

Review Article

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Abstract

Objective. Providing care to a loved one with cancer places demands on caregivers that result in changes to their daily routines and disruptions to their social relationships that then contribute to loneliness. Though caregivers' psychosocial challenges have been well studied, loneliness — a determinant of health — has not been well studied in this population. This narrative review sought to describe the current evidence on loneliness among caregivers of cancer patients. We aimed to (1) define loneliness, (2) describe its prevalence, (3) describe the association between loneliness and health outcomes, (4) describe risks and consequences of loneliness among cancer caregivers, (5) identify ways to assess loneliness, and (6) recommend strategies to mitigate loneliness in this unique population.

Method. We used evidence from articles listed in PubMed, PsycINFO, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases, book chapters, and reports. Articles were reviewed for the following inclusion criteria: (1) published in English, (2) caregivers of cancer patients, (3) loneliness as a study variable, and (4) peer-reviewed with no restriction on the timeframe of publication. Caregivers were defined as relatives, friends, or partners who provide most of the care and support for someone with cancer.

Results. Eighteen studies met inclusion criteria and were included in the analysis. Caregivers' experiences of loneliness can contribute to negative effects on one's social, emotional, and physical well-being. Social support interventions may not be sufficient to address this problem. Existing recommendations to mitigate loneliness include cognitive and psychological reframing, one-on-one and group therapy, befriending, resilience training, and technology-based interventions.

Significance of results. Limited attention to loneliness in cancer caregivers poses a twofold problem that impacts patient and caregiver outcomes. Interventions are critically needed to address loneliness as a determinant of health in caregivers, given their pivotal role in providing care and impacting health outcomes for people with cancer.

Introduction

An estimated 40 million caregivers provide care to adults aged 18 years and older who have an illness or disability in the USA (Cobb et al., 2016), and approximately 3 million Americans provide care for someone with cancer at home (Shaffer et al., 2019). The act of caregiving often involves extensive time and energy that can last for months or years and requires performing tasks that are commonly physically, emotionally, socially, and financially demanding (Biegel et al., 1991). Caregivers often provide the majority of the hands-on care for years without a break, without pay, vacation, recognition, backup, or help (Lynn, 2014).

Individuals diagnosed with cancer almost always rely on family, friends, and significant others to serve as caregivers when coping with their illness (Rokach et al., 2013; Cobb et al., 2016). The demand for caregivers continues to grow (Kent et al., 2016) as cancer care shifts from inpatient settings to outpatient and community-based settings and is associated with shorter hospitalizations, increased outpatient procedures, and extended survival (Ferrell et al., 2018). Caregivers provide care for loved ones in a variety of ways, including providing physical care, assisting in activities of daily living, administering and managing medications, providing transportation, supporting patients' emotional needs, completing household tasks, and providing companionship (Given et al., 2001; Glajchen, 2009). They also monitor treatment side effects and symptoms (Van Ryn et al., 2011), act as decision partners (Gray et al., 2019), and communicate with healthcare providers and insurance companies on the patient's behalf (Weitzner et al., 2000). Thus, caregivers provide an immense amount of assistance and support for their loved ones following a cancer diagnosis.

Despite the significant amount of support that caregivers contribute to cancer care, most adult oncology practice settings have not yet established standardized protocols to identify

Loneliness: ("Loneliness"[Mesh] OR loneliness[tiab] OR lonely[tiab] OR aloneness[tiab])
 AND
Caregiver: ("Caregivers"[Mesh] OR caregiver*[tiab] OR care giv*[tiab] OR carer[tiab] OR carers[tiab] OR care
 tak*[tiab] OR caretak*[tiab])
 AND
Cancer: (oncology OR cancer OR neoplasm OR tumour OR tumor)

Fig. 1. Search terms used in the literature search.

caregivers facing high emotional, social, and practical support needs (Shaffer *et al.*, 2019). As the burden of cancer is commonly shared between the patient and their caregiver, cancer caregiving is increasingly being understood as an intensive and emotionally draining experience (Kim and Schulz, 2008; Stenberg *et al.*, 2010; Bevans and Sternberg, 2012; Hunt *et al.*, 2016; Longacre *et al.*, 2018). Though complex care often occurs in the home (Van Ryn *et al.*, 2011), caregivers of cancer patients often lack the information, support, preparation, knowledge, and self-confidence necessary for their role (Northouse *et al.*, 2012; Applebaum and Breitbart, 2013). With the high burden associated with cancer caregiving, the real-life social limitations posed by infection risks, and the need for limiting contact with others, caregivers of cancer patients face substantial risks for loneliness and isolation. Although loneliness is a key indicator of health outcomes and well-being, little is known about loneliness in this population (Soothill *et al.*, 2001; Ferrell *et al.*, 2002; De Jong Gierveld and Van Tilburg, 2006; Oldham *et al.*, 2006; Sand and Strang, 2006; Murray *et al.*, 2010; Şahin and Tan, 2012; Rokach *et al.*, 2013; Vasileiou *et al.*, 2017; Secinti *et al.*, 2018).

This review provides a synthesis of current evidence related to the identification, conceptualization, measurement, and management of loneliness among caregivers of patients with cancer. More specifically, we aimed to (1) define loneliness, (2) describe the prevalence of loneliness, (3) describe the association between loneliness and health outcomes, (4) describe the risks and consequences of loneliness among cancer caregivers, (5) identify ways to assess loneliness, and (6) recommend strategies to address loneliness in this unique population. Given the paucity of evidence on the topic, a narrative review was conducted to provide an introductory synthesis of loneliness in this population, an important but complex topic, to inform evaluation, care delivery, and intervention development.

Methods

In this review, caregivers were defined as any relatives, friends, or partners who provide, typically, uncompensated aid to a person with a serious or chronic life-threatening illness (Bevan and Pecchioni, 2008; Hudson and Payne, 2011; Deshields *et al.*, 2012). The initial database search was conducted in June 2018 and was updated in June 2019. Following consultation with a health sciences librarian, PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO were searched using MESH and Boolean search techniques. Search terms included ("Loneliness"[Mesh] OR loneliness[tiab] OR lonely[tiab] OR aloneness[tiab]) AND ("Caregivers"[Mesh] OR caregiver*[tiab] OR care giv*[tiab] OR carer[tiab] OR carers[tiab] OR care tak*[tiab] OR caretak*[tiab]) AND (oncology OR cancer OR neoplasm OR tumour OR tumor). The reference lists of all articles read were also searched for relevant articles.

Eighty-eight articles were retrieved from the electronic search. We removed duplicates, screened for irrelevant titles and abstracts, and narrowed our search to include studies that involved human subjects. Articles were reviewed for the following inclusion criteria: (1) published in English, (2) caregivers of cancer patients, (3) loneliness as a study variable, and (4) peer-reviewed with no restriction on the timeframe of publication. Eighteen studies remained in the final analysis. See Figure 1 for a list of search terms and Figure 2 for a description of the flow diagram. All studies were published articles, and this review did not require an institutional ethics review.

Why loneliness matters

The phenomenon of loneliness is complex and multidimensional (Ekwall *et al.*, 2005) and associated with negative health outcomes (Petitte *et al.*, 2015). Loneliness is defined as a subjective feeling that occurs when the relationships one has do not match one's expectations of what the relationships should be (De Jong Gierveld and Van Tilburg, 2010; Holt-Lunstad *et al.*, 2010; Beller and Wagner, 2018). It can be described as the perceived experience of being alone or feeling alone even when around others (Peplau and Perlman, 1982; Cacioppo *et al.*, 2015), including the perception of having inadequate social contacts that one can rely on or trust (Perlman and Peplau, 1981; Ekwall *et al.*, 2005; Ayalon, 2016; Iecovich, 2016). De Jong Gierveld and van Tilburg (2006) described two components of loneliness. They define emotional loneliness as the absence of an intimate relationship or close emotional attachment, and social loneliness as the absence of a broader social network (De Jong Gierveld and Van Tilburg, 2006). Loneliness differs from social isolation, which is an objective lack of social contacts and relationships with other people (De Jong Gierveld, 1998; De Jong Gierveld and Van Tilburg, 2006; Beller and Wagner, 2018). In summary, being alone and feeling alone are not necessarily interchangeable, yet both are aspects of social disconnectedness (Beller and Wagner, 2018).

Furthermore, loneliness is suggested to be an important psychosocial determinant of health, yet it is often overlooked despite growing, vital public health concerns (Gerst-Emerson and Jayawardhana, 2015). Although people are more connected digitally, the prevalence of loneliness appears to be rising and increasingly widespread (Cacioppo *et al.*, 2015). In the general population, 7–39% of adults report feeling lonely (Savikko *et al.*, 2005; Victor *et al.*, 2005; Shiovitz-Ezra and Leitsch, 2010; Theeke, 2010). Among a sample of middle-aged adults in the USA, 29% felt lonely some or all of the time (Nersesian *et al.*, 2018). Loneliness can affect anyone, although it is more likely to occur in populations that are at risk for social alienation, isolation, and separation (Cacioppo *et al.*, 2015). With loneliness and the burden of cancer on the rise, it is crucial to understand the impact of loneliness on cancer caregivers.

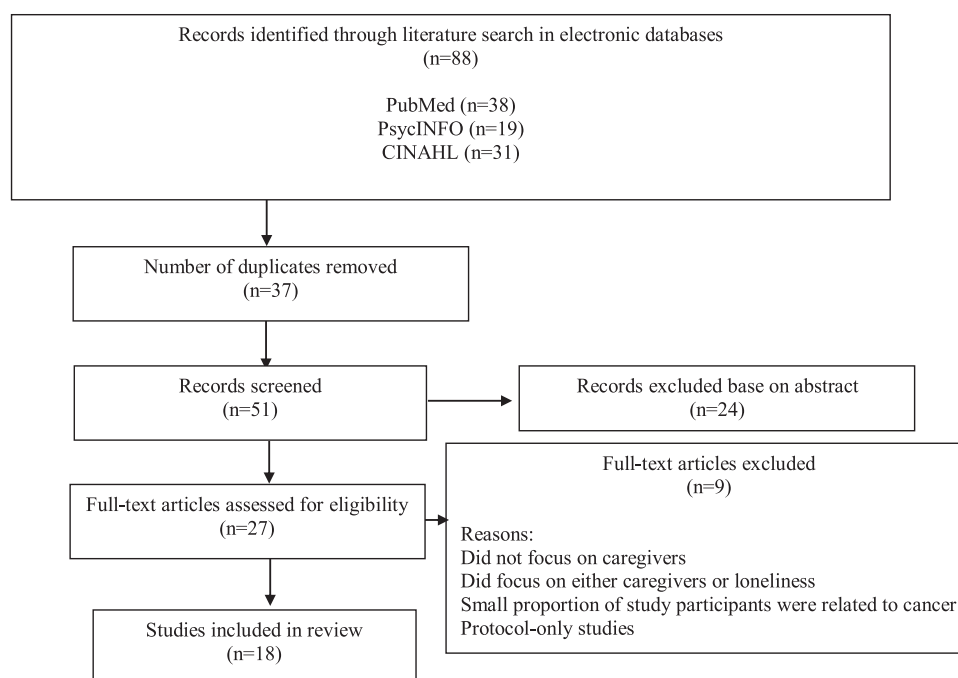


Fig. 2. Flow diagram of study selection.

There are robust associations between loneliness and poor physiological, physical, and psychological health (Petitte et al., 2015), where social integration and social support can provide protective effects on both morbidity and mortality (Berkman et al., 2000; Kawachi and Berkman, 2001; Steptoe et al., 2013; Gerst-Emerson and Jayawardhana, 2015). From a physiological standpoint, feeling lonely can result in the activation of the hypothalamic-pituitary-adrenal (HPA) cortex. HPA activation elicits physiological reactions in the autonomic, endocrine, and immune functioning pathways (Hawley and Cacioppo, 2003), including a suggested dysregulation in biomarkers like proinflammatory cytokines (interleukin-6, fibrinogen, and C-reactive protein) that over time, can result in negative health consequences (Hawley and Cacioppo, 2010; Jaremka et al., 2013; Nersesian et al., 2018).

Loneliness is also associated with consequences to physical health, including physical inactivity and smoking (Shankar et al., 2011; Dyal and Valente, 2015), functional limitations (Luo et al., 2012; Theeke et al., 2016a), sleep disturbance (Cacioppo et al., 2002, 2006; Hawley and Cacioppo, 2010; Kurina et al., 2011; Hayley et al., 2017), increased blood pressure (Sorkin et al., 2002; Hawley et al., 2006; Yang et al., 2014), inflammation (Luo et al., 2012; Nersesian et al., 2018), stroke (Holt-Lunstad and Smith, 2016; Valtorta et al., 2016), and death (Holt-Lunstad et al., 2010, 2015).

In addition, loneliness is associated with poor psychological health, including anxiety (Hawley and Cacioppo, 2010), fatigue (Cacioppo et al., 2002), depression (Hawley et al., 2009; Cacioppo et al., 2010; Luo et al., 2012; Jaremka et al., 2014), psychosis (DeNiro, 1995), and suicide (Sticklely and Koyanagi, 2016). Nersesian et al. (2018) found that in a sample of middle-aged adults in the USA, higher feelings of loneliness were associated with increased levels of self-reported stress, evidence to HPA physiologic stress reactivity. People who feel lonely are also at greater risk of cognitive and functional decline, which is particularly worrisome for our largely aging population (Luo et al., 2012;

Theeke et al., 2016b). One study documented a 64% increased chance of developing clinical dementia among people who feel lonely (Holwerda et al., 2014). Similarly, Rosenberg (2016) found that a higher amyloid burden, a biomarker for Alzheimer disease, was significantly associated with greater feelings of loneliness (Rosenberg, 2016). Understanding the role of loneliness in cancer caregivers is particularly salient given the potentially deleterious widespread health consequences.

Cancer caregiving and loneliness

Loneliness is not only a problem for cancer patients but also for many of their caregivers who report moderate to high levels of loneliness (Deckx et al., 2015; Soylu et al., 2016; Segrin et al., 2019). Providing care for a seriously ill loved one puts demands on individuals that limit their discretionary social contacts and often culminate in loneliness (Segrin et al., 2019). Caregivers' lives are often altered when they begin providing care for loved ones. They may lose contact with friends, neighbors, relatives, and social groups, such as faith communities and civic organizations (Lynn, 2014), may need to withdraw from previous social habits or modify their lifestyles (Soylu et al., 2016), and frequently do not have visitors or others to talk with them when they need the most help (Lynn, 2014). Caregivers of cancer patients spend a significant amount of time caring for individuals with complex care needs (Given et al., 2012; Soylu et al., 2016), and this is particularly true in instances where care is shifting to more in-home interventions and away from inpatient settings (Ferrell et al., 2018).

Loneliness may also increase the caregiver's risk of experiencing hopelessness. Greater feelings of hopelessness may then decrease caregivers' feelings of self-efficacy, ability to meet their own needs, or ability to adequately care for the person with cancer (Golden et al., 2009; Balfe et al., 2016). Notably, certain clinical guidelines that are standards of oncology care may predispose

cancer caregivers to feel lonely. For example, during the disease course, individuals undergoing cancer treatment must commonly adhere to behavioral restrictions and contact precautions to limit exposure to potentially threatening infections and diseases when they are immunocompromised (Wilson et al., 2018). Special precautions may include limiting the number of visitors to one's home or restricting outings that may expose patients to others in crowded places. Special precautions are especially relevant when the patient's health is significantly compromised (Miller and Kapp, 2015). The restrictions placed on patients may likewise affect caregivers by restricting their access to friends and acquaintances, leaving caregivers to feel lonely, disengaged, and potentially constrained from social support. Caregivers may also be conflicted about leaving the person with cancer home alone out of fear that something disastrous will happen. Commonly, this fear results in caregivers' withdrawal from social activities or work activities relevant to their self-worth (Stenberg et al., 2012). In addition, cancer caregivers go through anticipatory grief and bereavement, in which caregivers reported elevated feelings of loneliness when their loved one dies. Feelings of loneliness are especially common when caregivers deal with memories and exhaustion from the caregiving experience. After the death of a loved one with cancer, caregivers have previously described such feeling as "losing a part of yourself" along with a sense of emptiness and loss (Holtslander and Duggleby, 2010; Totman et al., 2015; Piil et al., 2019). More longitudinal studies are needed to examine caregiver loneliness as it relates to different points of the illness trajectory, including death or survivorship. Overall, compared to other caregivers, those who care for loved ones with cancer face a unique set of experiences related to loneliness even after the loved one dies.

Measuring loneliness

Using accurate and reliable instruments is vital to understanding the experience and prevalence of loneliness among cancer caregivers. Strong measurement tools also help to distinguish loneliness from other forms of psychosocial distress. Multi-item scales have been used to measure loneliness (Valtorta et al., 2016) including the 20-item UCLA Loneliness Scale (Russell et al., 1978) and its revised versions (Russell et al., 1980; Russell, 1996). A short form of the UCLA Loneliness Scale, which includes three items, was originally designed and validated for use in large telephone-based surveys that examined whether participants felt that they lacked friendship, felt left out, or felt isolated from others in the past month (Hughes et al., 2004). Items are scored on a 3-point scale (from 1 = *hardly ever* to 3 = *often*) with higher scores indicating greater loneliness. This 3-item measure was found to have good reliability scores among various groups (Hughes et al., 2004). Additionally, a single-item measure from the widely-used Center for Epidemiological Studies Depression Scale (CES-D) was validated for individual use through several nationwide studies and serves as a quick measure of loneliness (Radloff, 1977; Routasalo et al., 2006; Wilson and Moulton, 2010; O'Luanaigh et al., 2012; Nersesian et al., 2018). The 11-item De Jong Gierveld Loneliness Scale measures two separate dimensions of loneliness, emotional and social loneliness, and can be used as a general measure of loneliness (De Jong Gierveld and Kamphuis, 1985; Perlman and Joshi, 1987; Beller and Wagner, 2018). The 6-item De Jong Gierveld Loneliness Scale was specifically developed for use in large surveys (De Jong Gierveld and Van Tilburg, 2006) and was validated in

international studies with various age groups (McDade et al., 2006; Cacioppo et al., 2010; De Jong Gierveld and Van Tilburg, 2010; Shankar et al., 2011; La Grow et al., 2012; Penning et al., 2014; Lim and Chan, 2016; Ritchwood et al., 2017; Grygiel et al., 2019). Overall, these survey measures offer an opportunity to accurately and reliably measure loneliness, identify those most at risk, and observe changes in perceived loneliness over time.

Strategies to address loneliness

Along with using validated measures to identify and assess loneliness in cancer caregivers, addressing loneliness in this population is critical. Given that loneliness can occur at different timepoints during the illness trajectory, it is important to develop ongoing strategies to support caregivers, which in turn may also benefit patients (Musich et al., 2017). A growing body of literature has described available strategies that providers may provide to alleviate cancer caregivers' feelings of loneliness.

Caregiver-related interventions for loneliness fall into four main categories: (1) enhancing social skills, (2) providing social support, (3) increasing opportunities for social interaction, and (4) addressing maladaptive social cognitions (Hawkey and Cacioppo, 2010). The majority of intervention studies for loneliness evaluate the intervention's effectiveness of (1) addressing social aspects of loneliness (Hartke and King, 2003; Martina and Stevens, 2006; Shapira et al., 2007; Theeke et al., 2015); (2) engaging individuals in new activities or hobbies as a treatment for loneliness (Rook and Sorkin, 2003); and (3) utilizing a friendship-enrichment program such as befriending (Martina and Stevens, 2006). However, few studies specifically focus on interventions to address loneliness among caregivers of cancer patients who have unique barriers to interacting with others (Hartke and King, 2003).

To address loneliness of previous approaches utilized both individual and group interventions, including activities geared toward increasing social interactions and behaviorally targeted interventions to improve methods of communication and social skills (Hawkey and Cacioppo, 2010; Masi et al., 2011; Cacioppo et al., 2015). For example, friendship-enriched, group-based programs that include befriending focus on the creation of one-to-one relationships (Mitchell and Pistrang, 2011). The befriending relationship is characterized by the development of an emotional connection between two people grounded in sharing of an empathic connection (Mead et al., 2010; Lester et al., 2012) with aims to alleviate feelings of loneliness and provide tangible social support (Siette et al., 2017). Within befriending programs, volunteers provide the compassionate social support and companionship (Siette et al., 2017) and are generally designed to address interpersonal skills, including setting boundaries, developing listening skills, learning about caregivers' concerns, promoting health and safety, maintaining confidentiality, strengthening communication skills, providing emotional support, and building organization skills (Siette et al., 2017). At an individual level, befriending reduces loneliness, increases emotional well-being and allows individuals to re-gain resilience, re-establish social links, and re-engage with their local communities (Balaam, 2015). Among older adults, befriending is arguably the most widespread approach to help address social isolation and loneliness that is commonly available at cancer centers (Cattan et al., 2005; Savikko et al., 2005; Price, 2015; Gardiner et al., 2018).

Group interventions can also provide opportunities for social engagement with others. Group-based interventions allow

participants to reflect and reappraise their own behavior and situations by making comparisons with other caregivers and receiving advice and support from others (Mahendran et al., 2017). Group interventions may be less effective in addressing loneliness if they do not alter how individuals approach and think about their social relationships (Hawkey and Cacioppo, 2010). However, there are unique benefits to interventions involving group activities that enhance an individual's sense of belonging (Platt, 2009), promote social support (Saito et al., 2012; Cotterell et al., 2018), and potentially foster mindfulness practices (Creswell et al., 2012). Unfortunately, major barriers to caregiver support group attendance exist, including caregivers' lack of time, busy work schedules, and the need for respite care to relieve the caregiver to be able to attend the support group (Ussher et al., 2008). Alternatively, resilience training is an emerging approach to address loneliness that focuses on one's capacity to sustain positive relationships and overcome social stressors (Shapira et al., 2007; MacLeod et al., 2018). Research demonstrates that high levels of resilience can protect against the effects of loneliness and social isolation (Cotten et al., 2013; Chopik, 2016; MacLeod et al., 2016, 2018).

Cognitive-behavioral therapy (CBT) is another promising strategy caregivers can use to alleviate loneliness. Although further theoretical development and intervention testing is needed, prior studies have found that CBT interventions have the greatest effectiveness in addressing maladaptive cognitive processes related to loneliness (Hawkey and Cacioppo, 2010; Masi et al., 2011). CBT can be provided in both individual and group settings. CBT interventions teach individuals to notice and evaluate their own recurrent cognitive processes and resulting behaviors. Participants are guided to modify their negative thoughts by using learned adaptive coping techniques. Specifically, the maladaptive thought distortions may be expressed similarly in both depression and loneliness (i.e. "black and white" thinking, jumping to conclusions, magnifying or minimizing, emotional reasoning, and thinking that involves the word "should"), yet the mechanisms that these distortions lead to negative behaviors is widely variable. CBT interventions in their original format, however, may not be fitting to cancer caregivers' needs related to the feeling of loneliness and therefore require modifications.

While experiencing loneliness, individuals often report "increased attention to negative social stimuli" (Cacioppo and Hawkey, 2009). Other maladaptive cognitions associated with loneliness that often lead to negative behaviors include increased fear of negative evaluations, increased negative impressions of others, perceiving others to be less charitable, self-views of passively being a victim to others' actions, perception of being alone in the pain of caring for a loved one, fear that leaving the patient will lead to negative consequences, and greater difficulty to fulfill social needs (Cacioppo and Hawkey, 2009). However, cancer caregivers' cognitions are at times accurate, and the restrictions to spending time with others due to fear of spreading infections to their loved ones with cancer are actual limitations that contribute to feelings of loneliness. Therefore, CBT for caregiver loneliness may instead focus on behavioral activation and increased goal setting. This may emphasize creative solutions to "connecting with others," such as setting time aside for phone calls with others or coordinating technology-based interactions. Based on the current review, we can hypothesize that such adaptations of CBT for loneliness would also need to include psychoeducation on the long-term health consequences of loneliness, focusing on recognizing and modifying maladaptive thought patterns and emotions related to caregivers'

relationships with others, and the resulting behavioral changes that occur specific to caregivers' lifestyles.

To date, few formal interventions exist that target the cognitive misconceptions experienced by lonely people, let alone those specific to a caregiver's experience. One recent randomized-controlled trial included the creation of a CBT-based intervention called LISTEN (Loneliness Intervention using Story Theory to Enhance Nursing-sensitive outcomes) that targeted loneliness and included 27 individuals, found that CBT led to significant reductions in loneliness and systolic blood pressure at 12-week post-intervention (Theeke et al., 2016a). The LISTEN intervention included five, 2-h group sessions focused on psychoeducation about loneliness, emotional processing of feelings of loneliness, and behavioral activation (Theeke et al., 2016a). An important observation in this study is that participants had "near perfect attendance" which indicates strong intervention feasibility for caregivers (Theeke et al., 2015). These introductory findings strengthen the evidence that CBT may be effective in modifying the psychophysiological cascades that may divert the negative health consequences of loneliness and improve caregiver well-being (Theeke et al., 2016a). Historically, cancer caregivers have had high attrition rates for such interventions. Interventions including modified versions of CBT that focus on loneliness and are accessible may be more successful for interventions striving to address caregiver loneliness.

Technology-based interventions may also positively impact loneliness. A trial of weekly caregiver-to-caregiver telephonic support program resulted in self-reported improved coping skills, caregiver competence, and confidence along with decreased burden and loneliness (Stewart et al., 2006). In a meta-analysis of interventions to reduce loneliness, Masi et al. (2011) emphasized the increased benefit of utilizing technology to address loneliness, compared to interventions that were one-on-one, group-based, telephone, computer, and internet-based. Notably, most caregivers have access to technology and depending on where they live (i.e. rural communities), technology-based interventions may be their only option to participate in interventions that mitigate loneliness, rather than traveling to distant healthcare facilities for caregiver support services.

Overall, treatments that target maladaptive cognitions about loneliness and social interactions yield the strongest results (Masi et al., 2011). Specifically, interventions treating maladaptive social cognitions exhibited larger effect sizes than interventions targeting social skills, increasing social support, or increasing social interaction (Masi et al., 2011). These studies have greater effect sizes, irrespective of the group or individual treatment frameworks (Hawkey and Cacioppo, 2010; Masi et al., 2011; Cacioppo et al., 2015). Thereby, future work is needed to develop and evaluate the effectiveness of interventions that target cancer caregivers' maladaptive cognitions to prevent and address loneliness among caregivers of cancer patients.

Discussion and a roadmap to progress

A growing body of literature is evaluating cancer caregivers' needs, yet strategies to examine and address loneliness, which has broadly detrimental effects on health, are in their infancy. In an attempt to address psychosocial needs of cancer caregivers, most research has focused on providing caregivers with social support (Marsland et al., 2013; Vines and Demissie, 2013; Ferrell et al., 2018; Shin et al., 2018; Yoon et al., 2018). Yet, social support alone may not be sufficient to address loneliness in the cancer caregiver population. Limited understanding of loneliness in this population poses a twofold problem in which both

caregivers and patients may face greater risk for negative health outcomes. Therefore, understanding and addressing loneliness among cancer caregivers may improve health outcomes within this unique cancer dyad and may help to identify those caregivers who are at high risk and require additional support (Williams and Bakitas, 2012). Additional research could also identify complex biopsychosocial factors that may explain positive and negative health outcomes among cancer caregivers (Matthews and Gallo, 2011) and potential mediators such as optimism, negativity, perceived stress, and self-efficacy (Matthews and Gallo, 2011; Azizoddin et al., 2017).

Given the substantial negative consequences and high prevalence of loneliness, practice guidelines for comprehensive cancer care should include standards of care that support caregivers and assess for loneliness in this population. Due to the heavy workload burden placed on caregivers as they manage multiple demands of caring for someone with cancer, clinical assessment forms for evaluating loneliness should be brief, direct, discriminatory, and standardized (Higginson et al., 2010). Multiple-item scales to measure loneliness may not be practical in fast-paced clinical settings and often lack adequate external validity (Russell et al., 1978). Based on our review, a brief single-item assessment is a valid, easy-to-use and important clinical tool to assess for loneliness, and the findings may prompt a referral to a mental health professional.

Most studies have evaluated the psychosocial challenges related to caregiving, but very little is known about caregivers' experiences with feelings of loneliness. The methodology of the narrative review captures a representative set of studies of the understudied topic of loneliness in this population. Our study is limited as we did not apply a strength-of-evidence criterion to included articles, which is more characteristic of a systematic review (Sinclair et al., 2017). This methodological decision was based on the observation that many articles considered relevant to this review could not be assessed with a strength-of-evidence grading, yet we hope that this review will serve as a foundation for more empirical evidence. More work is needed to identify factors that either protect against or increase the risk for loneliness among caregivers, understand how loneliness impacts caregivers' ability to provide the best care for patients with cancer, and determine which interventions are most effective for different subsets of caregivers along the illness trajectory.

In conclusion, there is growing evidence that caregiver loneliness can be addressed in different ways, including support groups, technology, resilience training, community support services such as befriending, and one-on-one or group conversations with a trained mental health professional (Stenberg et al., 2012). Notably, the interventions described above are most effective if they are conducted in conjunction with interventions that target individuals' maladaptive thoughts such as through CBT (Beller and Wagner, 2018). Critical gaps remain in how we care for those who support individuals with cancer. Cancer caregivers make substantial contributions to patient care, and it is crucial that we understand their experiences with loneliness and provide resources and support to mitigate negative outcomes.

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Conflicts of interest. The authors hereby declare that they have no conflicts of interest to disclose.

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