ปัจจัยทำนายสุขภาวะทางจิตใจของผู้สูงอายุโรคหลอดเลือดหัวใจ ด้วยอำนาจของความเครียด ความแข็งแกร่งและยืดหยุ่นของชีวิต การมีสติ และการสนับสนุนทางสังคม
Factors Predicting Psychological Well-Being of the Elderly with Coronary Artery Disease based on the Power of Stress, Resilience, Mindfulness, and Social Support

นิพนธ์ต้นฉบับ

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Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาปัจจัยทำนายสุขภาวะทางจิตใจของผู้สูงอายุโรคหลอดเลือดหัวใจด้วยอำนาจของความเครียด ความแข็งแกร่งและยืดหยุ่นของชีวิต การมีสติ และการสนับสนุนทางสังคม **วิธีการศึกษา:** การวิจัยความสัมพันธ์เชิงทำนายมีกลุ่มตัวอย่าง คือ ผู้สูงอายุโรคหลอดเลือดหัวใจที่เข้ารับการตรวจตามนัด ณ คลินิกผู้ป่วยนอกอายุรกรรมโรคหัวใจ โรงพยาบาลทั่วไปแห่งหนึ่ง 138 คน คัดกรองด้วยแบบทดสอบสมรรถภาพสมองของไทยที่มีคะแนนมากกว่า 23 คะแนน ใช้วิธีการสุ่มตามความสะดวก เก็บข้อมูลโดยใช้แบบสอบถามข้อมูลส่วนบุคคล สุขภาวะทางจิตใจ การรับรู้ความเครียด ความแข็งแกร่งและยืดหยุ่นของชีวิต การมีสติ และการสนับสนุนทางสังคม วิเคราะห์โดยใช้สถิติถดถอยพหุคูณแบบนำตัวแปรเข้าทั้งหมด **ผลการวิจัย:** พบว่าความเครียด ความแข็งแกร่งและยืดหยุ่นของชีวิต การมีสติ และการสนับสนุนทางสังคม สามารถร่วมกันอธิบายความแปรปรวนของสุขภาวะทางจิตใจของผู้สูงอายุโรคหลอดเลือดหัวใจได้ร้อยละ 42 โดยความแข็งแกร่งและยืดหยุ่นของชีวิต การมีสติ และการสนับสนุนทางสังคมสามารถทำนายสุขภาวะทางจิตใจได้อย่างมีนัยสำคัญทางสถิติ (β = 0.24, 0.33 และ 0.23 ตามลำดับ P-value < 0.01 ทั้งหมด) ปัจจัยที่ทำนายได้ดีที่สุด คือ การมีสติ **สรุป:** ความแข็งแกร่งและยืดหยุ่นของชีวิต การมีสติ และการสนับสนุนทางสังคม สามารถทำนายสุขภาวะทางจิตใจของผู้สูงอายุโรคหลอดเลือดหัวใจได้ บุคลากรด้านสุขภาพควรนำข้อมูลนี้ไปพัฒนาโปรแกรมหรือนวัตกรรมสร้างเสริมสุขภาวะทางจิตใจให้ผู้สูงอายุโรคหลอดเลือดหัวใจต่อไป

คำสำคัญ: สุขภาวะทางจิตใจ; ผู้สูงอายุ; โรคหลอดเลือดหัวใจ

Abstract

Objective: To examine factors predicting psychological well-being (PWB) of the elderly with coronary artery disease based on the power of stress, resilience, mindfulness, and social support. **Methods:** A cross-sectional study recruited 138 elderly patients with coronary artery disease followed up at the cardiology outpatient clinic of a tertiary-care hospital in Thailand and had a Thai Mental State Examination score higher than 23 points. A convenience sampling method was used to recruit participants. Participants were interviewed for Personal Information Questionnaire, Ryff's Scales of Psychological Well-Being, Thai Perceived Stress Scale, Connor-Davidson Resilience Scale, Philadelphia Mindfulness Scale, and Personal Resource Questionnaire 2000. Associations were tested using multiple linear regression with the enter method. **Results:** Stress, resilience, mindfulness, and social support accounted for 42% of the variance of in explaining PWB. Resilience, mindfulness, and social support were predictors of PWB (β = 0.24, 0.33, and 0.23, respectively, P-value < 0.01 for all) and mindfulness was the strongest predictor. **Conclusion:** Resilience, mindfulness, and social support were predictors of PWB among the elderly with coronary artery disease. Health care providers could use these findings to develop programs or innovations to enhance PWB of the elderly with coronary artery disease.

Keywords: psychological well-being; the elderly; coronary artery disease

Introduction

Coronary artery disease (CAD) is a major cause of death in Thailand and worldwide. CAD, known as coronary heart disease or ischemic heart disease. CAD is a degenerative disease with hardening and narrowing of the coronary artery wall. It leads to a lack of blood supply to cardiac muscles caused by atherosclerosis. As a result, cardiac muscle does not get sufficient oxygen and blood and becomes damaged and infarcted. A heart attack or sudden cardiac death may occur when the blood flow supplying the heart muscle is completely blocked. CAD has led to a relatively high mortality rate among the elderly and is a significant problem for public health in Thailand and around the world.[1,2] The elderly diagnosed with CAD are likely to encounter numerous lifestyle changes including psychological feelings of depression and being unhealthy.[3] CAD is untreatable and the most common cause of death. Many patients suffer from disease conditions and limitations of the treatment, which significantly affect their psychological well-being and their lives.

Psychological well-being (PWB) is of significant concern among the elderly with CAD. Addressing PWB can help

reduce physical and psychological problems leading to reduction in risk from complications, acceptance of living with the disease, and better quality of life.[4] PWB, a positive mental state of life, is an essential indicator of good mental health and consists of six dimensions including autonomy, self-acceptance, personal growth, positive relations with others, environmental mastery, and purpose in life.[5] It is also a positive mental health without depression and loneliness.[6,7] A meta-analysis of 11 studies has indicated that positive PWB works as a protective factor for re-hospitalization and mortality among cardiac patients.[8] Therefore, it is of interest in examining factors predicting PWB in elderly patients with CAD so that intervention tailored to enhance PWB and quality of life of elderly patients can be developed.

Stress is personal perception and feeling to crisis situations in life.[9] The elderly face with numerous changes in their life such as role changes, health issues, and loss of a loved one or significant persons and these can lead to feeling of stress. Several studies have indicated that perceived stress of the elderly is an important variable influencing psychological well-being.[10-13] For example, Kamoei and Meschi (2016) found a negative relationship between perceived stress and PWB in cardiac patients.[11] Thus, elderly people who cope effectively with stressors by appraising stressful life events as challenge and manageable and having resources to deal with such stress could cope well and maintain a well-balanced life.

Resilience is defined as the positive potential of a person to manage stress or pressures in life and adapts to future challenge situations.[14] Previous studies have found resilience to be associated with psychological well-being and also predicted PWB in older people.[15,16] In addition, resilience also found to be an independent predictor of life satisfaction, which is one of the dimension of PWB.[5,17,18] Resilience can be an important factor to help elderly people to face with stressful life events and thus, having good PWB.

Mindfulness is defined as purposely paying attention in a certain way at the present moment without enforcing any judgment. It is the awareness and acceptance of one's internal states and surroundings.[19,20] Having good mindfulness could help reduce stress, anxiety, and loneliness in the elderly.[21] Findings of mindfulness intervention programs indicated that people with CAD had greater relaxation, improved sleep and physical health, and more mindful modes of thinking, including self-acceptance and acceptance of illness and illness experience.[22] Self-acceptance is one dimension of

psychological well-being defined by Ryff and Keyes.[5] People who have a good level of self-acceptance are likely to have high PWB. Further, several studies have found mindfulness to be a variable that influences PWB among adults.[23,24] Therefore, the elderly who have mindfulness might aware and accept their situations through monitoring such situations in the present moment and appropriately manage and cope with their problems.

Social support is the process of purposeful interactions among people within social networks. It is perceived attention to others, respect received from other persons such as spouse, family members, friends, neighbours, colleagues, and health personnel.[25] Previous studies have indicated that social support positively correlated with and predicted psychological well-being in the elderly.[12,26,27] Social support also predicted PWB with other chronic diseases, including diabetes mellitus, and cardiovascular disease.[28-30] As aforementioned studies, elderly people with high social support would be more likely to have good PWB and be less likely to have mental health problems.

Previous studies in Thailand have examined psychological well-being in general elderly people and in other chronic non-communicable diseases, but not specifically in the elderly with CAD.[12,15,16,27,29] Though some studies explored issues in cardiac patients, only certain factors relating to PWB have been examined and the results remain inconsistent.[11,30] Therefore, the purposes of this study were to explore PWB of the elderly with CAD and to examine factors predicting PWB among the elderly with CAD based on the power of stress, resilience, mindfulness, and social support. The results of the study would contribute to the knowledge that can be used to develop effective nursing intervention programs or innovations to promote PWB and prevent mental health problems in the elderly with CAD so that they can live with good quality of life.

This research study utilized Lazarus and Folkman's theory of stress and coping (1984) as the conceptual framework.[9] The theory proposed four main concepts; that is, Stress, Appraisal, Coping, and Adaptation outcome. Stress is a product of the transaction between a person and their external environment, which affects each other. Based on the theory and literature review, CAD is considered a stressor of the elderly. For primary appraisal, the elderly assess how the stressor affects their welfare as dangerous, threatening, or challenging to their life through insight and wisdom they have gained from their life experience. Elderly persons were often

perceived CAD as threatening and detrimental to their health and well-being, thus leading them to feel **stress**. Secondary appraisal involves elderly people to search and evaluate their available internal and external resources, **resilience** and **mindfulness** are their internal resources. Resilience is the ability of a person to recover from a negative experience of life as a process of adapting well in the face of stress. At the same time, mindfulness is an essential human ability and means of awareness of the present moment and acceptance without judgment. Besides, the elderly can sometimes find external resources from other persons to make them be able to cope with stressful situations through **social support**. The elderly who obtain adequate social support have shown to have better coping and managing problems effectively. Consequently, the coping strategies are employed both problem and emotional focused coping so that the elderly can successfully adapt to the illness situations that is a cause of stress and lead to both short and long-term adaptation outcomes; that is, psychological well-being.[9] Based on the above conceptual framework, it was hypothesized that stress, resilience, mindfulness, and social support were associated with PWB and predicted PWB of the elderly with CAD.

Methods

In this cross-sectional study conducted from September to December 2020, the study population was Thai patients aged 60 years old or older with coronary artery disease. The study sample was those in the study population receiving out-patient care at the cardiology outpatient clinic of a tertiary-care hospital in Thailand who met the eligibility criteria. The participants were recruited using a convenience sampling method.

To be eligible, the participants had to be a patient with CAD in classes I-III according to the New York Heart Association guidelines,[31] have no symptoms of recurrent CAD such as chest pain, palpitation, sweating, weakness, and fainting, not presenting with perception or cognitive impairments as examined by Thai Mental State Examination (TMSE) of score more than 23 points,[32] not be diagnosed with psychiatric or neurological disorders, and have no other chronic non-communicable diseases with severe physical symptoms such as cancer or paralysis and no serious complications or uncontrolled co-morbidities. For the exclusion, the elderly who showed any symptoms of recurrent

CAD such as chest pain, palpitation, sweating, weakness, or fainting were excluded, and medical and nursing care were immediately provided.

The appropriate sample size was determined through power analyses for multiple regression analysis. The effect size was based on Cohen (1988),[33] where the defined r with medium effect size = 0.30. A calculated effect size (f^2) was determined according to the formula $f^2 = \frac{R^2}{1-R^2}$ and $f^2 = 0.09$. The sample size was calculated using the G Power computer program with a type I error of 5% (i.e., α = 0.05), power of test = 80% and four independent variables. The calculated sample size was 138 subjects.

Research outcome measurements

The measures of this study were composed of two parts, screening and data collecting measures. The screening measure was the Thai Mental State Examination (TMSE), which consists of 6 items and is used to screen for cognitive impairment. The score of equal or less than 23 points indicates cognitive impairment. The data collecting measures contained six questionnaires as follows.

The demographic characteristics questionnaire collected age, gender, marital status, social habitat, education, primary source of income, sufficiency of income, duration of illness with CAD, and presence of other underlying diseases. The Ryff's Scales of Psychological Well-Being developed by Ryff (1995) was used to assess the person's perception of PWB composition.[5] With the 18 items, the scale has six dimensions namely autonomy, self-acceptance, personal growth, positive relations with others, environmental mastery, and purpose in life. The questions were translated into Thai by Klainin-Yobas et al (2020).[34] The items are rated on a 6-point Likert rating scale ranging from 1 (strongly disagree) to 6 (strongly agree). With the possible total score of 18 – 108 points, higher scores indicate higher level of PWB. Internal consistency reliability in this present study was good (Cronbach's alpha coefficient of 0.84).

The Perceived Stress Scale developed by Cohen et al. (1983) was used to assess the degree to which situations in life events are appraised as stressful within the past month.[35] The questions were translated into Thai by Wongpakaran and Wongpakaran (2010).[36] The scale has 10 items to be rated with a 5-point Likert scale ranging from 0 (never) to 4 (very often). With the possible total score of 0 to 40 points, higher scores indicate higher level of stress. Internal consistency

reliability in this present study was acceptable (Cronbach's alpha coefficient of 0.74).

The Connor-Davidson Resilience Scale developed by Connor and Davidson (2003) was used to assess an individual's ability to thrive in the face of adversities.[14] The 10-item questionnaire was translated into Thai by Vongsirimas et al (2017).[37] The items are rated on a 5-point Likert scale from 0 (not true at all) to 4 (true all the time). The range of the scores is from 0 to 40 with higher scores indicating higher level of resilience. Internal consistency reliability in this present study was good (Cronbach's alpha coefficient of 0.83).

The Philadelphia Mindfulness Scale Questionnaire, developed by Cardaciotto et al (2008) was used to assess present moment awareness and acceptance within a month.[38] The 20 items are divided into two subscales, awareness and acceptance, with 10 items each. Questions were translated into Thai by Silpakit and Wisajun (2011).[39] The items are rated on a 5-point Likert scale from 1 (never) to 5 (very often). For the acceptance subscale score, all even-numbered items were reverse-scored before summing up. The range of the scores is from 20 to 100 points with higher scores indicating higher level of mindfulness. Internal consistency reliability of awareness and acceptance domains in this present study was acceptable (Cronbach's alpha coefficient of 0.75 and 0.78, respectively).

The Personal Resource Questionnaire 2000 developed by Weinert (2003) was used to assess perceived social support. The 15 items are categorized into domains of assurance of worth, social integration, intimacy, nurturance, availability of assistance with information, emotional, and material support from others.[40] The questions were translated into Thai by Piboon et al (2012).[41] The items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). With the possible total score of 15 to 105 points, higher scores indicate more social support. Internal consistency reliability in this present study was good (Cronbach's alpha coefficient of 0.81).

Participant ethical protection

The study was approved by the Human Ethics Committee of the Faculty of Nursing at the first author's academic institute (approval number: IRB-NS 2019/66.0212; date of approval: January 27, 2020) and the Human Ethics Committee of the study tertiary-care hospital (approval number: NPH-REC 034/2020; date of approval: August 17, 2020).

Data collection procedure

From September to December 2020, data were collected through anonymous interviewing questionnaires at the clinic. Upon permission at the clinic, patients who were interested in the study were referred to the researcher for data collection. Face mask wearing and social distancing were implemented for COVID-19 prevention. Participants were informed about the purpose, risk and benefit, and procedure of the study. Written informed consent were then obtained. Participants were assessed with the Thai Mental State Examination; those with score of higher than 23 points were included in the study. Participants were then asked whether they would answer the questionnaires by themselves or would like to be interviewed by the researcher. The process lasted about 30 - 45 minutes.

Statistical analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize demographic and clinical characteristics, and study variables. Multiple linear regression with the enter method was used to test the association of the dependent and independent variables. Assumptions of multiple regression analysis were met. Statistical significance was set at a type I error of 5%. All statistical analyses were performed using the software program SPSS version 18.

Results

Of the total of 138 participants, almost two-thirds were men (63.00%). They were 60 - 83 years of age with a mean of 66.25 $\pm$ 4.98 years. Most of them were early older adults (78.50%), married (83.33%), lived with their family (91.30%), and had elementary education (71.00%). Slightly more than one-third had income from work (34.80%), followed by family support (32.60%). The majority of them considered themselves as having sufficient income (81.90%). Most participants had CAD for 1 - 3 years (37.68%) followed by less than one year (30.44%). Lastly, the majority of participants had other underlying diseases (81.90%) with the top three diseases were hypertension, dyslipidemia and diabetes mellitus (78.80%, 70.80% and 43.40%, respectively).

Mean scores (points) of all variables were as follows; psychological well-being (86.38 $\pm$ 9.51), stress (8.29 $\pm$ 4.79), resilience (32.49 $\pm$ 4.17), mindfulness (76.94 $\pm$ 8.82), and social support (88.54 $\pm$ 9.00). Pearson's product moment

correlation analysis indicated significant relationships between PWB and stress (r = -0.37), resilience (r = 0.54), mindfulness (r = 0.55), and social support (r = 0.43) (P-value < 0.001 for all) (Table 1).

Table 1 Mean scores of study variables and Pearson's product moment correlation coefficient (N = 138).

Variables	Mean	SD	1	2	3	4
1. Stress	8.29	4.79	1			
2. Resilience	32.49	4.17	-0.51§	1		
3. Mindfulness			-0.41§	0.58§	1	
Total score for mindfulness	76.94	8.82				
- Awareness	43.25	4.73				
- Acceptance	33.70	6.96				
4. Social support	88.54	9.00	-0.34§	0.41§	0.28*	1
5. Psychological well-being			-0.37§	0.54§	0.55§	0.43§
Total score for psychological well-being	86.38	9.51				
- Autonomy	13.33	2.66				
- Self-acceptance	14.20	1.75				
- Personal growth	13.17	2.74				
- Positive relations with others	16.15	2.00				
- Environmental mastery	15.99	2.05				
- Purpose in life	13.55	2.50				

* P-value < 0.01; § P-value < 0.001.

Based on **multiple regression analysis**, stress, resilience, mindfulness, and social support jointly predicted PWB and accounted for 42% of TWB variance in the elderly with CAD (R^2 = 0.42, P-value < 0.001). Specifically, only resilience, mindfulness, and social support independently, significantly predicted PWB (β = 0.24, 0.33, and 0.23, respectively; P-value = 0.009, < 0.001, and 0.002, respectively) (Table 2).

Table 2 Predictive factors on psychological well-being using multiple linear regression (N = 138).

Predictive factors	B	S.E.	β	t	P-value
Stress	-0.08	0.16	-0.04	-0.48	0.630
Resilience	0.54	0.21	0.24	2.65	0.009
Mindfulness	0.35	0.09	0.33	3.94	< 0.001
Social Support	0.25	0.08	0.23	3.18	0.002

Multiple linear regression: F = 24.22, P-value < 0.001; R^2 = 0.42, adjusted R^2 = 0.40.

Discussions and Conclusion

Findings of psychological well-being of the elderly with CAD were shown to be relatively high on the overall dimension with the highest score on the "positive relations with others" dimension. This is as expected since majority of the participants in this study were married (83.33%) and lived with their family (91.30%). As a result, the elderly had more opportunities to interact and exchange their knowledge and experiences with family members as well as receive assistance from them. Living with the family was essential to the elderly in enhancing their self-acceptance, feelings of warm, love, and value to the family, and thus, having confidence in their abilities to deal with stressful situations such as the illness.

It was found that stress, resilience, mindfulness, and social support had a relationship with psychological well-being of the elderly with CAD. However, only resilience, mindfulness, and social support could predict PWB of the elderly. Considering **resilience**, it was found that resilience scores of the elderly were high and significantly predicted PWB. This means that elderly people who had a high level of resilience were more likely to have a high level of PWB as compared to those having low level of resilience. Based on the conceptual framework of Lazarus and Folkman, persons who perceived the situations occurring in their lives as problems would find and evaluate their available internal resources, such as resilience for coping with their problems.[9] Resilience is the positive potential of a person to manage stress or recover from difficult life events. So, the elderly were able to adapt well in the face of stressful situations. This finding was consistent with the study Tecson and colleagues (2019) in patients with chronic diseases indicating that resilience predicted life satisfaction, which is one of the PWB dimensions.[18] In addition, it is consistent with a study of Chussanachote et al (2018) that indicated resilience as a predictor of PWB in Thai elderly people.[16]

Mindfulness scores of the elderly were relatively high. Mindfulness was found to be the strongest predictor of psychological well-being in the elderly with CAD, which means that the elderly with a high level of mindfulness were more likely to have a high level of PWB. The conceptual framework of Lazarus and Folkman states that when people assess that they are in danger or their life is threatened, they search for available internal resources to cope with the problem.[9] Mindfulness is an internal resource that people use to cope with some changes in their life.[20] The elderly who have mindfulness will focus their attention on the present moment and accept it without judgment. This finding was consistent with Crego et al (2020) study revealing that mindfulness was associated with PWB.[23] The result was also consistent with a previous study in Thailand indicating that the elderly who participated in psychological immunity intervention, which based on an integration of mindfulness, had significantly higher scores of psychological immunity and PWB.[42] It can be

concluded that the elderly who have mindfulness would express awareness and acceptance of the situation by monitoring their present moment experience and proper manage and cope with their problems thus, leading to better PWB.

The last predictor of psychological well-being was **social support**. The finding showed that elderly patients with CAD had a high level of social support and social support positively predicted PWB. This finding means that the elderly who had a high level of social support were more likely to have a high level of PWB. From the conceptual framework of Lazarus and Folkman, a person facing a stressful situation would seek their available external resources, including a source of social support such as family or significant others to cope with their stress leading to a PWB outcome.[9] Social support is essential for maintaining both physical and psychological health. In case of people who feel inability to cope on their own, seeking social support from family is helpful. This finding was consistent with previous study among the elderly with CAD in Thailand of Sriwirun et al (2018) with indicated social support was the strongest predictor of hope which was the same as purpose in life, one of PWB proposed by Ryff and Keyes.[43] Similarly, the finding from Thongsuk et al (2019) revealed that social support was a significant predictor of PWB among the elderly.[27] In addition, Kakavand et al (2020) study also found that perceived social support predicted the PWB of elderly patients with cardiovascular disease.[30]

Stress was found to be negatively correlated with PWB. Even though it was not a predictor of PWB, it is worth to mention. It might be that participants in this study were at their early older adults with mild to moderate level of severity of diseases (NYHA I to III) so that they could live, do activities of daily living, as well as work independently. They had someone to support and spend time with. All these could lead to positive feelings, establish their feelings of warmth and value; thus, enhance their physical health and PWB and reduce feelings of stress. Further, from the conceptual framework of Lazarus and Folkman, stress indirectly affects the PWB outcome through the mechanism of appraisal and coping.[9] Therefore, it might not show the direct effect on PWB. Further exploration of such indirect effect is recommended.

This present study has certain strengths and limitations. This study was strengthened by using previous validated instruments to measure the outcome variables for assessment of psychological well-being, stress, resilience, mindfulness, and social support. In addition, all instruments have been used with elderly people before and shown to have good internal consistency. Moreover, power analysis was performed to determine the sample size in this study. For the limitations, this study is cross-sectional research and only examined the associations in elderly people with CAD at the cardiology outpatient clinic of a tertiary-care hospital in Thailand. Therefore, the results may not be generalized in the elderly with CAD in different contexts.

The recommendation for healthcare practices is that cardiac nurses could develop the program based on the significant predictors, that is, resilience, mindfulness, and social support to enhance PWB in elderly patients with CAD. In addition, assessing PWB and promoting all the dimensions of PWB among the elderly would be beneficial to the elderly and enhance their quality of life. For future research, application of longitudinal design to further explore the impact of all factors to PWB is suggested. In addition, a causal model is recommended to have a better understanding of cause-and-effect relationships between variables following the theoretical concepts of Lazarus and Folkman. Finally, expansion of the study to explore in other age group such as in adults and in other groups of non-communicable diseases such as stroke, chronic obstructive pulmonary disease, asthma etc. are recommended.

In conclusion, this study found that stress, resilience, mindfulness, and social support accounted for 42% of the variance in explaining the psychological well-being of the elderly with CAD. Resilience, mindfulness, and social support were predictors of PWB of the elderly. Notably, the development of intervention programs or innovations to promote PWB among the elderly with CAD based on the findings will enhance PWB with positive mental health.

References

1. The Heart Association of Thailand under the Royal Patronage of H.M. the King. Thai acute coronary syndromes guideline 2020. 2020. (Accessed on Mar. 27, 2021, at http://www.thaiheart.org/Thai-ACS-Guidelines-2020) (in Thai)

2. World Health Organization. The top 10 causes of death. 2020. (Accessed on Mar. 27, 2021, at https://www.who.int/news-room/fact-sheets/detail/ the-top-10-causes-of-death)

3. Muangpaisan W. Depression. 2019. (Accessed on Nov. 20, 2020, at https://www.si.mahidol.ac.th) (in Thai)

4. Boehm JK, Peterson C, Kivimaki M, et al. Prospective study of positive psychological well-being and coronary heart disease. Health Psychol 2011;30:259-267. (doi: https://doi.org/10.1037/a0023124)

5. Ryff CD, Keyes CLM. The structure of psychological well-being revisited. J Pers Soc Psychol 1995;69(4):719-727.

6. Srisailamaiah M, Suresh K, Reddy S. Depression and psychological well-being among living institutionalized and non- institutionalized elderly. Int J Indian Psychol 2016;3(4). (Accessed on Mar. 24, 2020, at https://web.archive.org/web/20210529021750/https://ijip.in/wp-content/uploads/2019/02/18.01.034.20160304.pdf)

7. Sirotamarat P. Loneliness, self-efficacy, social support and psychological well-being of the elderly at amphoe mueang, Nonthaburi province. Master of Science (Community Psychology) thesis. Bangkok, Thailand. Kasetsart University, 2010. (doi: https://doi.nrct.go.th/ListDoi/listDetail?Resolve_DOI=10.14457/KU.the.2010.605) (in Thai)

8. DuBois CM, Lopez OV, Beale EE, et al. Relationships between positive psychological constructs and health outcomes in patients with cardiovascular disease: A systematic review. Int J Cardiol 2015;195:265–280. (doi: https://doi.org/10.1016/j.ijcard.2015.05.121)

9. Lazarus R, Folkman S. Stress, appraisal, and coping. New York. Springer Publishing Company, 1984.

10. Archer JA, Lim ZMT, Teh HC, et al. The effect of age on the relationship between stress, well-being and health in a Singaporean sample. Ageing Int 2015;40(4):413-425. (doi: https://doi.org/10.1007/ s12126-015-9225-3)

11. Kamoei K, Meschi F. The relationship between perceived stress and coping styles with psychological well-being in cardiac patients. Int J Med Res Health Sci 2016;5:707-711. (doi: https://www.ijmrhs.com/medical-research/the-relationship-between-perceived-stress-and-coping-styles-with-psycholog ical-wellbeing-in-cardiac-patients.pdf)

12. Hengudomsub P, Watanasin D, Srisopa P, et al. Factors predicting psychological well-being of community-residing older adults. Thai Pharm. Health Sci J 2017;12(2):57-67. (doi: https://ejournals.swu.ac.th/index.php /pharm/article/view/9792)

13. Nagaraj M. Influence of stress on psychological well-being among old age. Indian J Gerontol 2018;32(1). (doi: https://www.researchgate.net/profile/Mohammad-Rahman157/publication/323656279_Health_Status_and_Modelling_of_Urban_aged_Population_of_Sylhet_District_in_Bangladesh/links/5c88349c92851c1df93d477e/Health-Status-and-Modelling-of-Urban-aged-Population-of-Sylhet-District-in-Bangladesh.pdf#page=55)

14. Connor KM, Davidson JRT. Development of a new resilience scale: The connor-davidson resilience scale (CD-RISC). Depress Anxiety 2003; 18(2):76-82. (doi: https://doi.org/10.1002/da.10113)

15. Phuca W, Vongsirimas N, Thanoi W. Factors correlated with psychological well-being in patient receiving hemodialysis. Nurs Sci J Thai 2020;38(1):73-85. (in Thai)

16. Chussanachote W, Dallas J.C, Hengudomsub P. He protective factors influence on psychological well-being among aging people. J Royal Thai Army Nurs 2018;19:373-381. (in Thai)

17. Smith JL, Hollinger-Smith L. Savoring, resilience, and psychological well-being in older adults. Aging Ment Health 2015;19(3):192-200. (doi: https://doi.org/10.1080/13607863.2014.986647)

18. Tecson KM, Wilkinson LR, Smith B, et al. Association between psychological resilience and subjective well-being in older adults living with chronic illness. Baylor Univ Med Cent Proc 2019;32(4):520-524. (doi: https://www.tandfonline.com/doi/full/10.1080/08998280.2019.1625660)

19. Kabat-Zinn J. Mindfulness-based interventions in context: Past, present, and future. Clin Psychol Sci Pract 2003;10:144-156. (doi: https://doi.org/10.1093/clipsy.bpg016)

20. Bishop SR, Lau M, Shapiro S, et al. Mindfulness: A proposed operational definition. Clin Psychol Sci Pract 2004;11:230-241. (doi: https://doi.org/10.1093/clipsy.bph077)

21. Felsted KF. Mindfulness, stress, and aging. Clin Geriatr Med 2020; 36(4):685-696. (doi: https://doi.org/10.1016/ j.cger.2020.06.010)

22. Keyworth C, Knopp J, Roughley K, et al. A mixed-methods pilot study of the acceptability and effectiveness of a brief meditation and mindfulness intervention for people with diabetes and coronary heart disease. Behav Med 2014;40(2):53-64. (doi: https://doi.org/10.1080/08964289.2013.834865)

23. Crego A, Yela J. R, Gómez-Martínez M. Á, et al. The contribution of meaningfulness and mindfulness to psychological well-being and mental health: A structural equation model. J Happiness Stud 2020;21(8):2827-2850. (doi: https://doi.org/10.1007/s10902-019-00201-y)

24. Mahmoudzadeh S, Mohammadkhani P, Dolatshahi B, et al. Prediction of psychological well-being based on dispositional mindfulness and cognitive emotion regulation strategies in students. Pract Clin Psychol 2015;3(3):195-202. (doi: http://jpcp.uswr.ac.ir/article-1-212-en.html)

25. Haber D. Health promotion and aging (3rd ed). New York. Springer Publishing Company, 2003.

26. Poulin J, Deng R, Ingersoll TS, et al. Perceived family and friend support and the psychological well-being of American and Chinese elderly persons. J Cross Cult Gerontol 2012;27(4):305-317. (doi: https://doi.org/10.1007/s 10823-012-9177-y)

27. Thongsuk Y, Watanasin D, Hengudonsub P. Factors influencing psychological well-being among older adults. J Psychiatr Nurs Ment Health 2019;33(1):95-110. (in Thai)

28. Mojahed A, Fallah M, Ganjali A, et al. The role of social support and coping strategies in prediction of psychological well-being in type 2 diabetic patients of Zahedan. Bali Med J 2019;8(1):281-286.

29. Noppaket K, Nabkasorn C, Watanasin D. Factors predicting psychological well-being of the elderly with diabetes mellitus receiving care at a health promoting hospital. J Nurs Healthc 2017;35(4):122-131. (in Thai)

30. Kakavand A, Keshavarz S, Dashtdar H, et al. Relationships between perceived social Support and self-sufficiency with psychological well-being in elderly patients with cardiovascular diseases: The mediating role of psychological capital. Med J Mashhad Univ Med Sci 2020;63(4). (doi: https://sid.ir/paper/951278/en)

31. New York Heart Association. Classes of Heart Failure. 1994. (Accessed on Nov. 20, 2019, at https:// www.heart.org/en/health-topics/heart-failure/what-is-heart-failure/classes-of-heart-failure)

32. Train the Brain Forum Committee (Thailand). Thai mental state examination (TMSE). Siriraj Hosp Gaz 1993;45(6):359-374. (in Thai)

33. Cohen J. Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ. Lawrence Erlbaum Associates Publishers, 1988.

34. Klainin-Yobas P, Thanoi W, Vongsirimas N, et al. Evaluating the English and Thai-versions of the psychological well-being scale across four samples. Psychology 2020;11(1):71-86.

35. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav 1983;24(4):385-396. (doi: https://doi.org/10.2307/2136404)

36. Wongpakaran N, Wongpakaran T. The Thai version of the PSS-10: An investigation of its psychometric properties. Biopsychosoc Med 2010;4(6):1-6.

37. Vongsirimas N, Thanoi W, Klainin-Yobas P. Evaluating psychometric properties of the Connor-Davidson Resilience Scale (10-item CD-RISC) among university students in Thailand. J Nurs Sci 2017;35(3):25-35. (in Thai)

38. Cardaciotto L, Herbert JD, Forman EM, et al. The assessment of present-moment awareness and acceptance: The Philadelphia Mindfulness scale. Assess 2008;15(2):204-223. (doi: https://doi.org/10.1177/1073191107311467)

39. Silpakit C, Wisajun P. The validity of philadelphia mindfulness scale Thai version. J Ment Health Thai 2011;19(3):140-147. (in Thai)

40. Weinert C. Measuring social support: PRQ2000. In: Strickland O, Diiorio C (eds.), Measurement of nursing outcomes: Vol. 3. Self-care and coping. New York. Springer, 2003: pp.161-172.

41. Piboon K, Subgranon R, Hengudomsub P, et al. A causal model of depression among older adults in Chon Buri province, Thailand. Issues Ment. Health Nurs 2012;33:118-126.

42. Choochom O, Sucaromana U, Chavanovanich J, et al. Model of self-development for enhancing psychological immunity of the elderly. J Behav Sci 2019;14(1):84-96.

43. Sriwirun A, Sumngern C, Somanusorn S. Predictive factors of hope among the elderly with coronary artery disease. J Phrapokklao Nurs Coll 2018;29(1):101-112. (in Thai)