

## Factors Influencing Well-being of Patients with Myocardial Infarction

### นิพนธ์ต้นฉบับ

### Original Article

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### บทคัดย่อ

### Abstract

**วัตถุประสงค์:** เพื่อวิเคราะห์ปัจจัยที่มีอิทธิพลต่อความผาสุกของผู้ป่วยหลังจากเกิดโรคกล้ามเนื้อหัวใจขาดเลือด **วิธีการศึกษา:** การวิจัยเชิงพรรณนาแบบหาความสัมพันธ์เชิงทำนายในผู้ป่วยโรคกล้ามเนื้อหัวใจขาดเลือดจำนวน 201 รายที่เข้ารับการรักษาในแผนกผู้ป่วยนอกของโรงพยาบาลสมเด็จพระบรมราชเทวี ณ ศรีราชา โดยใช้แบบสอบถามที่มีโครงสร้างซึ่งประกอบด้วยแบบประเมินข้อมูลทั่วไปของผู้ป่วย ความผาสุก การรับรู้ภาวะสุขภาพ คุณภาพชีวิต ภาวะจิตใจและอารมณ์ ภาวะซึมเศร้า พฤติกรรมสุขภาพ และการปรับตัวเกี่ยวกับความเจ็บป่วย วิเคราะห์ข้อมูลด้วยสถิติเชิงพรรณนา สหสัมพันธ์ของเพียร์สันและการวิเคราะห์ถดถอยพหุคูณ **ผลการศึกษา:** พบว่าปัจจัยทำนายความผาสุกคือภาวะจิตใจและอารมณ์ ( $\beta = 0.43, P\text{-value} < 0.001$ ) และภาวะซึมเศร้า ( $\beta = -0.29, P\text{-value} < 0.001$ ) โดยสามารถรวมกันอธิบายความแปรปรวนของความผาสุกได้ร้อยละ 41.6 สรุป: จากที่พบว่าภาวะจิตใจและอารมณ์และภาวะซึมเศร้าสัมพันธ์กับความผาสุกของผู้ป่วยหลังจากเกิดโรคกล้ามเนื้อหัวใจขาดเลือด บุคลากรทางด้านสุขภาพและหน่วยงานที่เกี่ยวข้องควรพัฒนาโปรแกรมเพื่อส่งเสริมความผาสุกดังกล่าวโดยเน้นการพัฒนาด้านจิตใจและอารมณ์ และป้องกันภาวะซึมเศร้า

**คำสำคัญ (keywords) :** ปัจจัยที่มีอิทธิพล, ความผาสุก, ผู้ป่วยหลังจากเกิดโรคกล้ามเนื้อหัวใจขาดเลือด

**Objective:** To examine factors influencing well-being of patients with myocardial infarction. **Method:** A sample of this descriptive correlational study consisted of 201 myocardial infarction patients who were followed up at the outpatient department of Queen Savang Vadhana Memorial Hospital. The study made use of a structured questionnaire that included personal information, well-being, health perception, quality of life, mental and emotional state, depression, health behaviors, and illness adjustment. Data were analyzed using descriptive statistics, Pearson's product moment correlation and multiple regression analysis. **Results:** The predicting factors of well-being were the mental and emotional state ( $\beta = 0.43, P\text{-value} < 0.001$ ) and depression ( $\beta = -0.29, P\text{-value} < 0.001$ ). These two factors explained 41.6% of the well-being variance. **Conclusion:** As the mental and emotional state and depression were associated with the well-being of patients with post-myocardial infarction, health care providers and relevant settings should develop an intervention to promote their well-being by focusing on improving the mental health and emotion, and preventing the depression.

**Keywords:** influencing factors, well-being, post-myocardial infarction patient

## Introduction

Myocardial infarction (MI) is one of the most prevalent causes of death worldwide. In Thailand, myocardial infarction is a common heart disease with a high incidence rate, a major cause of death, and poses an enormous health care burden. According to the Bureau of Non-Communicable Diseases, the admission rate of ischemic heart disease (I20 - I25) including MI has risen from 347.57 per 100,000 population in 2008 to 431.91 per 100,000 population in 2013. The mortality rate of ischemic heart disease (I20 - I25) has risen from 21.19 in 2008 per 100,000 population to 27.83 per 100,000 population in 2014.<sup>1</sup>

Myocardial infarction is generally known as heart attack caused by a partial or complete blockage of a coronary

arteries, thereby reducing blood supply into heart muscle cells, resulting in the death of heart muscle. The most common symptom as an indicator of hospital admission is chest pain or chest discomfort, occasionally feeling like heartburn. Severe ischemia contributes to other symptoms including shortness of breath, nausea, feeling faint, a cold sweat, or feeling tired. The management with percutaneous coronary intervention and medications are commonly provided to MI patients. Lifestyle modification is also important to patients with MI.<sup>2</sup>

With such detrimental symptoms, physical functions of post-MI patients tend to decline and they need re-hospitalization because of illness's progression and

complications. The complications of MI included heart failure, cardiogenic shock, angina, free-wall rupture, interventricular septal rupture, mitral regurgitation, aneurysm, ventricular fibrillation, ventricular tachycardia, complete heart block, and left ventricular thrombus or embolism.<sup>3</sup> In addition to physical problems, post-MI patients face psychological problems including anxiety, depressed mood, and depression.<sup>4</sup> Myocardial infarction is associated with a high level of anxiety, the fear of impending death, and deep frustration resulting from the sudden and serious changes in functioning. Depressed mood is a common response to myocardial infarction. About 20 - 30% of the patients hospitalized for myocardial infarction manifest mild to severe depressive symptoms.<sup>4</sup> Additionally, Thompson et al. (2007; cited in Barsness)<sup>5</sup> described the psychological reactions following myocardial infarction may include low mood, tearfulness, sleep irritability anxiety, acute awareness of minor somatic sensations or pains and poor concentration and memory. Therefore, illness experience with myocardial infarction can have important consequences for the patient's well-being and future life perspectives.

Well-being can be described as judging life positively and feeling good.<sup>6</sup> Well-being is a positive outcome that is meaningful for people and for many sectors of society, because people perceive that their lives are going well with higher levels of well-being judgement.<sup>7</sup> People with high well-being report feeling happy, capable, well-supported, and satisfied with life. Well-being is associated with numerous health related benefits.<sup>8</sup> For example, higher levels of well-being are associated with decreased risk of disease, illness, and injury, better immune functioning, faster recovery, and increased longevity.<sup>9-12</sup> Moreover, well-being is strongly linked to happiness and life satisfaction.<sup>13</sup>

Based on literature, there are many factors that influence well-being of post-ischemic heart disease people including enjoyable, fulfilling career, enough money, regular exercise, nutritional diet, sufficient sleep, fun hobbies and leisure pursuits, the ability to adapt to change, and optimistic outlook.<sup>13</sup> However, little is known about factors influencing well-being among post-MI patients in Thailand. With the increasing rate and health care burdens, quality of life and its determinants would be keys to develop the intervention for this patient population. Therefore, the purpose of the study was to examine predicting factors of well-being among patient with myocardial infarction.

This descriptive correlational study was conducted to examine whether the potential factors could predict well-being among post myocardial infarction patients in Thailand.

### Setting and sample

The study was conducted at the outpatient department (OPD) of Queen Savang Vadhana Memorial Hospital, Sriracha district, Chonburi province, Thailand. A total of 201 myocardial infarction patients who were followed up at the OPD participated in this study. To prevent type 2 error in the correlation coefficient analysis, a power analysis was considered. A power of 0.80, an alpha of 0.05, and a small effect size of 0.20 were used. The researchers used a small effect size because of no knowledge from previous similar studies in Thailand. As guided by Polit and Beck's approximate sample size table<sup>14</sup>, a sample size of at least 194 was needed. However, to prevent missing data, the extra number of participants (3%) was added. As a consequence, a total of 201 myocardial infarction patients who were followed up at the OPD were recruited. Convenience sampling was used to select participants. The inclusion criteria included 1) being diagnosed with myocardial infarction, 2) not suffering from other debilitating illnesses such as neurological problems, psychological disorders, or hearing problems, 3) having full consciousness, and 4) being able to communicate in Thai language.

### Ethical consideration

With concerns about human protection and the rights of all participants, research proposal was approved by the Institutional Review Board (BUU-16/2557) of Burapha University prior to data collection. Information about the objectives, research protocols, and any concerns were informed to all participants individually. The issues of confidentiality, anonymity, and the right of withdrawal were addressed. After written description were given and any concerns about the research project were discussed, participants were requested to sign a consent form. All data were treated anonymously with research identification number.

### Measurement tools

A package of questionnaire was administered in this study. The questionnaires were developed by the researcher

team (Deenan, Thaneer, and Watankul) from the previous study.<sup>15</sup> In the development phase of the questionnaire in previous investigation<sup>15</sup>, content validity was confirmed by 5 experts and reliability were confirmed by 30 coronary heart disease patients. In addition to personal information section, the questionnaire consisted of three sections of psychometric measurements including perceived health and illness, functional status and lifestyle behaviors with Cronbach's alpha coefficients of 0.60, 0.83 and 0.70, respectively. The items from all three subscales were further tested for construct validity by factor analysis. The results showed newly formed constructs namely mental and emotional state, functional performance, illness adjustment, and health behaviors. These newly found subscales were with good factor loadings and acceptable reliability measures with Cronbach's alpha coefficients > 0.70 for all. These subscales were used in this present study. In addition, an item measuring health perception and another item assessing well-being were added in this present study.

The questionnaire in this present study consisted of 8 parts. In the first part, personal information questionnaire asked the participants about their age, gender, marital status, income, occupation, and history of illness. The second part was a single item of "Health perception" scale, a self-reported instrument asking participants how they perceived their health with a rating response ranging from 1 (very poor) to 10 (very good). The third part was a single item of "Well-being" scale to measure participant's perceived psychological well-being. The question asked "How happy are you with your life overall?" with a 6-point rating scale ranging from 1 (totally unhappy) to 6 (totally happy).

The fourth part of the questionnaire consisted of 8 items assessing mental and emotional state with a 6-point Likert-type rating scale ranging from 1 (never) to 6 (always). This scale had an acceptable internal consistency reliability with a Cronbach's alpha coefficient of 0.71. The fifth part of the questionnaire contained 6 items assessing the participant's stress management competency with a 5-point Likert-type rating response scale ranging from 1 (never) to 5 (always). This scale had a borderline acceptable internal consistency with a Cronbach's alpha coefficient of 0.68. In the sixth part of the questionnaire, 10 items assessed functional performance with item response of Likert-type rating scale ranging from 1 (never) to 5 (always). This functional performance scale had an acceptable internal consistency

reliability with a Cronbach's alpha coefficient of 0.87. The seventh part of the questionnaire, the illness adjustment scale, consisted of 7 items with a response 0 (no) and 1 (yes). The illness adjustment score was obtained by summing all 7 items. The test-retest reliability was high with a coefficient of 0.97.

The eighth part contained items assessing health behaviors in the past month. This part was divided into three sections. The first section with 16 items evaluated food consumption behavior, while the second section contained 4 items assessing physical activity. The third section had 16 items assessing adherence to treatment and risk control. All items were rated on a rating scale ranging from 1 (never) to 5 (always). Internal consistency reliability of each of these 3 sections was acceptable with Cronbach's alpha coefficients of 0.72, 0.71 and 0.71, respectively. For all eight parts, higher scores indicated higher positive functional status or perception.

Additionally, depression was measured by the Depression Inventory developed by Zung (1981) and translated into Thai language by Thaneer.<sup>16</sup> In this 20-item Zung Self-Rating Depression Scale, positive items were scored 4 "not at all," to 1 "most or all of the time," while negative items were scored with the opposite direction. The Cronbach's alpha coefficient was 0.82.

#### **Data collection procedure**

Data collection took place at the OPD of Savang Vadhana Memorial Hospital. Researchers reviewed profiles of all MI patient in the waiting list for physician appointment. MI patients who met the inclusion criteria were approached. Research project information and human right protection were provided to the MI patients. Researchers fully explained the purpose of the study, contents of the questionnaire, the right to withdraw from the study, and anonymity of the data collected. Volunteers were asked to sign the informed consent. The researchers interviewed the participants in a private area. It took about 30 to 45 minutes to complete the interview.

#### **Data analysis**

Data were analyzed using descriptive statistics, Pearson's product moment correlations, and multiple regressions. Statistical significance was set at the *P*-value <

0.05. All assumptions for Pearson's product moment correlation and multiple regression analyses were met.

## Results

### Demographic characteristics of the participants

A total of 201 myocardial infarction patients participated in this study. The mean age of patients was 64.45 years (SD = 11.75) and about two-thirds were male (131 patients or 65.2%). The majority of the participants were married (96.0%). The average duration of illness was 59.06 months (SD = 60.24). Most of them were hospitalized one time post MI (82.6%).

### Predictors of well-being

Based on Pearson's correlation coefficients, well-being was significantly positively correlated with health perception ( $r = 0.35$ ,  $P$ -value < 0.001), functional performance ( $r = 0.37$ ,  $P$ -value < 0.001), illness adjustment ( $r = 0.18$ ,  $P$ -value = 0.006), mental and emotional state ( $r = 0.60$ ,  $P$ -value < 0.001), adherence to treatment and risk control ( $r = 0.14$ ,  $P$ -value = 0.026) (Table 1). As expected, well-being was significantly negatively correlated with depression ( $r = -0.55$ ,  $P$ -value < 0.001). However, there were no significant relationships between well-being and physical activity, stress management, or food consumption.

**Table 1** The association between well-being and various factors among post MI patients (N = 201).

Factors	Pearson's correlation coefficient (r)	P-value
Health perception	0.35	< 0.001
Functional performance	0.37	< 0.001
Illness adjustment	0.18	0.006
Mental and emotional state	0.60	< 0.001
Food consumption	0.10	0.075
Physical activity	0.08	0.131
Stress management	0.02	0.386
Adherence to treatment and risk control	0.14	0.026
Depression	-0.55	< 0.001

Based on results from multiple regression analysis, only two factors were significantly associated with well-being of post-MI patients (Table 2). Mental and emotional state was the strongest influence on well-being ( $\beta = 0.43$ ,  $P$ -value < 0.001). Depression was also found to significantly negatively

affect well-being ( $\beta = -0.29$ ,  $P$ -value < 0.001). These two factors explained about 41% of well-being variance.

**Table 2** Predictors of well-being from multiple linear regression (N = 201).

Model	Beta coefficient	t	P-value
Constant		4.18	< 0.001
Mental and emotional state	.43	6.25	< 0.001
Depression	-0.29	-4.16	< 0.001

$F_{(2,197)} = 70.29$ ,  $P$ -value < 0.001, adjusted  $R^2 = 0.41$ .

## Discussions and Conclusion

Our present study found two predictors, mental and emotional state and depression, significantly influenced well-being among post myocardial infarction patients in Thailand. Mental and emotional state had a positive effect on well-being. This research showed that participants who rated higher scores on well-being experienced more frequent positive mental and emotion state and lower scores on depression scale. This result was supported by other studies that people who experienced more frequent positive and less negative emotions had a higher level of well-being,<sup>17</sup> increased life satisfaction,<sup>18</sup> increased physical health,<sup>19,20</sup> greater resilience to stress,<sup>21</sup> better social connection with others, and even longer lives.<sup>20,22</sup> In addition, positive moods such as joy, happiness, and energy, as well as characteristics such as life satisfaction, hopefulness, optimism, and sense of humor were associated with reduced risk of mortality in healthy populations, and predicted longevity, controlling for negative states.<sup>23</sup> On the other hand, patients with the lowest mental health status had a more than two-fold higher risk of new cardiovascular events or death compared to those with the highest mental health status. In addition, emotional distress was negatively correlated with spiritual well-being.<sup>24</sup>

Moreover, it was found in previous studies that depression was a significant predictor of health-related quality of life (HRQL) of patients with myocardial infarction.<sup>25-</sup>

<sup>28</sup> In previous studies, depression predicted worse outcomes after myocardial infarction, and was associated with higher re-hospitalization or mortality rates, more frequent angina episodes, more physical limitations, and worse quality of life.<sup>29,30</sup> Depression was a predictive factor of well-being in this study. This research showed that people who experienced more depression have lower well-being. It could

be explained that depression is manifested by a number of symptoms including depressed mood, diminished interest or pleasure in all or almost all activities, low self-esteem, sleep disturbance, changes in appetite, loss of energy, difficulty concentrating, psychomotor retardation or agitation, and suicidal ideation.<sup>29</sup> Additionally, Ziegelstein<sup>31</sup> found that depression was significantly associated with decreased adherence at 1 to 2 years of follow-up for all self-care behaviors assessed including exercise, diet, medication use, smoking cessation, and stress management. Likewise, Molloy, et al.<sup>32</sup> found that depression has been associated with a failure to adhere to medication prescriptions. Moreover, Cohen<sup>33</sup> investigated adherence in the context of cardiovascular risk reduction and demonstrated that poor adherence occurred when patients did not take their medications correctly due to depression.

Furthermore, the results found that well-being was independently positively correlated with health perception, functional performance, illness adjustment and adherence to treatment and risk control. These results were supported by other studies in that diagnosis of myocardial infarction altered physical, psychosocial and spiritual well-being and adversely affected overall quality of life.<sup>34</sup> Patients who had difficulties in daily works due to cardiac problems decreased the health-related quality of life significantly.<sup>35,36</sup> These results were congruent with another study.<sup>37</sup> Patients who adjusted appropriately to the illness could get good health outcomes and return to a normal life as judged by themselves. Such perceived improvement could be associated with the patient's judgment based on their health and functioning dimension. Some studies supported the strategies of problem-focused coping.<sup>35,38</sup> Moreover, a previous study showed reciprocal relationships between general health perception and overall quality of life after coronary artery bypass surgery.<sup>39</sup>

However, the results also showed that some factors were not significantly related to well-being. These included food consumption, physical activity, and stress management. These results were not supported by previous studies.<sup>40-43</sup> Our results which were opposite to other studies could be due to our participants' characteristics. Our participants were more likely to be in the older age, with a mean age of 64.45 years. For physical activity, eating behavior, and stress management behavior, participants might well adapt to their health condition because they experienced illness for almost

5 years and reported only one time of re-hospitalization. However, no associations between these health behaviors and well-being could be attributable to less varied values of these health behavior variables.

In conclusion, mental and emotional state and depression were found to be significant predictive factors of well-being among post-myocardial infarction patients. This finding corresponded to empirical evidences of depression in this patient group. Therefore, the intervention to improve mental health and reckless negative emotion would be needed for post-myocardial infarction patients. Research to promote mental and emotional state and reduce depression would be of great concerns.

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