

# Trajectory and Influencing Factors of Depressive Symptoms in Family Caregivers Before and After the Death of Terminally Ill Patients With Cancer

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**D**eaths caused by cancer have been increasing worldwide each year; 7.6 million people died of cancer in 2008, and 13.1 million are estimated to die by 2030 (World Health Organization, 2012). In Taiwan, 41,046 people died from cancer in 2010, accounting for 28% of all deaths (Department of Health, Executive Yuan, 2012). As more patients die of cancer, more family caregivers face bereavement. Adaptation to bereavement has been suggested to follow a dual-process model (Stroebe & Schut, 1999), which involves two kinds of coping: loss- and restoration-oriented coping. The process of recovering from a loved one's death is modeled as fluctuating between ruminating about the loss and attempting to redefine life without the decedent (Stroebe & Schut, 1999). After bereavement, caregivers experience grief, a normal, uncomplicated emotional, cognitive, functional, and behavioral reaction to the death of a loved one that typically subsides over time (Kacel, Gao, & Prigerson, 2011). Failure to assimilate and integrate the losses from the patient's death into a new life without the deceased may result in complicated grief (i.e., prolonged and unresolved grief) (Zisook & Shear, 2009). Caregivers who experience complicated grief commonly present with long-lasting depression (Kacel et al., 2011).

Bereaved caregivers' prevalence rate of depressive symptoms was shown in cross-sectional studies to be 50%–58% in the first month (Ando et al., 2010; Harlow, Goldberg, & Comstock, 1991), 24%–25% in 2–4 months (Ando et al., 2010; Zisook, Paulus, Shuchter, & Judd, 1997), 23% in 6 months (Harlow et al., 1991), and 16% in 12 months (Ando et al., 2010; Zisook et al., 1997) after the patient's death. Bereavement-related depression leads to adverse outcomes such as somatic distress; sleep disorders; social dysfunction; feelings of hopelessness, guilt, and worthlessness; suicidal ideation; and even suicide, thereby impairing bereaved caregivers' quality of life (Stroebe, Schut, & Stroebe, 2007; Zisook

**Purpose/Objectives:** To explore the occurrence of depressive symptoms and factors that affect them in family caregivers before and 1, 3, 6, and 13 months after the death of a care recipient with cancer.

**Design:** Descriptive, longitudinal study.

**Setting:** A medical center in northern Taiwan.

**Sample:** Convenience sample of 186 primary family caregivers.

**Methods:** Changes in caregivers' depressive symptoms and their influencing factors during bereavement were analyzed with the generalized estimating equation, which uses robust standard error estimates to account for within-subject correlations of scores during the follow-up period.

**Main Research Variables:** Caregivers' depressive symptoms; potential influencing factors included intrapersonal risk or protective factors, social resources, caregiving situation, and time in relation to the patient's death.

**Findings:** Caregivers' depressive symptoms peaked at one month and decreased significantly during the first 13 months after the patient's death. Bereaved caregivers experienced a lower level of depressive symptoms if they had cared for older patients, reported a higher level of subjective caregiving burden during the patient's dying process, and had greater social support. Caregivers reported a higher level of depressive symptoms after bereavement if they had a higher level of depressive symptoms before the patient's death, had poorer health, and were the patient's spouse.

**Conclusions:** Caregivers' depressive symptoms improved significantly from one month before to 13 months after the patient's death.

**Implications for Nursing:** Nurses should increase their ability to identify factors influencing caregivers' depressive symptoms before and after the death of their terminally ill family member and provide appropriate care to facilitate caregivers' psychological adjustments to bereavement.

**Knowledge Translation:** Healthcare professionals should pay special attention to caregivers who are the patient's spouse, have poorer health, and suffer from a higher level of depressive symptoms. Appropriate care before and after the patient's death is needed to facilitate caregivers' psychological adjustment to the loss of their relative.

& Shear, 2009) and highlighting the importance of bereavement-related depression.

Among studies on caregivers of patients with cancer in Western countries, only one explored the trajectory of depressive symptoms (Chentsova-Dutton et al., 2002) and three longitudinal studies investigated factors influencing depressive symptoms after the patient's death (Burton et al., 2008; Kris et al., 2006; Kurtz, Kurtz, Given, & Given, 1997). However, depressive symptoms only were evaluated at 3, 4.5, and 13 months after bereavement in those studies, respectively. Because depressive symptoms decrease over time after bereavement (Ando et al., 2010; Kris et al., 2006; Schulz, Hebert, & Boerner, 2008; Zhang, Mitchell, Bambauer, Jones, & Prigerson, 2008), and intense initial grief reactions may be an important indicator of whether individuals will develop chronic and profound grief reactions, the frequency of assessments should be extended and depressive symptoms should be evaluated to reflect the most difficult times for bereaved families.

Caregiving and bereavement are not separate, but are parts of a single chronic stressor that involves caring for a terminally ill family member, the family member's death, and the caregiver's ensuing bereavement. However, the literature tends to treat caregiving and bereavement separately. Rarely has the same sample of individuals been followed from caregiving through bereavement. Therefore, research is needed on the impact of the patient's death on the caregiver in relation to the caregiving burden that preceded bereavement. In addition, only one Taiwanese study to date has explored caregivers' grief reactions immediately and one month after the death of a loved one (Hsieh, Huang, Lai, & Lin, 2007). Little is known about the factors affecting Taiwanese caregivers' bereavement adjustment following the death of terminally ill patients with cancer. Therefore, the purpose of this study was to explore the trajectory and influencing factors of depressive symptoms in family caregivers before to 13 months after the death of terminally ill patients with cancer.

## Depressive Symptoms After Bereavement

### Trajectory

Depressive symptoms have been shown to peak 1–2 months after bereavement, drop below clinical depression levels after 6–8 months, and continue to drop up to 12 months after bereavement (Schulz et al., 2003; Zhang et al., 2008). In those studies, depressive symptoms were measured using the Center for Epidemiological Studies–Depression (CES-D) scale (Radloff, 1977). In studies using the Self-Rating Depression Scale (SDS) (Byrne & Raphael, 1997; Middleton, Raphael, Burnett,

& Martinek, 1997) and the Beck Depression Index (BDI) (Futterman, Gallagher, Thompson, Lovett, & Gilewski, 1990; Thompson, Gallagher-Thompson, Futterman, Gilewski, & Peterson, 1991), depressive symptoms also were shown to abate over time, but the caregivers' depressive symptoms were not strong enough to be classified as clinical depression at any time in the bereavement period.

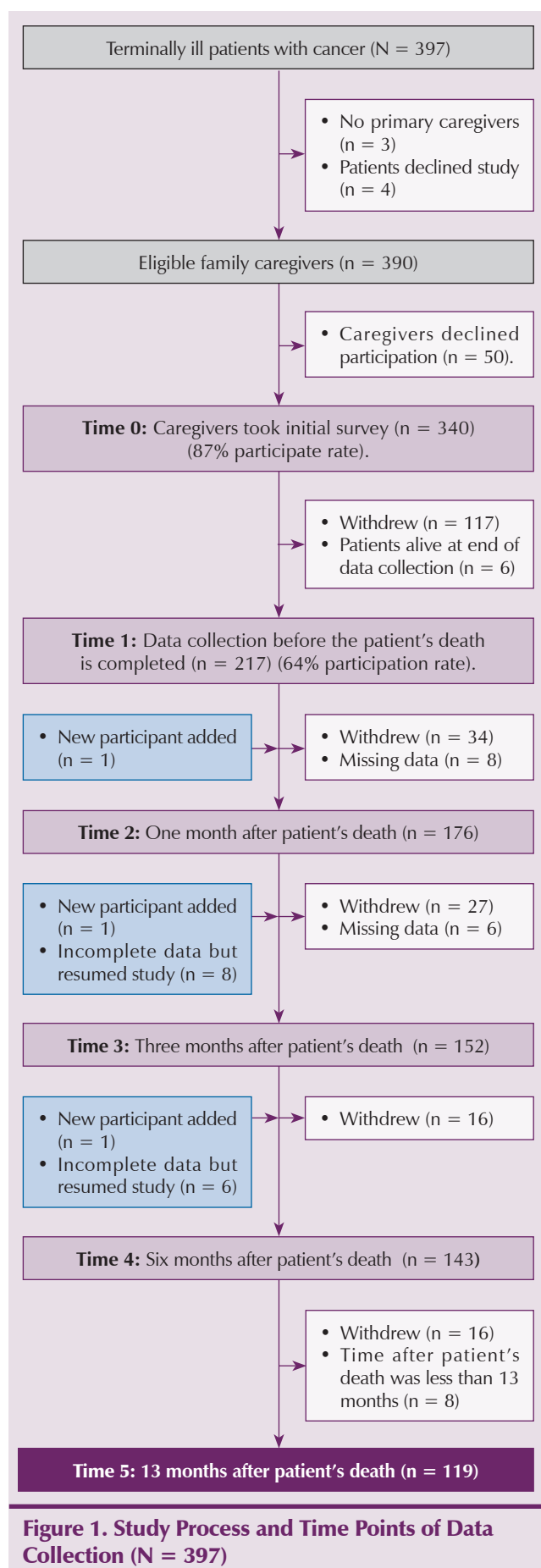
### Influencing Factors

Factors influencing depressive symptoms after bereavement based on a systematic review (Stroebe et al., 2007) were categorized as follows: intrapersonal potential risk and protective factors, social resources, caregiving situation, and time in relation to death. Intrapersonal potential risk and protective factors include caregivers' demographic characteristics (e.g., gender, age, educational level), financial status, health, and depressive symptoms before the patient's death, as well as patients' demographic characteristics. No conclusive findings were identified regarding the influence of caregivers' gender on their depressive symptoms after bereavement (Boerner, Schulz, & Horowitz, 2004; Kris et al., 2006; Li, Liang, Toler, & Gu, 2005; Zhang et al., 2008), age (Harlow et al., 1991; Kris et al., 2006; Li et al., 2005), educational level (Kris et al., 2006; Kurtz et al., 1997), financial status (Li, 2005; Li et al., 2005), and health status (Kris et al., 2006; Li et al., 2005; Zhang et al., 2008), as well as the deceased patient's age (Kurtz et al., 1997).

The level of caregivers' depressive symptoms after bereavement has been shown in most studies to be more severe if they experienced a higher level of depressive symptoms before the patient's death (Kris et al., 2006; Li et al., 2005; Zhang et al., 2008). However, one study (Burton et al., 2008) showed no such effect of depressive symptoms before the patient's death on caregivers' depressive symptoms after bereavement.

Social resources include the social support system available to caregivers and their kinship with the patient. Caregivers with a weak social support system are more prone to serious depressive symptoms (Li, 2005; Zhang et al., 2008). Depressive symptoms after the patient's death were found to be more severe if the caregiver was the patient's spouse (Kris et al., 2006; Li, 2005), but Zhang et al. (2008) found that the kinship between the patient and caregiver had no effect on depressive symptoms after the patient's death.

The caregiving situation refers to such variables as caregivers' perceived burden and objective caregiving demands. Caregivers with a greater caregiving burden experienced more severe depressive symptoms (Li, 2005) and had a significantly elevated risk of depressive symptoms after the patient's death (Kris et al., 2006), but others did not find the latter association significant (Boerner et al., 2004). Finally, for time in relation to death, caregivers'



depressive symptoms have been shown to decline as time passes after the patient dies (Boerner et al., 2004; Lee & DeMaris, 2007; Zhang et al., 2008).

## Methods

### Design and Sample

For this descriptive, longitudinal study, a convenience sample of primary family caregivers of terminally ill patients with cancer was recruited from a medical center in northern Taiwan from June 2007 and was followed through September 2010. Inclusion criteria for caregivers were (a) having cared for a patient whose cancer was progressing and was unresponsive to current curative cancer treatments, as judged by the patient's physician; (b) being identified by the patient as the family member most involved with the patient's actual care; (c) being aged 21 years or older; and (d) being willing to participate and able to communicate with data collectors. The data collectors were trained to follow a standardized procedure and to be sensitive to participants' psychological responses during data collection.

### Procedure

The research ethics committee of Linkou Chang Gung Memorial Hospital in Taiwan approved the research protocol. Written informed consent was obtained from all participants. As shown in Figure 1, 34 family caregivers declined to participate in the first assessment after the patient's death, but 3 returned to participate later; therefore, the final sample comprised 186 bereaved family caregivers.

Bereaved family caregivers were surveyed six times. Because some participants withdrew during the study, caregivers who completed all surveys after bereavement were compared with those who did not throughout the follow-up period in terms of demographic characteristics and other variables (see Table 1). To confirm whether depressive symptoms after bereavement were the reason for caregivers' withdrawal from study follow-up, caregivers' level of depressive symptoms before they withdrew were compared with the levels in caregivers who did not withdraw (see Table 2).

### Instruments

**Outcome variable:** Caregivers' depressive symptoms were measured with the 20-item CES-D (Radloff, 1977). The CES-D is the most commonly used instrument in the literature for measuring depressive symptoms of bereaved caregivers. The CES-D also has advantages over the SDS and BDI. Although the SDS and CES-D have the same number of items and take a similar amount of time to complete, the SDS has not been verified in a Taiwanese population. In addition, the BDI measures severity of de-

**Table 1. Comparison of Caregivers With Complete Versus Incomplete Surveys Throughout Bereavement Follow-Up (N = 186)**

| Variable                                  | Incomplete <sup>a</sup><br>(n = 74) |       | Complete<br>(n = 112) |       | t        | p    |
|---|-------------------------------------|-------|-----------------------|-------|----------|------|
|   | $\bar{X}$                           | SD    | $\bar{X}$             | SD    |          |      |
| Subjective caregiving burden <sup>b</sup> | 59.35                               | 10.77 | 60.5                  | 10.06 | 0.02     | 0.87 |
| Objective caregiving demands              | 18.56                               | 9.41  | 18.69                 | 10.5  | 0.86     | 0.35 |
| CES-D score before bereavement            | 17.71                               | 9.41  | 18.69                 | 10.5  | 1.13     | 0.29 |
| Variable                                  | n                                   | %     | n                     | %     | $\chi^2$ | p    |
| <b>Gender</b>                             |                                     |       |                       |       | 1.52     | 0.23 |
| Female                                    | 55                                  | 74    | 74                    | 66    |          |      |
| Male                                      | 19                                  | 26    | 38                    | 34    |          |      |
| <b>Age (years)</b>                        |                                     |       |                       |       | 5.14     | 0.07 |
| 18–35                                     | 23                                  | 31    | 19                    | 17    |          |      |
| 36–55                                     | 34                                  | 46    | 64                    | 57    |          |      |
| 56 or older                               | 17                                  | 23    | 29                    | 26    |          |      |
| <b>Educational level</b>                  |                                     |       |                       |       | 0.29     | 0.86 |
| Elementary school or less                 | 8                                   | 11    | 15                    | 13    |          |      |
| High school                               | 36                                  | 49    | 54                    | 48    |          |      |
| College degree or higher                  | 30                                  | 41    | 43                    | 38    |          |      |
| <b>Financially sufficient</b>             |                                     |       |                       |       | 0.01     | 0.93 |
| Yes                                       | 55                                  | 74    | 90                    | 80    |          |      |
| No  | 13                                  | 18    | 19                    | 17    |          |      |
| Missing                                   | 6                                   | 8     | 3                     | 3     |          |      |
| <b>Comorbidity in the caregiver</b>       |                                     |       |                       |       | < 0.01   | 1    |
| Yes                                       | 25                                  | 34    | 38                    | 34    |          |      |
| No  | 49                                  | 66    | 74                    | 66    |          |      |
| <b>Relationship with patient</b>          |                                     |       |                       |       | 2.69     | 0.26 |
| Spouse                                    | 34                                  | 46    | 51                    | 46    |          |      |
| Adult child                               | 24                                  | 32    | 46                    | 41    |          |      |
| Other                                     | 16                                  | 22    | 15                    | 13    |          |      |

<sup>a</sup> Includes participants who withdrew from the study or had missing data

<sup>b</sup> Measured with the Caregiver Reaction Assessment scale

CES-D—Center for Epidemiological Studies–Depression

Note. Because of rounding, not all percentages total 100.

pression rather than frequency of depressive symptoms, and its score can be inflated by fatigue.

The CES-D has four subscales: positive emotions, depressive emotions, physical activities, and social difficulties. Each item is rated on a scale from 0–3, based on the frequency of occurrences during the past week. Total scores range from 0–60, with a score of 16 or higher indicating clinical depression. The CES-D has high internal consistency (Cronbach alpha = 0.9); 4- and 12-week test-retest reliabilities of 0.67 and 0.32, respectively; and adequate construct validity (Radloff, 1977). The Chinese version of the CES-D was translated by two psychiatrists (Chien & Cheng, 1985), who established the scale's internal consistency, test-retest reliability, and validity of case identification. In the current study, Cronbach alpha ranged from 0.9–0.93.

**Independent variables:** Intrapersonal potential risk and protective factors included caregivers' demographic characteristics (e.g., age, gender, educational level), financial status, health (e.g., chronic diseases), depressive

symptoms before the patient's death, and patients' age.

Caregivers' relationship to the patient (i.e., spouse, adult child, and other) and social support were measured with the **Medical Outcomes Study Social Support Survey (MOS-SSS)** (Sherbourne & Stewart, 1991). The MOS-SSS has 19 functional support items hypothesized to measure emotional, informational, tangible (i.e., practical support, such as someone to take patients to doctor's appointments or prepare meals for them if they are unable to do so), and affectionate support, as well as positive social interaction. Each item is scored on a scale from 1–5, with a higher score indicating a better support system. When used to measure social support of patients with chronic disease, the MOS-SSS had a Cronbach alpha of 0.91 and adequate divergent validity (Sherbourne & Stewart, 1991). In the current study, the Cronbach alpha for the four subscales ranged from 0.86–0.97.

Objective caregiving demands were measured with the Chinese version of a four-item scale by Emanuel et al. (1999), which evaluates the intensity of assistance provided to the patient. Items include assistance in the patient's daily living, chores, transportation, and health, with responses ranging from 1 (no assistance needed) to 4 (assistance always needed). The original scale was

translated into Chinese and used to assess the level of family caregivers' assistance to terminally ill patients with cancer (Cronbach alpha = 0.91) (Tang, Li, & Liao, 2007). In the current study, Cronbach alpha was 0.84.

Subjective caregiving burden was measured with the 24-item **Caregiver Reaction Assessment (CRA)** scale (Given et al., 1992). The CRA contains five subscales with items on positive and negative caregiver reactions, scored from 1–5. Item scores are averaged to give a total score ranging from 1–5, with higher scores indicating a stronger negative impact of caregiving. Reliability (Cronbach alpha = 0.8–0.9) and construct validity have been established for the CRA (Given et al., 1992). In the current study, the CRA had a Cronbach alpha of 0.86.

Caregivers' depressive symptoms before the patient's death were measured every two weeks until the patient's death, loss to follow-up, or study withdrawal. However, the impact of caregivers' depressive symptoms before the patient's death on depressive symptoms after bereavement was only evaluated by comparison with caregivers'



**Table 2. CES-D Scores for Bereaved Caregivers With Complete and Incomplete Surveys (N = 186)**

| Time                        | n   | $\bar{X}$ | SD    | t    | p    |
|-----------------------------|-----|-----------|-------|------|------|
| <b>T2 to T3</b>             |     |           |       | 3.42 | 0.06 |
| Complete                    | 152 | 19.19     | 12.59 |      |      |
| Incomplete                  | 33  | 18.33     | 10.24 |      |      |
| <b>T3 to T4</b>             |     |           |       | 1.78 | 0.18 |
| Complete                    | 143 | 11.16     | 11.77 |      |      |
| Incomplete                  | 16  | 15.43     | 9.46  |      |      |
| <b>T4 to T5<sup>a</sup></b> |     |           |       | 0.01 | 0.91 |
| Complete                    | 119 | 14.99     | 10.32 |      |      |
| Incomplete                  | 16  | 15.12     | 10.21 |      |      |

<sup>a</sup> Excludes participants for whom the time after the patient's death was less than 13 months (n = 8)

CES-D—Center for Epidemiological Studies–Depression; T2—one month after death; T3—three months after death; T4—six months after death; T5—13 months after death

prebereavement depressive symptoms assessed closest to the patient's death (time 1). To reflect the most stressful times of the bereavement experience, time after the patient's death was further categorized at 1 (time 2), 3 (time 3), 6 (time 4), and 13 (time 5) months (Ando et al., 2010; Schulz et al., 2008; Zhang et al., 2008). The first six months after bereavement constitute a clinically important time for identifying abnormal grief patterns. Thirteen months after the patient's death was chosen as the final time point rather than 12 months to avoid an anniversary effect on caregivers' grief reactions.

## Data Analysis

Data on selected independent variables and caregivers' depressive symptoms before and after the patient's death were analyzed with descriptive statistics (e.g., frequency, percentage, mean, standard deviation). The factors influencing and changes in caregivers' depressive symptoms over time after the patient's death were analyzed with the generalized estimating equation (Burton, Gurrin, & Sly, 1998), which uses robust standard error estimates to account for within-subject correlations of CES-D scores during the follow-up period.

## Results

### Participants

The majority of the 186 caregivers were women, with a mean age of 47.14 years (SD = 12.81; range = 21–84). Most were the patient's spouse or adult child, had at least a high school education, had no chronic disease, and reported they were financially sufficient. Most patients (n =

101, 54%) were men, with a mean age of 60.76 years (SD = 13.9; range = 25–93). The most common sites of cancer were stomach (n = 43, 23%), lung (n = 28, 15%), pancreas (n = 23, 12%), and colorectal (n = 23, 12%). Caregivers' prebereavement depressive symptoms were last assessed from 1–74 days before the patient's death (median = 5 days). The median times for the four assessments were 4.71, 13.2, 26.2, and 56.57 weeks after the patient's death. Demographic characteristics did not differ significantly between caregivers who completed all surveys after bereavement compared to those who did not throughout the follow-up period. In addition, comparisons indicated that the level of depressive symptoms after bereavement did not cause caregivers to withdraw.

### Depressive Symptom Trajectories After the Patient's Death

Caregivers' depressive symptoms peaked at one month after the patient's death (time 2). At three months into bereavement (time 3), the mean score dropped to around the threshold for clinical depression. At six months (time 4) and 13 months (time 5) after the patient's death, the mean scores were below the threshold for clinical depression. The generalized estimating equation results indicated that bereaved caregivers' levels of depressive symptoms declined significantly from time 2 to time 5 (see Table 3). The likelihood of experiencing clinical depression (CES-D score of 16 or higher) after the patient's death also diminished significantly as time passed. The prevalence of clinical depression was 60% (n = 130) before and 59% (n = 103) at 1 month, 47% (n = 72) at 3 months, 42% (n = 60) at 6 months, and 39% (n = 46) at 13 months after the patient's death, with odds ratios relative to the odds for clinical depression before the patient's death ranging from 0.38 (95% confidence interval [0.67, 1.24]) to 0.91 (95% confidence interval [0.67, 1.24]) (data not shown).

### Factors Influencing Depressive Symptoms After the Patient's Death

The level of depressive symptoms after the patient's death was not affected by caregivers' gender,

**Table 3. Changes in CES-D Scores and Time of Patient Death (N = 217)**

| Time | n   | $\bar{X}$ | SD    | b     | SE   | 95% CI         | Wald $\chi^2$ | p       |
|------|-----|-----------|-------|-------|------|----------------|---------------|---------|
| Int  |     |           |       | 18.48 | 0.68 | [17.13, 19.81] | 725.3         | < 0.001 |
| T1   | 217 | 18.32     | 10.08 | Ref   |      |                |               |         |
| T2   | 176 | 19.03     | 12.16 | 0.72  | 0.77 | [-0.79, 2.23]  | 0.87          | 0.35    |
| T3   | 152 | 16.08     | 11.52 | -2.28 | 0.71 | [-3.67, -0.87] | 10.09         | 0.001   |
| T4   | 143 | 14.76     | 10.25 | -3.97 | 0.72 | [-5.39, -2.54] | 29.88         | < 0.001 |
| T5   | 119 | 13.36     | 10.12 | -5.48 | 0.85 | [-7.14, -3.8]  | 41.3          | < 0.001 |

CES-D—Center for Epidemiological Studies–Depression; CI—confidence interval; Int—intercept; Ref—reference (CES-D score at T1); SE—standard error; T1—last assessment before death; T2—one month after death; T3—three months after death; T4—six months after death; T5—13 months after death

age, educational level, and financial status, but was higher in those with chronic illness ( $p = 0.03$ ) (see Table 4). However, caregivers' depressive symptoms after bereavement were affected by their depressive symptoms before the patient's death ( $p < 0.001$ ) and inversely related to the patient's age. Caregivers of older patients had fewer depressive symptoms than those of younger patients; with each year increasing in the patient's age, the caregiver's depressive symptoms decreased by 0.11 (95% confidence interval  $[-0.21, -0.01]$ ;  $p = 0.01$ ).

Primary family caregivers who were the patient's spouse had significantly higher CES-D scores than those who were the patient's child or other relation. In addition, caregivers with a better social support system tended to have a lower level of depressive symptoms after the patient's death. Caregivers with a more negative caregiving experience (i.e., greater subjective caregiving burden) before the patient's death experienced fewer depressive symptoms after bereavement. Objective caregiving demands had no obvious effects on caregivers' depressive symptoms after the patient's death. Finally, multivariate generalized estimating equation test showed that caregivers' depressive symptoms declined with time after the patient's death (time 3,  $b = -3.09$ ; time 4,  $b = -4.62$ ; time 5,  $b = -5.92$ ).

## Discussion

In the current study, overall trajectory of primary family caregivers' depressive symptoms peaked at one month after the patient's death, consistent with previous reports, regardless of the instrument used to measure depressive symptoms (Byrne & Raphael, 1997; Futterman et al., 1990; Middleton et al., 1997; Schulz et al., 2003; Thompson et al., 1991; Zhang et al., 2008). The authors found that, in general, caregivers' depressive symptoms decreased to the threshold for clinical depression at three months and to below the threshold for clinical depression at six months after the patient's death. Those results are consistent with previous reports of depressive symptoms in family caregivers three to eight months after the patient's death (Schulz

**Table 4. Multivariate Analysis of Factors Influencing Depressive Symptoms in Family Caregivers After the Patient's Death**

| Variable  | b     | SE   | 95% CI         | Wald $\chi^2$ | p       |
|---|-------|------|----------------|---------------|---------|
| <b>Intercept</b>                                      | 41.45 | 6.72 | [28.27, 54.62] | 38.03         | < 0.001 |
| <b>Gender</b>   |       |      |                |               |         |
| Male  | 0.05  | 1.12 | [-2.15, 2.26]  | 0.01          | 0.96    |
| Female  | Ref   |      |                |               |         |
| <b>Age of caregiver (years)</b>                       | -0.05 | 0.04 | [-0.14, 0.03]  | 1.52          | 0.21    |
| <b>Educational level</b>                              |       |      |                |               |         |
| College degree or higher                              | -0.02 | 2.07 | [-4.08, 4.03]  | < 0.01        | 0.99    |
| High school   | -0.7  | 1.93 | [-4.5, 3.09]   | 0.13          | 0.71    |
| Less than high school                                 | Ref   |      |                |               |         |
| <b>Financially sufficient</b>                         |       |      |                |               |         |
| No  | -1.43 | 1.44 | [-4.25, 1.39]  | 0.98          | 0.32    |
| Yes   | Ref   |      |                |               |         |
| <b>Chronic disease</b>                                |       |      |                |               |         |
| Yes   | 2.63  | 1.26 | [0.15, 5.12]   | 4.33          | 0.03    |
| No  | Ref   |      |                |               |         |
| <b>Depressive symptoms before the patient's death</b> | 0.48  | 0.06 | [0.36, 0.6]    | 61.2          | < 0.001 |
| <b>Age of patient (years)</b>                         | -0.11 | 0.49 | [-0.21, -0.01] | 5.53          | 0.01    |
| <b>Relationship with patient</b>                      |       |      |                |               |         |
| Other   | -5.82 | 1.51 | [-8.8, -2.85]  | 14.71         | < 0.001 |
| Child   | -3.84 | 1.68 | [-7.13, -0.5]  | 5.22          | 0.02    |
| Spouse  | Ref   |      |                |               |         |
| <b>Social support</b>                                 | -0.18 | 0.02 | [-0.23, -0.12] | 48.57         | < 0.001 |
| <b>Caregiving situation</b>                           |       |      |                |               |         |
| Subjective burden                                     | -0.12 | 0.05 | [-0.23, 0.01]  | 4.52          | 0.03    |
| Objective demands                                     | 0.02  | 0.14 | [-0.26, 0.31]  | 0.02          | 0.86    |
| <b>Time in relation to death</b>                      |       |      |                |               |         |
| T5  | -5.92 | 0.8  | [-7.49, -4.43] | 54.32         | < 0.001 |
| T4  | -4.62 | 0.67 | [-5.95, -3.3]  | 46.77         | < 0.001 |
| T3  | -3.09 | 0.67 | [-4.41, -1.77] | 21.22         | < 0.001 |
| T2  | Ref   |      |                |               |         |

CI—confidence interval; Ref—reference (comparison group for estimating b); SE—standard error; T2—one month after death; T3—three months after death; T4—six months after death; T5—13 months after death

et al., 2003; Zhang et al., 2008). In addition, level of depressive symptoms in the current study dropped to its lowest at 13 months after the patient's death, consistent with previous studies regardless of the scale used to measure levels of depressive symptoms after bereavement (Byrne & Raphael, 1997; Futterman et al., 1990; Middleton et al., 1997; Schulz et al., 2003; Thompson et al., 1991; Zhang et al., 2008). This analysis showed that depressive symptoms declined with time after the patient's death, indicating that those symptoms were dynamic and gradually abated as caregivers adjusted to the new environment and resumed their normal daily life (Zhang, El-Jawahri, & Prigerson, 2006).

Among caregiver's intrapersonal potential risk and protective factors, their depressive symptoms after the patient's death were less severe if the patient was older. That result contradicted a previous report by Kurtz et al. (1997) that patient age does not influence the level of caregivers' depressive symptoms after the patient's death, but is similar to other findings (Ringdal, Jordhøy, Ringdal, & Kaasa, 2001; Yancey, Greger, & Coburn,

1990). That result may be explained by death at an older age being regarded as a natural process, making the disease or death of older adults easier to accept than the disease or death of younger people (Surbone, Kagawa-Singer, Terret, & Baider, 2007). In addition, more than 90% of 217 caregivers perceived death as a relief to the older adult in a study by Schultz et al. (2003).

Caregivers with more depressive symptoms before the patient's death endured greater depressive symptoms after bereavement, as was reported previously (Kris et al., 2006; Li et al., 2005; Zhang et al., 2008). Because bereavement had a negative psychological impact on caregivers, those without good mental health before the patient's death would be less adaptable, thereby affecting their mental adjustment during the bereavement period (Schum, Lyness, & King, 2005; Stroebe et al., 2007).

Caregivers with chronic illness had greater depressive symptoms after the patient's death than those without chronic illness, similar to previous reports (Harlow et al., 1991; Li et al., 2005; Zhang et al., 2008). When encountering stressful events, caregivers' adaptability would be affected by their general health condition. Therefore, caregivers with worse health conditions are likely to have poorer adaptability and negative adjustment (Lev & McCorkle, 1998; Stroebe et al., 2007).

Caregivers in the current study had more depressive symptoms after the patient's death if they were the patient's spouse, as was reported previously (Kris et al., 2006; Li, 2005). However, caregivers had fewer depressive symptoms after the patient's death if they had a better social support system, which also supports previous studies (Burton et al., 2008; van der Houwen et al., 2010; Zhang et al., 2008). Therefore, a good social support system can promote caregivers' emotional recovery, thereby lowering the level of depressive symptoms after the patient's death.

Caregivers in the current study with a greater caregiving burden before the patient's death experienced less depressive distress after bereavement, in contrast to a report by Li (2005). However, that result is consistent with the Relief Model, which states that caregiving burden and the caregiver role are relieved on the patient's death, allowing bereaved caregivers to resume normal life, thereby promoting their psychological and physical well-being (Bass & Bowman, 1990; Schulz, Newsom, Fleissner, Decamp, & Nieboer, 1997).

## Limitations

Because of the current study's longitudinal design, the internal validity of the results could have been affected by participants who dropped out. However, the basic characteristics and CES-D scores of dropouts did not differ significantly from those of participants who continued. Participants were chosen by convenience

sampling from an oncology ward at Linkou Chang Gung Memorial Hospital in northern Taiwan. Therefore, the results of this study cannot be generalized to caregivers of patients with cancer at other healthcare systems. Depressive symptoms after bereavement might have been influenced by factors not explored in this study (e.g., caregiver work situation, religion, locus of control, influence of Chinese cultural norms on caregiving, whether their terminally ill relatives received hospice care after they enrolled in this study). Those factors are recommended for exploration in future studies.

## Conclusions

The current study's results indicate that caregivers' depressive symptoms declined with time after the patient's death. Caregivers tended to endure milder depressive symptoms after bereavement when the patient was older, they had a good social support system, and the caregiving burden was heavy. However, if caregivers had poor physical and psychological health or were the patient's spouse, then they were at risk for more severe depressive symptoms after the patient's death.

## Implications for Nursing

Although the death of the care recipient ends caregiving activities, the emotional impact of those experiences does not necessarily end at the same time. The impact of end-of-life caregiving extends into the bereavement stage and the magnitude of caregiving stress often is underestimated. The current study's results indicate that depressive symptoms were as likely to emerge in the bereavement period as in the context of caregiving, at least in the first few months after the patient's death. Oncology nurses should refer caregivers with severe depressive symptoms to a mental healthcare provider or a social worker to continuously evaluate and monitor the trajectory of caregivers' depressive symptoms into bereavement. In addition, nurses should improve their ability to identify factors influencing depressive symptoms before and after bereavement. Mental healthcare providers should emphasize caregivers' normal grief process and help bereaved family members recover from their grief. Effective resources should be available and healthcare providers should be responsive to at-risk bereaved families to facilitate their psychological adjustment over the death of the patient.

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