

Informal Female Care Givers of Older Adults with Dementia in Taiwan

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Abstract

Family care givers providing a major portion of care giving often experience stress related to the negative consequences for their health. Female care givers often more heavily involved care giving activities than males. Care givers' gender studies have seldom conducted in Taiwan. The purpose of this study was to explore the relationship of demographic factors and coping on health of female care givers of older adults with dementia in Taiwan. In addition, whether coping mediated or moderated the relationship between stress and care giver's health was also examined. Lazarus and Folkman's Stress model guided this study. Using a secondary data analysis method, this study examined data collected from the family care givers of older adults with dementia (2002). One hundred and three female care givers were analyzed by applying Pearson correlation, simple and multiple regression analysis. The findings showed care givers who are younger, more income, and with helpers had better health. Care givers who had less income, without helpers, and caring for care recipients with more behavioral problems had more depressive symptoms. In addition, mediating effect of avoidance coping was supported in this study. The data analysis from this study will provide a basis for nurses to develop interventions that minimize the negative impacts on female care givers.

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Introduction

Dementia is a serious disease and usually has a progressively deteriorated outcome. Mostly, providing care for these dementia patients is their families, which may cause negative consequences of health. Providing care for impaired older adults is often stressful, the chronic stress of caring for a dementia patient has a significant effect on care giver's health (Brody, 1985; Wright, Hickey, Buckwalter, Hendrix, & Kelechi, 1999).

The prevalence rate of dementia is increasing among the aged population. Approximately 5-8% of older adults aged 65 and above, 15-20% of persons over aged 75, and 25-50% of persons over age 85 year may have dementia in the US (Schindler & Cucio, 2000).

In Taiwan, the dementia prevalence rate was 3-5% in 1995 (Department of Health Executive Yuan). Of those, 70-80% of the dementia patients were cared for by their families, 8.4%

cared for by nursing professional, and 13.7% institutionalized in nursing homes (Department of Health Executive Yuan, 1995). Dementia illness course is unpredictable, and rapidly declines. The survival time after senile dementia of the Alzheimer's type onset may range from eight to twenty years. Most family care givers choosing to provide community-based care to the elderly often experience stress-related health problems because of the long duration of caring, an overload of responsibilities, and role conflicts (Sayles-Cross, 1993).

In the US, women, including wives, daughters, and daughters-in-law, comprise the largest group of care givers to elders (Stone et al., 1987). In addition, there is a gender-based division of labor where males and females play different roles of assistance. Women provide most care giving, whereas men are more likely to make the service arrangements, do home repairs, or provide intermittent assistance (Montgomery & Borgatta, 1989). Moreover, elderly wives may

be at great risk for stress and depression because they experience role regression and role entrenchment, in which spouses forgo their social and familial roles and focus completely on caring for their spouses (Given, Collins, & Given, 1988). Furthermore, female family care givers have higher levels of anxiety than male care givers (Huang, 2003; Walker, Martin, & Jone, 1992). It may be that female care givers are more involved or take more responsibilities than male care givers.

In Taiwan, most family care givers are also female. Taiwan's females have multiple roles during care giving. The overload responsibilities of the care givers may cause higher stress. Additionally, female informal care givers may experience social inequality and lack of social sources. Thus, female care givers are often greater suffering health problems than males (Anderson et al., 1995; Pruchno & Potashnik, 1989).

Purpose

The purpose of this study is to explore the impact of coping and the influence of

demographic characteristics of care giving stress on health of female care givers of older adults with dementia. Care giving has been identified as very stressful; consequently one aim is to describe the relationships among stress, coping, and depressive symptoms of female care givers. Moreover, coping is also examined whether mediated or moderated the relationship between care giving stress and health of female care givers. Little research has investigated the effects of coping on health of female dementia care givers. Research questions are stated as follows:

1. What are the relationships between age, income, duration, helper, behavioral problems, coping, and health?
2. What are the influences of age, income, duration, helpers, and care recipient's behavioral problems on care giver's health?
3. What are the effects of coping on care giver's health?
4. Is the relationship between care giving stress and health moderated by coping?
5. Is the relationship between care giving stress and health mediated by coping?

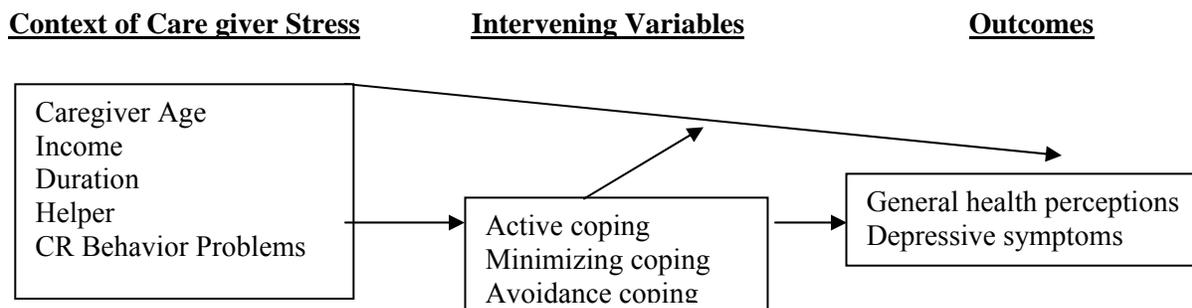


Figure 1
Adapted from Lazarus and Folkman's (1984) Stress and Coping Model

Background

Many studies have indicated that long-term stressful care giving negatively affects care givers' mental and physical health. Thus, the deterioration of health of care givers usually results in the institutionalization of care

recipients (Brown, Poter, & Foster, 1990). Crassel (1995) indicated family care givers had significantly higher somatic symptoms and perceived burden. Also, Gonzalez-Salvador et al. (1999) implied that the stress of family care givers of Alzheimer's patients was strongly

related to psychosocial and physical morbidity of care givers. Female care givers comprised approximately 70-80% of the care giving population and thus female care givers reported higher levels of physical and mental health problems than males (Borden & Berlin, 1990; Yee & Schultz, 2000).

Coping has been defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984, p. 141). A variety of characteristics may influence coping abilities, such as family relationships, care giving duration, age, gender, and income (Brody, 1981). Pearlin et al. (1989) suggested that the nature of the stressor encountered in a situation influences how the person copes with his/her situation. Coping behaviors that people use to manage situations may involve individual efforts to meet the demands of care giving or to make them more manageable. Smyth and Yarandi (1996) analyzed the factor structure of the Ways of Coping Questionnaire (Lazarus & Folkman, 1984) and defined three coping strategies: active, avoidance, and minimizing the situation. Active coping involves aggressive efforts to change situations; avoidance coping involves wishful thinking and efforts to escape problem situations; and minimizing the situation reflects an attempt to remove oneself from an unpleasant situation (Musil & Ahmad, 2002; Smyth & Yarandi, 1996). These three coping strategies are often used as the interventions for helping care givers to adapt to their care giving stress. Thoits (1994) used panel data to explore the effects of problem solving (active coping) on the psychological health outcomes of informal care givers and suggested that individuals may use active coping to minimize their difficulties.

This study was a model-based, cross-sectional study that used a descriptive correlational design to examine the relationships among demographic factors, situational factors, and coping on health outcomes of family care givers of older adults with dementia in Taiwan. One hundred and three female care givers which was a secondary data from 148 primary family care

givers of older adults with dementia in Huang and Musil's study (2003). Lazarus and Folkman's (1984) Stress and Coping model guided this study and was used to test the proposed relationships among the study variables. Mediating and moderating effects of coping were also examined.

Health in Care givers

Depressive symptoms are often the consequence of care giving stress (Schulz et al., 1995; Schulz, Newsom, Mittelmark, Burton, Hirsch, & Jackson, 1997; Wright, Hickey, Buckwalter, Hendriex, & Kelechi, 1999). Whitlatch and colleague (1997) investigated the predictors of depression in 202 family care givers of cognitively impaired adults and found that the majority of care givers had great depressive symptoms as measured by using the CES-D depression scale. Their CES-D scores were between 19.71 and 20.82 throughout the one-year study period. The mean rates of the three waves of data: baseline = 20.8, time 2 = 20.5, and time 3 = 19.7 were more than twice as high as studies of the general adult population (with mean CES-D scores ranged from 8.6 to 9.9) (Linn, Dean, & Ensel, 1986).

Stone, Cafferata, & Sangl (1987) found that after care givers' physical health tend to decline after beginning care giving. Because elderly persons with dementia have cognitive and behavioral impairments, care givers may feel exhausted in providing care for them. Kiecolt-Glaser, Dura, Speicher, Trask, and Glaser (1991) reported that the care giving stress has a negative influence on care givers' immune systems. Kiecolt-Glaser et al. (1991) examined 69 spousal care givers who had already taken care of the elderly with dementia for an average of five years and 69 non-care givers. After 13 months follow-up, care givers showed decrements compared to non-care givers on three measures of cellular immunity.

Study Variables of Conceptual Framework **Age**

Age is often associated with health outcomes of care givers. Sparks, Donner, & Keane-Hagerty (1998) indicated care giver's age predicted poorer physical health for both wives and husbands. Younger care givers experienced

more depressive symptoms or burden than older care givers (Anderson et al., 1995; Lawton, Rajagopal, Brody, & Kleban, 1992; Parks & Pilisuk, 1991).

Incomes

Income may influence a care giver's health. Families may receive financial benefit from the government when taking care for their family members. Zanetti and his colleagues (1998) indicated that 16.5% of family care givers reported their household income as insufficient. There is a positive relationship between income and health of dementia care givers (Lawton et al., 1992; Schulz & Williamson, 1991). Schulz and Williamson (1991) conducted a two-year longitudinal study and greater depression in dementia care givers was related to inadequate income at baseline (time I) and (one year) time III.

Duration

Care giving duration may have a relationship to the care giver's health outcomes. Kao, Lu, Yen, & Liu (1999) reported that family care givers providing longer duration of care for their frail elders had experienced fewer burdens than those with a shorter time of care giving. This result may be due to care givers adapting to their situation during the longer care giving duration or the family care givers having access to support resources. Moen, Robinson, and Dempster-McClain (1995) investigated care giving and women's well-being and found a curvilinear relationship between care giving duration and role conflicts. In the beginning, female care givers may disrupt their roles or regular patterns, while over time, the female care givers may go back to their regular life patterns. After a longer period of care giving, the linear relationship between care giving duration and role conflict became a negative relationship.

Additionally, Schultz and Williamson's two-year (4 waves) longitudinal study showed that care givers of care recipients with AD expressed declines of health and great depressive symptoms (1991). In their study, female care givers maintained high, stable rates of depressive symptomatology during the two-year period, whereas male care givers showed

significant increases in depression over time. That is, the longer the duration of care giving, the higher the scores of the depressive symptoms for male care givers. Moreover, Schulz and Williamson indicated that when perceptions of available social support declined, the depression of care givers increased during the baseline (time I) to two years (time IV).

Helper

In Taiwan, hiring an assistant from foreign countries to help with care giving has been commonly utilized over the last five years. Paid-helpers usually come from Philippines, Malaysia, and Mainland China, and were trained by some private or public agency to provide assistance for chronically ill persons. These helpers often provide direct care, housekeeping, and companionship and may assist with housework or meeting physical needs. About 3-33% of all informal family care givers have assistants including both Taiwanese and foreign assistants (Hung et al., 1999). Having a paid-helper is significant to care givers' health (Huang, 2003). Only one study supports the benefits of foreign paid helpers for family care givers. The benefits may be similar to in-home respite care, with the exception of formal health services from professionals. Curran (1995) mentioned that the benefits of in-home respite include improved mood, reduced distress, and decreased time consumed in care giving activities (Berry, Zarit, & Rabatin, 1991; Montgomery, 1995).

Behavioral Problems

Family care givers often take care of dementia patients who are cognitively or physically dependent for twenty years or more prior to the patient's institutionalization or death (Wright, Clipp, & George, 1993). Family care givers may use formal health services (e.g., respite care, adult day care center) to supplement their informal support network such as relatives, friends, and neighbors. However, the services are limited and some family care givers may not offer enough for their needs.

Beach, Schulz, Yee, and Jackson (2000) conducted a care giver study to examine the effects of changes in care giving involvement on

health-related outcomes of care givers who took care of impaired older adults. Beach et al. showed that care giving is associated with generalized stress, which is consistent with the findings of previous studies (Aneshendel et al., 1995; Chiu et al., 1998; Chou et al., 1999; Goode et al., 1998). Moreover, changes in spouse physical-impairment levels were also related to worse health-related outcomes. That is, the greater the severity of physical impairments of the care recipient with dementia, the higher the levels of stress in the care givers. Zanetti, Frisoni, Bianchetti, Tamazza, Gigoli, and Trabucchi (1998) reported that poor cognition and high frequency of behavioral disturbance of care recipients with dementia was significantly related to the higher depressive symptoms of family care givers (Gallicchio, Siddiqi, Langenberg, & Baumgarten, 2002). Consistently, Ory, Hoffman, Yee, Tennstedt, and Schulz (1999) investigated the differences between dementia and non-dementia care givers with regard to care giver well-being and found that dementia care givers spent more time and were more involved in care giving than non-dementia care givers. Thus, dementia care givers experienced more negative outcomes than non-dementia care givers.

Haley, Levine, Brown, and Bartilucci (1987) reported that care givers' appraisals of the care recipient's behavioral problems as stressful and appraisals of themselves as inadequate to deal with such behaviors, the number of care recipient's behavioral problems were positively related to the depressive symptoms of care giver's. Haley and colleagues (1996) stated care givers who used more problem-coping (active coping) strategies had better health outcomes. There are no clear results about the relationship between the behavioral problems of care recipients and coping used by care givers. Little research has been done to examine the relationship between the health outcomes of care givers and behavioral problems of the elderly with dementia in Taiwan.

Methodology

Using a secondary data analysis method, this study examined data collected from the family

care givers of older adults with dementia (Huang and Musil, 2003). One hundred and three female care givers were from the data-set of Huang's (2003) study. The subjects of primary study in this study were informal female care givers of older adults aged 65 or above who had Alzheimer's disease or another form of dementia. The name lists of family care givers of the older adults with dementia were provided by the Kaohsiung Family Care giver Association and one nursing home in the South of Taiwan. Inclusion criteria for this secondary study consisted of being a primary family care giver who: (1) was female, (2) was able to understand or communicate in Chinese or Taiwanese, (3) had been taking care of an elderly family member with dementia at home for at least 6 months prior to the time of the study, and (4) provided unpaid care for a minimum of five hours weekly.

Sample

One hundred three females out of 148 primary family care givers lived in the suburban or city areas in the South of Taiwan. They were recruited by the name list provided by a family care giver association and a nursing home. Subjects were interviewed to complete the study questionnaire. The subjects for this study ranged in age from 27 to 82 years ($M = 55.70$, $SD = 12.07$). Table 1 shows the description of individual characteristics of 103 subjects. Care giver duration of care giving, which was counted after the primary care giving began to care for their elderly families with dementia, ranged from 6 to 180 months ($M = 39.79$, $SD = 33.85$). A large portion of family care givers was married ($n = 93$, 90.3%). Another variable was monthly household income, which was dichotomized for analytic purposes ($\leq 40,000$ NT dollars and $> 40,000$ NT dollars); Sixty-nine of care givers had a monthly income of less than 40,000 (67%) and 34 care givers had incomes greater than 40,000 (33%). Sixty-one (59.2%) care givers had paid helpers and 42 (40.8%) did not have paid-helpers. Most subjects were married (90.3%), un-employed (72.8%), and spent more than 40 hours weekly (71.8%) taking care of their elderly family members (See Table 1).

Table 1
Descriptive Statistics of Individual Characteristics of Subjects (N = 103)

Variable	Mean \pm SD	N	%
Age	55.70 \pm 12.07		
Range 27-82			
Marital Status			
Single		10	9.7
Married		93	90.3
Duration (Months)	39.79 \pm 33.85		
Range 6-180			
Relationship to Care Recipient			
Spousal		37	36
Adult Child		66	64
Monthly Income (NT dollars)*			
< 40,000		69	67
> 40,000		34	33
Hours Per Week			
0-10 hours		7	6.8
11-20 hours		9	8.7
21-30 hours		3	2.9
31-40 hours		10	9.7
> 40 hours		74	71.8
Helpers			
No		42	40.8
Yes		61	59.2

* 1 USD = 35 NT Dollars

Instruments

The demographic information sheet and four measurements were provided. The Center for Epidemiological Studies-Depression (CES-D) (Radloff, 1977), the General Health Perceptions subscale of the Short Form-36 Health Survey (Ware, 1992) had been used in Taiwan and had acceptable reliability. Behavioral Problems Checklist (BPC; Niederehe, 1988) and modified Ways of Coping (Lazarus & Folkman, 1984; Smyth & Yarandi, 1996) had acceptable reliability in Huang's study (2003).

Depressive Symptoms

Depressive Symptoms were measured by the Center for Epidemiological Studies-Depression Scale (CES-D Scale; Radloff, 1977). The CES-D is a 20-item scale, which was designed for screening depressive symptoms in the general population. Respondents are asked to rate on a 4-point scale (0 = rarely or none of the time, 1 =

some or little of the time, 2 = occasionally or a moderate amount of time, 3 = most or all of the time) how frequently they had experienced certain symptoms or feelings during the previous week. Scores range from 0 to 60, with higher scores reflecting greater depressive symptoms. The total score was calculated by adding up by all ratings, with higher scores indicating with more depressive symptoms (Radloff, 1977). Scores on the CES-D Scale at or above 16 are considered at a risk for clinical depression (Radloff, 1977). The CES-D has been translated in Chinese to measure depressive symptoms in an elderly population in Taiwan (Lyu & Lin, 2000). Lyu and Lin (2000) reported that the average CES-D score of community-dwelling elders in the south of Taiwan was 13.21. The mean of this care giver sample was 26.98 (SD = 10.14; range = 2 - 48). The Cronbach's alpha coefficient for Huang's care giving study was .89 (2003).

General Health Perceptions

Physical health was measured with the general health perception scale of the 36-item Short Form (SF-36) of the Medical Outcomes Study questionnaire, which was designed as a generic indicator of health (Mchorney, Ware, & Reczek, 1993; Ware, 1990; Ware & Sherborne, 1992). The SF-36, an easy-to-complete questionnaire, has been shown to be a reliable and valid instrument. Due to the brevity of the SF-36, the instrument has been widely used among diverse populations both in the USA and internationally such as German, Spanish, French, Taiwan, Chinese, and Japanese studies (Krongrad et al., 1997; Ware et al., 1995). Only the general health perception scale, a five-item scale, was used in this present study to evaluate the physical health of care givers. The General Health Perceptions subscale appeared to be sensitive to physical health problems (Nerenz et al., 1992). The first item asked individuals to rank their perception of health (excellent = 1, very good = 2, good = 3, fair = 4, poor = 5). Another four items assessed the degree to which the subject agrees with the questions about their health. The scores were ranked from definitely true = 1 to definitely false = 5. Subjects were asked to rank their health including the following four questions: "I am somewhat ill," "my health is excellent," "I am as healthy as anybody I know," "I have been feeling bad lately" (definitely true = 1, mostly true = 2, not true = 3, mostly false = 4, definitely false = 5). In Huang's (2003) study, the Cronbach's alpha coefficient of the General Health Perception scale was .90.

Care Recipient's Behavioral Problems

Behavioral problems of the care givers were assessed with the Behavioral Problem Checklist (BPC), which was designed to assess the range of behavioral problems that the elderly with dementia living in a private home may present, and the burdens these may cause for family care givers. The BPC was developed at the Texas Research Institute of Mental Sciences (TRIMS) in Houston, which included 52 items of functioning in both the mental health and social role areas (Niederehe & Fruge, 1984). Care giver's response to the 52 items provided a profile of elderly symptoms, deficits, and interpersonal behaviors; the care giver's

emotional reactions to the care recipient's behavioral problems were also included. For this study, the investigator only used the "FREQUENCY" dimension of the scale to examine how often the care recipient demonstrated the behavioral problems during the previous week, which were ranked on a 5-point scale (0 = never, 1 = not in last week, 2 = 1-2 times last week, 3 = 3-6 times last week, 4 = daily). Cronbach's alpha for the entire 52-item scale was 0.89. and Cronbach's alpha was .90 in Huang's study (2003).

Coping

Coping had been defined as cognitive and behavioral attempts to manage events that are appraised as stressful (Lazarus & Folkman, 1984; Folkman & Lazarus, 1987) and were measured by the modified Ways of Coping Checklist (M-WOC) (Smyth & Yarandi, 1996). The modified Ways of Coping Checklist was from a 66-item instrument that was determined to have three factors: active coping (15 items, alpha = .84), avoidance coping (10 items, alpha = .80), and minimizing the situation (10 items, alpha = .84) in a sample of 656 African-American women (Smyth & Yarandi, 1996). The modified WOC was a 35-item on a four-point Likert-type summative scale (0 = does not apply and or not used, 1 = used somewhat, 2 = used quite a bit, 3 = used a great deal). Musil and Ahmad (2002) conducted a study related to the health of grandmothers and reported the reliability of active coping, avoidance coping, and minimizing the situation as .87, .83, and .81. In Huang (2003) study, Cronbach's alpha coefficient of active coping, avoidance coping, and minimizing the situation were as .85, .75, and .73, and .85 for 35 items of the M-WOC.

Results

Descriptive statistics were computed on all study variables and were summarized by frequency, mean, and standard deviations. The distribution for continuous variables was examined and normal. Cronbach's alpha coefficients were obtained for all reliabilities. Pearson's Correlation and multiple regression statistics were used to test all hypotheses. A significant alpha level of .05 was used for all statistical tests.

The data included descriptive statistical analysis, preliminary data analysis, and hypothesis testing. Pearson product-moment correlation, simple regression, and hierarchical multiple regression were used to analyze the predictors of

health outcomes. Preliminary analysis involved examining the data cleaning and testing the assumptions for regression model. After performing the preliminary data analysis, the main data analysis was run by using SPSS version 11.0.

Table 2
Correlations Age, Income, Duration, Helper, and Care Recipient's Behavioral Problems with Coping, and Health (N = 103)

Variables	Active Coping	Avoidance Coping	Minimizing Coping	General Health Perceptions	Depressive Symptoms
Age	-.449**	-.282**	-.052	-.292**	.024
Income	.294**	.127	.194*	.199*	-.334**
Duration	.000	-.148	.021	.091	-.071
Helper	.008	-.017	-.066	.182	-.231*
Behavioral Problems	.130	.291**	.104	-.133	.213*

* $p < .05$, ** $p < .01$ (2-tailed)

Relationship Among Variables

Age. Older care givers had less active coping and less avoidance coping than younger care givers ($r = -.449$, $p < .01$) (See Table 2). In addition, there was a negative correlation between age and general health perceptions ($r = -.292$, $p < .01$), it indicated older care givers had worse health than younger care givers.

Incomes. There was a significant positive correlation between income and active coping ($r = .394$, $p < .01$) and income and minimization coping as well ($r = .194$, $p < .05$). The more income the care givers had, the more active coping they used. In addition, there was a significantly positive relationship between income and general health perceptions ($r = .199$, $p < .05$), but negative relationship between income and depressive symptoms ($r = -.334$, $p < .01$).

Helper. Care givers who had paid helpers usually had fewer depressive symptoms and

healthy than those without the use of paid-helpers. When care recipients have more behavioral problems, care givers have more depressive symptoms and worse general health.

The Effects of Coping

For the main effect of coping, younger female care givers when they had paid helpers and used less avoidance coping had better health, accounted for 26.4% in general health perceptions (See Table 3). On the other hand, female care givers with no paid helpers had lower incomes, used more avoidance coping, and had more depressive symptoms (See Table 4).

For the mediating effect of coping, avoidance coping was a mediator between the care recipient's behavioral problems and depressive symptoms of care givers. When a mediating effect of avoidance coping occurred, the care recipient's behavioral problems had no longer significance with depressive symptoms.

Table 3
General Health Perceptions Regressed on Care Giving Variables and Coping (N=103)

Variable	Coping	
	Model 3a	Model 3b
Constant	22.780	23.687
Age	-.369***	-.414***
Income	.134	.124
Care Giving Duration	.156	.124
Care Recipient's Behavioral Problems	-.227*	-.163
Active Coping		.047
Avoidance Coping		-.346***
Minimizing Coping		.151
Paid Assistants	.267**	.239**
R ²	.237	.322
Adjusted R ²	.198	.264
F Change	6.035***	.457***

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

Table 4
Depressive Symptoms Regressed on Care Giving Variable and Coping (N=103)

Variable	Coping	
	Model 4a	Model 4b
Constant	20.590	13.060
Age	.040	.093
Income	-.332***	-.336***
Care Giving Duration	-.079	-.025
Care Recipient's Behavioral Problems	.232*	.097
Active Coping		-.141
Avoidance Coping		.610***
Minimizing Coping		-.096
Paid Assistants	-.285**	-.220**
R ²	.236	.510
Adjusted R ²	.196	.468
F Change		

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

Discussion

The present findings support care giving is stressful and causes deleterious consequences for care givers. Statistical analysis of mediator and moderator testing (Baron & Kenny, 1986), only avoidance coping had a mediating effect between care recipient's behavioral problems and depressive symptoms of care givers, with no moderating effects.

This female study had higher mean scores of depressive symptom scores (Mean = 28.96) than the mean rates from 19.7-24 in Youn and colleague's study (Youn, Knight, Jeong, & Benton, 1999). Females were a high percentage of care givers and usually had inter-role conflicts and that may cause high levels of depression. Miller and Cafasso (1992) indicated that due to the gender role differences as a result of current

social role demands, females usually assumed responsibilities for more tasks than males, which may cause differences in burden.

Consistently, Powers, Gallagher-Thompson, and Kraemer (2002) conducted a coping and depression in Alzheimer's care giving study, they found avoidance coping had a positive relationship with depressive symptoms. Comparing a previous study, care givers who used more active coping decreased their mental health problems (Nuendorfer, 1991).

Correlational analyses revealed older care givers had poorer health than younger care givers. The results was thus consistent with the findings of studies by Sparks et al. (1998) and Stommel et al. (1990). Care givers with higher monthly incomes had better health than those with lower incomes. No research has been done in Taiwan on the relationship between income and health outcomes of family care givers. Three studies in the US had reported a positive relationship between income and health of care givers who care for the elderly with dementia (Lawton et al., 1992; Montgomery, Stull, & Borgatta, 1985; Schulz & Williamson, 1991). Older care givers had less active coping than younger care givers, which is not relevant to Winslow's study (1997). In general, younger people are most active in daily life than older adults. Care givers who had higher monthly incomes also used more active coping than those with lower incomes. Adequate finance may help care givers to receive more assistance or choices.

The care giving duration is not significant with female care giver's health in this secondary data analysis study, which might be due to female care giver can adjust very well to their care giving situations. In the previous studies, care givers who had longer care giving duration had better health in Taiwan (Kao, Lu, Yen, & Liu, 1999) and in the USA (Moen, Robinson, & Dempster-McClain, 1995). Care givers who had paid-in-home assistants had better health than those without paid assistants. Paid assistants could decrease the family care giver's care load and their depressive symptoms. Curran (1995) has studied the benefits of paid helpers such as reduced distress, improved mood, and

decreased time consumed. By using multiple regression analyses, younger care givers with paid helpers had better health.

For the main effect of coping, younger care givers who had paid helpers and less avoidance coping had better health, accounted for 26.4% in general health perceptions. Younger care giver, with paid helpers, and their care recipients with less behavioral problems explained 19.8 % of variances in general health perceptions. On the other hand, care givers who used more avoidance coping had worse health, which was consistent with a previous study (Nuendorfer, 1991). Neurndorfer (1991) reported that family care givers of the elderly who used more avoidance and minimizing coping had worse health.

For the mediating effect of coping, based on the conceptual model and previous studies (Goode et al., 1998; Haley et al., 1987; Musil & Ahmad, 2002), avoidance coping was a mediator between the care recipient's behavioral problems and depressive symptoms of care givers. When a mediator of avoidance coping occurred, the care recipient's behavioral problems had no longer significance with depressive symptoms. Inconsistently, Haley and colleagues (1996) indicated when care givers used more avoidance coping, they usually had higher depressive symptom scores. Musil and Ahmad (2002) conducted a grandmother care giving study, they found that avoidance coping had a mediating effect between care giving stress and their health outcomes. When these grandmothers had more avoidance coping, they had higher level of depression.

Limitations

Two limitations of this study include convenience sampling and the use of only two settings in the south of Taiwan may restrict the population. The generalizability was limited in the south of Taiwan. Additionally, the cross-sectional nature of the present data made a difficulty to assess study variables over time.

Implication for Practice

This study indicated care giving stress had significant findings of care giver's depressive

symptoms and general health. Nurses may assess and evaluate the factors of care giving, which could make deleterious consequence for the care giver's health. According to the results of this study, more active coping, more minimizing coping, and less avoidance coping could decrease depressive symptoms of care givers. Nurses could use effective coping strategies as interventions to help care givers of the elderly with dementia to adjust better in their care

giving situations. In addition, home health care professionals need to help care givers of cognitively or physically impaired elders to recruit more care givers from the family network. Coping (active, avoidance, and minimizing) may help family care givers to decrease their negative health outcomes and to increase their well-being.

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