

## Factors Influencing Life Satisfaction among Older Thai Women with Knee Osteoarthritis

*Pinthusorn Pattayakorn, Somchit Hanucharurnkul, Jean Goepfinger, Thavatchai Vorapongsathorn, Porntip Malathum, Thanainit Chotanaphuti*

**Abstract:** This study aimed to examine causal relationships among disease severity, social support, socioeconomic status, self-efficacy and life satisfaction of older Thai women with knee osteoarthritis. The theoretical framework was derived from Braden's self-help theory and review of the literature. A sample of 430 older Thai women with knee osteoarthritis was recruited from the orthopedic clinics of three hospitals (university, military and private). Structural Equation Modeling was used to examine a hypothesized model. The final model fit the empirical data and explained 44% and 22% of variance in life satisfaction and self-efficacy, respectively.

Results indicated: (1) greater disease severity was related to lower self-efficacy and life satisfaction; (2) greater social support was related to greater self-efficacy and life satisfaction; (3) relationships between disease severity and life satisfaction, and between social support and life satisfaction, were mediated by self-efficacy; (4) greater socioeconomic status was related to greater life satisfaction; (5) greater disease severity was related to lower socioeconomic status; and, (6) social support was positively correlated with socioeconomic status.

These findings: 1) provide an increased understanding of life satisfaction among older Thai women with knee osteoarthritis; and, 2) suggest the salience of enhancing such individuals' life satisfaction through intervention programs that emphasize self-efficacy specific to osteoarthritis management, as well as social support through family participation.

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**Keywords:** Older Thai women; Knee osteoarthritis; Life satisfaction; Self-efficacy; Social support; Disease severity

### Introduction

Knee osteoarthritis (knee OA) is the most common type of arthritis experienced by older women worldwide.<sup>1-3</sup> Because the aging population is globally increasing, the number of the older women with knee OA also is rising. Knee OA has been found to be the primary cause of long term disability among older Thai women.<sup>4</sup>

Multiple factors are known to affect the progression of knee OA including: age, gender,

*Correspondence to: Pinthusorn Pattayakorn, RN, PhD (Candidate), Department of Nursing, Faculty of Medicine Ramathibodi Hospital Mahidol University, Bangkok, Thailand. E-mail: pinthusorn@hotmail.com*  
*Somchit Hanucharurnkul, RN, PhD. Professor Emeritas, Department of Nursing, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.*  
*Jean Goepfinger, RN, PhD, FAAN. Professor, School of Nursing, University of North Carolina at Chapel Hill, NC, USA.*  
*Thavatchai Vorapongsathorn, PhD. Associate Professor, Faculty of Public Health, Mahidol University, Bangkok, Thailand.*  
*Porntip Malathum, RN, PhD. Assistant Professor, Department of Nursing, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand.*  
*Thanainit Chotanaphuti, MD, Col. Associate Professor, Pramongkutklo Hospital, Bangkok, Thailand.*

trauma, overuse, genetics, obesity, intra-articular crystal deposition, muscle weakness and peripheral neuropathy.<sup>5</sup> These factors can be categorized as: hereditary contributions; mechanical factors; and, effects of aging.<sup>5</sup> Likewise, one's culture and lifestyle also can induce knee OA, i.e. Thai women who have squatted and knelt on a routine basis tend to have knee OA when they become older.<sup>6</sup> Symptoms (i.e. pain and joint stiffness) of knee OA become part of the elders' lives and inhibit their activities. Older women with knee OA also may experience emotional distress and have decreased life satisfaction due to having to live with long term pain and limitations.<sup>7-8</sup>

Life satisfaction, especially in later life, has been recognized as an important health outcome, and a significant indicator of successful aging.<sup>9, 10</sup> However, limited research has been conducted regarding life satisfaction of individuals with knee OA. In fact, no information regarding interventions to enhance the life satisfaction of elderly Thais could be located in English or Thai language publications. Although previous studies have identified factors that may influence life satisfaction (disease severity,<sup>3,11</sup> socioeconomic status (SES),<sup>11-12</sup> social support,<sup>3,13</sup> and self-efficacy,<sup>3,14</sup>), the studies did not correlate these potential explanatory factors with life satisfaction, but with related concepts (quality of life (QOL) and psychological well-being (PWB)). The causal relationships among these factors and life satisfaction have yet to be explored. In fact, potential explanatory factors might conjointly influence life satisfaction and have some interaction among them. Thus, it seems essential to examine concurrently potential causal relationships among such factors and the concept, life satisfaction.

Hence, the aim of this study was to test the causal relationships of disease severity, social support, SES and self-efficacy to life satisfaction in older Thai women with knee OA. The research was conducted in an attempt to enhance understanding of life satisfaction and its contributing factors, and

serve as a precursor to development of appropriate intervention programs to improve life satisfaction among the elder population.

## **Conceptual Framework and Review of Literature**

The theoretical framework was derived from Braden's self-help theory<sup>15</sup> and review of the literature. Self-help, as described by Braden,<sup>16</sup> is an informed process of facing definable, manageable adversities via control of everyday problems. The self-help model gives recognition to the resiliency of people, and explains how a repertory of enabling skills helps individuals meet situational and cognitive challenges of illness.

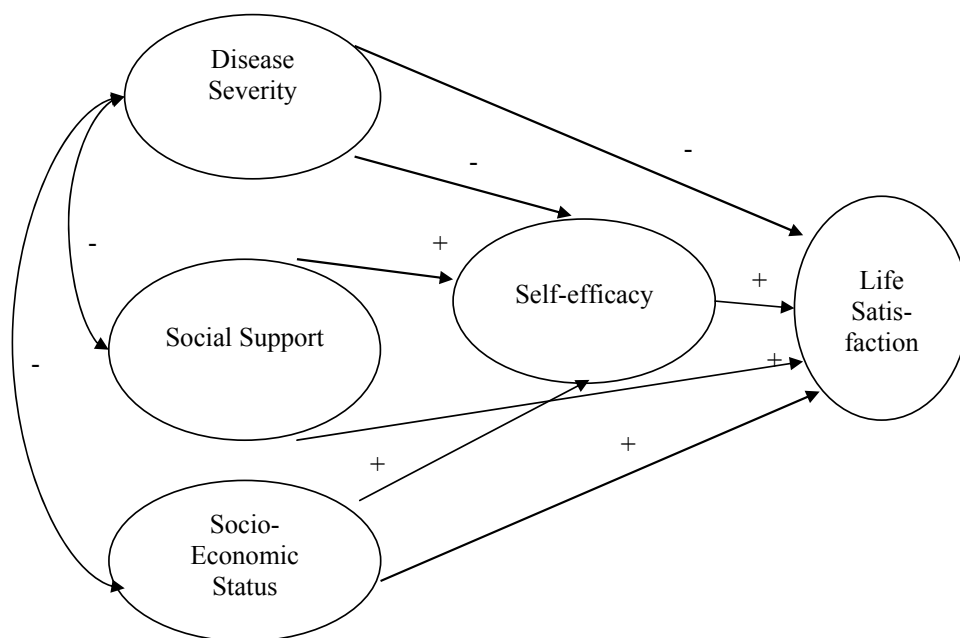
Braden postulated that "a sufficient level of enabling skills mediates the direct interference of disruptive forces on learning a self-help response. Self-help behavior is enhanced and subsequently life quality is increased."<sup>15 (p.42)</sup> Enabling skills comprise a learned set of behaviors, cognitions, affects and beliefs, as well as provide the basis for additional learning, such as the process of problem solving, cognitive reframing, delay of gratification and a general belief in self.<sup>10</sup> Background factors, such as age, gender, education, ethnic origin and income, are thought to influence enabling skills or self-help performance.<sup>15</sup>

Although Braden's self-help model highlights enabling skills, in this study, self-efficacy was used as a proxy for enabling skills. Both enabling skills and self-efficacy are recognized as powerful cognitive mediators. Self-efficacy refers to a belief in one's ability to meet situation-specific demands.<sup>17</sup> On the other hand, enabling skills refers to one's perceived level of ability to manage adversity as a more general concept.<sup>15, 16</sup> Enabling skills, however, have been evaluated through self-efficacy.<sup>10, 16</sup>

Self-efficacy related to OA management, specifically pain management and other symptom management, may contribute to one's life satisfaction

or perception of PWB. Life satisfaction has been recognized as being comprised of five factors. These factors include: zest (versus apathy); resolution and fortitude; congruence between desired and achieved goals; positive self-concept; and, mood tone.<sup>18</sup> In

this study, the selected variables included disease severity, social support, socio-economic status (SES), self-efficacy and life satisfaction, and their inter-relationships, which are displayed in the hypothesized model (**Figure 1**).



**Figure 1** Hypothesized Model of Factors Influencing Life Satisfaction among Older Thai Women with Knee OA.

Disease severity and background factors, such as SES and social support, were considered antecedents, while self-efficacy was viewed as a mediator and life satisfaction was seen as an outcome. The literature has indicated disease severity of knee OA is an important stressor that may have a negative direct impact on a patients' life satisfaction<sup>3,11</sup> as well as self-efficacy.<sup>3,14</sup> Social support has been shown to facilitate life satisfaction,<sup>3</sup> and positively affect the self-efficacy of older adults, as well as individuals with chronic illnesses.<sup>19,20</sup> In addition, one's SES, pattern of living, environment, and availability and adequacy of resources have been found to positively influence an individual's life satisfaction<sup>11-12</sup> and self-efficacy.<sup>20-21</sup> On the other hand, severity of

disease has been shown to be negatively correlated with SES<sup>11,20</sup> and social support,<sup>3,22</sup> while internal control (a term related to self-efficacy) can have a positive effect on life satisfaction.<sup>43</sup> Thus, it appears that self-efficacy, in respect to OA management, might mediate the severity of knee OA, and both social support and SES may indirectly contribute to life satisfaction through self-efficacy.

Therefore, the purpose of this study was to examine an hypothesized model that addressed the following four hypotheses: (1) Greater disease severity would be related to lower self-efficacy and life satisfaction, and would be mediated by self-efficacy to increase life satisfaction; (2) Greater social support would be related to greater self-efficacy and life

satisfaction, and would be mediated by self-efficacy to increase more life satisfaction.; (3) Greater SES would be related to greater self-efficacy and life satisfaction, and would be mediated by self-efficacy to increase more life satisfaction; and, (4) Greater disease severity would be related to lower social support and SES.

## **Method**

**Design and Sample:** A cross-sectional descriptive design was used to test the causal relationships among disease severity, social support, SES, self-efficacy and life satisfaction among older Thai women with knee OA. The sample size was calculated with regard to maximum likelihood estimation (10 respondents per an estimated parameter). An additional 10 percent was calculated in to compensate for expected attrition,<sup>23</sup> resulting in an estimated sample size of 450 subjects. Convenience sampling was used to obtain potential subjects.

After approval from the Institutional Review Board (IRB) of two hospitals (university and military) was obtained, and a private hospital concurred with both approvals, potential subjects were recruited from the three respective hospitals' orthopedic clinics. The clinics were chosen because they: had well-known physicians who specialized in knee OA management; had a number of patients with knee OA; and, were assumed to have patients from different socio-economic backgrounds. Due to the limited authority of the principal investigator (PI), because of working as an outsider, 450 potential subjects had to be approached and asked their reasons for coming to receive medical services at their respective clinic. Those who indicated having knee OA were informed of the study's details and assured their confidentiality would be maintained and they would be free to discontinue participation at any time without repercussion. Those who met the inclusion criteria were asked to sign a consent form.

Selection criteria included 60 year or older Thai women who: 1) had a diagnosis of knee OA on at least one side; 2) were able to speak and verbally understand Thai; 3) had no known psychiatric illness; 4) did not have a cognitive impairment, as determined by achieving a score of 25 or higher on the Set Test for screening of moderate-to-severe cognitive impairment;<sup>2,24</sup> and, 5) were willing to participate. Exclusion criteria included older Thai women with knee OA who had a communication and/or hearing impairment, or failed to complete the study questionnaires.

Of the 450 subjects approached, twenty (5 with a Set test score less than 25; 15 refused to complete screening interview) were excluded. Of those excluded, 11 were from the military hospital and 9 were from the university hospital. Thus, 430 subjects participated (245 from the military hospital; 150 from the university hospital; and, 35 from the private hospital). Fewer subjects participated from the private hospital due to the global economic crisis and political unrest in Bangkok the first quarter of 2009.

Subjects ranged in age from 60 to 89 years, with a mean of 70 years. Most were Buddhists (97.7%; n = 420) and married (53.5%; n = 230), while many were widowed (40%; n = 172). Their educational level varied from no education to a master's degree. The majority had 4 years of formal education (42.3%; n = 182). Their monthly household incomes varied from 0 - 3,000,000 Baht (0-\$85,715) with a mode of 10,000 Baht (\$286) and a median of 20,000 Baht (\$572). Most were housewives (83%; n = 357) and affected with knee OA longer than five years (47.9%; n = 206). Body mass index (BMI) varied from 13.34 to 42.04 kg/m<sup>2</sup>, with the majority being overweight (42.80%; n = 184; BMI = 25-29.9 kg/m<sup>2</sup>). The majority of subjects attended an orthopedic clinic every 2-3 months (77%; n = 331) and had co-morbid conditions (82.3%; n = 354).

Subjects from all three hospitals were similar in age, religion, marital status, educational levels, occupation, frequency of clinic attendance, co-morbidity and no experience with knee replacement. In contrast, they were different in income and BMI. The military hospital subjects had the lowest monthly incomes [mode = 10,000 Baht (\$286); median = 20,000 Baht (\$572)], while the university hospital subjects had monthly incomes somewhat higher than those from the military hospital [mode = 10,000 Baht (\$286); median = 25,000 Baht (\$715)]. The private hospital subjects had the highest monthly incomes [mode = 30,000 Baht (\$857); median = 40,000 Baht (\$1143)]. The majority of military hospital subjects had a BMI within a normal range (18.5–24.9 kg/m<sup>2</sup>), while those from the university hospital [BMI = 25–29.9 kg/m<sup>2</sup>] and private hospital [BMI > 30 kg/m<sup>2</sup>] tended to be overweight and obese, respectively.

**Procedure:** Data were collected between January and April 2009. The PI conducted a face-to-face, structured interview with each subject due to the fact that many elderly have visual acuity problems. Each interview included administration of five instruments, which took approximately 20 to 45 minutes to complete. Due to the fact that no private rooms were available in the clinics of either the university or military hospital, interviews were conducted in the waiting room of the respective hospitals' clinic while the subjects were waiting for their scheduled appointments. However, interviews were conducted in a private room in the clinic of the private hospital. All subjects were assured their interview would not interfere with their scheduled clinic appointment. None expressed confidentiality concerns.

**Instruments:** Data were collected through use of five instruments: Demographic Questionnaire; Severity of the Disease Scale-Modified Version (M-SEV);<sup>11</sup> Social Support Questionnaire (SSQ);<sup>27</sup> Arthritis Self-efficacy Scale (ASES);<sup>28</sup> and, Life Satisfaction Index A-modified (LSIA-modified).<sup>18, 29</sup> Translation from English into Thai and back translation

from Thai to English was performed, by two individuals skilled in both languages, on the ASES and the LSIA-modified because both were originally developed in English. Content validity of the ASES and LSIA-modified was determined by five experienced Thai nurse gerontologists.

A pilot study to test the instruments' reliability and feasibility of the study was performed using 30 elderly military hospital patients who fit the inclusion criteria, but not included in the actual study. The pilot study provided the instruments' reliability and the study's feasibility, as well as suggesting the use of face-to-face interviews rather than self-administered questionnaires.

The Demographic Questionnaire is a PI developed instrument designed to obtain personal information about the subjects. Each subject was asked to respond to 27 questions regarding her: age, gender, weight, height, body mass index (BMI), race, religion, years of formal education, income, monthly household income, marital status, and health history (smoking history, alcohol consumption, exercise, alternative medicines used, frequency of medical attendance and hospitalization history).

The Severity of the Disease Scale-Modified Version (M-SEV), initially developed by Oupaichit<sup>25</sup> and modified by Karnjanavorawong,<sup>11</sup> assesses severity of knee symptoms related to knee OA. The M-SEV uses 10 questions to determine the severity of pain (3 questions), functional ability (5 questions) and disease duration (2 questions). Respondents are asked to choose one of 3 multiple choices (1=less or no symptom to 3=severe symptom) for each question. A total score is obtained by summing the numerical value of the responses across questions. Possible scores can range from 10 to 30 with: 10–16 = slightly severe; 17–23 = moderately severe; and, 24–30 = very severe. Internal consistency reliability of the overall M-SEV has been found to be 0.83 and 0.61 on pre-test and post-test, respectively.<sup>37</sup> The alpha coefficient of the overall M-SEV, in this study, was 0.72 and 0.71 for the pilot study and actual study,

respectively. Permission for use of the scale was obtained from Mahidol University.

The Social Support Questionnaire (SSQ), developed by Schaefer, Coyne and Larzarus,<sup>26</sup> and modified by Hanucharunkul,<sup>27</sup> measures support provided by family, friends and health care providers, and has been used repeatedly in thesis and dissertation research throughout Thailand. The SSQ consists of 21 items which are divided into three parts, according to the sources of support: informative (7 items), emotional (7 items) and tangible (7 items). Subjects are requested to respond on a five point Likert-like scale with 0 = no support to 4 = a great deal of support. A total score is obtained by summing the numerical value of the responses across items. Possible total scores range from 0 – 84, whereby, the higher the score the higher the level of social support. Prior studies produced an internal consistency reliability of 0.89 for the overall SSQ.<sup>19</sup> The total SSQ alpha coefficient, in this study, was 0.87 for both the pilot study and actual study. The SSQ was used with permission from Mahidol University.

The Arthritis Self-efficacy Scale (ASES), developed and modified by Lorig and associates,<sup>28</sup> measures self-efficacy in pain and management of other symptoms, and is in the public domain. The ASES contains 8 items, 3 of which measure self-efficacy in pain management and 5 that measure self-efficacy in the management of other symptoms. Respondents are asked to rate each item from 1 = very uncertain to 10 = very certain. A total score is obtained by summing the numerical value of the responses across items. The total score can range from 8 to 80. High total scores indicate high levels of self-efficacy in the management of pain and other symptoms. Chronbach's alphas of 0.75 and 0.87 have been shown for self-efficacy with respect to pain management and self-efficacy in the management of other symptoms, respectively.<sup>28</sup> The test-retest reliability of pain management self-efficacy and of self-efficacy of management of other symptoms has been found to be 0.87 and 0.90, respectively.<sup>28</sup> In this study, an alpha coefficient of 0.96 and 0.91

was found for the pilot study and the actual study, respectively.

The Life Satisfaction Index A-Modified (LSIA-modified), developed by Neugarten, Havighurst and Tobin,<sup>18</sup> and modified by Adams,<sup>29</sup> is used to assess the level of life satisfaction of older adults and is available in the public domain.<sup>31</sup> The LSIA-modified contains 18 items, scored on a three-point Likert-like scale, which are divided into 5 life satisfaction factors: zest (vs. apathy) (4 items); resolution and fortitude (4 items); congruence between desired and achieved goals (3 items); positive self-concept (2 items); and, mood tone (5 items). Items are scored using Wood, Wylie, and Sheafor's<sup>30</sup> scoring method, whereby, a non-affirmative response = 0; a question mark or no response = 1; and, an affirmative response = 2. The seven negatively stated items are reverse scored before calculating the total score. A total score is obtained by summing the numerical value of the responses across items. Possible total scores range from 0–36. Prior studies have obtained a Cronbach's alpha of 0.82.<sup>3</sup> The alpha coefficient, for this study, was 0.81 for the pilot study and 0.75 for the actual study.

**Data Analysis:** Data were analyzed through use of descriptive statistics, ANOVA, Pearson's correlation coefficient and LISREL. Pearson's correlation coefficient was used to explore the relationships among variables. Structural equation modeling statistics (SEM), through use of the Linear Structural Relationship (LISREL) program, were employed to test and modify the model. The significance level was set at  $\alpha = 0.05$ .

## **Results**

**Study Variables:** Subjects reported a low level of SES and a moderate level of disease severity, social support, self-efficacy and life satisfaction (see **Table 1**). The results showed no significant differences in disease severity ( $F = 1.87$ ;  $p > .05$ ) or self-efficacy ( $F = 2.13$ ,  $p > .05$ ) among subjects across the three hospital settings.

**Table 1** Descriptive Statistics for all Variables (n = 430)

Variables	Possible Range	Actual Range	Mean	Mode	Median	SD	Level
<b>Disease Severity</b>	10-30	10-30	18.97	19.00	19.00	3.83	Moderate
Pain	3-9	3-9	4.56	3.00	4.00	1.44	Moderate
Functional disability	5-15	5-15	10.03	10.00	10.00	2.20	Moderate
Disease duration	2-6	2-6	4.37	4.00	4.00	1.13	Moderate
<b>Social Support</b>	0-84	6-72	40.38	35.00	40.00	11.82	Moderate
Family	0-28	0-28	16.67	18.00	17.00	5.63	Moderate
Health care providers	0-28	0-28	15.71	18.00	17.00	4.67	Moderate
Friends	0-28	0-24	8.01	0.00	8.00	6.08	Low
<b>Socioeconomic Status</b>							
Education	-	0-21	8.05	4.00	4.00	5.42	Low
Income	-	0-3,000,000	44,989.53	10,000	20,000	150,792.01	Low
<b>Self-efficacy</b>	8-80	8-80	55.27	60.00	56.00	14.07	Moderate
Pain	3-30	3-30	21.19	30.00	21.00	5.60	Moderate
Other symptoms	5-50	5-50	34.08	40.00	35.00	9.37	Moderate
<b>Life Satisfaction</b>	0-36	5-36	23.82	24.00	25.00	6.61	Moderate
Zest (versus apathy)	0-8	0-8	5.10	6.00	5.00	2.14	Moderate
Resolution and fortitude	0-8	0-8	5.30	6.00	6.00	1.86	Moderate
Congruence between desired and achieved goals	0-6	0-6	4.69	6.00	5.00	1.41	High
Positive self-concept	0-4	0-4	2.35	2.00	2.00	1.11	Moderate
Mood tone	0-10	0-10	6.38	8.00	7.00	2.75	Moderate

Findings showed statistically significant differences in social support ( $F = 13.84$ ;  $p < .001$ ) and life satisfaction ( $F = 4.36$ ;  $p < .05$ ) among subjects across the three hospital settings. Subjects from the private hospital reported the highest levels of social support and life satisfaction. Military hospital and university hospital subjects reported the lowest levels of social support and life satisfaction. However, scores between the two sets of subjects were almost equal. In addition, the findings revealed

statistically significant differences in social support ( $F = 11.24$ ,  $p < .001$ ) and life satisfaction ( $F = 9.24$ ,  $p < .001$ ) among the three groups' SES level (low, medium, high).

**Model Testing:** Pearson's correlation coefficients indicated no multicollinearity among the major variables (see **Table 2**). Measurement models of disease severity, social support, self-efficacy and life satisfaction were tested through confirmatory factor analysis (CFA).

**Table 2** Correlation Matrix of Major Variables (n= 430)

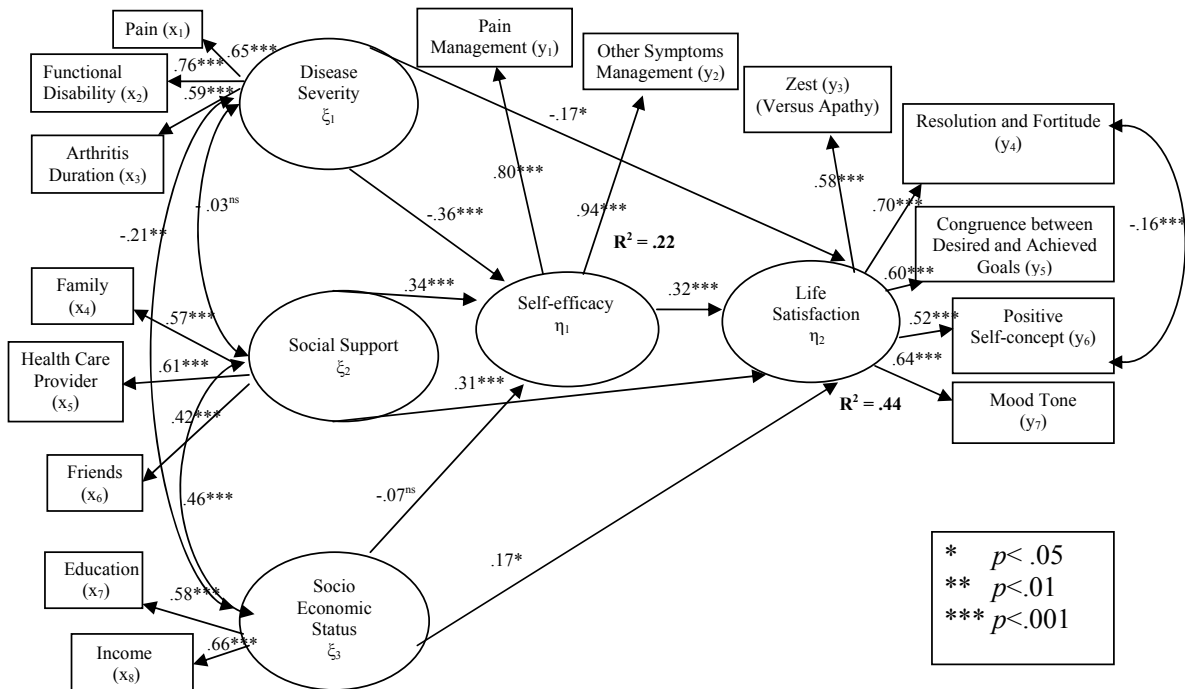
	Education	Income	Disease Severity	Social Support	Self-efficacy	Life Satisfaction
Education	1					
Income	.37**	1				
Disease Severity	-.21**	-.11*	1			
Social Support	.21**	.22**	-.04	1		
Self-efficacy	.15**	.07	-.29**	.23**	1	
Life Satisfaction	.22**	.24**	-.26**	.32**	.41**	1
Mean	8.05	44989.54	18.97	40.38	55.27	23.82
Std. Deviation	5.42	150792.01	3.83	11.82	14.07	6.61

\*\*p = 0.01 level (2-tailed).

\*p = 0.05 level (2-tailed).

After the results indicated the models fit the empirical data, the hypothesized model (see Figure 1) was examined. Initially, the hypothesized model did not fit the empirical data and, therefore, was modified by adding paths and freeing specific parameters to be estimated. Finally, the modified model (see Figure 2)

was accepted as a goodness-of-fit to the data at values of  $\chi^2 = 131.79$ ,  $df = 76$ ,  $\chi^2/df = 1.73$ ,  $p = .00008$ ,  $RMSEA = 0.041$ ,  $GFI = 0.96$ ,  $AGFI = 0.94$ . The modified model explained 44% of variance in life satisfaction and 22% of variance in self-efficacy.



$\chi^2 = 131.79$ ,  $df = 76$ ,  $\chi^2/df = 1.73$ ,  $p = .00008$ ,  $RMSEA = 0.041$ ,  $GFI = 0.96$ ,  $AGFI = 0.94$

Figure 2 Modified Model of Factors Influencing Life Satisfaction among Older Thai Women with Knee Osteoarthritis

The findings revealed disease severity had a negative, direct effect on life satisfaction ( $\gamma_{21} = -0.17$ ,  $p < .05$ ) and self-efficacy ( $\gamma_{11} = -0.36$ ,  $p < .001$ ), and a negative indirect effect on life satisfaction through self-efficacy ( $\gamma_{11} \cdot \beta_{21} = -0.12$ ,  $p < .001$ ). Social support was found to have a positive, direct effect on life satisfaction ( $\gamma_{22} = 0.31$ ,  $p < .001$ ) and self-efficacy ( $\gamma_{12} = 0.34$ ,  $p < .001$ ), and a positive, indirect effect on life satisfaction through self-efficacy ( $\gamma_{12} \cdot \beta_{21} = 0.11$ ,  $p < .001$ ). Socio-economic status (SES) had a positive, direct effect on life satisfaction

( $\gamma_{23} = 0.17$ ,  $p < .05$ ), but a non-significant, negative, indirect effect on life satisfaction through self-efficacy ( $\gamma_{13} \cdot \beta_{21} = -0.02$ ,  $p > .05$ ). SES had a negative association with disease severity ( $r_{31} = -0.21$ ,  $p < .01$ ) and a positive association with social support ( $r_{32} = 0.46$ ,  $p < .001$ ). Self-efficacy had a positive effect on life satisfaction ( $\beta_{21} = 0.32$ ,  $p < .001$ ). However, disease severity had a non-significant relationship with social support ( $r_{21} = -0.03$ ,  $p > .05$ ). The causal effects of the variables on life satisfaction are displayed in terms of direct, indirect and total effects (see Table 3).



**Table 3** Standardized Direct Effect, Indirect Effect and Total Effect of Latent Variables in the Model

<i>Causal Variables</i>	<b>Modified Model</b>					
	<i>Affected Variables</i>					
	<b>Self-efficacy</b>			<b>Life Satisfaction</b>		
	<b>Direct Effect</b>	<b>Indirect Effect</b>	<b>Total Effect</b>	<b>Direct Effect</b>	<b>Indirect Effect</b>	<b>Total Effect</b>
Disease Severity	-0.36***	-	-0.36***	-0.17*	-0.12***	-0.29***
Social Support	0.34***	-	0.34***	0.31***	0.11***	0.42***
Socioeconomic Status	-0.07 <sup>ns</sup>	-	-0.07 <sup>ns</sup>	0.17*	-0.02 <sup>ns</sup>	0.15 <sup>ns</sup>
Self-efficacy	-	-	-	0.32***	-	0.32***
Structural Equation Fit	R <sup>2</sup> = .22			R <sup>2</sup> = .44		

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

### **Discussion**

Congruent with previous studies, subjects in this study were women 60 to 89 years of age and primarily considered young-old.<sup>3, 22</sup> Buddhism, the Thai national religion practiced by more than 95% of the population, very likely had an impact on subjects' thoughts, lifestyles and health care practices. For example, knee bending (squatting, kneeling or even sitting on floor with legs tucked back to one side) is a common cultural and religious practice in Thailand that may have produced overuse of the joint, a major risk factor for knee OA in individuals with normal BMIs.<sup>32</sup>

Most subjects attended their respective orthopedic clinic for years, resulting in their ability to control symptoms at a level of moderate-severity. Because subjects had lived with knee OA for some time, it is likely they had worked toward managing the adversities of their illness. The fact this study found disease severity to have a negative direct effect on life satisfaction and self-efficacy, and a negative indirect effect on life satisfaction through self-efficacy, is congruent with prior research wherein disease severity was found to be a negative contributor to life satisfaction

in older adults with OA<sup>3</sup> and self-efficacy in terms of internal control.<sup>3,13</sup>

The subjects perceived their social support, including support from family and healthcare providers, to be at a moderate level. Prior studies have found family support, among Thais, is a primary source of support for individuals with chronic illnesses.<sup>19</sup> Because Thai-Buddhists have a strong sense of obligation in repaying their debt of gratitude to their parents,<sup>33</sup> strong family relationships and support exists within Thai families.<sup>19,33</sup> Moreover, most of the subjects, in this study, had attended their respective orthopedic clinic for several years which, no doubt, contributed to the rapport and, subsequent, support they received from healthcare providers. Consistent with previous findings, social support received from friends was reported to be at a low level.<sup>19,34</sup> Since many (40%) subjects were widowed and lived with family members, their chances of engaging in activities with friends, rather than family members, would have been low. Additionally, support from friends might have decreased due to a reduction of living friends. However, in this study, information regarding the number of living friends was not obtained.

Findings reveal higher income subjects had better social support and were able to afford favorable healthcare. Conversely, lower income subjects were found to have less social support, which may have been due to the fact family members, since they had to work for a living, were not always available to provide support. During data collection, it was noted subjects from the private hospital came to the clinic with family members, while subjects from the government hospital tended to come to the clinic alone despite having physical limitations due to OA. Although no report of a relationship between social support and SES has been found in studies regarding arthritis, the relationship noted in this study was consistent with previous research conducted on individuals with other chronic illnesses.<sup>34, 35</sup>

Social support, in this study, was found to be related to self-efficacy and life satisfaction. These findings are consistent with prior research, wherein, social support has been found to contribute to: life satisfaction;<sup>3</sup> positive well-being in older adults with OA<sup>1</sup> and PWB in women with arthritis;<sup>36</sup> and, self-efficacy in Thais<sup>19</sup> and Koreans<sup>37</sup> with chronic illnesses.

Although, previous studies have reported social support to be related to severity of illness in individuals with arthritis and OA,<sup>3, 22</sup> disease severity, in this study, was found to have a non-significant relationship with social support. Perhaps this finding is due to the fact subjects in this study, compared to those in prior research, were older women with strong familial support. Thus, regardless of the level of disease severity, their social support remained steadfast.

The fact the majority of subjects were found to have a low level of SES was not surprising, given that educational level and income are positively correlated. When the subjects were of school age, only four years of education was compulsory in Thailand,<sup>2,22</sup> explaining why the subjects' average educational level was four years of formal schooling. The finding that the majority of subjects had a monthly household income of approximately 10,000 baht (\$286), which

is less than the average 2007 Thai monthly income of 18,660 baht (\$533),<sup>38</sup> would be anticipated based upon the limited education received by the subjects.

Consistent with the prior findings,<sup>39</sup> wherein higher quality of life among subjects with higher SES and lower quality of life among individuals with lower SES, findings of this study revealed individuals with a higher income levels had higher life satisfaction than did those with a lower income levels. Similarly, SES has been shown to be a life satisfaction factor among Turks.<sup>40</sup> However, the results are incongruent with previous findings regarding the positive, direct effect of education on exercising self-efficacy in older adults,<sup>21</sup> and the relationship between SES and perceived control in Western elders.<sup>20</sup> It must be kept in mind that both studies were not conducted on a specific population, like older Thai women with knee OA. The fact that the subjects were able to afford the cost of favorable health care and assistive services, in addition to the Buddhist practice of merit-making (offering alms to monks, praying and being charitable) could have had an impact on the results. Most Thais believe merit-making will improve their fate and bring happiness, which could have contributed to their life satisfaction. However, in this study, data regarding merit-making of these elders was not recorded.

Finding greater disease severity to be related to lower SES is consistent with prior findings.<sup>11, 13</sup> People with lower SES have been found to engage in lifestyles that could induce risk and progression of OA.<sup>41</sup> For example, their living environment most likely requires repetitive knee bending due to habitually sitting or squatting on the floor to carry out daily tasks, such as cooking traditional Thai meals and doing house cleaning. Although most subjects' health care needs were covered by the Thai universal health care policy, they still had transportation expenses to and from the orthopedic clinics, which could have posed a great financial burden.

Subjects were found to perceive their self-efficacy in OA management at a moderate level.

This could have been due to the fact subjects tended to visit the orthopedic clinic every two to three months, and gained knowledge about OA management from physicians and nurses, as well as from other patients. The knowledge gained might have helped them develop self-efficacy, even though no specific OA self-management program was available at any of the selected hospitals. Although no reports could be found, in Thailand, regarding self-efficacy regarding OA management, moderate levels of self-efficacy among individuals with knee OA involved in an exercise program have been reported.<sup>2</sup>

Finding self-efficacy had a positive effect on life satisfaction is consistent with previous findings that revealed a: positive relationship exists between self-efficacy (in terms of internal personal control) and life satisfaction among women with OA;<sup>3</sup> positive association between self-efficacy and PWB exists among Latinas with arthritis;<sup>14</sup> and, positive association between internal control over health and QOL exists among people with arthritis.<sup>13</sup> Moreover, like the mediating effect self-efficacy plays in regards to life satisfaction, prior research has found self-efficacy (in terms of internal control over health) to be a mediator between severity of impairment and QOL in a causal model predicting QOL among individuals with arthritis.<sup>13</sup>

In this study, the final model fit the empirical data and explained 44% of the variance in life satisfaction. This finding is congruent with both Braden's<sup>15</sup> and LeFort's<sup>10</sup> research studies. Braden's self-help model explained 49% of the variance in quality of life among individuals with arthritis, while LeFort's<sup>10</sup> model explained 47% and 45% of the variance in life satisfaction at base line and post-test, respectively, among people with chronic pain.

While this study's finding and prior research demonstrate consistency in amounts of variance explained in life satisfaction, it must be kept in mind that all of the variables, among the various models, were not similar. For example, Braden's causal model<sup>15</sup> was comprised of number of years ill, disability,

severity of illness, monitoring, gender, income, self-help class, dependency, uncertainty, enabling skill, self-help and life quality, while LeFort's<sup>10</sup> model included pain rating, disability, uncertainty, self-efficacy, resourcefulness, self-help and life satisfaction. It is noteworthy that this study had the same pattern of relationships among major variables in the model, and similar predictive power with previous studies, although the variables in the model were not exactly the same as Braden's original model.<sup>15</sup> The results of this study help support the fact that the self-help model is robust when used with different variables and cultures.

The final model fit, in this study, to the empirical data explained 22% of the variance in self-efficacy. This study reported a smaller variance in explaining self-efficacy compared to LeFort's<sup>10</sup> model, which explained the variance of self-efficacy at 38% and 39% at baseline and post-test, respectively. This difference may be the result of the homogeneity of this study's sample, as well as the low SES of subjects, which could have reduced the ability to explain self-efficacy. Moreover, the variables in this study's model were not the same as the variables used in LeFort's model. In brief, this study supported the adequacy of Braden's self-help theory in older Thai women with knee OA.

## **Conclusions, Limitations and Recommendations**

The findings provide a better understanding of life satisfaction and self-efficacy among older Thai women with knee OA, and could serve as the basis for development of intervention programs that emphasize self-efficacy specific to OA management and life satisfaction, as well as social support through family participation. However, there are study limitations. First, the cross-sectional design and convenience sampling used limits generalizability of

the findings. In addition, the small sample size from the private hospital caused homogeneity of the SES, which decreases generalizability of the findings to the private sector. Finally, the study was conducted in an urban area, which limits generalizability of the findings to older, rural women with knee OA.

Future studies need to consider the use of a longitudinal design to address, over time, causal relationships among disease severity, social support, socioeconomic status, self-efficacy and life satisfaction of older Thai women with knee OA. Moreover, testing the model in a community setting may strengthen and expand the model's generalizability.

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## ปัจจัยที่มีผลต่อความพึงพอใจในชีวิตของหญิงไทยสูงอายุที่ป่วยเป็นโรคข้อเข่าเสื่อม

พินทุสร ปัตยะกร, สมจิต หนูเจริญกุล, Jean Goepfinger, ธวัชชัย วรพงศธร, พรทิพย์ มาลาธรรม, ธโนนิตย์ ไซตนุกูดี

**บทคัดย่อ:** การศึกษาครั้งนี้ มีวัตถุประสงค์เพื่อตรวจสอบความสัมพันธ์เชิงสาเหตุระหว่างความรุนแรงของโรค การสนับสนุนทางสังคม สถานะทางเศรษฐกิจและสังคม การรับรู้สมรรถนะในตนเอง และความพึงพอใจในชีวิตของหญิงสูงอายุที่เป็นโรคข้อเข่าเสื่อม กรอบแนวคิดเชิงทฤษฎีที่ใช้ในการศึกษาครั้งนี้พัฒนามาจากทฤษฎีของบราวเดนและวรรณกรรมที่เกี่ยวข้องกับโรคข้อเสื่อม กลุ่มตัวอย่างเป็นผู้ป่วยหญิงสูงอายุ จำนวน 430 คนที่มาใช้บริการ ณ คลินิกกล้ามเนื้อ กระดูกและข้อโรงพยาบาลมหาวิทยาลัยโรงพยาบาลทหารและโรงพยาบาลเอกชน ผลการทดสอบแบบจำลองสมมติฐานด้วยสถิติ Structural Equation Modeling พบว่า แบบจำลองสุดท้ายที่ปรับมีความสอดคล้องกับข้อมูลเชิงประจักษ์ และสามารถทำนายความแปรปรวนของความพึงพอใจในชีวิต และการรับรู้สมรรถนะในตนเองได้ 44% และ 22% ตามลำดับ

ผลการวิจัยพบว่า (1) ความรุนแรงของโรคมักทำให้การรับรู้สมรรถนะในตนเองและความพึงพอใจในชีวิตลดลง (2) การสนับสนุนทางสังคมทำให้เกิดการรับรู้สมรรถนะในตนเองและความพึงพอใจในชีวิตเพิ่มมากขึ้น (3) ความสัมพันธ์ระหว่างความรุนแรงของโรคกับความพึงพอใจในชีวิต และการสนับสนุนทางสังคมกับความพึงพอใจในชีวิตสามารถปรับเปลี่ยนได้โดยผ่านการรับรู้สมรรถนะในตนเอง (4) สถานะทางเศรษฐกิจและสังคมส่งผลให้มีความพึงพอใจในชีวิตมาก (5) ความรุนแรงของโรคมักมีความสัมพันธ์กับระดับสถานะทางเศรษฐกิจและสังคมที่ต่ำ และ (6) การสนับสนุนทางสังคมมีความสัมพันธ์ทางบวกกับสถานะทางเศรษฐกิจและสังคม

ผลการศึกษาครั้งนี้ ช่วยเพิ่มความเข้าใจเกี่ยวกับความพึงพอใจในชีวิตของหญิงไทยวัยสูงอายุที่เป็นโรคข้อเข่าเสื่อม และชี้ให้เห็นว่า ควรจัดโปรแกรมการดูแลตนเองที่เฉพาะเจาะจงกับผู้ป่วยข้อเข่าเสื่อม โดยมุ่งเน้นการพัฒนาการรับรู้สมรรถนะในตนเอง และส่งเสริมการมีส่วนร่วมของครอบครัวเพื่อเพิ่มความพึงพอใจในชีวิตของหญิงสูงอายุกลุ่มนี้

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**คำสำคัญ:** หญิงไทยวัยสูงอายุ, ข้อเข่าเสื่อม, ความพึงพอใจในชีวิต, การรับรู้สมรรถนะในตนเอง, การสนับสนุนทางสังคม, ความรุนแรงของโรค

ติดต่อที่: พินทุสร ปัตยะกร, RN, PhD (Candidate), ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามธิบดี มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย E-mail: pinthusorn@hotmail.com  
สมจิต หนูเจริญกุล, RN, PhD. ศาสตราจารย์เกียรติคุณ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามธิบดี มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย  
Jean Goepfinger, RN, PhD, FAAN. Professor, School of Nursing, University of North Carolina at Chapel Hill, NC, USA.  
ธวัชชัย วรพงศธร, PhD. รองศาสตราจารย์ คณะสาธารณสุขศาสตร์ มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย  
พรทิพย์ มาลาธรรม, RN, PhD. ผู้ช่วยศาสตราจารย์ ภาควิชาพยาบาลศาสตร์ คณะแพทยศาสตร์โรงพยาบาลรามธิบดี มหาวิทยาลัยมหิดล กรุงเทพฯ ประเทศไทย  
ธโนนิตย์ ไซตนุกูดี, MD, พันเอก รองศาสตราจารย์ โรงพยาบาลพระมงกุฎเกล้า กรุงเทพฯ ประเทศไทย