การรับรู้การเจ็บป่วยในผู้ป่วยไทยที่มีกล้ามเนื้อหัวใจตาย: การศึกษาแบบภาคตัดขวาง

Illness Perceptions in Thai Patients with Myocardial Infarction: A Cross-Sectional Observational Study

จารุวรรณ กฤตย์ประชา* ตาณิกา หลานวงค์ เพ็ญพิชชา ถิ่นแก้ว กรวิกา บวชชุม ประณีต ส่งวัฒนา

Charuwan Kritpracha* Tanika Lanwong Phenpitcha Tinkaew Kornwika Buatchum Praneed Songwathana

คณะพยาบาลศาสตร์ มหาวิทยาลัยสงขลานครินทร์ สงขลา ประเทศไทย 90110

Faculty of Nursing, Prince of Songkla University, Songkhla, Thailand, 90110

บทคัดย่อ

วิจัยนี้มีวัตถุประสงค์เพื่อศึกษาการรับรู้การเจ็บป่วยของผู้ป่วยกล้ามเนื้อหัวใจตายในไทย โดยเป็นการศึกษาเชิงสังเกตแบบภาคตัดขวาง กลุ่มตัวอย่าง คือ ผู้ป่วยไทยที่มีกล้ามเนื้อหัวใจตายโดยคัดเลือกแบบเฉพาะเจาะจงจำนวน 50 ราย เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล คือ แบบสอบถามการรับรู้การเจ็บป่วยฉบับปรับปรุง ผ่านการตรวจสอบความเที่ยงได้ค่าสัมประสิทธิ์แอลฟาของครอนบาค 0.86 และคำถามปลายเปิดเพื่อสอบถามเกี่ยวกับการรับรู้การเจ็บป่วยด้วยภาวะกล้ามเนื้อหัวใจตาย ข้อมูลเชิงปริมาณวิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และข้อมูลเชิงคุณภาพวิเคราะห์โดยใช้การวิเคราะห์เนื้อหา ผลการวิจัยสรุปได้ ดังนี้ อาการเจ็บหน้าอกเป็นอาการที่พบมากที่สุดในช่วงหนึ่งเดือนก่อนได้รับการวินิจฉัยโรคกล้ามเนื้อหัวใจตาย (n=41; 82%) และอาการเจ็บหน้าอกเป็นอาการที่กลุ่มตัวอย่างรับรู้ว่ามีความเกี่ยวข้องกับกล้ามเนื้อหัวใจตาย (n=37; 74%) คะแนนที่สูงที่สุดของการรับรู้การเจ็บป่วยคือคะแนนในด้านผลที่เกิดตามมาภายหลังการเจ็บป่วย (mean=3.55, SD=0.55) รองลงมาคือ ด้านความสามารถที่จะควบคุมหรือรักษาการเจ็บป่วยได้ (mean=3.36, SD=0.30) และด้านการควบคุมการรักษา (mean=3.47, SD=0.39) สาเหตุของภาวะกล้ามเนื้อหัวใจตายตามการรับรู้มากที่สุด 3 อันดับ ได้แก่ การทำงานมากเกินไป (mean=4.20, SD=.86) พฤติกรรมการรับประทานอาหาร (mean=3.96, SD=1.01) และการดื่มเครื่องดื่มแอลกอฮอล์ (mean=3.70, SD=.86) ตามลำดับ ข้อมูลเชิงคุณภาพให้ข้อมูลเชิงลึกของการรับรู้การเจ็บป่วยของผู้ป่วยกล้ามเนื้อหัวใจตาย

คำสำคัญ: การรับรู้การเจ็บป่วย, กล้ามเนื้อหัวใจตาย, โรคหัวใจ

Abstract

This research aimed to examine illness perceptions of Thai patients with myocardial infarction. A cross-sectional observational study was conducted with a purposively selected 50 Thai adult patients with myocardial infarction (MI). Data were collected using the Revised Illness Perceptions Questionnaire with the Cronbach's alpha of 0.86, and open-ended questions, to explore the MI illness perceptions. Quantitative data were analyzed by descriptive statistics and qualitative data were analyzed using content analysis. The results based on illness perceptions revealed that chest pain was the most experienced symptom in the past one

Corresponding author*: charuwan.kr@psu.ac.th

วันที่รับ (Received) 28 ก.ย. 2567 วันที่แก้ไข (Revised) 28 ธ.ค. 2567 วันที่ตอบรับ (Accepted) 19 ม.ค. 2568

month before MI diagnosis (n=41; 82%) and chest pain was perceived as a symptom related to MI (n=37; 74%). The highest score of illness perceptions is the Consequences domain (mean=3.55, SD=0.55), followed by the Cure/Controllability domain (mean=3.36, SD=0.30) and the Treatment Control domain (mean=3.47, SD=0.39). The three most perceived causes of MI were overwork (mean=4.20, SD=.86), diet or eating habits (mean=3.96, SD=1.01), and alcohol (mean=3.70, SD=.86) respectively. Results from open-ended questions provided in-depth content of illness perceptions of Thai patients with myocardial infarction.

Keywords: Illness perceptions; Myocardial infarction; Heart disease

Introduction

Myocardial infarction (MI) is a worldwide leading cardiovascular health problem that causes mortality and morbidity. The Global Burden of Disease study estimated that in 2022, 9.2 million deaths were related to ischemic heart diseases including MI.[1] In Thailand, the mortality rate of ischemic heart disease has increased every year from 23.4 to 26.9 per 100,000 population, from 2012 to 2021, respectively.[2]

Although advances and effectiveness of treatment have decreased mortality [3], adverse events or outcomes have been reported, for instance, recurrence of cardiac events[4], low attendance of cardiac rehabilitation[5,6], and sub-optimal lifestyle modification[5,7]. Researchers have sought to identify factors related to positive health behaviors and positive health outcomes in patients with MI. According to the self-regulation model[8,9,10,] a person experiencing an illness constructs illness perception, which is an individual's integrated perceptual-cognitive model of the health threat, to make sense of the illness and influence response behaviors.

Studies have investigated the relationship and influence of illness perceptions on various physiological and psychological health outcomes.[11,12,13] Previous studies also reported that patients with various illnesses, including MI, possess illness perceptions that might not support their health outcomes.[14] Limited research has examined illness perceptions in different ethnocultural populations, including Thai patients with myocardial infarction. Ethnocultural groups might have different views of illness. Understanding illness perceptions from patients with different cultural backgrounds can support nurses to shape patients' perceptions and to provide effective interventions to improve health outcomes. Therefore, it is important to examine the perceptions of illness among Thai patients with MI to improve patient-centered care and ultimately improve the health outcomes of patients with MI.

Research objective

To examine the illness perceptions of Thai patients with myocardial infarction.

Research Design

Conceptual Framework

The self-regulation theory proposed by Leventhal, Nerenz and Steele[8] and conceptualization of illness perceptions domains proposed by Moss-Morris and colleagues[15] were used to guide this study. According to the self-regulation theory[8], when an individual experiences an illness, cognitive representation of the illness or illness perceptions is constructed to make sense of the illness which in turn regulate an individual's response behaviors. The construct of illness perceptions has been delineated with seven domains[15] comprised of 1) Identity which is an individual's thoughts about labels and symptoms and their association with the illness;

2) Cause which is an individual's thoughts about factors that cause the illness; 3) Consequence which is an individual's thoughts about illness severity, and likely impact on physical, social, and psychological functioning; 4) Timeline which is an individual's thoughts about the duration of the illness; 5) Cure/ Controllability which is an individual's thought about the extent to which illness is amenable to cure or control; 6) Illness Coherence which is an individual's thoughts about understanding the illness; and 7) Emotional Representation which is the extent to which an individual is emotionally affected by the illness.

Methods

The study employs a cross-sectional observational study.

Sample and setting

The study was conducted at a 640-bed regional government hospital in southern Thailand. The sample size was calculated based on a confidence level of 95%, a population proportion of 3%, and a sampling error of 5%. The number of samples required was determined as 45 participants.[16] To prevent sample loss, the researchers added 5% of participants. Therefore, the total sample size was targeted at 50 participants. The study participants were recruited at the outpatient department and medical wards from September 2016 to September 2017. The study population were adult patients with MI. The inclusion criteria were: 1) patients aged 20 years or above, 2) first diagnosed with MI, 3) no known psychiatric disorder or cognitive dysfunction, and 5) able to read and communicate in Thai language.

Ethical Consideration

The study protocol was approved by the Institutional Review Board of the Faculty of Nursing, Prince of Songkla University (NREC 2016_010), certification date was April 25, 2016. Head nurses of the medical outpatient department and medical wards of the hospital informed patients who met the inclusion criteria. After the potential participants granted permission, the researcher contacted them and explained the study information, including the purpose of the study, rights, benefits, confidentiality, and procedures, and asked them to sign the informed consent form.

Data Collection

Instruments

The instruments comprised two questionnaires and an open-ended interview guide described as follows.

1. The demographic and health and illness questionnaire was developed by the research team. This questionnaire comprised of items related to patients' characteristics and health information.

2. The 70-item Revised Illness Perceptions Questionnaire (IPQ-R) was developed by Moss-Morris and colleagues using self-regulation theory as the framework[15]. The word "illness" was replaced with "my heart condition." Some items were adapted to be specific to MI. The IPQ-R is a well-established questionnaire and accepted for its validity. The IPQ-R was translated into the Thai language using back translation technique. The Thai version of the IPQ-R was pretested among 10 patients with MI, yielded the Cronbach's alpha of 0.91. The reliability of the Thai version was further tested using the data of the full study sample (n=50); the Cronbach's alpha of the total IPQ-R revealed an adequate value of 0.86.

The IPQ-R is comprised of 3 parts. Part 1 includes 14 items (symptoms) of the Identity domain, with a yes/no response format. The sum of items rated "yes" on the question symptom related to MI indicates the score of Identity dimension. A higher score represents a higher number of symptoms at-

tributed to the illness. Part 2 includes 18 items of the Cause domain. Part 3 includes a total of 38 items divided into five domains: Consequences 6 items; Timeline 6 items of acute/chronic and 4 items of cyclical; Cure/Controllability 6 items of personal control and 5 items of treatment control; Illness Coherence 5 items; and Emotion Representation 6 items. The response format of the part 2 and 3 was a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). A higher score of each dimension in part 2 and 3 represent a more threatening perception of the dimension.

3. Semi-structured interview guide. The interview guide was developed by the research team to capture and understand the content of illness perceptions experienced by patients with MI.

Data collection procedure

All participants were interviewed using the open-ended interview guide first, to capture the illness perceptions of patients with MI without interference from content of the two structured questionnaires. The researcher asked permission to tape-record the interview. After the interview, the two structured questionnaires were administered. Data were collected by two registered nurses working as research assistants. They were trained using research instruments before conducting the research.

Data Analysis

Data obtained from the demographic and health and illness questionnaire, and the IPQ-R were analyzed using descriptive statistics of percentages, frequencies, mean and standard deviation. Data from the open-ended questions were transcribed from the tape recordings. Content analysis was performed to analyze the qualitative data.

Results

The participants' characteristics illustrate that most of the participants were male (n=46, 92%), and the mean age was 54.54 years (SD 8.96). The majority were Buddhists (n=33, 66%) and married (n=39, 78%). Twenty-eight percent of the participants (n=12) had an education level in primary school. Almost half of the participants (n=23, 46%) did not use alcohol but were smokers (n=20, 40%). Thirty-four percent (n=17) had a body mass index of 25-29.9 kg/m^2. Seventy percent of participants (n=35) had underlying diseases, with three most underlying diseases of hypertension, dyslipidemia, and diabetes mellitus. Furthermore, 70% (n=35) were diagnosed with STEMI and the duration was less than 1 month. Most participants took antiplatelet drugs (n=47, 94%) and received Percutaneous Coronary Intervention (PCI) treatment (n=40, 80%).

Regarding illness perceptions, the study participants rated chest pain as the most occurring symptom before hospital admission (82%), and 74% of the participants perceived chest pain as a symptom related to MI.

Table 1 presents the perceived causes of illness. The three highest-scored items perceived by the patients as the causes of MI were: overwork (mean=4.20, SD=0.86), diet or eating habits (mean=3.96, SD=1.01), and alcohol (mean=3.70, SD=0.86). The altered immunity received the lowest score as the perceived cause of myocardial infarction (mean=2.26, SD=1.01).

Table 1. Perceived causes of illness (n=50)

Perceived causes of illness		Mean	SD
Psychological attributions	Stress or worry	3.54	1.05
	Mental negative attitude	3.02	1.08
	Family problems or worries caused my illness	2.44	1.01
	Overwork	4.20	.86
	Emotional state	2.40	1.18
	Personality	2.96	1.05
Risk Factors	Hereditary	3.24	1.14
	Diet or eating habits	3.96	1.01
	Poor medical care in my past	2.70	1.09
	Own behavior	2.72	1.03
	Aging	3.12	1.10
	Smoking	3.04	1.12
	Alcohol	3.70	.86
Immunity	A germ or virus	3.14	1.29
	Pollution in the environment	3.40	1.34
	Altered immunity	2.26	1.01
Accident or chance	Chance or bad luck	3.04	1.11
	Accident or injury	3.30	1.04

The domains of illness perceptions are presented in Table 2. The highest score of illness perceptions was the consequences domain (mean=3.55, SD=0.55). The lowest score came from illness coherence domain (mean=3.06, SD=0.77).

Table 2. Illness perceptions (n=50)

Illness perceptions	Mean	SD
Timeline	3.23	0.46
acute/chronic	3.25	0.48
cyclical	3.15	0.78
Consequences	3.55	0.55
Cure/Controllability	3.36	0.30
Personal control	3.27	0.44
Treatment control	3.47	0.39
Illness Coherence	3.06	0.77
Emotional representations	3.16	0.69

The content analysis of the qualitative data revealed seven themes, synthesized as the following details.

1. Identify as a serious illness: Most participants stated that myocardial infarction is a serious illness that can lead to death as one participant stated: *"I think it's severe." (P1), "Myocardial infarction was a serious illness that resulted in death quickly. If I have symptoms related to myocardial infarction, I must immediately go to the hospital" (P5).*

2. Myocardial infarction causes: Most participants reported eating behavior as the cause of MI. The participants identified unhealthy food such as salty food, fast food, and high-fat food as causes of the MI illness. Eating behaviors such as overeating were reported. Example statements are as follows: *"There is definitely not enough blood flowing to the heart because of clogged fat." (P2) and "The causes are age, eat greasy foods." (P9)*

3. Consequence of myocardial infarction: Most of the participants mentioned the consequences of MI as unhealthy and decreased functional ability. They perceived that their illness affected their work abilities. Example statements are as follows: *"My health is not so good, causing my family to worry, affecting my work." (P14)*

4. Various timelines for MI and controllability: There are various thoughts regarding the duration of MI. Some thought that MI would be with them for a long time or throughout their life. For example, *"The illness would last a long time." (P15) "It's been a lifelong thing." (P22)* On the other hand, some participants thought that they might not have long time with MI. They can control it with treatments from physicians and behaviors as the statement: *"It didn't take long, I thought it would go away because I controlled my diet." (P16)*

5. Overcoming myocardial infarction: The participants thought that they could control their illness by following up with physicians and perform healthy behavior such as decreasing high-fat food, increasing healthy food, and regularly exercising. For example, *"I think that there are some things we cannot control, but we can take care of ourselves, such as food, stress, and rest." (P14) and "I think 70% of the time it can be alleviated because I have seen people in my neighborhood who had MI and received treatment, and they are better." (P18)*

6. Symptom of myocardial infarction: The signs and symptoms that the participants thought were related to MI were chest pain as well as pain in the back on the left side of the body. As they said: *"I feel tired, I feel a burning sensation in my chest and a feeling of tightness." (P1) and "Chest tightness, chest pain, pain in the left side of the back muscles, palpitations, fainting, vomiting." (P8)*

7. Feeling for myocardial infarction: The participants were frightened because of being diagnosed with MI. They dealt with their feelings through positive thinking, empowerment, and decreased stress. The participants mentioned: *"I feel discouraged, but I have to fight to get rid of this disease." (P14) and "It makes me easily irritated, makes me think too much, and affects my daily life." (P23)*

Discussion

The aim of the study was to examine the illness perceptions of Thai patients with myocardial infarction. Chest pain was rated as the most occurring symptom before hospital admission and the symptom was related to the MI illness. The three highest-scored items perceived by the patients as the causes of MI were overwork, diet or eating habits, and alcohol. The highest score of illness perceptions was the consequences domain indicating that MI was a more serious illness as perceived by the patients.

The symptom of MI that the participants perceived most important was related to chest pain. This result is similar to a previous observational study. Of the 100 patients, almost all (99%) patients perceived chest pain as a related symptom of MI.[17] The results are consistent with a previously published systematic review by Sharma et al.[18]. In this review, including 105 studies, most patients were aware of chest pain as a symptom of MI, and chest pain was documented as the highest prevalence symptom of MI patients. In addition, the result of a study in Saudi Arabia presented that the majority of 1,247 participants recognized chest pain (87.1%) and shortness of breath (86%) as MI symptoms.[19]

The three most perceived causes were overwork, diet or eating habits, and alcohol. The findings differ from findings in Sweden, reporting smoking, hypertension and obesity[20], and in Iran reporting stress and family issues as most perceived causes of MI.[21] The differences of perceived causes of MI supported the differences of Illness perceptions constructed from various sources inherited in different cultural contexts.

The average highest score of illness perceptions is the Consequences domain, indicating that the participants perceived the consequences of myocardial infarction as serious consequences. This may be because MI is a life-threatening condition that affects patients and their families in many aspects.[22] A study showed that there was a significant positive correlation between consequences and personal control, Illness coherence, and emotional representations[17] and a study found that the psychological needs were higher than other domains.[23]

Regarding the Timeline domain, the majority of the patients perceived that the MI was a chronic illness, meaning that they thought the illness of MI would last for a long period. This result was similar to a previous study of patients with MI undergoing percutaneous coronary intervention in Iran, reporting the patients' perception tended to be chronic condition.[21] Moreover, The Treatment Control was found to be the second highest reported domain, consistent with the previous study, which revealed the treatment control as the highest reported dimension.[21] This means that participants perceived that the treatment will be effective in curing and could control their illness. This corresponds to the data from the interview, some participants thought that it could be controlled because medical care has improved a lot.

Nevertheless, the average lowest score of illness perceptions was the Illness Coherence domain. The finding is consistent with a previous study; Illness perceptions in functional neurological disorder was low illness coherence.[24] Moss-Morris et. al.[15] mentioned that illness coherence was the importance of how the illness makes sense to the patient playing an important role in response to symptoms and longer-term adjustment. It can be postulated that patients with myocardial infarction had less understanding of their illness.

Furthermore, the participants reported negative emotion representation, which was confirmed by the data from the interview, such as frightening, and is consistent with other studies. A qualitative study investigating emotion reaction following MI reported main emotional reactions, including hypoarousal reactions and low mood, hyperarousal reactions, and a changed sense of self and outlook on life.[25]

Limitations

A limitation is the sample size of the study and consequently, this also reflects the limitation of the generalizability of the findings because it included only one hospital in southern Thailand.

Recommendations

The results of this study provide recommendation that nurses should enhance their skills in the assessment of illness perceptions and promote appropriate illness perceptions for patients with MI. Future study with the focus on illness perceptions-based and cultural-specific intervention to promote health behavior, prevent the burden of complications, and improve health outcomes for patients with MI is recommended.

Identification of funding sources

This research was supported by the Faculty of Nursing Research Fund, Prince of Songkla University.

Acknowledgment

The authors would like to thank Prof. Dr. Jos M. Latour, University of Plymouth, for his invaluable support and constructive feedback in preparing this manuscript.

References

1. Mensah GA, Fuster V, Murray CJ, & Roth GA. Global burden of cardiovascular diseases and risks, 1990-2022. Journal of the American College of Cardiology. 2023; 82(25): 2350-473. doi: 10.1016/j.jacc.2023.11.007.
2. Sakboonyarat B, & Rangsin R. Hospital admission and mortality rates for ischemic heart disease in Thailand: 2012–2021, BioMed Central Research Notes. 2024; 17(1): 142. doi: 10.1186/s13104-024-06803-x.
3. Shah RU, Henry TD, Rutten-Ramos S, Garberich RF, Tighiouart M, & Bairey Merz CN. Increasing percutaneous coronary interventions for ST-segment elevation myocardial infarction in the United States: progress and opportunity. Journal of the American College of Cardiology: Cardiovascular Interventions. 2015; 8(1 Part B): 139-46. doi: 10.1016/j.jcin.2014.07.017
4. Li S, Peng Y, Wang X, Qian Y, Xiang P, Wade SW, et al. Cardiovascular events and death after myocardial infarction or ischemic stroke in an older Medicare population. Clinical Cardiology. 2019; 42(3): 391-9. doi: 10.1002/clc.23160.
5. Blair J, Angus NJ, Lauder WJ, Atherton I, Evans J, & Leslie SJ. The influence of non-modifiable illness perceptions on attendance at cardiac rehabilitation. European Journal of Cardiovascular Nursing. 2014; 13(1): 55-62.
6. Sze CL, Sidiah S, & Lily L. Enrollment and attendance to cardiac rehabilitation after percutaneous coronary intervention in Sarawak: A prospective study. International Journal of Recent Technology and Engineering. 2019; 8(1C2): 900-3.
7. Elkashef ASF, Nasr MH, & Khalil BM. Lifestyle changes among patients with myocardial infraction. Egyptian Journal of Health Care. 2022; 13(4): 435-48.
8. Leventhal H, Nerenz DR, & Steele DJ. Illness representation and coping with health threats. In: Baum A, Tayler SE, Singer JE, editors. Handbook of Psychology and Health. Hillsdale (NJ): Lawrence Erlbaum Associates; 1984. 219-52.
9. Bishop GD. Understanding the understanding of illness: Lay disease representations. In: Skelton JA, Croyle RT, editors. Mental representation in health and illness. New York: Springer; 1991. p. 32-59.
10. Leventhal H, Diefenbach M, & Leventhal EA. Illness cognition: Using common sense to understand treatment adherence and affect cognition interactions. Cognitive therapy and research. 1992; 16: 143-63.
11. Aqeel M, Abbas J, Shuja KH, Rehna T, Ziapour A, Yousaf I, et al. The influence of illness perceptions, anxiety and depression disorders on students mental health during COVID-19 outbreak in Pakistan: a web-based cross-sectional survey. International Journal of Human Rights in Healthcare. 2021; 15(1): 17-30. doi: 10.1108/IJHRH-10-2020-0095.

12. Lotfi-Tokaldany M, Shahmansouri N, Karimi A, Sadeghian S, Saadat S, Abbasi SH, et al. Association between illness perceptions and health-related quality of life in patients with preexisting premature coronary artery disease. Journal of Psychosomatic Research. 2019; 120: 118-23. doi: 10.1016/j.jpsychores.2019.03.001.
13. Sawyer AT, Harris SL, & Koenig HG. Illness perceptions and high readmission health outcomes. Health psychology open. 2019; 6(1): 1-11. doi: 10.1177/2055102919844504.
14. Lerdal A, Hofoss D, Gay CL, & Fagermoen MS. Perception of illness among patients with heart failure is related to their general health independently of their mood and functional capacity. Journal of patient-reported outcomes. 2019; 3(1): 1-7. doi: 10.1186/s41687-019-0142-1.
15. Moss-Morris R, Weinman J, Petrie K, Horne R, Cameron L, & Buick D. The Revised Illness Perceptions Questionnaire (IPQ-R). Psychology & Health. 2002; 17(1): 1-16.
16. Serdar CC, Cihan M, Yücel D, & Serdar MA. Sample size, power and effect size revisited: simplified and practical approaches in pre-clinical, clinical and laboratory studies. Biochem Med (Zagreb). 2021; 31(1): 1-27. https://doi.org/10.11613/BM.2021.010502
17. Chakraborty S, & Aditya S. A study to assess the illness perceptions among post-myocardial infarction patients in cardiology wards of tertiary care hospitals Kolkata. Malaysian Journal of Medical Research. 2020; 4(3): 55-60. https://doi.org/10.31674/mjmr.2020.v04i03.009.
18. Sharma A, Vidusha K, Suresh H, Ajan M, Saravanan K, Dhamania M, et al. Global awareness of myocardial infarction symptoms in general population: a systematic review and meta-analysis. Korean Circulation Journal. 2021; 51(12): 983-96. doi:10.4070/kcj.2021.0100.
19. Alsaab SM, Almutairi AM, Alsaadi GK, Altokhais ZA, Alabdulqader SH, Alnofal WY, et al. Awareness of Myocardial Infarction Symptoms and Risk Factors in Saudi Arabia: A Cross-Sectional Study. Cureus. 2023; 15(12): e50092. doi: 10.7759/cureus.50092.
20. Grauman A, Johansson JV, Falahee M, & Veldwijk J. Public perceptions of myocardial infarction: Do illness perceptions predict preferences for health check results. Preventive Medicine Reports. 2022; 26: 1-8. https://doi.org/10.1016/j.pmedr.2021.101683.
21. Thagizadeh A, Ghahramanian A, Zamanzadeh V, Aslanabadi N, Onyeka TC, & Ramazanzadeh N. Illness perceptions and cardiovascular risk factors in patients with myocardial infarction undergoing percutaneous coronary intervention in Iran. BioMed Central Cardiovascular Disorders. 2022; 22(1): 1-12. doi: 10.1186/s12872-022-02684-9.
22. Supanam S. Nurse's Role in Caring for Patients with Acute Coronary Syndrome. Royal Thai Army Nurses. 2024; 25(1): 19-28. (in Thai)
23. Nunthaitawekul P, Dangdomyuit P, Preerapong P, Rabama J, & Sakorn P. Care need among to patients with coronary artery disease. Royal Thai Army Nurses. 2021; 22(2): 169-77. (in Thai)
24. Andreas J, Stoyan P, Claas L, Michael J, Christoph H, Philipp M, et al. Illness perceptions in functional neurological disorder: low illness coherence and personal control. British medical Journal Neurology Open. 2024; 6(1): 1-7. doi: 10.1136/bmjno-2024-000648.
25. Liljeroos T, Humphries S, Puthoopparambil SJ, Norlund F, & Olsson EMG. Management of emotional distress following a myocardial infarction: a qualitative content analysis. Cognitive behaviour therapy. 2023; 52(1): 47-64. doi: 10.1080/16506073.2022.2135591.