

Factors Predicting Depression among Caregivers of Persons with Dementia

Pasitta Ondee, Rungnapa Panitrat, Kanaungnit Pongthavornkamol, Vorapun Senanarong, Theresa A. Harvath, Dechavudh Nittayasudhi

Abstract: This study aimed to determine, based on Pearlin's Stress Process Model, factors (i.e. behavioral problems and activities of daily living dependency of individuals with dementia, caregiver burden, and coping strategies of the caregiver) that predicted depression among caregivers of persons with dementia. Using stratified sampling, 226 caregivers of persons with dementia were recruited from three memory clinics in metropolitan Bangkok, Thailand. Data were collected via seven self-report questionnaires, including: a demographic data questionnaire; a revised Memory and Behavioral Problems Checklist; a modified Barthel Activities of Daily Living Index; the Zarit Burden Interview; the Jalowiec Coping Scale; and, the Center for Epidemiologic Studies Depression Scale. Data were analyzed via descriptive statistics and path analysis.

The results revealed the modified model fit the data well ($\chi^2 = 0.990$; $df = 1$; $p = 0.443$; RMSEA < 0.001; GFI = 0.998; AGFI = 0.974) and explained 51.4% of variation in caregiver depression. Behavioral problems of the persons with dementia were found to have a significant indirect effect on caregivers' depression through caregiver burden, while activities of daily living dependency of the individuals with dementia was found to have a significant indirect effect on caregivers' depression through caregiver burden. Behavioral problems and activities of daily living dependency of the individuals with dementia also had a significant direct effect on caregiver burden, while caregiver burden was found to have a positive direct effect on caregivers' depression. The findings may be helpful with development of an effective nursing intervention program for promoting good mental health and decreasing depression among persons with dementia.

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Introduction

Dementia is one of the most prevalent disorders found among the elderly. According to Alzheimer's Disease International (ADI), there currently are 30 million people with dementia worldwide, with 4.6 million new cases diagnosed each year.¹ A survey of elderly Thais found the prevalence rate of dementia among this population ranged from 3.4% to 9.8%.^{2, 3}

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Moreover, Thais, 60 years of age and older, comprised 10.94% of Thailand's population, in 2005, and are expected to increase to 15.28% (n=10.78 million) of the Thai population by 2020.⁴ Since the majority of individuals with dementia require care and/or supervision, their family caregivers often have to forgo or leave work to provide their needed care. Thus, it is not uncommon for caregivers, who provide such care for an extended period of time, to experience emotional issues (i.e., depression,^{5,6} increased stress and anxiety, aching, moodiness, headaches, dizziness, sleeplessness, and exhaustion⁷).

Prior studies have found the prevalence rate of depression among caregivers of the elderly to range from 11% to 65%.^{8,9} In addition, a number of studies have indicated that activities of daily living (ADL) dependency is associated with depression among caregivers of the elderly.^{10,11} However, no study could be located, in Thai or English language journals, that has investigated the relationship between ADL dependency of Thais with dementia and depression among Thai caregivers.

Conceptual Framework and Literature Review

This study focused on the outcomes of caregiving, using the Stress Process Model (SPM),¹² which has been used to explore relationships among selected factors involving the stress of caregiving (i.e., behavioral problems and ADL of persons with dementia, caregiver burden, and coping strategies of the caregiver) and depression among caregivers of the elderly. The SPM postulates that the relationship between the stressors associated with caring for an elderly person with dementia (i.e., behavior problems and ADL dependency of the demented person, and caregiver burden) and the outcomes (i.e., caregiver depression) of such care is mediated by the coping strategies used and the presence of social support.¹²

Dementia is a syndrome of impaired cognitive function that results in a decline of an individual's cognitive functioning. As the dementia progresses, individuals with dementia are known to experience mood and personality changes, cognitive decline, and psychiatric symptoms.¹³ Caregivers who care for their relatives with dementia for a prolonged time can experience various emotional problems, especially depression.⁵ Depression is an illness that involves one's body, mood, and thoughts that affect the eating patterns, sleep, and thoughts about oneself. Depression is recognized as a common mental health problem among caregivers of persons with dementia,⁶ with a prevalence rate ranging from 11% to 65% among the caregivers of patients with dementia.^{7,8} Depression impacts one's self-esteem, energy to work, decision-making, sleep, physical health, and continued ability to provide care for a loved one who has dementia.^{7,14}

There are many factors associated with caregiver depression, such as ADL dependency and behavioral problems of the person with dementia, caregiver burden, and the caregiver's coping strategies in dealing with the demands of caregiving. ADL dependency of the persons with dementia has been found to be associated with depression among caregivers of the elderly.¹⁵ Behavioral problems among individuals with dementia include a variety of behavioral disturbances, such as restlessness, wandering, aggression, shouting, and psychiatric symptoms (delusions, hallucinations, and depression).¹⁶ These behavioral problems, among persons with dementia, have been found to be associated with caregiver depression.¹⁷

Caregiver burden has been defined as an individual's subjective perception of overload in one or more of the physical, psychological, social, and/or financial aspects of caregiving.¹⁸ In addition, burden has been recognized as the perception of caregivers regarding the amount of time and degree of difficulty they encounter when supporting human functioning for their dependent care receivers.¹⁹ The primary caregivers of persons with Alzheimer's disease, the most common type of dementia, often have been described as the "hidden victims" of

the disease.²⁰ The demands of caregiving directly burden caregivers and can lead to depression. In the SPM, caregiver burden is thought to act as a mediator between behavioral problems and depression among caregivers of persons with dementia.²¹ However, the model is not precise with respect to the relationship between caregiver burden and caregiver depression.

Coping strategies have been found to be a mediator between stressors and health outcomes (i.e., depression).²¹ The coping strategies used may influence the development of depression among caregivers.²² Caregivers who use more active coping strategies, such as problem solving, have been found to experience fewer depressive symptoms than caregivers who use more passive coping strategies.²³ In addition, a significant association has been noted between active coping strategies for managing behavioral problems among persons with dementia and reduced levels of caregiver depression.²⁴

Previous studies have suggested that behavioral problems and ADL dependency of persons with dementia are associated with increased caregiver burden and caregiver depression.^{23, 25 - 27} However, the findings have not been consistent. Therefore, the aim of this study was to determine, based on Pearlin's Stress Process Model, factors (i.e., behavioral problems and ADL dependency of individuals with dementia, caregiver burden, and coping strategies of the caregiver) that predict depression among caregivers of persons with dementia.

Method

Design: This research used a cross-sectional, correlational design.

Sample: The sample, which consisted of caregivers of individuals with dementia, was recruited from three memory clinics, within 3 hospitals in metropolitan Bangkok, Thailand. The sample size was determined by estimation of the minimum sample size ratio of each estimated parameter, plus an additional 25% for

attrition, resulting in a need for 200 subjects. Initially 230 potential subjects were approached and selected to participate in the study. However, four of them withdrew prior to completing the questionnaires, because of worrying about their care receiver who was waiting for medical care. Thus, a total of 226 subjects took part in the study.

The subjects' inclusion criteria consisted of Thai primary caregivers who: were at least 18 years of age; provided care, at home, for a relative who had been diagnosed with dementia for at least one month; lived in the same household with their relative with dementia; had not been diagnosed with, or received treatment for, mental illness or a psychiatric disorder; were able to speak and understand Thai; and, were willing to participate in the study. Potential subjects were identified by the fact they were attending one of the three memory clinics, used as a study site, along with their relative who had dementia.

The caregivers included 184 women and 42 men who: had a mean age of 52.43 years (range = 20 to 83 years) and an average monthly income of 41,863.72 baht (30 baht = 1 USD). In addition, the subjects primarily: were Buddhist (n = 217; 96.0%); were married (n = 125; 55.3%); were daughters (n = 112; 49.6%); held a bachelor's degree or higher (n = 125; 55.3%); were not employed outside the home (n = 57; 25.2%); were a government officer/enterprise officer (n = 50; 22.1%); had an adequate income to meet their daily needs (n = 196; 86.7%); had four to six family members living in the household (n = 149; 65.9 %); had one (n = 152; 67.3%) or two (n = 46; 20.4%) family member(s) who required care for dementia; had been a caregiver for an average of 4.54 years; spent an average of 11.8 hours per day providing care to their loved one with dementia; had no health problems prior to becoming a caregiver (n = 167; 73.9%); developed health problems after becoming a caregiver (n = 112; 49.6%); engaged in caregiving because he/she was a child/close relative of the person with dementia (n = 151; 66.8%); had

gratitude toward the person with dementia (n = 64; 28.3%) or was unemployed (n = 47; 20.8%); and, had other family members who participated in the caregiving of the individual with dementia (n = 184; 81.4%).

The 226 individuals with dementia, who were receiving care from their caregivers, had an average age of 75.73 years (range = 52 to 98 years) and had been diagnosed with dementia for 1 month to 20 years (average = 4.6 years). They, primarily, were: female (n = 137; 60.6%); married (n = 122 ; 54.0%); primary school graduates (n = 80; 35.4%); Buddhist (n = 219; 96.9%); unemployed (n = 147; 65.0%) or retired and receiving a pension (n = 64; 28.3%); without personal income (n = 5; 5.3%); and, covered for health expenses by government insurance (n = 174; 77.0%).

Ethical considerations: Approval to conduct the study was obtained from the Institutional Review Board Committees of the primary investigator's (PI) academic institution, as well as the three memory clinics used as data gathering sites. Potential subjects were informed about: the nature of the study; voluntary participation; what involvement in the study entailed; anonymity and confidentiality issues; and, the right to withdraw from the study at any time without repercussions. If the participants encountered emotional distress, while taking part in the study, the PI offered them supportive counseling. Those who consented to participate in the study were asked to sign a consent form prior to data collection.

Measurements: Data were collected via seven instruments, including the: researcher-developed Demographic Data Questionnaire for Caregivers; researcher-developed Demographic Data Questionnaire for Persons with Dementia; revised Memory and Behavior Problem Checklist (RMBPC);²⁸ Thai version of the modified Barthel Activity of Daily Living Index (ADL);²⁹ Zarit Burden Interview (ZBI);¹⁹ Thai version of the Jalowiec Coping Scale (JCS);³⁰ and, Center for Epidemiologic Studies Depression Scale (CES-D).³¹ Permission to translate and/or use the original copyrighted instruments was obtained prior to data collection.

Instruments originally written in English, but not previously translated into Thai, required translation and back-translation, with comparison of the back-translated version to the original English version so as to assure no changes in meaning had occurred. Prior to use in this study, all instruments, with the exception of the two demographic data questionnaires, were examined for content validity by five experts (a psychiatrist, a gerontologist, a nurse gerontologist, and two lecturers in geriatric nursing), which yielded, for each instrument, a content validity index of 1.00. Also, prior to use in this study, all instruments were pilot tested on 30 caregivers, with characteristics similar to the study sample, and found to have Cronbach's alpha coefficients ranging from 0.86 to 0.94.

The Demographic Data Questionnaire for Caregivers was used to obtain personal information about each caregiver's: age; gender; marital status; religion; relationship with the individual with dementia; education level; occupation; income level; adequacy of income; number of individuals living in the household; number of individuals with dementia living in the household; time spent caring for the person with dementia; presence of health problems prior to caregiving and after starting caregiving; reasons for being a caregiver; and, the presence of other family members helping with caregiving.

The Demographic Questionnaire for Persons with Dementia (PWD) was used to collect information about the persons with dementia. The data obtained included: age; gender; duration of dementia; marital status; educational level; religion; occupation; personal income; and, source of health care coverage.

The 24-item RMPBC²⁸ was used to assess the presence of behavioral problems of the persons with dementia. The checklist consisted of three parts: memory-related problems (seven items); depression (nine items); and, disruption (eight items). Examples of the items were: "Asks the same question over and over" (memory); "Appears anxious or worried" (depression); and, "Wakes you and other family members during

the night" (disruption). Possible responses to each item included assessment of the frequency of the problem and the caregiver's reaction (i.e., "How much does it bother you?") to the behavioral problem. For frequency, the possible responses were: 0 = "never occurs;" 1 = "did not occur in the past week;" 2 = "occurred one to two times in the past week;" 3 = "occurred three to six times in the past week;" and, 4 = "occurs daily or more often." Possible responses to each item regarding reaction to the behavioral problems were: 0 = "not at all;" 1 = "a little;" 2 = "moderately;" 3 = "very much;" and, 4 = "extremely." A total score, which could range from 0 to 96 was obtained by summing the response values across all items. A high score indicated a high level of frequency of behavioral problems and the caregiver's reaction to the behavioral problems. The reliability of the instrument, in this study, was 0.93

The Thai version of the modified, 10-item, Barthel Activities of Daily Living (ADL) Index^{29, 32} was used to obtain information regarding the ADL of the persons with dementia. The questionnaire consisted of basic ADL, including their: bowel and bladder control, grooming; toilet use; feeding; transferring; mobility; dressing; stair use; and, bathing. The level of the persons', with dementia, ability to perform each activity was assessed using a variety of scales, depending upon the activity. For example, possible responses to bowel control were 0 = "incontinent" to 2 = "continent," while possible responses to mobility were 0 = "immobile" to 3 = "independent, but may use an aid (i.e., cane)." The total score, which could range from 0 to 20, was obtained by summing the response values across all items. High scores suggested a high level of independence with ADL. The reliability of the instrument, in this study, was 0.94.

The Thai version of the 22-item Zarit Burden Interview (ZBI)¹⁹ was used to measure caregiver burden. The ZBI was developed by Zarit¹⁹ and translated, in 2009, into Thai at the Mapi Research Trust. The instrument consisted of two dimensions: personal strain (18 items) and role

strain (12 items). Examples of the items were: "Do you feel your relative is dependent upon you?" (personal strain); and, "Do you feel your social life has suffered because you are caring for your relative?" (role strain). Possible responses to each item were: 0 = "never;" 1 = "rarely;" 2 = "sometimes;" 3 = "quite frequently;" and, 4 = "nearly always." A total score, which could range from 0 to 88, was obtained by summing the response values across all items. Interpretation of the total score was: 0 - 20 = "little or no burden;" 21 - 40 = "mild to moderate burden;" 41 - 60 = "moderate to severe burden;" and, 61 - 88 = "severe burden." The reliability of the instrument, in this study, was 0.93.

The Thai version of the Jalowiec Coping Scale (JCS)³⁰ was used to measure the coping strategies used by the caregivers. The instrument consisted of 40 items with two subscales: problem-focused coping strategies (15 items) and emotion-focused coping strategies (25 items). Examples of the items were: "Think through different ways to handle the situation" (problem-focused coping); and, "Drink alcohol beverages" (emotion-focused coping). Each item had the following possible responses: 1 = "never used;" 2 = "seldom used;" 3 = "sometimes used;" 4 = "often used;" and, 5 = "used all the time." A total score for the problem-focused subscale, which could range from 15 to 75, was obtained by summing the response values across all relevant items, while the total score for the emotion-focused subscale, which could range from 25 to 125, was obtained by summing the response values across all relevant items. A high score, for each subscale, suggested frequent use of the type of coping strategies being assessed. To obtain a total score for the entire scale, which could range from 40 to 200, the results of the two subscales were summed. The reliability of the instrument, in this study, was 0.91.

The 20-item Center for Epidemiologic Studies Depression Scale (CES-D)³¹ was used to measure symptoms of caregivers' depression by asking the frequency of specific depressive features experienced during the past week. The CES-D assessed four major

areas: depressive affect (7 items); positive affect (4 items); somatic symptoms and retarded activity (7 items); and, interpersonal relationships (2 items). Examples of items were: "I felt depressed" (depressive affect); "I felt I was just as good as other people" (positive affect); "I did not feel like eating; my appetite was poor" (somatic symptoms and retarded activity); and, "People are unfriendly" (interpersonal relationships). Possible responses for each item were: 0 = "rarely or none of the time;" 1 = "some or little of the time;" 2 = "occasionally or a moderate amount of the time;" and, 3 = "most or all of the time." Prior to calculating a total score, the four positively stated items, were reverse scored. The total score, which could range from 0 to 60, was obtained by summing the response values across all items. High scores suggested a greater depressive symptom severity. In the Western version of the instrument, scores of 16 and above suggested significant clinical symptomatology and the likelihood of a diagnosis of major depressive disorder. However, for the Thai version of the instrument, a score of 19 and greater was considered to suggest significant clinical symptomatology and the likelihood of a diagnosis of major depressive disorder. The reliability of the instrument, in this study, was 0.89.

Procedure: After approval to conduct the study was obtained, and eligible subjects were identified and signed a consent form, data were collected. Data collection took place in a private area in each of the memory clinics, and was coordinated with staff members of each clinic so that no interruptions in the data gathering process would occur and the person with dementia would receive medical services in a timely fashion. Subjects were given the seven questionnaires to complete on their own, which took about 30 minutes. To decrease the concerns of the caregivers, a trained research assistant (RA) was available to care for their respective relatives with dementia (i.e., prevent unsafe wandering and accidents).

Data analysis: Descriptive statistics were used to characterize the sample and to examine the distribution properties of the variables. Cronbach's alpha coefficient

was used to determine the study instruments' reliabilities. Path analysis was used to test the hypothesized, as well as the subsequent modified model of the study.

Results

Behavioral problems of persons with dementia:

The mean score of the frequency of behavioral problems of persons with dementia was 1.29 (range = 0-4). In regards to each subscale measuring the frequency of behavioral problems, the highest mean score was memory-impairment (mean = 2.19), followed by depression (mean = 0.82), and disruption (mean = 0.11). The mean score for the caregivers' reactions to the behavioral problems of the persons with dementia was 1.42 (range = 1-4). In terms of each subscale that measured the caregivers' reactions to the behavioral problems of the persons with dementia, the mean scores were as follows: memory-related (mean = 2.42); disruption (mean = 2.41); and, depression (mean = 1.96). These findings reflected a relatively low level of frequency and reaction to behavioral problems of the individuals with dementia in this study.

ADL dependency of persons with dementia:

The total score of ADL dependency of persons with dementia ranged from 0 to 20, with a mean of 14.18. Regarding the level of ADL dependency, most subjects had low ADL dependency (n = 161; 71.2%), followed by total ADL dependency (n = 30; 13.3%), moderate ADL dependency (n = 21; 9.3%), and severe ADL dependency (n = 14; 6.2%). Therefore, ADL dependency of the persons with dementia was at a low level.

Caregiver burden: Total scores of caregiver burden ranged from 0 to 88, with a mean of 23.82. Regarding the two subscales that measured a component of caregiver burden, the mean score for personal strain was 14.81, while the mean score for role strain was 9.01. The scores of caregiver burden were classified into three categories: little or no burden (0-20); mild to moderate burden (21-40); moderate to severe

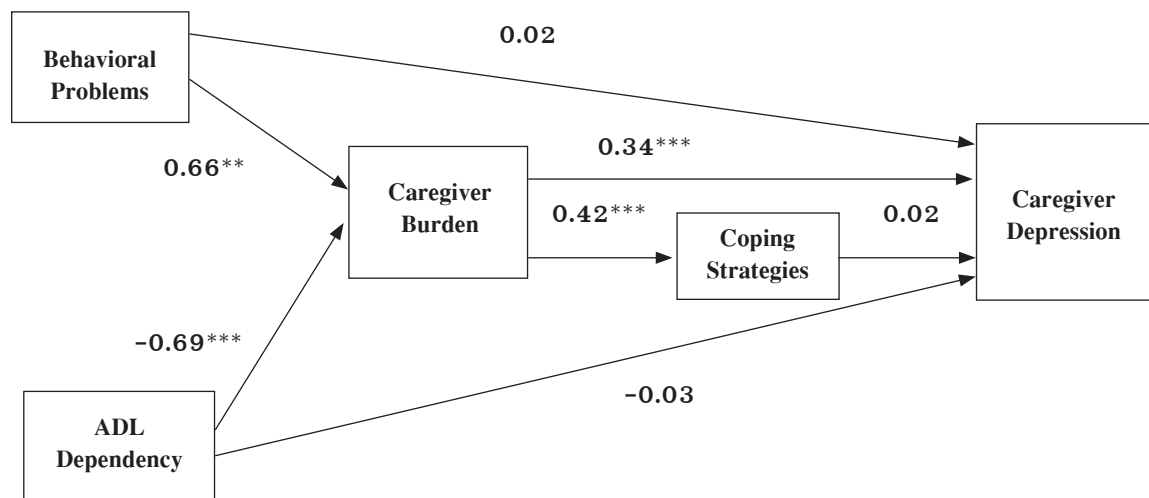
burden (41–60); and, severe burden (61–88). Slightly over half of the caregivers had little or no burden ($n = 115$; 50.9%), followed by mild to moderate burden ($n = 69$; 30.5%), moderate to severe burden ($n = 34$; 15.0%), and severe burden ($n = 8$; 3.5%). These findings suggested that the caregiver burden was at a low level.

Coping strategies: The total scores of caregivers' coping strategies ranged from 40 to 200, with a mean of 88.21. Regarding the two subscales that measured the focus of the coping strategies, the mean score for problem-focused coping was 41.03, while the mean for emotion-focused coping was 47.18. These findings indicated there was a low level of use in regards to coping strategies among the caregivers in this study. Moreover, the caregivers tended to use problem-focused coping strategies more often than emotion-focused coping strategies.

Caregiver depression: The total caregiver depression scores ranged from 0 to 60, with a mean

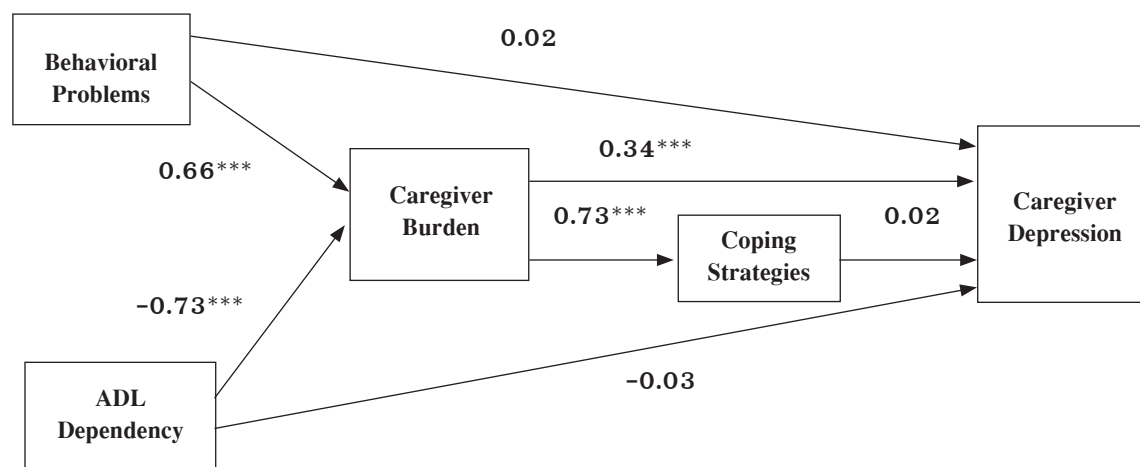
of 13.81. In terms of the four subscales that measured a component of caregiver depression, the mean scores were as follows: depressive effect = 2.88; positive effect = 6.26; somatic and retard activity = 4.32; and, interpersonal relationships = 0.35. These findings suggest, overall, the study's caregivers had a low level of depression. However, more than one-quarter of them ($n = 61$; 27%) did have a total score on the depression scale that was ≥ 19 , which suggested the presence of depression.

Model testing: The hypothesized model (see **Figure 1**) failed to fit the data. Therefore, the hypothesized model was modified by using modification indices of the program and theoretical support. The hypothesized model was modified until fit to the data was obtained (see **Figure 2**). Therefore, the estimated parameters, in the modified model, designated a better fit to the data and ensured the theoretical framework, except for the pathway between coping strategies and caregiver depression.



$$\chi^2 = 8.374; df = 2; \chi^2 / df = 4.367; p = 0.061; RMSEA = 0.120; GFI = 0.985; AGFI = 0.887; ***p < .001$$

Figure 1 Hypothesized Model of Predicting Factors of Depression among Caregivers of Persons with Dementia



$\chi^2 = 0.990$; $df = 1$; $\chi^2 / df = 0.990$; $p = 0.443$; RMSEA = 0.000; GFI = 0.998; AGFI = 0.974; *** $p < .001$

Figure 2 Modified Model of Predicting Factors of Depression among Caregivers of Persons with Dementia

The direct, indirect, and total effects of casual relationship of the modified model are shown in **Table 1**. The model indicated that behavioral problems, ADL dependency of persons with dementia, and caregiver burden were significant predictors of depression among caregivers of persons with dementia. Caregiver burden had a significant positive direct effect on caregiver depression. In addition, behavioral problems of the persons with dementia had a significant positive direct effect on caregiver burden. Furthermore, the ADL dependency

of the persons with dementia also had a significant negative direct effect on caregiver burden. The behavioral problems of the persons with dementia also had a significant indirect effect on caregiver depression, through caregiver burden, and the ADL dependency of the persons with dementia had a significant indirect effect on caregiver depression, through caregiver burden. Although there was a significant direct effect of caregiver burden on coping strategies, no significant indirect effect of caregiver burden on caregiver depression, through coping strategies, was noted.

Table 1 Direct Effect, Indirect Effect, and Total Effect of the Study Variables in the Modified Model

Casual Variables	Affected Variables								
	CG Burden			Coping Strategies			CG Depression		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
Behavioral Problems	.66***	–	.66***	–	.48***	.48***	.02	.23***	.25***
ADL Dependency	–.73***	–	–.73***	–	–.53***	–.53***	–.03	–.26***	–.28***
Caregiver Burden	–	–	–	.73***	–	.73***	.34***	.01	.35***
Coping Strategies	–	–	–	–	–	–	.02	–	.02
	R² = 0.337			R² = 0.052			R² = 0.514		

Note: *** $p < .001$; ADL = activity of daily living; CG = caregiver; DE = direct effect; IE = indirect effect; TE = total effect

Discussion

The average age of persons with dementia was 75.73 years, with 39.4% ($n = 89$) being 80 years of age and older. This finding was congruent with the fact that the prevalence of dementia increases as age increases.³³ Most of the persons with dementia ($n = 161$; 71.2%) had a low level ADL dependency, suggesting limited deterioration in being able to carry out tasks related to daily living (i.e., eating, bathing, walking). Quite possibly, because these individuals had ready access to health care services, as result of being able to pay for the services rendered, they received appropriate treatment (i.e., memory clinic and medications) that facilitated postponement of their cognitive impairment.

The caregivers primarily were middle-aged adults (mean age = 51.43 years). According to Erickson's Developmental Theory,³⁴ during middle-age, people commonly focus on career and family. However, for the caregivers, in this study, their focus had to include or primarily be about providing care to a person with dementia. The majority of study caregivers were female, which is similar to previous studies conducted in Western countries and Thailand.^{4,10,14} In Thailand, caregivers, primarily, have been found to be daughters,⁷ while in Western countries they, primarily, are spouses, especially wives.¹⁰ In general, regardless of culture, the care of a family member with an illness tends to fall on females. This is because there tends to be cultural expectations that caregiving of ill family members is the female's role. Thai females, especially single daughters, are most likely to take responsibility for providing care to a family member with dementia. According to the National Statistics of Thailand, elderly Thais often live with family members, in the same household, and their daughters tend to become the responsible caregiving person.¹⁴

A number of the caregivers were not employed outside the home ($n = 59$; 26.1%), followed by government/enterprise officers, who were employed as government/enterprise officers ($n = 50$; 22.1%).

However, 28.3% ($n = 64$) of the persons with dementia, for whom the caregivers provided care, received a retirement pension ($n = 64$; 28.3%) that assisted them in meeting their financial needs. This finding was congruent with findings of a previous study,¹⁴ wherein most caregivers were not employed and stayed at home. Unfortunately, no prior study could be located related to individuals with dementia receiving a retirement pension. As a result of the available monetary funds, either by the caregiver or person receiving care, the average monthly family income was higher than the average adequate income in Thailand. This finding, no doubt, helped to facilitate the accessibility of healthcare services for the family member with dementia.

The average duration of caregiving was 4.54 years, while the average time spent caregiving was 11.8 hours per day. This findings was similar to prior research that noted the mean period of caregiving was 3.8 to 4.3 years, with the average caregiving hours per day being 8.4 to 12.78.^{7,23} Since 57 (25.2%) of the caregivers were not employed outside the home, they most likely took more time to provide care to the person with dementia than the family members who were employed. The major reasons stated by the caregivers for serving as a caregiver were: being a child of the person with dementia; being a close relative of the person with dementia; and, feeling a sense of gratitude toward the person with dementia. Such findings were not surprising given the Thai culture, which advocates that the younger generation be responsible and have respect for the older generation by taking care of them. In addition, Thai Buddhists believe in the concept of repayment for parents' goodness to their children/grandchildren.

Most of the caregivers ($n = 167$; 73.9%) reported no health problems prior to becoming a caregiver. However, nearly half of them ($n = 112$; 49.6%) indicated health problems after becoming a caregiver. These findings were consistent with prior studies that found caregivers of persons with dementia tend to develop health problems (i.e., fatigue, stress, and back pain) after becoming a caregiver.⁶

The number of family members of caregivers ranged from four to six, with 81.4% ($n = 184$) having other family members participate in the caregiving of the demented person. Unfortunately, no previous research, in Thailand, could be located that reported the number of family members participating in the caregiving of a demented person. The fact that such a high percentage of the caregivers were able to access assistance from other family members, in the provision of caregiving, helps to explain the low level of caregiver burden and depression found among the caregivers in this study.

The frequency of caregiver reaction to behavioral problems of persons with dementia was low. The most frequently reported behavioral problem was memory impairment, with the reactions to this problem being the highest, yet relatively low, among the three types of behavioral problems measured. This finding was not congruent with previous studies^{35, 36} that found that the most frequently reported behavioral problem, among caregivers, was depression. Quite possibly, the fact the caregivers' reactions to the demented persons' behavioral problems was low was because of the financial accessibility of health care services (i.e., memory clinic and medications).

The majority of the caregivers had little or no burden ($n = 115$; 50.9%). This finding was not congruent with previous studies^{21, 37} that noted that caregivers had a high level of burden. The reason may be the result of the caregivers' belief that they never perceived the act of caring for their demented parent/family member as a burden. The caregivers believed that children are responsible for caring for their elderly parents/relatives. The fact that a large majority of caregivers ($n = 184$; 81.4%) received assistance in providing caregiving from other family members and had an average of 4.54 years of experience in caregiving most likely contributed to their low sense of caregiving burden. Having assistance with and knowledge/comfort about delivery of care had to help decrease the caregivers sense of caregiver burden.

The frequency in the use of coping strategies by the caregivers was low, regarding problem-focused and emotion-focused coping. However, they were more likely to use problem-focused coping, compared to emotion-focused coping. This finding was congruent with prior research³⁸ that noted that caregivers used more problem-focused coping than emotion-focused coping. The reasons, most likely, for a greater use of problem-focused coping among the caregivers were related to: the financial accessibility of healthcare providers, by the persons with dementia, which provided the caregivers with information about caregiving; and, the high educational level of the caregivers ($n = 125$ or 55.3% had a bachelor's degree or higher), which could have facilitated their ability to seek out and access available resources related to caregiving.

Sixty-one (27%) of the caregivers had depression scores ≥ 19 , suggesting the presence of depression. However, it was difficult to compare this finding to prior studies because they were predominately done in western cultures and used depression scores ≥ 16 .³⁹ The caregivers who were demonstrating depression could have been experiencing more caregiving burden, and ADL dependency and behavioral problems, on the part of the person with dementia, than the caregivers who were not experiencing caregiver depression.

The predictors of caregiver depression were found to be behavioral problems and ADL dependency, on the part of the person with dementia, and caregiver burden. Similar to prior research,^{35, 39} this study found caregiver burden had a positive direct effect on caregiver depression. Most likely, when caregivers experience more caregiver burden they become more prone to feelings of depression as a result of contending with their burden. Interestingly, the findings revealed no significant indirect effect between caregiver burden and caregiver depression, through coping strategies.

Behavioral problems of the demented person had a significant positive direct effect on caregiver burden, which was similar to previous studies.^{35, 39} Such

a finding suggested that higher behavioral problems of the demented person increased caregivers' burden level. The reason for the relationship, most likely, was because as behavioral problems of a demented person increase so does the need for more caregiving actions (i.e. effective management of behavioral problems).

Similar to prior research,⁵ ADL dependency of the demented person was found to have a significant negative direct effect on caregiver burden. Such a finding was not surprising given the fact that as demented persons became more dependent upon caregivers the caregivers are required to provide more caregiving actions. This, in turn, could increase the burden of caregiving on caregivers. Unlike many western cultures, where highly dependent demented persons are likely to be institutionalized,⁵ in Thailand, family members of demented persons, with high ADL dependency, are more likely to stay home to provide needed care rather than place their demented family members in institutions.

Both the presence of behavioral problems and ADL dependency of demented persons were found to have a significant indirect effect on caregiver depression, through caregiver burden, which was congruent with prior studies.^{5, 36, 39} The presence of behavioral problems and ADL dependency of demented persons both require increased actions of caregiving on the part of the caregiver. This situation can contribute to increased caregiver burden and, in turn, lead to greater caregiver depression.

Finally, similar to prior research,³⁸ caregiver burden was found to have a positive direct effect on coping strategies. Such a finding was not surprising because as one's burden increases the likelihood of increasing the use of coping strategies also increases. The fact that no significant indirect effect of caregiver burden on caregiver depression, through coping strategies, was found was not congruent with prior research^{38, 39} This possibly was due to the fact that, in this study, both emotion-focused coping and problem-focused coping were combined as one score in the analysis.

Limitations and Recommendations

The study focused only on Thai family caregivers of patients attending memory clinics in metropolitan Bangkok, Thailand. Therefore, the findings cannot be generalized to Thai family caregivers of patients living in rural areas or in small communities. Future research is needed to better understand the issues that primary caregivers from rural and small communities face in regards to providing care to persons with dementia.

In addition, the measurement used to assess behavioral problems (RMPBC)²⁸ did not contain all possible behavioral problems that could exist among individuals experiencing dementia. As a result, not all aspects related to caregiver burden were examined. Therefore, future researchers may want to consider the use of an assessment measurement that focuses on a wider range of possible behavioral problems among persons with dementia. The instrument used to assess coping strategies (JCS)³⁰ was developed in a Western culture and may not have been adequately sensitive to aspects of the Thai culture. As a result, some aspects of coping strategies, used by Thais, may have been missed. Therefore, future studies need to consider the development and use of an instrument that is sensitive to the coping strategies used by Thais. Finally, the level of dementia of the persons being care for, in this study, was never determined. As a result, it is unclear if there was a range in the level of dementia of the recipients of care. Therefore, future studies need to include and compare different levels of dementia severity, among recipients of care, so as to have a better understanding of depression among caregivers.

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ปัจจัยทำนายความซึมเศร้าของผู้ดูแลผู้ที่มีภาวะสมองเสื่อม

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บทคัดย่อ : วัตถุประสงค์ของการวิจัยครั้งนี้เพื่อศึกษาปัจจัยทำนายความซึมเศร้าของผู้ดูแลผู้ที่มีภาวะสมองเสื่อม ซึ่งประกอบด้วยพฤติกรรมที่เป็นปัญหา การพึ่งพาในการทำกิจวัตรประจำวันของผู้ที่มีภาวะสมองเสื่อม ความรู้สึกเป็นภาระของผู้ดูแล และการเผชิญปัญหา โดยใช้กรอบแนวคิดกระบวนการของความเครียดของเพอร์ลิน กลุ่มตัวอย่าง คือ ผู้ดูแลผู้ที่มีภาวะสมองเสื่อมซึ่งมารับการรักษา ณ คลินิกความจำ 3 แห่งในเขตกรุงเทพมหานคร จำนวน 226 คน โดยใช้การสุ่มตัวอย่างแบบลำดับขั้น เก็บรวบรวมข้อมูลโดยการให้กลุ่มตัวอย่างตอบแบบสอบถามด้วยตนเอง จำนวน 7 ชุด ได้แก่ แบบสอบถามข้อมูลทั่วไปของผู้ดูแลและผู้ที่มีภาวะสมองเสื่อม แบบสอบถามพฤติกรรมที่เป็นปัญหาของผู้ที่มีภาวะสมองเสื่อม แบบสอบถามการทำกิจวัตรประจำวันของผู้ที่มีภาวะสมองเสื่อม แบบสอบถามความรู้สึกเป็นภาระของผู้ดูแล แบบสอบถามแบบแผนการเผชิญปัญหาของผู้ดูแล และแบบประเมินความซึมเศร้าในผู้ดูแล วิเคราะห์ข้อมูลด้วยสถิติบรรยายและการวิเคราะห์อิทธิพลเชิงสาเหตุ

ผลการศึกษาพบว่าแบบจำลองที่ปรับแล้วมีความสอดคล้องกับข้อมูลเชิงประจักษ์ ($\chi^2 = 0.990$, $df = 1$, $p = 0.443$, RMSEA < 0.001, GFI = 0.998, AGFI = 0.974) โดยสามารถอธิบายความแปรปรวนของความซึมเศร้าในผู้ดูแลผู้ที่มีภาวะสมองเสื่อมได้ร้อยละ 51.4% พฤติกรรมที่เป็นปัญหามีอิทธิพลโดยอ้อมต่อความซึมเศร้าของผู้ดูแลผ่านความรู้สึกเป็นภาระในการดูแล การพึ่งพาในการทำกิจวัตรประจำวันมีอิทธิพลโดยอ้อมต่อความซึมเศร้าของผู้ดูแลผ่านความรู้สึกเป็นภาระในการดูแล พฤติกรรมที่เป็นปัญหาและการพึ่งพาในการทำกิจวัตรประจำวันของผู้ที่มีภาวะสมองเสื่อมมีอิทธิพลโดยตรงทางอ้อมต่อความรู้สึกเป็นภาระในการดูแล ความรู้สึกเป็นภาระในการดูแลมีอิทธิพลโดยตรงทางบวกกับความซึมเศร้า การศึกษาครั้งนี้สามารถนำไปสู่การพัฒนาโปรแกรมส่งเสริมสุขภาพจิตและการป้องกันการเกิดความซึมเศร้าในประชากรกลุ่มนี้ต่อไป

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คำสำคัญ: สมองเสื่อม ความซึมเศร้า ผู้ดูแล ความรู้สึกเป็นภาระ

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