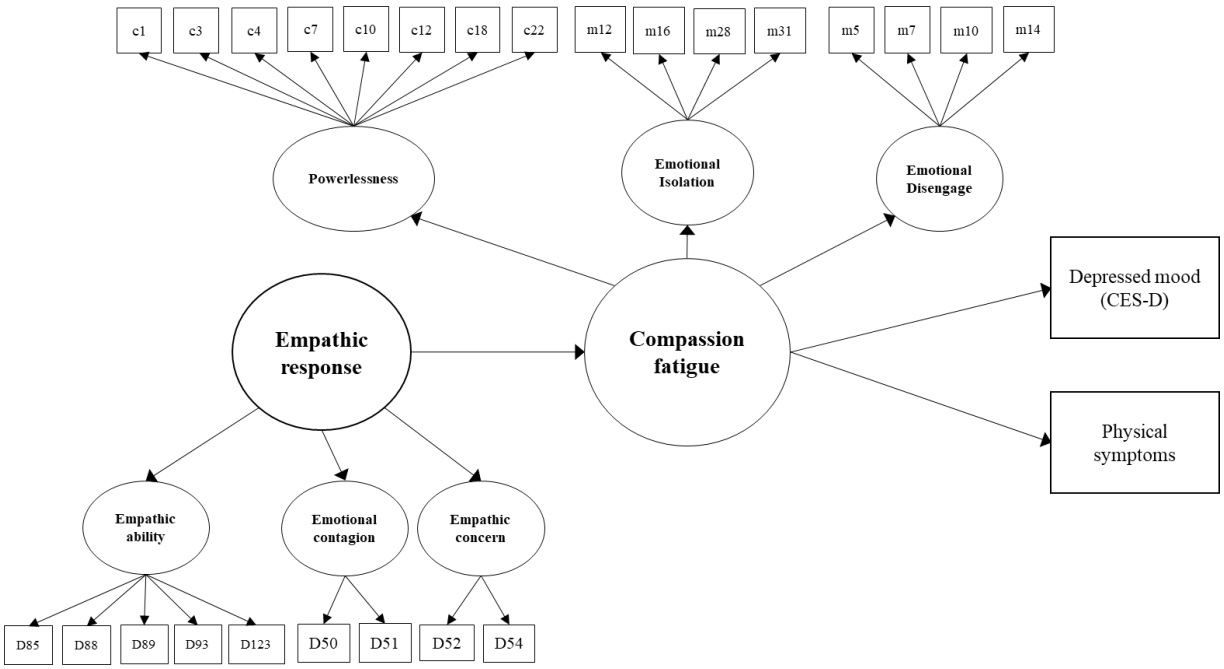



*Figure 3.8.* Structural Regression Model 1

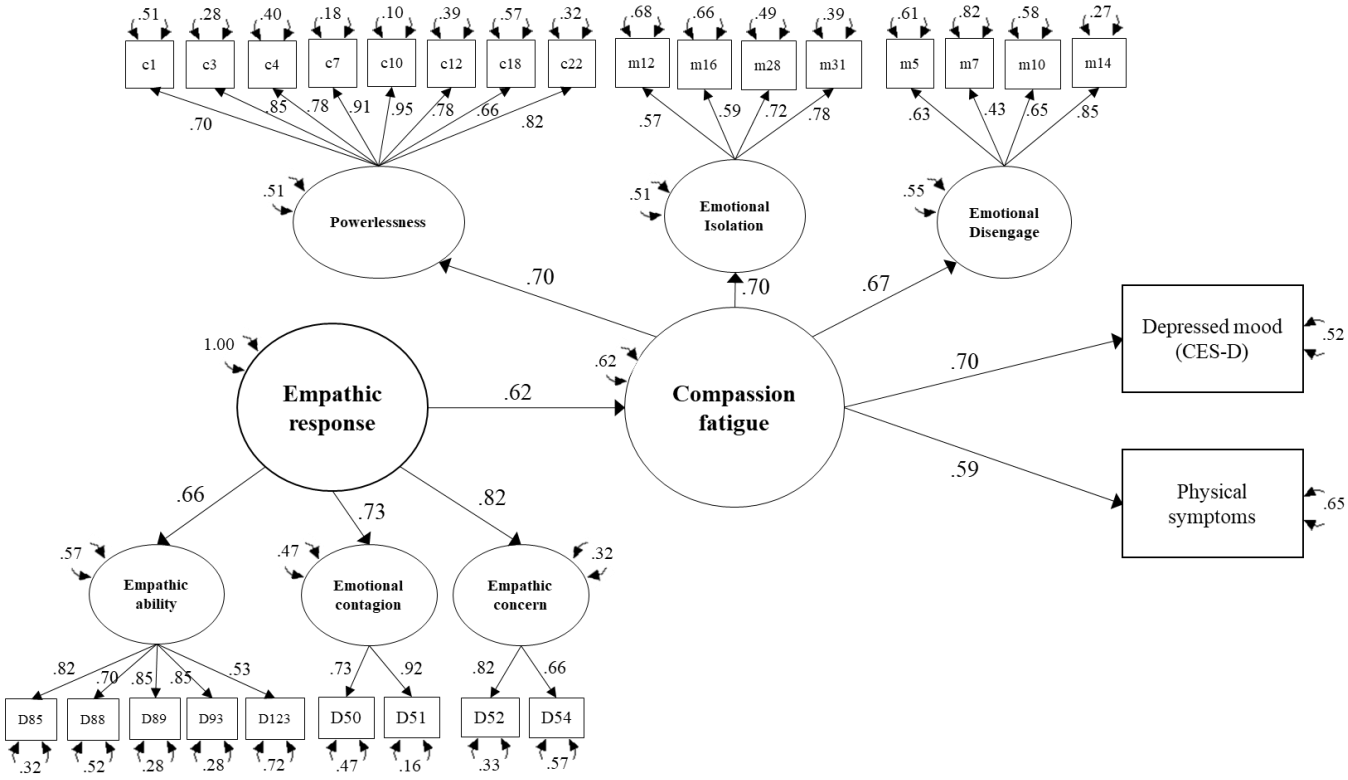



*Figure 3.9.* SR Model 1 with Standardized Path Coefficients (N = 214)

An alternative structural regression model 2 (SR Model 2; Figure 3.10) was tested, which differed from SR Model 1 in the composition of the empathic response measurement model. Although our hypothesized empathic response model was a 2-factor model, a 3-factor ER model was retained due to a better fit in this data. However, providing more information to the structural model analysis did not improve the fit of the 2-factor model in SR Model 2 compared to SR Model 1 (Table 3.12). Therefore, SR Model 1 was retained.

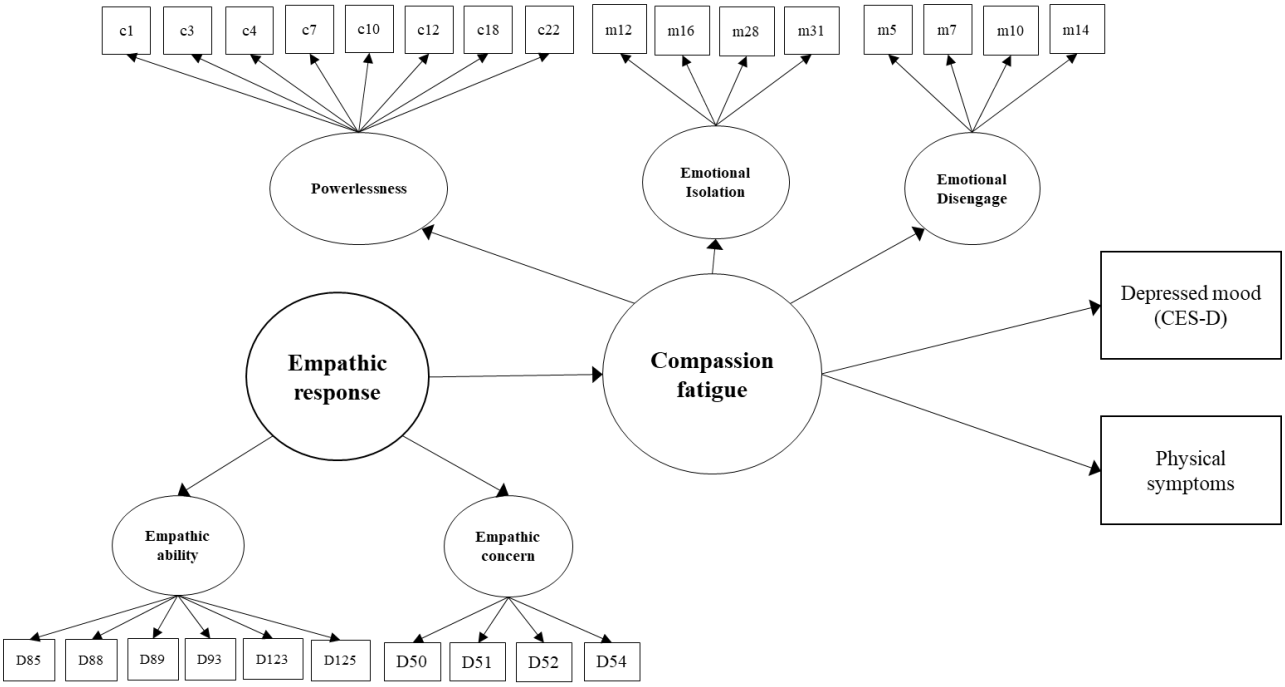



*Figure 3.10.* Structural Regression Model 2

The hypothesized model (SR Model 1) was compared with an alternative nested model (SR Model 3) to test whether compassion fatigue mediated the effects of empathic response on the spouse caregiver's physical symptoms and depressed mood (hypothesis 3). Paths from empathic response to depressed mood and physical symptoms were added (illustrated with dashed lines in Figure 3.11). The $X^2$ difference test indicated that the difference of 7.265 was significant ($p$ = .026) (Table 3.12), which indicates the model with more freely estimated parameters fits the data better than the model adding additional paths. Therefore, SR Model 1 was retained because the evidence suggests the additional paths were not necessary. Empathic response's impact on the outcome variables was fully mediated by compassion fatigue.

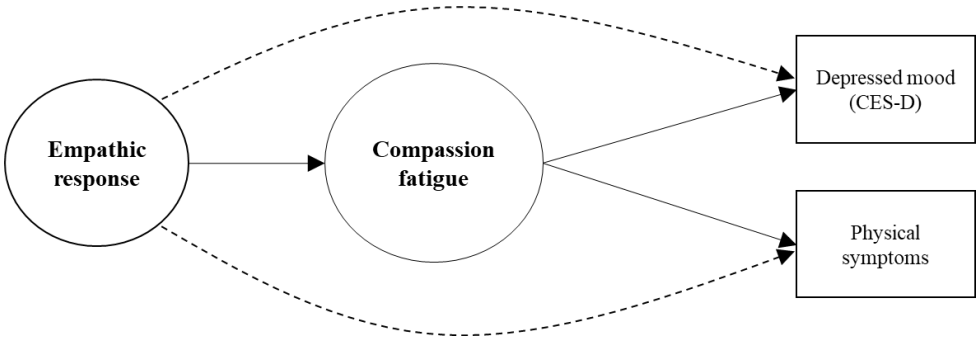



*Figure 3.11.* Structural Regression Model 3

## Discussion of Results

### 5.1 Summary of study results

This study examined a measurement model of empathic response and tested a hypothesized theoretical model that examined the relationships among compassion fatigue, empathic response, and negative outcomes in spouse caregivers of women with breast cancer. The findings shed light on the unique characteristics of compassion fatigue in family caregivers and broaden our understanding of their response to the suffering of care recipients. Moreover, we examined the direct impact of empathic response on caregivers' depressed mood and physical symptoms. The finding contributes valuable empirical evidence supporting the mediating role of compassion fatigue between empathic response and two negative outcomes in spouse caregivers.

In Sub-study 1 we generated a valid and reliable scale to measure empathic response scale that consisted of three factors: empathic ability (Factor 1), emotional contagion (Factor 2), and empathic concern (Factor 3). The evidence suggested a 3-factore measurement model as opposed to our hypothesized 2-factor model, in which “I need to be more sensitive to my partners moods (DOII 50)” and “I need to provide more emotional support to my partner (DOII 51)” were separated from the hypothesized empathic concern subscale and formed a new category. In summary, empathic ability was measured by DOII 85, 88, 89, 93, 123; emotional contagion was measured by DOII 50, 51; and empathic concern was measured by DOII 52, 54 (Table 3.13).

Sub-Study 2 examined the relationships among empathic response, compassion fatigue, physical symptoms, and depressed mood in spouse caregivers of women with breast cancer using structural equation modeling. The results demonstrated that empathic response significantly predicted compassion fatigue and subsequently led to physical symptoms and depressed mood in

caregivers. This supports the conclusion that empathic response precedes compassion fatigue, which then leads to caregivers' physical symptoms and depressed mood, providing a more accurate depiction of the relationships among the variables studied compared to the model allowing empathic response to directly predict depressed mood or physical symptoms in this study sample.

Table 3.13. Factors and Items of Empathic Response Measurement Model

| | | |
|---|---|---|
| **Factor 1: Empathic ability** | | |
| 1 | I worry her illness may reoccur with its initial severity. | DOII 85 |
| 2 | I wonder if her illness can be controlled in the future. | DOII 88 |
| 3 | I wonder if the illness is spreading undetected. | DOII 89 |
| 4 | I worry the illness will involve other parts of her body in the future. | DOII 93 |
| 5 | I worry about the physical side effects of treatment. | DOII 123 |
| **Factor 2: Emotional contagion** | | |
| 1 | I need to be more sensitive to my partners moods. | DOII 50 |
| 2 | I need to provide more emotional support to my partner. | DOII 51 |
| **Factor 3: Empathic concern** | | |
| 1 | I need to protect my partner from stress. | DOII 52 |
| 2 | I need to help my partner with her treatment. | DOII 54 |

Our findings indicated that powerlessness, emotional isolation and emotional disengagement significantly contributed to the level of compassion fatigue experienced by spouse caregivers in this study. These aspects of compassion fatigue were assessed using a total of eight items from the CASE (CASE 1, 3, 4, 7, 10, 12, 18, 22) and eight items from the MIS (MIS 12, 16, 28, 31, 5, 7, 10, 14) (Table 3.14). The results support Hypothesis 1, as these items were found to indicate the level of compassion fatigue in spouse caregivers and can further predict the development of depressed mood and physical symptoms among spouse caregivers in relation to their care recipient's illness.

Table 3.14. Factors and items of compassion fatigue measurement model

| | | |
|---|---|---|
| **Factor 1: Powerlessness** | | |
| 1 | I am able to use information and resources to cope with the demands of cancer. | casep1r |
| 2 | I am able to call on my inner strengths to pull myself through the cancer. | casep3r |
| 3 | I have what it takes to help my family through this cancer. | casep4r |
| 4 | I have the ability to take the necessary steps to work through the demands from the cancer. | casep7r |
| 5 | I have the ability to handle the challenges from the cancer. | casep10r |
| 6 | I have ways to manage the uncertainty brought on by the cancer. | casep12r |
| 7 | I am able to deal with the physical changes caused by the cancer. | casep18r |
| 8 | I am able to manage what is being asked of me despite the cancer. | casep22r |
| **Factor 2: Emotional isolation** | | |
| 1 | We don't talk together about the sadness I feel about the breast cancer. | MIS12 |
| 2 | My personal feelings about the breast cancer are not what we talk about together. | MIS16 |
| 3 | Sad thoughts about the breast cancer are hard for us to talk about together. | MIS28 |
| 4 | We avoid discussing our fears about the breast cancer. | MIS31 |
| **Factor 3: Emotional disengagement** | | |
| 1 | We check in with each other to see how we are doing about the breast cancer. | MIS5r |
| 2 | We spend a lot of time talking about how things are going with the breast cancer. | MIS7r |
| 3 | We try to support each other's feelings about the breast cancer. | MIS10r |
| 4 | We confide in each other about the breast cancer. | MIS14r |

Our findings contributed to a deeper understanding of how empathic response in spouse caregivers influences their well-being. Although the evaluation of empathic response as a predictor of depressed mood and physical symptoms in spouse caregivers did not yield significant direct paths, the absence of such direct relationships suggested that empathic response on the two negative outcomes was fully mediated through compassion fatigue, supporting our hypothesis 3. This implied that we should assess individuals who exhibit empathic responses and avoid solely viewing it as a positive characteristic of a caring caregiver. Our results indicated that specific aspects of deeply caring about a care recipient may lead to negative consequences for spouse caregivers. Therefore, it is important for healthcare providers carefully evaluate family

caregivers' empathic response in clinical practice, and not overly emphasize or overly value empathic response. Based on current evidence, empathic response as measured by the current study can serve as a risk factor for compassion fatigue rather than a positive attribute in caregiving.

**5.2 Comparison of current results against prior literature**

Results are consistent with prior research but also expand upon them. The compassion fatigue measures used in this study were derived from a self-efficacy scale and an interpersonal sensitivity and mutuality measure specifically designed for couples affected by cancer. This aligns with Figley's proposal that measures of marital and family satisfaction and adjustment can be conceptualized as measure for compassion fatigue burnout (Figley, 1995; Peeples, 2000). Additionally, the study incorporated items that measured spouse caregivers' empathic response, including their concerns about their ill partner's well-being and their own role in caregiving. This measurement model design corresponds to Kim et al. (2008) discovery that individual differences in attachment style and relationship quality are associated with spouse caregivers' psychological adjustment, which can impact motivation to engage and endorse the caregiving role.

As per Figley, one key distinction between workplace compassion fatigue and family compassion burnout is that the latter is not limited to either traumatic stress or compassion (Figley, 1995; Peeples, 2000). Family compassion burnout may be more pronounced when there is lower satisfaction and higher levels of distress among family members, and when there are discrepancies between expectations and perceived quality of life. However, this study only examined the caregiver's response, and future research could consider the patient's perception of the care they receive.

One study on informal caregivers of dementia patients found that perspective taking, which refers to caregivers' tendency to take the psychological point of view of others (cognitive empathy), had a significant negative correlation with depression, while empathic concern, which refers to caregivers' ability to feel for others (affective empathy), was positively correlated with anxiety (Jütten et al., 2019). In contrast to this study, our results did not strongly support a direct link between empathic response and caregiver depressed mood, which is consistent with Khalaila and Cohen (2016) study in spouse caregivers of older adults, which found that caregiver's role strain and personal strain were positively correlated with depression when they had high or average levels of emotional suppression, but the correlation was weakened when the emotional suppression level was low. In addition, Khalaila and Cohen (2016) found that the relationship between caregiver role strain and depression was mediated by the sense of mastery (being in control of one's life) and disengagement coping style (e.g., avoidance, social withdrawal), supporting our hypotheses that powerlessness and emotional disengagement are two domains of compassion fatigue that contribute to the mediating effect between empathic response and depressed mood.

**5.3 Study limitations**

We acknowledge two primary limitations of the current study. First**,** the cross-sectional data did not establish a time precedence between independent variables and outcome variables, making it challenging to infer causality. Second, the study sample predominantly consisted of Caucasian husbands of women with breast cancer, limiting the generalizability to other caregiving populations, such as adult-children or female caregivers. Additionally, the literature suggests that compassion fatigue may also be experienced by caregivers of patients with different types of diseases or illness conditions, such as dementia, post-traumatic stress disorder, and those

receiving palliative care, may also experience compassion fatigue. This study focused exclusively on spouse caregivers of women with early diagnosed breast cancer, a condition known for its highly curability and relatively short-term exposure to the patients' illness. Therefore, the findings may not fully capture the dynamics and challenges that may arise in longer-term relationship or with different types of illnesses. Further research is needed to better understand the implications and experiences of family caregivers in these contexts.

### 5.4 Recommendations for future research

In comparison to the amount of literature on compassion fatigue among professional healthcare workers, there remains a relative dearth of research on this phenomenon in family caregivers. Therefore, the current study investigating compassion fatigue in spouse caregivers represents a significant advancement in the field. For future studies on family caregivers, four recommendations emerge. Firstly, it is crucial to explore potential moderators that may serve as protective factors against compassion fatigue, as identified in Study 1, such as compassion satisfaction, relationship attributes, and support resources. Understanding effective strategies for mitigating compassion fatigue can help prevent adverse consequences in family caregivers. Additionally, expanding the model to include additional variables, such as caregivers' self-care practices, will further enhance our understanding of this complex phenomenon and its implications.

Secondly, it is imperative for future studies to focus on the development and validation of family caregiver-specific instruments for assessing empathic response and compassion fatigue. These tailored scales have potential utility in clinical practice, allowing for more accurate measurement of family caregivers' experiences in these constructs. Additionally, there is a clear need for interventions specifically designed to address compassion fatigue in family caregivers.

The findings of this study offer valuable insights for the design and implementation of such interventions, ultimately aiming to alleviate the stress of compassion fatigue among this population.

Thirdly, it is important for future research to expand the examination of the model to include diverse caregiving populations and consider the influence of social determinants of health on compassion fatigue. While the elements of the model may be relevant to different populations, empirical evidence is needed to validate and test their impact. By exploring the social context in which caregiving occurs, we can gain a deeper understanding of the factors that contribute to compassion fatigue and tailor interventions accordingly. This will enable us to address the unique needs and challenges faced by different caregiving populations and promote more effective support strategies.

Finally, it is crucial to raise awareness among healthcare providers about the impact of empathic response and compassion fatigue in family caregivers. As frontline professionals working closely with families, they are in a unique position to identify the signs of compassion fatigue and recognize when families need assistance. It is important for healthcare providers to offer timely support to prevent family caregivers from becoming overwhelmed and withdrawing from their caregiving responsibilities. By detecting and intervening early in family caregivers experiencing compassion fatigue, healthcare providers can effectively alleviate compassion stress, enhance family coping, ultimately improve the quality of care delivered to patients by their loved ones.

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## Appendix

Table 3.12. Fit Indices for Measurement and Structural Regression Models (N = 214)

| Model | $X^2$ | *p* | RMSEA (90% CI) | CFI | SRMR | BIC |
|---|---|---|---|---|---|---|
| **Measurement models** | | | | | | |
| Empathic response | | | | | | |
| ER Model 1 (2-factor, 10 items) | $X^2(34) = 105.93$ | < .001 | .141 (.111 - .172) | .834 | .083 | 2999.14 |
| ER Model 2 (3-factor, 9 items)* | $X^2(24) = 43.11$ | .010 | .087 (.042 - .128) | .949 | .047 | 2638.09 |
| Compassion fatigue | | | | | | |
| CF Model 1 (3-factor, 17 items) | $X^2(116) = 196.4$ | < .001 | .078 (.058 - .098) | .932 | .057 | 5165.57 |
| CF Model 2 (3-factor, 16 items)* | $X^2(101) = 145.5$ | .002 | .064 (.039 - .086) | .953 | .053 | 4902.66 |
| **Structure regression models** | | | | | | |
| **SR Model 1 (with ER Model 2)** | $X^2(317) = 541.19$ | < .001 | .058 (.050 - .067) | .925 | .075 | 17071.470 |
| SR Model 2 (with ER Model 1) | $X^2(318) = 546.03$ | < .001 | .059 (.050 - .067) | .923 | .074 | 17253.136 |
| SR Model 3 (ER → CESD + Physical) | $X^2(315) = 533.93$ | < .001 | .058 (.049 - .063) | .926 | .074 | |
| SR Model 1-3 $X^2$ difference test | $X^2(2) = 7.265$ | .026 | | | | |

* Retained models