

# Factors Predicting Health-Related Quality of Life among Patients with Myocardial Infarction in Myanmar\*

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## Abstract

**Purpose:** To examine the predictive power of age, sex, depression, and social support on health-related quality of life among patients with myocardial infarction in Myanmar.

**Design:** Predictive correlational design.

**Methods:** The sample consisted of 100 myocardial infarction patients diagnosed for at least three months and came to follow-up at Cardiology Clinic, Yangon General Hospital, Myanmar. Data were collected by using demographic form, the World Health Organization Quality of Life Questionnaire (WHOQoL-BREF), the Patients Health Questionnaire (PHQ-9), and the Social Support Questionnaire. Descriptive statistics and multiple regression analysis were used for data analysis.

**Main findings:** The mean score of the overall health-related quality of life was found to be moderate ( $M = 82.02$ ,  $SD = 8.84$ ). The mean age of the samples was 60.6 years ( $SD = 8.98$ ) and 67% were men. The majority of the sample had mild depression ( $M = 5.23$ ,  $SD = 6.10$ ). Sixty percent of them perceived high-level social support. In multiple regression analysis, age, sex, depression, and social support jointly accounted for 34.1% of the variance in overall health-related quality of life ( $R^2 = .341$ ,  $F_{(4, 95)} = 7.327$ ,  $p < .001$ ). Depression was the only one variable significantly predicting health-related quality of life ( $\beta = -.505$ ,  $p < .001$ ).

**Conclusion and recommendations:** Findings from this study revealed moderate health-related quality of life in Myanmar patients with myocardial infarction and depression was the important predictor. The patients should be assessed for depression regularly to reduce depressive symptoms and improve health-related quality of life.

**Keywords:** depression, health-related quality of life, Myanmar, myocardial infarction

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# ปัจจัยทำนายคุณภาพชีวิตของผู้ป่วยกล้ามเนื้อหัวใจตายในประเทศพม่า\*

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## บทคัดย่อ

**วัตถุประสงค์:** เพื่อศึกษาอำนาจการทำนายของตัวแปรอายุ เพศ ภาวะซึมเศร้า และการสนับสนุนทางสังคม ต่อคุณภาพชีวิตของผู้ป่วยกล้ามเนื้อหัวใจตายในประเทศพม่า

**รูปแบบการวิจัย:** การศึกษาความสัมพันธ์เชิงทำนาย

**วิธีดำเนินการวิจัย:** กลุ่มตัวอย่างเป็นผู้ป่วยโรคกล้ามเนื้อหัวใจตายจำนวน 100 ราย ที่ได้รับการวินิจฉัยมาแล้วอย่างน้อย 3 เดือน และมาติดตามการรักษาที่คลินิกโรคหัวใจ โรงพยาบาลย่างกุ้ง ประเทศพม่า เก็บรวบรวมข้อมูลโดยใช้แบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามคุณภาพชีวิต แบบประเมินภาวะซึมเศร้า และแบบประเมินการสนับสนุนทางสังคม วิเคราะห์ข้อมูลโดยใช้สถิติพรรณนา และสถิติถดถอยพหุคูณ

**ผลการวิจัย:** กลุ่มตัวอย่างมีคะแนนเฉลี่ยคุณภาพชีวิตโดยรวมอยู่ในระดับปานกลาง ( $M = 82.02$ ,  $SD = 8.84$ ) อายุเฉลี่ย 60.6 ปี ( $SD = 8.98$ ) ร้อยละ 67 เป็นเพศชาย กลุ่มตัวอย่างส่วนใหญ่มีภาวะซึมเศร้าในระดับปานกลาง ( $M = 5.23$ ,  $SD = 6.10$ ) ร้อยละ 60 มีการรับรู้การสนับสนุนทางสังคมในระดับสูง ตัวแปรอิสระทุกตัวสามารถร่วมกันทำนายคุณภาพชีวิตได้ร้อยละ 34.1 ( $R^2 = .341$ ,  $F_{(4, 95)} = 7.327$ ,  $p < .001$ ) และปัจจัยที่สามารถทำนายคุณภาพชีวิตในผู้ป่วยกล้ามเนื้อหัวใจตายในประเทศพม่าอย่างมีนัยสำคัญทางสถิติคือ ภาวะซึมเศร้า ( $\beta = -.505$ ,  $p < .001$ )

**สรุปและข้อเสนอแนะ:** คุณภาพชีวิตของผู้ป่วยกล้ามเนื้อหัวใจตายในประเทศพม่าอยู่ในระดับปานกลาง โดยมีภาวะซึมเศร้าเป็นปัจจัยทำนายที่สำคัญ จากผลการศึกษาในครั้งนี้ ผู้ป่วยกล้ามเนื้อหัวใจตายในประเทศพม่าควรได้รับการคัดกรองภาวะซึมเศร้าเป็นระยะเพื่อแก้ไขภาวะซึมเศร้าและส่งเสริมคุณภาพชีวิตผู้ป่วยให้ดีขึ้น

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## Background and Significance

Myocardial infarction is a major health problem contributing to high morbidity and mortality rates in every region. In 2008, 17.3 million people were estimated to die of cardiovascular diseases and the estimated deaths from the same disease would be increased to 23.3 million by the year 2030<sup>1</sup>. Moreover, three-fourth of global deaths in low and middle-income countries were patients with coronary heart diseases including myocardial infarction<sup>2</sup>. In Myanmar, myocardial infarction is apparently one of the most important health problems. According to the statistics of Cardiovascular Outpatient Department, Yangon General Hospital (YGH), Myanmar, the number of these patients has been increasing. The total number of the patients with cardiovascular diseases including myocardial infarction was 21,597 patients in 2013, 23,900 in 2014 and 26,514 in 2015<sup>3</sup>.

Patients with myocardial infarction could develop many complications such as recurrent acute myocardial infarction, cardiac arrhythmia, cardiogenic shock, chronic heart failure, and stroke<sup>4</sup>. Most of them experience disease-related symptoms including chest pain, tightness or heaviness, indigestion or heartburn, persistent shortness of breath, and weakness<sup>5</sup>. Living with the disease affects their physical, psychological, social, and environmental aspects. As a result, their health-related quality of life (HRQoL) is worsen<sup>6</sup>. According to literature review, patients with myocardial infarction significantly reported lower satisfaction with general health than the general population<sup>7</sup>. In addition, the results of previous studies in developed countries revealed that the patients with myocardial infarction had poor or decreased HRQoL<sup>7-9</sup>. Moreover, their physical, psychological, and social domains of HRQoL were significantly negatively affected<sup>8-11</sup>.

Quality of Life model developed by Zhan<sup>12</sup> was employed to guide this study. According to the model, quality of life (QoL) is a

multi-dimensional concept that includes life satisfaction, psychological well-being, health and physical functioning, and socioeconomic status. Life satisfaction is cognitive evaluation with high level of QoL and sense of wellbeing. Zhan's QoL model proposed that multiple factors influence quality of life and those factors are categorized into three groups as personal background factors, health-related factors and social, cultural, and environmental factors<sup>12</sup>.

According to the QoL Model<sup>12</sup>, age and sex are categorized in personal background factors. Previous studies found influence of age and sex on HRQoL in patients with myocardial infarction, but the results were mixed. A study from Australia reported that age had a significant effect on HRQoL<sup>8</sup>, but in another study from China found no significance<sup>13</sup>. For another variable, sex could predict HRQoL in Iran patients with myocardial infarction<sup>10</sup>. Conversely, sex had no significance relationship with HRQoL in patients with myocardial infarction from United Kingdom<sup>11</sup> and Australia<sup>8</sup>. Evidently, inconsistent findings were found among these factors.

Depression is categorized into the health related factor in the QoL Model. This factor has been identified as an important factor influencing HRQoL in previous studies. Some studies examined HRQoL in patients with myocardial infarction also reported association between depression and HRQoL<sup>9,13</sup>. However, these studies were conducted in developed countries. No studies regarding depression and its association with HRQoL in patients with myocardial infarction in Myanmar were found.

Further, social support, a factor in social/cultural/environmental category, has been found significantly associated with HRQoL in patients with various chronic diseases including myocardial infarction<sup>8</sup>. Hawkes and colleagues<sup>8</sup> found a significant association between social support and HRQoL among Australian with myocardial infarction. Another study conducted in Netherland reported that individuals with higher socioeconomic status

and high level social support had better HRQoL<sup>14</sup>. Note that these studies were conducted in Western countries while none was found in patients with myocardial infarction in Myanmar.

In conclusion, patients with myocardial infarction reported decreased HRQoL. Most studies examining the predictive factors of HRQoL among this group of patients were conducted in developed countries outside Myanmar, especially in western countries. The existing study results may not be generalized to the Myanmar population because people under differences in religious, lifestyle, ethnic, social, and cultural contexts have different perspectives on life satisfaction and well-being, and may effect their perception of HRQoL. Additionally, the findings were inconsistent on some predictive factors. Thus, a limited study in this area inspired the researchers to examine predictive power of age and sex as personal background factors, depression as a health-related factor and social support as a social factor on HRQoL in patients with myocardial infarction in Myanmar. The results of this study would help to gather more insightful knowledge to nursing staff in developing countries like Myanmar to plan for services to improve their patients' HRQoL.

### **Objectives**

To examine the predictive power of age, sex, depression, and social support on HRQoL among Myanmar patients with myocardial infarction.

### **Hypothesis**

Factors including age, sex, depression, and social support could predict HRQoL among Myanmar patients with myocardial infarction.

### **Methodology**

This study is a predictive correlational study.

#### **Population and Sample**

The population in this study were Myanmar patients with myocardial infarction both male

and female who came to receive treatment at the Cardiology Clinic, Yangon General Hospital, Myanmar. The samples were patients with myocardial infarction who came to follow-up at the clinic and met the following inclusion criteria: 1) aged 18 years old and above, 2) diagnosed with myocardial infarction for at least three months, and 3) well oriented and able to communicate with Myanmar language. In addition, those with severe conditions such as uncontrolled arrhythmias or heart failure functional class IV, diagnosed with psychiatric disorders and aged over 60 years old with cognitive impairment were excluded.

The sample size was calculated using power analysis based on the effect sizes of previous studies<sup>9,13</sup> in which the effect size ranged from 0.10 to 0.21. The researchers chose medium effect size ( $f^2 = .15$ ) to calculate the sample size in this study. G\* power software<sup>15</sup> was used for calculation of sample estimation based on  $\alpha$  value of .05, the power of .85, and four independent variables. A minimum sample of 95 subjects are required. Finally, 100 samples were recruited in this current study.

#### **Research Instruments**

(1) The demographic form developed by the researchers was used to collect participants' personal and clinical characteristics.

(2) WHOQoL-BREF questionnaire in Myanmar version was used to measure the participants' HRQoL in this study. The original version developed by World Health Organization group was translated into Myanmar version by Naing, Nanthamongkolchai, and Munsawaengsub<sup>16</sup>. The questionnaire, a 5-point Likert scale, consisted of 26 items, categorized into four dimensions as physical, psychological, social relationship, and environmental domains. The summed scores ranged from 26-130. Higher score was indicative of higher level of HRQoL. A score ranged from 26-60 indicated low HRQoL, 61-95 indicated moderate HRQoL, and 96-130 indicated good HRQoL.

(3) Patient Health Questionnaires (PHQ-9) in Myanmar version was used to measure

depression. The original version developed by Spitzer, Kroenke, and Williams<sup>17</sup> was translated into Myanmar version by Zaw Zaw Aung<sup>18</sup>. There were nine questions and each question had four choices with scores assigned ranging from 0 to 3. A total score ranged from 0 to 27; a higher score indicated more severe depression. A range of scores reflecting the level of depression included: 1 to 4 for minimal, 5 to 9 for mild, 10 to 14 for moderate, 15 to 19 for somewhat severe, and 20 to 27 for severe depressions.

(4) Social Support Questionnaire developed by Naing, Nanthamongkolchai, and Munsawaengsub<sup>16</sup> was used to measure social support in this study. This scale, a 3-point Likert scale, consisted of 10 items assessing perceived social support from family and relatives or friends. Social support score ranged from 10 to 30 with a higher score indicating higher social support. A range of scores reflecting the level of social support included: 10 to 17 for low, 18 to 23 for moderate, and 24 to 30 for high social supports.

(5) General Practitioner Assessment of Cognitive (GPCOG) in Myanmar version was used as a screening tool to assess the cognitive impairment of the participants aged over 60 years. The original version developed by Brodaty and colleagues<sup>19</sup> was modified and translated into Myanmar version by Lwe Say Phaw Hla<sup>20</sup>. This instrument consisted of 9 items with 6 categories. A score given to each item was one point. A total score ranged from 0-9 points. If the participant's total score was less than 9 points, they would be excluded from this study.

#### **Validity and reliability**

WHOQoL-BREF, PHQ-9, and Social Support Questionnaires were well-developed and their Myanmar versions were used in Myanmar patients with chronic diseases including cardiac diseases and diabetes. Thus, the content validity of these tools was not checked, but the reliability with 30 patients who had similar characteristics with the samples.

The Cronbach's alpha value of the instruments was .89 for WHOQoL-BREF questionnaire, .86 for PHQ-9 questionnaire, and .82 for Social Support Questionnaire.

#### **Protection of Human Subjects**

This project was approved by the Institutional Review Board, Faculty of Nursing, Mahidol University, Bangkok, Thailand (COA No.IRB-NS2016/70.0711), the Ethical and Research Committee, University of Nursing, Yangon, and the Health Professional Resource Development and Management, Department of Medical Services, Ministry of Health and Sports in Nay-Pyi-Taw, Myanmar.

#### **Data Collection**

After obtaining permission from the hospital, the first author collected the data at the Cardiology Clinic by herself. Staff nurses at the clinic introduced the researcher to the patients who met the criteria for the study and were willing to participate. The researcher clarified the purpose, benefits, risks, and the rights of participants. For the patients who were aged over 60 years old, the researcher screened their cognitive impairment by using the GPCOG questionnaire. If the potential participants met the study criteria and were willing to participate, the researcher asked these participants to sign on the consent forms and explained how to answer the questionnaires. The researcher also asked permission from the participants to collect data from their medical records.

Data collection lasted approximately 20-30 minutes per person. If the participants could not read and write or had visual impairment, the researcher interviewed them in a private room and filled the questionnaire as directed by the participants. After completing all processes of data collection, data were analyzed to answer the research question.

#### **Data Analysis**

Descriptive statistics including mean, standard deviation, and percentage were computed to describe the samples' characteristics. Key assumptions underlying Pearson product moment correlation and multiple regression

analysis including normal distribution, linear relationship, multicollinearity, and homoscedasticity were tested and satisfactorily met. Multiple regression analysis (enter method) was performed to examine predictive power of age, sex, social support, and depression on HRQoL among the participants.

### Findings

The mean age of the samples was 60.6 years (SD = 8.98). Sixty seven percent of the samples were men and 76% were married. Thirty-six percent completed secondary school, and 40% were unemployed. Most of the samples (94%) got monthly income between 50,000-500,000

kyats or 40-400 US Dollars. 92 % lived with family members. The majority of the samples had mild depression ( $M = 5.23$ ,  $SD = 6.10$ ). Sixty percent of all perceived high level social support.

In this study, the participants reported their overall HRQoL in a moderate level ( $M = 82.02$ ,  $SD = 8.84$ ). According to the four domains of the HRQoL, the results showed that mean score of physical domain was 22.80 ( $SD = 2.94$ ), psychological domain was 18.28 ( $SD = 2.42$ ), social relationship domain was 10.18 ( $SD = 1.53$ ), and environmental domain was 24.42 ( $SD = 3.13$ ), as shown in Table 1.

**Table 1:** Means, standard deviations, ranges and levels of HRQoL

Domain of HRoL	Possible range	Actual range	M	SD	Level of HRQoL
Overall quality of life	26-130	52-103	82.02	8.84	Moderate
Physical domain	7-35	7-30	22.80	2.94	Moderate
Psychological domain	6-30	7-23	18.28	2.42	Moderate
Social relationship domain	3-15	6-15	10.18	1.53	Moderate
Environment domain	8-40	8-32	24.42	3.13	Moderate

According to Pearson's product moment correlation coefficient ( $r$ ), depression was found to have negatively significant correlation with HRQoL ( $r = -.563$ ,  $p < .01$ ) and social support had positively significant correlation with HRQoL ( $r = .305$ ,  $p < .01$ ). To find

relationship between sex and HRQoL, a dummy variable was created with a dummy code (0 = female, 1 = male). Point biserial correlation coefficient was calculated, and the result showed positively significant correlation ( $r_{pb} = .211$ ,  $p < .05$ ) as shown in Table 2.

**Table 2:** Intercorrelations among age, sex, depression, social support, and HRQoL

Variables	1	2	3	4	5
1. Age	1				
2. Sex	.016	1			
3. Depression	-.052	-.184	1		
4. Social support	.140	.161	-.342**	1	
5. Health-related quality of life	.024	.211*	-.563**	.305**	1

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

The results of the multiple regression analysis showed that four independent variables jointly accounted for 34.1% of the variance in HRQoL of the samples ( $R^2 = .341$ ,

$F_{(4, 95)} = 7.327$ ,  $p < .001$ ). However, depression was the only one variable significantly predicting the HRQoL ( $\beta = -.505$ ,  $p < .001$ ) as shown in Table 3.



**Table 3:** Regression analysis summary of age, sex, depression, and social support predicting HRQoL

Variables	B	SE	$\beta$	t	P-value
Constant	78.406	7.251		10.813	< .001
Age	- .020	.083	- .020	- .238	.812
Sex	1.862	1.594	.099	1.168	.246
Depression	- .732	.130	- .505	-5.644	< .001
Social support	.309	.233	.119	1.324	.189

$R = .584$ ,  $R^2 = .341$ ,  $adj. R^2 = .314$ ,  $df = 4, 95$ ,  $F_{(4, 95)} = 7.327$

### Discussion

In this study, the sample's mean age was 60.6 years old ( $SD = 8.98$ ) with age ranging from 40 to 80 years and 48% of them were age above 60 years old. Previous studies also supported that myocardial infarction occurred to people who were in middle and old age group<sup>8,13</sup>. The sample comprised more men (67%) than women (33%). Similarly, previous studies had reported that the majority of myocardial infarction patients were men<sup>8,10,13</sup>.

The findings indicated that overall HRQoL in this study was moderate ( $M = 82.02$ ,  $SD = 8.84$ ). This result was different from a study of mainland China reported that the HRQoL in patients with myocardial infarction was poor<sup>13</sup>. However, the study in china measured the HRQoL by SF-36 questionnaire. Importantly, the participants in that study were hospitalized patients. Their health conditions might be more severe than those of the participants in this study who were outpatients visiting the hospital for follow-up care.

In this study, we examined predictive power of the four independent variables on HRQoL among Myanmar patients with myocardial infarction. In multiple regression analysis, the results showed that the four independent variables were able to predict the variation in HRQoL of the samples by 34.1% ( $R^2 = .341$ ,  $F_{(4, 95)} = 7.327$ ,  $p = .000$ ). This study partially supported the QoL Model of Zhan<sup>12</sup>, because only depression, a variable in the health-related factor category, significantly predicted the HRQoL in Myanmar patients with myocardial

infarction ( $\beta = -.505$ ,  $p < .001$ ). The other three independent variables, namely age, sex, and social support, were not predictors of HRQoL in this study.

Consistently, findings from most previous studies revealed that depression significantly predicted worse HRQoL in myocardial infarction patients<sup>8,10,11</sup>. Depression occurred two to three times more in myocardial infarction patients than in the general population<sup>21</sup>. Poor physical function, bodily pain, shortness of breath, perceived stress and anxiety are more likely to lead the patients to suffer from depression. Interestingly, in this study, the majority of the participants (85%) had "no depression" to only "mild depression". Myanmar is one of the Buddhist countries and three-quarters of people meditate daily and 95% meditate at least once a month<sup>22</sup>. Most of them could perform their daily living activities and took part in religious affairs. This may be a reason for explaining why the majority of them had no or mild depression. In addition, the participants in this study received treatments from the government hospital. All of them could get almost support for all medical cost from the government. They received the necessary treatment regularly and they could consult their health conditions and health-related concerns with health care providers at the clinic. However, six percent of all participants reported suffering severe depression. According to personal information of this sample group, they were unemployed and lived with very low income. A half of them were widow/widower. These could

be some reasons why these persons reported severe depression in this study.

Regarding the personal background factors, age and sex variables could not predict overall HRQoL ( $\beta = -.020$ ,  $p = .821$  and  $\beta = .099$ ,  $p = .246$ , respectively). The results were consistent with a previous correlational study from Singapore in which age could not predict overall HRQoL in patients with myocardial infarction<sup>9</sup>. Inconsistently, one of the studies from China found that increasing age was a significant predictor for poor overall HRQoL in patients with myocardial infarction when measured by SF-36 ( $\beta = .25$ ,  $p < .05$ )<sup>13</sup>. Regarding sex variable, previous studies from Australia<sup>8</sup>, the United Kingdom<sup>11</sup>, and China<sup>13</sup> revealed that sex could not predict overall HRQoL in patients with myocardial infarction. However, an opposite result from a study conducted in Iran showed that sex significantly predicted mental health component in myocardial infarction patients when measured with SF-12 questionnaire<sup>10</sup>. These evidence highlighted that the perception of HRQoL might be different among the participants. Different participants' characteristics and contexts may cause different perception and the results could vary among studies. Additionally, the current study used WHOQoL-BREF questionnaire and there was no correlation between age, a small correlation between sex and overall HRQoL ( $r = .024$ ,  $p > .05$  and  $r_{pb} = .211$ ,  $p < .05$  respectively). Therefore, age and sex variables could not predict HRQoL in this study.

Social support did not predict HRQoL in this current study ( $\beta = .119$ ,  $p = .189$ ), even though social support of the participants was significantly correlated with overall HRQoL ( $r = .305$ ,  $p < .01$ ). One similar study in Australia also revealed that social support was significantly related to mental HRQoL within 6 months after hospitalization in patients with myocardial infarction, measured by SF-36 questionnaire<sup>8</sup>. Majority of the participants in this study perceived moderate to high social support. They reported that most of the time they received

respect from family members and had good friendship with friends and neighbors. However, most of them had never received financial support from their friends and neighbors. According to Myanmar culture, Myanmar people paid high respect to older persons in their family. Even though the participants in this study perceived social support from moderate to high level, most of them perceived quite similar supports. This might be the reason why social support could not predict HRQoL in the participants with myocardial infarction in the current study.

### Conclusion and Recommendations

In conclusion, one of the health-related factors (depression) was the most important predictor of HRQoL in Myanmar participants with myocardial infarction in this study. The findings partially supported the QoL Model of Zhan. According to the results of this study, certain implications for nursing practice and research were suggested as follows:

(1) This study is useful for nursing practice in regular screening and monitoring of depression at post-myocardial infarction period to reduce depressive symptoms and to improve HRQoL in patients with myocardial infarction. Therefore, regular screening and monitoring of depression in these patients should be encouraged so that their depressive symptoms can be reduced.

(2) This research should be replicated in different settings or multi-settings in Myanmar. Further research should be conducted on other health related factors such as disease-specific symptoms to investigate predictive power of them on HRQoL in this group.

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