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## PUBLIC HEALTH | RESEARCH ARTICLE

# Development of caregiver resilience scale (CRS) for Thai caregivers of older persons with dementia

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**Abstract:** This research aim to develop the Caregiver Resilience Scale (CRS) and examine the validity and reliability. The process began with a review of the concept of resilience based on a synthesis of existing research together with an exploration of qualitative data derived from an interview of ten caregivers of older persons with dementia. The CRS was examined by a panel of three experts to confirm its content validity, with the content validity index equal to 0.84. It was also tried out with 30 caregivers to test its internal consistency, and the result showed that the internal consistency was at a high level (Cronbach's alpha 0.87). Furthermore, the Exploratory Factor Analysis was conducted with 150 caregivers to test construct validity of the scale, and it was found that all six domains of the CRS had construct validity. The final version of the CRS was composed of 30 items within six domains: physical competence; relationship competence; emotional competence; cognitive competence; moral competence; and spiritual competence. The 30-item CRS was considered appropriate as a newly developed instrument.

**Subjects:** Development Studies; Health and Social Care; Medicine, Dentistry, Nursing & Allied Health

**Keywords:** caregivers; older persons; dementia; resilience scale

### 1. Introduction

As the caregivers' role, some caregivers of older persons with dementia have to provide care for 24 h per day and the long term care continuing for 15 years or more (Landefeld, Palmer, Johnson, Johnston, & Lyon, 2004). When having to live with long term care giving caregivers are likely to

### ABOUT THE AUTHOR

The author is a researcher nurse and interested in neurological patients. This research was conducted as part of a PhD program at College of Public Health Sciences, Chulalongkorn University, Thailand. The author is currently building caregiver resilience scale for use with caregivers of older persons with dementia in outpatients with a particular focus on resilience.

### PUBLIC INTEREST STATEMENT

Caregivers are the heart of care. Caring for older persons with dementia is associated with poor quality of life (QOL), poor physical and psychological health of caregivers. Resilience enabled caregivers to return to normal after traumatic psychological events, after change, after being exposed to serious events, and after a life threatening situation, making caregivers able to better cope with the demand of caring for elderly persons with dementia.

Health care professionals could also employ the Caregiver Resilience Scale as a guideline when assessing resilience among caregivers of older persons with dementia. Resilience outcomes are balance of mind and effective coping. Finally, they were able to continue providing care to older persons with dementia effectively.

develop stress. Furthermore, a high level of a patient's dependence impacts both their physiological and psychological well-being (Adams & Smyth, 2008; Pinguart & Sorensen, 2007). A review of previous research associated with caregivers' burden of caregivers of older persons with dementia has revealed that resilience is one of the key buffers and protective factors for caregivers burnout and, strain as it, decreases caregivers burden or caregivers distress.

Resilience is a process of growth and adaption, and it has a multi-dimensional structure. It is also a holistic, dynamic, and development that encompass the ability to cope with stress, and, serious situation (e.g. family problems, family relationships, and serious illnesses). Resilience outcomes are a balance of mind and effective coping. In other words resilience causes emotional strength, especially psychological strength of caregivers during interactions with others who have distress, psychological traumas, or emotional uncertainty. Some caregivers have more resilience, strength, and resistance to stress than others caregivers. Theses caregivers have good coping ability and can develop strength from the stress and trouble they are facing. In addition, caregivers who have resilience have the ability to seek meaning, goals, and values during complicated situations (Siebert, 2007c). Assessment of individual resilience is commonly undertaken by use of a resilience scale. A review of previous research has shown that there are two instruments that are popularly used to assess individual resilience as follows: (a) the 25-item Connor-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003), and (b) the 22-item Response to Stressful Experiences Scale (RSES) (Johnson et al., 2011).

At the same time, the literature review has revealed limited use of the CD-RISC to assess resilience in the general population and the Stressful Experiences Scale (RSES) has been mostly used to assess resilience in the military.

It is worth noting that most studies on caregivers' resilience have been conducted in western countries and at present no research has been done on an assessment of caregiver resilience using a resilience scale with Thai caregivers of older persons with dementia. Correspondingly, the development of a resilience scale for caregivers of older persons with dementia is much needed.

### **1.1. Purpose**

- (1) To develop the caregiver resilience scale for Thai caregivers of older persons with dementia.
- (2) To examine the validity and reliability of the caregiver resilience scale.

## **2. Methods**

### **2.1. Exploring the resilience concept and specifying the domains of caregivers' resilience**

The pre-specific domain of the Caregiver Resilience Scale (CRS) was determined by using the method of concept analysis from the literature review and exploration of caregivers' resilience (Davis, 1999; Grotberg, 1999; Gunnestad, 2006; Lester, Masten, & McEwen, 2006; Reivich & Shatte, 2002; Roland, 2006; Siebert, 2007a, 2007b). In the end, the resilience theory offered by Davis (1999) was used as a guideline in this study. Then, a qualitative approach was conducted by semi-structured interview among 10 caregivers in order to confirm the pre-specified structure of caregivers' resilience and congruence with Thai caregivers' context.

### **2.2. Formatting the CRS**

Based on the data from an exploration of the concept of caregivers' resilience and the Resilience Theory of Davis (1999), the first draft of the Caregivers Resilience Scale (CRS) developed in the present study was composed of six domains and 36 items, which were as follows: physical competence (items 1–6), relationship competence (items 7–12), emotional competence (items 13–18), moral competence (items 19–25), cognitive competence (items 26–31), and spiritual competence (items

32–36). These 36 items which were arranged in a four point Likert scale, with the response choices ranging from 0 (not true) to 3 (mostly true). The scoring criteria for positive items were described as follows: 0 (not true), 1 (sometimes true), 2 (frequently true), and 3 (mostly true), while the scoring criteria for negative items were as follows: 0 (mostly true), 1 (frequently true), 2 (sometimes true), and 3 (not true). Possible total scores ranged from 0 to 108 points, with higher scores indicating higher levels of caregivers' resilience.

### **2.3. Examining validity and reliability of the CRS**

#### **2.3.1. The psychometric evaluation was adopted to evaluate the validity and reliability of the CRS**

The content validity was validated by three professionals who gave expert opinions related to internal consistency with definitions of terms. The contents validity evaluation from which were created for the experts to give their opinion on the relevancy and clarity of each item which was a three point rating scale (–1 = not relevant, 0 = somewhat relevant, and 1 = quite relevant) was used.

#### **2.3.2. Pre-test**

The CRS was also tried out with 30 caregivers to test its internal consistency. Cronbach's alpha coefficient was used to estimate the internal consistency of the CRS. An alpha coefficient of 0.7 (Nunnally & Bernstein, 1994) or higher was considered acceptable for the newly developed instrument.

#### **2.3.3. Field test**

Item correlation was analyzed in the second round of evaluation of factor analysis. The items with a correlation of 0.3 were considered acceptable (Nunnally & Bernstein, 1994).

Exploratory Factor Analysis (EFA) was used to examine the number of domains and indicators of the CRS item set. Principle components and varimax methods were conducted to extract and rotate the components.

The rotate factors were interpreted by testing the items load at 0.30. The five criteria employed in evaluating items were eigenvalues, scree plot, and percentage of variance, factor loading, and theoretical interpretability. Therefore, the scores from the participants were considered to extract and specify factors of the CRS. Finally, the final draft of the Caregivers Resilience Scale (CRS) consisted of 30 items which could be categorized into six factors.

#### **2.3.4. Participants and setting**

The sample size was calculated based on the sample criteria of factor analysis. Munro (2005) suggested that the ratio of about five to ten subjects per item was adequate for an initial psychometric evaluation of a newly developed instrument. Finally, there were 150 participants.

The participants were 150 primary caregivers of older persons diagnosed with mild to moderate dementia or any subtypes of dementia. These patients all had appointments at the Memory Clinic, Neurological Clinic, or Geriatric Clinic in the Out Patient Department (OPD) at a regional hospital in upper southern Thailand. The participants were selected by means of purposive sampling according to the following inclusion criteria: (1) they were primary caregivers who provided the majority of care for older persons with dementia, (2) they were between aged 20 to 60 years of age, (3) they were able to speak and understand the Thai language, and (4) they agreed to participate in this study.

### **3. Protection of human subjects**

Protection of human subjects was sought from the Institutional Review Board (IRB), the Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University (COA No. 063/2557), and the Ethics Committee of the two Regional Hospital of upper southern Thailand.

The first Informed Consent Form (ICF) was used in the pre-test and field test to ensure the participants' willingness to participate in the semi-structure interview and psychometric evaluation.

#### 4. Results

The first draft of the CRS was composed of 36 items within the six domains of (physical competence, relationship competence, emotional competence, cognitive competence, moral competence, and spiritual competence). The draft was examined by three experts who recommended the deletion of six items, which were considered redundant. After omitting the six items, the content validity index was equal to 0.84, which was acceptable relevance for the construct of caregivers' competence.

In the second drafts of the CRS, a total of 30 items was retained. The draft was also tried out with 30 caregivers to test its internal consistency, and the result showed that the internal consistency was at a high level (Cronbach's alpha 0.87). For the item analysis: Cronbach's alpha coefficient was employed to examine the correlation between item and item, item and subscale, and item and total. Item correlations ranging from 0.56 to 0.88 were considered acceptable. Therefore, the correlation between item and total scores was accepted as adequate.

The third draft of the 30-items CRS was examined to ensure internal consistency. The alpha of each subscale and the total scale were evaluated. An alpha coefficient of the total CRS was 0.87, while the alpha coefficients of the subscales of the physical competence domain, relationship competence domain, emotional competence domain, moral competence domain, cognitive competence domain, and spiritual competence domain ranged from 0.52 to 0.87. The correlations of items and their subscale ranged from 0.32 to 0.83.

The results of Bartlett's test of sphericity showed a significant high inter—item correlation ( $\chi^2 = 17,124.13, p < 0.01$ ). The KMO reported the sampling adequate at 0.91 which was an excellent indicator of factorability. Factor extraction: In this step, the communalities of the 30 items of factor extraction ranged from 0.40 to 0.78. The six components with initial eigenvalues greater than 1 ranged from 1.43 to 21.34, and the total variances at 63.67 were reported.

The rotation using the orthogonal varimax method was calculated in this step. The result was considered a low level in the hierarchy of factors. The low level factor seemed less meaningful to the overall analysis (Comrey & Lee, 1992). Factor rotation was used to improve interpretation. After rotation, the six components showed a total percentage variance of 63.67% as presented (Table 1). The items statements and communality of each item in the CRS with all factors are provided (Table 2).

**Table 1. Total loading, percent of variance, and cumulative percentage of the second draft 30-item CRS classified by factor loading (Eigen values equal or greater than 1)**

Factor	Extraction sums of square loadings			Rotation extraction sums of squared loading		
	Eigenvalues	Percent of variances	Cumulative (%)	Eigenvalue	Percent of variances	Cumulative (%)
1	1.43	3.44	64.15	10.15	13.10	24.23
2	3.24	8.27	60.31	9.18	15.60	49.46
3	18.17	50.09	59.68	7.77	18.31	35.34
4	1.52	2.84	65.07	5.32	22.31	65.07
5	21.34	52.73	52.73	10.22	15.70	25.05
6	8.67	48.23	63.67	9.81	25.10	63.67

**Table 2. Item statements and communalities of the third draft 30-item CRS classified by item numbers (N = 150)**

Item	Item statement	Communality
<i>Physical competence</i>		
1	While caring for the older person with dementia, I get to sleep for at least six to eight hours per day	0.57
2	I have a physical check-up once a year	
3	I have time to do the activities that I like such as going to a movie, listening to music, seeing my friends, and exercising	0.61
4	I drink six to eight glasses of water a day, which is more than drinking soft drinks, tea, coffee, or energy drinks	0.68
5	I am concerned with what I eat, and I eat only food that has low sodium, low fat and low sugar content	0.64
<i>Relationship competence</i>		
6	While the older person with dementia is talking, I listen to him/her attentively and do not disrupt him/her	0.48
7	While engaging in a conversation with the older person with dementia, I have eye contact; facial expression and body language easy to make it easier to talk with him/her	0.77
8	Sometimes I feel bored and argue with the older person with dementia because it is difficult to make him/her understand me	0.78
9	When I talk to the older person with dementia, I reduce disturbing noises in the environment such as by turning of the television or radio, or trying to find a quiet place with no disturbance to talk	0.74
10	When the older person with dementia asks the same question repeatedly, sometimes I feel annoyed	0.66
<i>Emotional competence</i>		
11	I feel happy and I sometimes laugh while giving care to the older person with dementia	0.71
12	I feel that I am not alone because there are still other people who are ready to help me	0.66
13	While giving care to the older person with dementia, I sometimes shout and scream at them because I cannot control my emotion	0.77
14	I sometimes use violence with the older person with dementia when I am very angry	0.67
15	I have mentally prepared myself for a new situation and think of only one thing at a time	0.60
<i>Moral competence</i>		
16	I am able to make the older person with dementia to take the medication as prescribed by the doctor and take him/her to see the doctor on the day of the appointment	0.40
17	I am able to prepare meals and take care of food intake of the older person with dementia, and I even let the older person with dementia	0.68
18	I take the older person with dementia watch the television or listen to music, and I take him/her to go for walk outside, seeing his/her friends, and going to a temple	0.56
19	I arrange the environment to ensure safety such as making sure the floor is not slippery, having adequate lighting, and putting up signs	0.69
20	I take care of personal hygiene of the older person with dementia such as bathing, taking care of oral hygiene, and getting dressed	0.76
<i>Cognitive competence</i>		
21	When the older person with dementia is restless, disobedient, or repetitive, I understand him/her and am able to calm him/her down	0.69
22	When the older person with dementia is wandering or trying to get out of the house, I am able to make him/her stop wandering	0.71

(Continued)

**Table 2. (Continued)**

Item	Item statement	Communality
23	When the older person with dementia loses self-perception or talks to himself/herself, I am able to make him/her regain self-perception	0.50
24	When the older person with dementia tries to hurt himself / herself other people, or me, I tend to be frightened and do not know what to do	0.40
25	When the older person with dementia is sleepless at night, I am able to make him/her go to sleep	0.57
<i>Spiritual competence</i>		
26	I accept the changes that have come into my life	0.70
27	When I do good deeds, I think that the sacred being knows what I am doing	0.73
28	I am able to forgive others who do not give care to the older person with dementia as much as I do	0.61
29	I am able to seek something to hold on to spiritually such as beliefs and faith in my own religion	0.59
30	I have a chance to do religious activities such as praying, meditating, going to the temple or mosque, depending on my own religious beliefs	0.64

## 5. Discussion

The final version of the CRS for Thai caregivers was composed of 30 items within six domains: physical competence; relationship competence; emotional competence; cognitive competence; moral competence; and spiritual competence. The existing theoretical structures of the CRS are described as below:

Domain I: Physical competence was the sixth contributing factor to caregivers resilience in Thai primary caregivers (% of variance = 13.10). The study findings indicated that Thai primary caregivers did not perform self-care by using physical competence. This was simply because Thai primary caregivers were mainly blood relatives of the patients, so they tended to devote their time for the care of their loved one. Therefore, healthcare professionals should promote the physical health of caregivers and encourage them to perform self-care so as to maintain their health status (Ritveerakul, 2005).

Domain II: Relationship competence was the fifth-ranked contributing factor to resilience (% of variance = 15.60). All items reflected communication skills. From the literature review, the point was made that with older persons with dementia communication is important because it has effects on the outcome of caring for older persons with dementia (Savundranayagam, Hummert, & Montgomery, 2005).

Domain III: Emotional competence was the third contributing factor to resilience (% of variance = 18.31). The findings indicated that Thai primary caregivers had to bear the direct effect of caring for older persons with dementia. Similarly, previous research (Sörensen, Duberstein, Gill, & Pinquart, 2006) has reported that the direct strain from caring for older persons with dementia on health status includes depression, anxiety, stress, headache, sleeplessness, and exhaustion.

Domain IV: Moral competence was the second contributing factor to resilience in Thai primary caregivers (% of variance = 22.31). All items in this domain reflected caring for older persons with dementia. According to the Resilience Theory of Davis (1999) and a literature reviews, moral competence is important because moral competence enables caregivers to provide complete care that can control or delay progression of the disease.

Domain V: Cognitive competence was the fourth factor to resilience in Thai primary caregivers (% of variance = 15.70). It is worth noting that behavioral and psychological management was frequently found in mild to moderate demented elderly persons. Therefore, cognitive competences is important for primary caregivers as it equips them with the ability to properly carry out behavioral and psychological management.

Domain VI: Spiritual competence was the principal factor contributing to resilience in Thai primary caregivers (% of variance = 25.10). The findings of this study indicated that Thai primary caregivers cared for older persons with dementia by using religious teaching and gathering, belief, hope, strength and faith from spiritual support.

In conclusion, the CRS was found to be both valid and reliable. The CRS was considered appropriate as a newly developed instrument that could be used to assess resilience in Thai caregivers of older persons with dementia. The main limitation of the study is that the sample was selected from two setting to examine the construct validity, so the sample only represented Thai primary caregivers living in the upper southern region of the country. In the process of psychometric evaluation, the construct validity of the CRS should also be carried out if it is used in others regions of Thailand, or in other kinds of healthcare settings.

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#### Competing Interests

The authors declare no competing interest.

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#### References

- Adams, K. M. M., & Smyth, K. (2008). Personal losses and relationship quality in dementia caregiving. *Dementia*, 7, 301–319. <http://dx.doi.org/10.1177/1471301208093286>
- Connor, K. M., & Davidson, J. R. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18, 76–82. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/1520-6394>
- Comrey, A. L., & Lee, H. B. (1992). *First course in factor analysis*. Hillsdale, NJ: Lawrence-Erlbaum.
- Davis, N. J. (1999). Resilience, status of the research and research-based programs (2013). Retrieved from <http://www.mentalhealth.samhsa.gov/schoolviolence/5-28resilience.asp>
- Grotberg, E. (1999). Countering depression with the five building block of resilience. *Reaching Today's Youth*, 4, 66–72. Retrieved from <http://www.nesonline.com>
- Gunnestad, A. (2006). Resilience is a cross-culture perspective: How resilience is generated in different cultures. *Journal of Intercultural Communication*, 11. Retrieved from <http://www.immi.se/intercultural/nr11/gunnested.htm>
- Johnson, D. C., Polusny, M. A., Erbes, C. R., King, D., King, L., Litz, B. T., ... Southwick, S. M. (2011). Development and initial validation of the Response to Stressful Experiences Scale (RSES). *Military Medicine*, 176, 161–169. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/2100258>
- Landefeld, C. S., Palmer, R. M., Johnson, M. A., Johnston, C. B., & Lyon, W. L. (2004). *Current geriatric diagnosis & treatment*. Singapore: McGraw-Hill.
- Lester, B. M., Masten, A. S., & McEwen, B. (2006). *Resilience in children*. Malden, MA: Blackwell Publishing.
- Munro, B. H. (2005). *Statistical methods for health care research* (5th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill Inc.
- Pinquart, M., & Sorensen, S. (2007). Correlates of physical health of informal caregivers: A meta-analysis. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 62, P126–P137. Retrieved from <http://www.ncbi.nlm.nih.gov/doi/10.1093/geronb/62.2.P126>
- Reivich, K., & Shatte, A. (2002). *The resilience factor: 7 keys to finding your inner strength and overcoming life's hurdles*. New York, NY: Broadway books.
- Ritveerakul, N. (2005). *Factors predicting health status on family caregivers of dementia elderly patients* (The Degree of Master Nursing Science). Mahidol University, Bangkok, Thailand.
- Roland, C. B. (2006). On human resilience: Our role as counselors. *Adulspan Journal*, 5, 2–3. [http://dx.doi.org/10.1002/\(ISSN\)2161-0029](http://dx.doi.org/10.1002/(ISSN)2161-0029)
- Savundranayagam, M. Y., Hummert, M. L., & Montgomery, R. J. V. (2005). Investigating the effects of communication problems on caregiver burden. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 60, S48–S55. doi:10.1093/geronb/60.1.S48
- Siebert, A. (2007a). Resiliency and longevity. Retrieved from <http://www.resiliencecenter.com/articles/resilong.shtml>
- Siebert, A. (2007b). Resiliency principles. Retrieved from <http://www.survivorguidelines.org/articles/sieb11.html>
- Siebert, A. (2007c). Caregiver resiliency. Retrieved from <http://www.resiliencecenter.com/articles/caregiver.shtml>
- Sörensen, S., Duberstein, P., Gill, D., & Pinquart, M. (2006). Dementia care: mental health effects, intervention strategies and clinical implications. *The Lancet Neurology*, 5, 961–973. doi:10.1016/S1474-4422(06)70599-3



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