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## RESEARCH ARTICLE

### A Mixed-Method Approach on Secure Attachment and its Effects on Caregivers of Older Adults Living at Home

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#### Abstract:

##### Background:

A secure attachment style of informal caregivers is important for the care of older adults at home. Informal caregivers who have secure attachment style to care for older adults, can effectively provide care for older adults.

##### Objective:

A sequential explanatory mixed-method design was introduced to study the factors predicting secure attachment and explain informal caregivers' perceptions.

##### Materials and Methods:

140 informal caregivers were selected from sub-district health-promoting hospitals from provinces in the northeastern Thailand by using the multi-stage random sampling method. The parameters included were caregivers' personal information, satisfaction, empathy, health status, and caregivers' attachment. Five experts in the field considered the content validity of all the measurements. The reliability of the four measurements was verified by applying Cronbach's alpha coefficient, yielding 0.83, 0.70, 0.82 and 0.74. The researchers analyzed the data obtained from descriptive statistics and hierarchical regression analysis. A qualitative descriptive study was performed using semi-structured interviews, and data were analyzed using thematic analysis.

##### Results:

The results of quantitative data (a cross-sectional design) revealed that caregivers' health status was considered the strongest predictor ( $\beta = .362$ ,  $t = 5.208$ ,  $p < .001$ ) of secure attachment, followed by satisfaction, gender (female) and empathy. The qualitative data results revealed that four factors, i.e., caregivers' healthy status, caregivers' satisfaction, caregivers' empathy, and female gender, could help the caregivers provide better care.

##### Conclusion:

Informal caregivers with good health status exhibited secure attachment. Healthcare teams and nurses should implement a program promoting good health status for informal caregivers who care for older adults at home.

**Keywords :** Predictor factors, Secure attachment, Caregivers of older adults, Cronbach's alpha coefficient, Occupation, Relationships.

#### Article History

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## 1. INTRODUCTION

The ageing population is a global trend as a consequence of medical advances and the decrease of both fertility and mortality rates, resulting in increased longevity, such as in Thailand. Certain factors can be directly attributed to the increasing number of older adults. Statistically, Thailand's older adult population grew from 7.2 million in 2010, with a projection of 11 million by 2020 [1]. In 2005, older adults in

Thailand reached 10%. Therefore, Thailand became an aging society [2]. The current trend in Thai families has switched from extended to nuclear families. Each family has fewer children because more housewives have to work outside the home, and parents rely on their children less. Domestic caregivers or servants are also more difficult to find, while approximately 600,000-700,000 older adults live alone [3]. Therefore, caregivers are important for older adults in Thai society [4].

Attachment style is a perception of self and others. There

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are four types of attachment styles: secure, anxious-preoccupied, dismissive-avoidant, and fearful-avoidant [5]. In addition, it is a way that a person contacts other people to form relationships [6]. Caregivers who have secure attachment can effectively provide care for older adults. There is still no clear evidence about how to connect caregivers with older adults to provide long-term care for the older population. A secure feeling of attachment [7, 8] between a caregiver and a care receiver is important. Caregivers may have a superficial relationship because of disappointment, leading to a fearful attachment style related to negative views of self and others. This consequently leads them to avoid having a relationship because they fear rejection. Therefore, determining the factors affecting the attachment bond of informal caregivers among caregivers and older adults needs to be explored.

According to a literature review, there are many factors affecting a secure attachment style among unpaid caregivers caring for older adults living at home. These factors include gender, occupation, economic status, length of time spent providing care, satisfaction, empathy, and the health status of the caregivers [6, 9]. Good quality relationships with the family of caregivers result in good satisfaction of unpaid or secure caregivers, making older adults feel warm. Hence, the relationship quality among caregivers and older adults is important [10]. Caregivers that are satisfied with caring for older adults will not feel that caring is a burden [11]. Importantly, a secure attachment style is essential for caregivers. In order to support caregivers, understanding the predictive factors associated with secure attachment is essential, and knowledge about what predictors are most likely to give caregivers secure attachment, must be gained. The selected factors can help promote caregivers in terms of flexibility and adaptation for caring for older adults. The majority of aging people (17.30%) in Thailand is in the northern region, while the upper northeastern region ranks fifth (13.10%) [12]. Many older people in the upper northeastern region are poor, and residing in a nursing home is expensive. Therefore, understanding the predictors of secure attachment of caregivers of older adults living in the northeastern part of Thailand is essential for promoting long-term care for older adults. However, previous studies have yielded limited knowledge about the predicting factors associated with the secure attachment of caregivers. Due to inadequate studies on the factors surrounding the secure attachment of caregivers, this study examines the factors predicting secure attachment and explains informal caregivers' perceptions.

Hence, the findings of this study can be useful in the development of programs for supporting informal caregivers caring for older adults at home.

## 2. MATERIALS AND QUANTITATIVE STUDY METHODS

### 2.1. Design and Participants

1) This sequential explanatory mixed-method design survey study aimed to examine the predictor variables of secure attachment in caregivers of older adults living in the northeastern region of Thailand. Data were collected from December 23, 2019 to March 23, 2020. The samples were

informal caregivers in the upper northeastern region of Thailand. The sample size was determined by using the G \* Power 3 program [13]. The effect size was determined at 0.15 by the Medium of Squared multiple correlations, referring to the size of the medium influence (medium) at the statistical significance level of 0.05. The Power of the test was 0.80 [14]. There were 7 predictors as subjected by 112 people. To prevent data missing, the researcher added more participants to 140 people. The participants consisted of 140 informal caregivers who lived with older adults and met the inclusion criteria. The 140 participants were screened using the caregivers' attachment style questionnaire of Parapob [15]. These informal caregivers were siblings or spouses (unpaid informal caregivers) taking care of older adults for at least three years.

2)The caregivers had to be living in the same house with the older adult(s) who had been under their care for at least three years.

3)The caregivers had to be able to communicate fluently in Thai. This study was based on a cross-sectional design examination.

### 2.2. Data and Materials

In order to protect the rights of the research participants in the study, data collection was performed following Project Number 140/2562 on November 21, 2019, with approval from the Ethical Review Sub-Committee Board for Human Research Involving Sciences, Thammasat University, No. One hundred and forty participants provided data on the following instruments: 1) the caregivers' personal information; 2)the caregivers' satisfaction (Satisfaction Scale [16] the caregivers' empathy (the version of the basic empathy scale by Makmee [17]; 4)the caregivers' health status [18]; and 5) the caregivers' attachment by Parapob based on the work of Bartholomew and Horowitz [7, 15]. Five experts considered the content validity and reliability. Four measurements, the caregivers' satisfaction, the caregivers' empathy, the caregivers' health status, and the caregivers' attachment, were verified applying Cronbach's alpha coefficient (0.83, 0.70, 0.82, and 0.74). The researchers randomly selected the caregivers of older adults. The participants signed a consent form after they expressed their understanding of their roles as participants in the project. The questionnaire responses remained anonymous, with coding for all completed questionnaires.

### 2.3. Data Analysis

The Statistical Package for the Social Science for Windows (SPSS version 22.0) was used to analyze the demographic data, with frequency, percentage, mean, and standard deviation. In addition, the researchers used this program to examine the predictors of relationship quality with the selected factors, including satisfaction, empathy, health status, and secure attachment of caregivers, using hierarchical regression analysis for testing seven predictive factors. In the first step, the personal factors included gender (GEN), occupation (OCCU), economic status(ECO), sufficient income but not for savings (ECO1), and sufficient income for savings (ECO2), all of which were entered into the first model. The second step involved adding caregivers' satisfaction (TS) to the regression

model, while the third step added empathy (TEM) to the model. The fourth step added length of time spent providing care (TIME 1), such as 8-14 hours (TIME 2), 15-21 hours (TIME 3), and 22-24 hours (TIME 4), to the model. In the last step, health status (TH) was added to the regression model.

### 3. MATERIALS AND QUALITATIVE STUDY METHODS

#### 3.1. Design and Participants

In the qualitative descriptive study, the perceptions of caregivers caring for older adults living at home were explored by using a qualitative descriptive design to gain a better understanding of the most frequent prominent predictors related to the secure attachment of caregivers.

#### 3.2. Data and Materials

1. The instruments used in the quantitative phase were utilized to construct interview guidelines for the in-depth interviews with caregivers in order to gain a better understanding of secure attachment based on the factors with the highest scores, indicating that they could be the predictors of secure attachment.

2. The above-mentioned interview guide was adopted for the study and used with the participants. The interview guide was constructed based on the variables with the highest scores, indicating that they were capable of predicting secure attachment. It consisted of semi-structured interview questions that were used to ask the participants about their perceptions and understanding of the secure attachment of informal caregivers caring for older family members at home.

3. The interview guide was approved by five experts for appropriate language, accuracy, and completeness.

### 4. RESULTS

#### 4.1. Demographic Data

The results of the analysis of the personal information of caregivers of older adults by using descriptive statistics

revealed that most of the participants were males (56.43%) (n = 79) and non-healthcare professionals (51.43%) (n= 72) with sufficient income but not enough for savings (70.00%) (n=98). The length of time spent providing care for older adults was 1-6 hours per day, or 32.86% (n =46).

#### 4.2. Factors Predicting Secure Attachment in Caregivers of Older Adults

One hundred and forty persons with informal caregivers completed five measurements examining the factors predicting secure attachment in caregivers of older adults living at home. At the fifth step of the regression model by using enter, caregivers' health status (TH) ( $\beta = .362$ ) was found to be the strongest predictor of secure attachment, followed by satisfaction (TS) ( $\beta = .312$ ), gender (GEN) ( $\beta = .178$ ), and empathy (TEM) ( $\beta = .138$ ). In contrast, occupation (OCU) ( $\beta = -.075$ ,  $t = -1.098$ ,  $p = .274$ ), length of time spent providing care (TIME2 $\beta = -.007$ ,  $t = -.100$ ,  $p = .920$ , TIME3 $\beta = -.059$ ,  $t = -.735$ ,  $p = .464$ , TIME4 $\beta = -.027$ ,  $t = -.371$ ,  $p = .711$ ) and economic status (ECO1 $\beta = -.075$ ,  $t = -.845$ ,  $p = .400$ , ECO2 $\beta = .003$ ,  $t = -.038$ ,  $p = .970$ ) were not found to be significant predictors of the secure attachment of caregivers. Caregivers' gender, occupation, income, economic status, satisfaction, empathy, length of time spent providing care for older adults per day, and health status co-explained the variance of the secure attachment pattern of caregivers of older adults by 42.0% with a statistical significance ( $R^2 = .420$ ,  $F = 24.445$ ,  $p < .000$ ). The results of the hierarchical regression analysis pointed out that the factors predicting the secure attachment pattern of caregivers of older adults were health status, satisfaction, gender, and empathy (Tables 1, 2 and 3).

Based on the hierarchical regression analysis studying the factors influencing the secure attachment pattern of caregivers of older adults, namely gender, occupation, economic status, satisfaction, empathy, length of time spent providing care for older adults per day, and health status. For the relationship analysis, the findings indicated that the independent variables affecting the dependent variable were caregivers' gender, occupation, satisfaction, empathy, and health status (Table 1).

**Table 1. Pearson's product correlation with secure attachment (n=140).**

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Gender (GEN)-Female	-	-	-	-	-	-	-	-	-	-	-
2. Occupation (OCCU) - Healthcare professionals	-.011	-	-	-	-	-	-	-	-	-	-
3. Economic status Sufficient income but not for savings (ECO1)	.062	.120	-	-	-	-	-	-	-	-	-
4. Sufficient income for savings (ECO2)	-.135	.075	-.568**	-	-	-	-	-	-	-	-
5. Caregivers' satisfaction (TS)	.262*	.042	.220*	-	-	-	-	-	-	-	-
6. Empathy (TEM)	.107	.039	.098	-.115	.216*	-	-	-	-	-	-
Length of time spent providing care 7. Time 8-14 hours (TIME2)	-.131	.053	-.038	-.019	-.136	-.098	-	-	-	-	-

(Table 1) contd.....

8. Time 15-21 hours (TIME3)	- .245*	.050	.142	.094	- .227*	.051	-.132	-	-	-	-
9. Time 22-22 hours (TIME4)	.059	-.123	-.095	.010	-.034	-.129	-.166	.322*	-	-	-
Variables	1	2	3	4	5	6	7	8	9	10	11
10. Health status (TH)	.022	.065	-.076	-.087	.304*	.170*	.108	.010	-.088	-	-
11. Secure attachment (TSE)	.282*	-.043	-.023	-.094	.499*	.286*	-.037	-.165	-.042	.484*	-

Note. \*p <.05, \*\* p <.001.

Table 2. Hierarchical regression analysis for the predictor variables of secure attachment of caregivers (n = 140) (Enter).

Step Predictor variables	Model 1			Model 2			Model 3			Model 4			Model 5		
	$\beta$	t	p	$\beta$	t	p	$\beta$	t	p	$\beta$	t	p	$\beta$	t	p
1 Gender	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Female	0.27	3.29	0.001	0.15	2.05	0.043	0.15	1.97	0.052	0.15	1.99	0.049	0.16	2.33	0.022
Occupation (OCCU)	-0.02	-0.23	0.816	-0.03	-0.45	0.656	-0.04	-0.55	0.585	-0.05	-0.63	0.531	-0.08	-1.1	0.274
Economic status	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sufficient income, but not enough for savings (ECO1)	-0.1	-1	0.317	-0.19	-2.05	0.043	-0.19	-2.1	0.037	-0.19	-2	0.048	-0.08	-0.85	0.4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sufficient income for	-0.11	-1.11	0.269	-0.09	-0.98	0.331	-0.07	-0.84	0.401	-0.07	-0.77	0.442	0	0.04	0.97
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Satisfaction (TS)	-	-	-	0.48	6.31	0	0.45	5.88	0	0.46	5.64	0	0.32	4.02	0
3 Empathy(TEM)	-	-	-	-	-	-	0.19	2.53	0.013	0.19	2.48	0.014	0.14	2.13	0.035
4 Length of Time	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	0.05	0.68	0.496	-0.01	-0.1	0.92
8-14 hrs./day (TIME1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15-21 hrs./day (TIME2)	-	-	-	-	-	-	-	-	-	0	0	0.999	-0.06	-0.74	0.464
22-24 hrs./day (TIME3)	-	-	-	-	-	-	-	-	-	-0.03	-0.33	0.744	-0.03	-0.37	0.711
5 Health Status (TH)	-	-	-	-	-	-	-	-	-	-	-	-	0.35	4.82	0

\*p <.05, \*\* p <.01, \*\*\* p <.001

Table 3. Hierarchical regression analysis for the predictor variables of secure attachment of caregivers (n = 140) (Stepwise)

Model M	R	R <sup>2</sup>	R <sup>2</sup> Change	F	P-value
1	.282	.080	.080	11.920	.000
2	.523	.273	.025	25.734	.000
3	.570	.325	.021	16.251	.000
4	.570	.325	.021	16.251	.000
5	.684	.420	.018	24.445	.000
Predictors	b	<sup>SE</sup> b	Beta( $\beta$ )	t	P-value
Health status	.603	.116	.362	5.208	.000
Satisfaction	.338	.078	.312	4.318	.000
Gender	.180	.069	.178	2.604	.010
Empathy	.530	.260	.138	2.041	.043
	R=.648	R <sup>2</sup> =.420	F=24.445	-	-

\*p <.05, \*\* p <.01, \*\*\* p <.001

**Table 4. Themes of caregivers caring for older adults.**

Themes	Sub themes	Categories
1 Meaning of secure attachment	1.1 Providing good care	1) Giving the best care 2) Love 3) Caring for older adults
-	1.2 Connection with older adults	1) Attachment to parents 2) The responsibility of the youngest child
2 Factors affecting the secure attachment of caregivers who care for older adults	2.1 Gender: being female affecting secure attachment	1) Females providing better care and understanding of older adults 2) Females being more delicate 3) Females being more
-	-	females being more
-	-	inclined to touch
-	2.2 Satisfaction affecting secure attachment	1) Thinking that they are happy 2) Anticipating the future
-	2.3 Empathy affecting	1) Being afraid of
secure attachment	making older adults feel	
-	regret	
-	2) Doing good without	
-	expecting anything in	
-	return	
-	3) Being moral	
-	caregivers	
Themes	Sub themes	Categories
-	-	4) Keeping a sense of humor
-	2.4 Caregivers' health status affecting secure attachment	1) Caregivers staying healthy

**Table 5. Integration of the findings on the four predictor variables and secure attachment in caregivers.**

Predictor variables	Standardized coefficients (β)	Qualitative sub-theme	Categories
Gender	(β = .178, t = 2.604, p <.05)*.	1) Gender affecting secure attachment	1) Females providing better care and understanding of older adults 2) Females being more delicate 3) Females being more females being more inclined to touch
Satisfaction	β = .312, t = 4.318, p <.001***	Satisfaction affecting secure attachment	1) Thinking that they are happy 2) Anticipating the future
Empathy	β = .138, t = 2.041, p <.05)*.	Empathy affecting secure attachment	1) Being afraid of making older adults feel regret 2) Doing good without expecting anything in return 3) Being moral caregivers 4) Keeping sense of humor
Caregivers' health status	(β = .362, t = 5.208, p <.001***)	Caregivers' health status affecting secure attachment	1) Caregivers staying healthy

**5. DISCUSSION**

**5.1. Caregivers' Health Status**

Caregivers' Health Status (TH) was found to be the strongest predictor and was able to explain the variance in the secure attachment as a significant predictor of secure attachment (β = .362, t = 5.208, p <.001). In addition, insecurely attached individuals were more likely to report more physical and mental health problems than securely attached individuals. This finding was consistent with the qualitative results in the category: "Caregivers staying healthy". If they are

healthy, it will be good for the care of the elderly. Changes in physical health seem to limit the ability of caregivers to provide care to meet the needs of care recipients, resulting in the feelings of the elderly about their physical deterioration, which is negatively associated with caregivers' outcomes [19]. In this study, the researchers used quality of life or caregiver's well-being to measure their health status. Secure attachment is related to subjective well-being [20]. On the part of caregivers, attachment anxiety has been found to be correlated with impaired mental health, while attachment insecurity has been

found to be correlated with an increasingly regulated type of caregiving [21].

### 5.2. Caregivers' Satisfaction

The findings concerned the relationship between satisfaction and the secure attachment pattern of caregivers of older adults. The finding was consistent with the qualitative results in the following two categories: 1) thinking they are happy and 2) anticipating the future. Satisfaction was able to explain the variance in the secure attachment of caregivers of older adults as a significant predictor of secure attachment ( $\beta = .312, t = 4.318, p < .001$ ).

In terms of self-satisfaction, most of the caregivers rated themselves at 80% and over, indicating the self-esteem of the informal caregivers. When they have self-esteem, their feeling towards the older adults they are caring for, will be better. This is consistent with the research of Murphy [22]. According to the findings, relationship, satisfaction, parenting, and health-related quality of life were negatively affected by caregiving. In fact, relationship quality has also been interchangeably used with relationship satisfaction, happiness, and even adjustment in recent years [10]. Satisfaction was certainly associated with secure attachment [23] (Tables 4 and 5).

### 5.3. Caregivers' Empathy

Empathy was able to explain the variance in the secure attachment of caregivers as a significant predictor of secure attachment ( $\beta = .138, t = 2.041, p < .05$ ). This finding was consistent with the qualitative results in the following categories: 1) being afraid of making older adults feel regret; 2) doing good without expecting anything in return; 3) being moral caregivers; and 4) keeping a sense of humor. In this research, it was found that empathy affected the care of the older adults because the informal caregivers showed mental stability and flexibility. This was consistent with the study of Pinijvicha [6], who studied the relationship between attachment styles and empathy. It was found that attachment styles and empathy were significantly related. The present study was consistent with a study that found that empathy could be defined as the ability to perceive the thoughts of other people as cognitive and affective empathy. Empathy, therefore, is the ability to feel the emotions of others and respond with concern, kindness, capacity for adaptation, and caring about the suffering of others or the emotions of elderly people [17, 24]. A number of studies indicated a positive correlation between attachment and empathy [25].

### 5.4. Gender

The results concerned the relationship between gender (female) and the secure attachment patterns of caregivers of older adults. Female gender was able to explain the variance in the secure attachment of caregivers of older adults as a significant predictor of secure attachment ( $\beta = .178, t = 2.604, p < .05$ ). This finding corresponded with the qualitative results in the following categories: 1) females providing better care and understanding of older adults; 2) females being more delicate; and 3) females being more inclined to touch. This finding was in accordance with Thai social norms, where the

predominant roles in the household or family belong to females [26]. Thai society believes that women have to be responsible for providing care for the well-being of older adults and other people in the household. Furthermore, men are usually less involved in caring for older adults than women [27]. This means that females tend to be more secure than males because females aged between 45 and 65 years have a greater tendency to accept the task of providing care for aging and elderly family members or other adults [25]. Hence, this behavior may emerge when helping a care recipient with toileting, bathing, and other ADL [28].

### 5.5. Occupation

The results in this area concerned the relationship between occupation (non-professional healthcare) and the secure attachment patterns of caregivers of older adults. However, non-professional health caregivers were not a significant predictor of the secure attachment of caregivers of older adults ( $\beta = -.075, t = -1.098, p = .274$ ). Occupation did not affect the security of the caregivers. The older adults in this research were home-bound and social-bound. Therefore, medical or nursing skills in the care of this elderly group were not focused. Occupation did not affect the secure attachment patterns of caregivers in this study due to the fact that both healthcare professionals and non-professional health caregivers, including village health volunteers or villagers in the northeastern culture, continue to live in the same way as in the past. In the case of the elderly with chronic diseases or taking medications, caregivers may be either non-professional or professional [29].

### 5.6. Economic Status

The first indication of the results in this area concerned the relationships between economic status (ECO1, ECO2), including sufficient income but not enough for savings (ECO1), sufficient income enough for savings (ECO2), and secure attachment patterns of the caregivers of older adults. It was found that none of the factors mentioned above was a significant predictor of secure attachment on the part of caregivers ( $\beta = -.075, t = -.845, p = .400$  and  $\beta = .003, t = .038, p = .970$ ).

Studies in Thailand have indicated that financial status does not affect secure attachment in caregivers of older adults. This is possible because Thailand is a country with different societies, cultures, and values concerning elderly care. For example, daughters or the youngest daughters must provide care for the elderly. If not, they will be blamed by neighbors and society. This is different from other studies, which found that economic resources represented another caregiver characteristic that appears to be important in determining the quality of the relationships of care caregivers and recipients. Economic resources represented the financial means by which an individual meets his or her material needs. In dyadic caregiving relationships, the economic resources of caregivers may be used by care recipients without personal economic resources. Caregivers' assessment of satisfying and adequate economic support will make them feel certain about their relationships with the elderly [30].

### 5.7. Length of Time Spent Providing Care

The fourth indication of the findings concerned the relationship between the length of time spent providing care (TIME1, TIME2, TIME3) and the secure attachment patterns of caregivers of older adults. However, the length of time spent providing care (TIME1, TIME2, TIME3) was not a significant predictor of the secure attachment of caregivers of older adults ( $\beta = -.007$ ,  $t = -.100$ ,  $p = .920$ ,  $\beta = -.059$ ,  $t = -.735$ ,  $p = .464$ ,  $\beta = -.027$ ,  $t = -.371$ ,  $p = .711$ ). The length of time spent providing care may not affect the secure attachment of caregivers. However, the quality of time may be important. In this study, the quality of time was not studied. Therefore, the length of time spent providing care did not affect the secure attachment of caregivers. This is inconsistent with a study of Stolz et al. [31], who collected data from 26 articles on caregivers providing care for elderly people in the USA, Europe, Canada, and Hong Kong. Most of the articles studied were about the caregivers of the elderly with dementia using both quantitative and qualitative designs. The study found that long-term good quality was correlated with higher secure attachment rates and styles [32].

### CONCLUSION

The findings of this study indicated that the predictors (caregivers' gender, satisfaction, empathy, and health status) accounted for 42.0% of the variance in insecure attachment among the informal caregivers. Suggestions for future study are that nurses or health care providers should implement good health status in order to help informal caregivers gain security and help older adults effectively. Further studies, the researcher should conduct activities to support caregivers' well-being, to help them to become satisfied, and to more empathy; and also how to care for older adults with the best care should be investigated, including better relationships and positive attitudes.

### LIMITATIONS OF THE STUDY

1. This study cannot be freely generalized to the population in other regions of Thailand or other countries because it was set in the northeastern region of Thailand. Thus, cultural differences would lead to an increased likelihood of differences in the results.

2. This study does not explain the cause-effect relationship of the variables with regard to secure attachment because this study only detected the correlations that exist, not their causality. Importantly, informal caregivers such as family members should maintain care for their older adults at home with functionality. Further studies should address how to support programs to encourage caregivers to stay at home with gratitude toward older adults in the Thai context.

### LIST OF ABBREVIATIONS

<b>GEN</b>	= Gender
<b>OCCU</b>	= Occupation
<b>ECO1</b>	= Sufficient income, but not enough for savings
<b>ECO2</b>	= Sufficient income for savings

<b>TS</b>	= Caregivers' satisfaction
<b>TEM</b>	= Caregivers' empathy
<b>TH</b>	= Health status
<b>TIME1</b>	= Length of time spent providing care = 8-14 hours/day
<b>TIME2</b>	= Length of time spent providing care = 15-21 hours/day
<b>TIME3</b>	= Length of time spent providing care 22-24 hours/day
<b>TSE</b>	= Secure attachment pattern of informal caregivers

### ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Ethical Review Sub-Committee Board for Human Research Involving Sciences, Thammasat University, Thailand with approval number 140/2562.

### HUMAN AND ANIMAL RIGHTS

No Animals were used in this research. All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

### CONSENT FOR PUBLICATION

The older adults with their caregivers that were willing to participate in the study signed informed consent forms.

### AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author [O.K.] upon request.

### FUNDING

Not applicable.

### CONFLICTS OF INTEREST

The authors declare no conflicts of interest, either financial or otherwise.

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