# Investigating the level of self-care and supportive-educative needs of patients with myocardial infarction, based on Orem's model

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***Journal of Research & Health***
*Social Development & Health Promotion Research Center*
*Vol. 3, No.4, 2013*
*Pages: 489- 496*
***Original Article***

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Received: 10 Dec 2012
Accepted: 1 May 2013

How to cite this article: Mohammadpour A, Rahmati Sharghi N, Khosravan Sh, Alami A. Investigating the level of self-care and supportive-educative needs of patients with myocardial infarction, based on Orem's model. *J Research Health*2013; 3(4): 489- 496.

## Abstract

Myocardial infarction is the most common cause that threatens one's life by causing disability and limitation. According to Orem's theory, people such as a person suffering from myocardial infarction have some degrees of self-care which are shown in their behavior through using knowledge, motivation and skill. The present study aiming to determine the level of self-care, educative and supportive needs and its relevant factors was carried out based on Orem's model on such people. In this cross-sectional analytical study, 100 patients suffering from myocardial infarction in Khorasan Razavi Province, having at least one time history of hospitalization, were selected by simple random sampling method. Data were collected by using a questionnaire based on Orem's model in various domains such as knowledge, motivation and skill and analyzed in SPSS software version 16. Based on the results, the subjects were 27 to 97 years old, 74% were male, and 72% have experienced heart attack for the first time. The level of self-care was 58% in knowledge domain, was 42% in motivation domain, and was 44% in skill domain. There was a significant relationship between sugar and blood lipid level with self-care in skill dimension and knowledge, but no significant relationship was observed between other variables and self-care level. Finally, it is concluded that the level of self-care among patients suffering from myocardial infarction is far from the favorable level, thus more self-care training and support based on the scientific method (Orem's model) is proposed to increase their self-care ability.

**Keywords**: Educational, Myocardial Infarction, Self-Care

## Introduction

Cardiovascular diseases are the major health problems and the leading cause of death and disability worldwide [1,2]. Approximately, 81 million adults in the United States are suffering from cardiovascular diseases and their treatment and care costs are over 503 billion dollars [3]. In 2015, deaths caused by it will reach 20 million people worldwide [4]. According to American Heart Association's statistics, almost 1.5 million heart attacks occur each year in the U.S. and one third of the them die before they reach hospital. According to the World Health Organization's (WHO) report, cardiovascular diseases comprise 35% of deaths in Iran [5]. In long term, it results in individual's limitation in life and performance as it affects many aspects of life [6]. In Iran, cardiovascular diseases resulting in deaths of 138007 individuals (45.3%) are

the leading cause of death, of which half are due to heart attack. The mortality rate due to cardiovascular diseases in all ages is 205 people per 100,000 people. In ages above 70 years old, this increases to 4,156 people per 100,000. The disease burdens 1.5 million years which means a total of 1.5 million years of living in the country is lost due to disability and death from cardiovascular diseases [7]. Although there are too many deaths due to heart attack, many have to live with the disease and control and endure its effects as life goes on. This is because the clinical manifestations of disease and its complications affect his/her social relationships and lifestyle in addition to affecting one's comfort [8]. Moreover, the frequency of rehospitalization in all the heart diseases is 57%, which imposes huge costs on patient and health care system [9]. Therefore the importance of self-care is really important. Self-care is the most important form of primary care in both developed and developing countries. Approximately 65% to 85% of all health care is applied by the patients and heir family in which they use traditional and non-medical methods [10].

In addition to the patients role in self-care, the nurse also can be effective in taking care of them after discharge. One of the methods of patient care is surveillance based on nursing theories such as Dorothy Orem's Self-Care Deficit Theory. The theory's central idea revolves around individual's performance, maintaining life, health, wellbeing and self-care [11]. According to Orem's theory, human being has the self-care ability, which perfects by applying knowledge, motivation and skill and presents itself in his behavior. When there is a balance between self-care ability and self-care needs, the individual is healthy and when this balance is disturbed, the person deviates from health (patient) and needs self-care himself/herself and should provide these needs themselve or by other's help [12,13]. The nurse has the role of an educator, guide, supporter and adviser [14]. In studies on self-care ability in patients suffering from coronary artery disease and the quality of life in patients suffering from myocardial infarction, self-care ability is shown at moderate level and their quality of life is at moderate level and relatively desirable [15,16,17]. Therefore, continuous self-care follow up can lead to improvement in quality of life, reduction in costs and reduction in number of hospital admissions. Moreover, it is possible to prevent acute and chronic complications of diseases and delay their onset and exacerbation [18]. According to Orem's model, people suffering from myocardial infarction should firstly have sufficient motivation and demand for this behavior to achieve the desired level of self-care and subsequently should have enough ability for an informed and enabling act. Therefore, he needs enough information (knowledge) that eventually leads to the acquisition of necessary skill to assess the current situation and decide and act appropriately [19]. Thus, performing surveillance based on this model needs the assessment of self-care level in three domains of motivation, knowledge and skill and subsequently the identification of educative and supportive needs of patients. The present study was also designed and performed to determine the levels of self-care based on Orem's model in patients suffering from myocardial infarction in order to determine their educative and supportive needs.

## Method

This is a cross-sectional analytical study conducted to determine self-care level and educative and supportive needs of people suffering from myocardial infarction based on Orem's model in 2012. Participants were living in the urban areas of Khorasan Razavi (Gonabad, Bajestan and Torbat-e-Heydaryeh) and were hospitalized at least once. After preparing the list of patients, a sample size of 100 subjects was selected by simple randomized sampling method. Then, after obtaining the informed consent from participants, a questionnaire containing several parts was used to determine the level of self-care and educative and

supportive needs. The first section included demographics and disease status of the samples. The second section investigated self-care level and educative and supportive needs. The questions in knowledge domain are in general and developmental dimensions. Deviation from health includes myocardial in farction symptoms, medication and their side effects and diet as well as factors influencing the disease trend, obesity, constipation, blood pressure, activity and resting, sexual activity, relationship with family and friends, stress and very cold weather. Questions in motivation and skill domains are also designed in line with the above questions and based on Orem's model.

The content of the questionnaire was prepared by searching and reading the related literature and its validity was confirmed by several expert faculty members and health professionals related to this group of patients. Reliability was measured through a test-retest and intraclass correlation coefficient with its total agreement as 75.87%. Self-care was measured in four levels of excellent, good, fair and weak, but in determining the relationship between the variables with knowledge, motivation and skill, excellent and good levels were considered as appropriate level and fair and weak levels as inappropriate. In this study, the analysis of the collected data was performed by SPSS software version 16 using descriptive statistics and proper analytical statistic tests such as student t-tests and Chi-square. In interpreting the results, P values of less than 0.05 were considered significant.

## Results

Among the participants, 74% were male, 26% were female, 92% were married, 6% were divorced or widowed and 2% were single. The mean age of patients was 58.14 years (range 27 -97 years old). 16% of participants were illiterate, 54% had elementary education, 21% had middle school or high school education and 9% had higher education. The mean duration after having myocardial infarction (MI) was 250.43 days.

The mean of body mass index (BMI) was estimated 25.302 kg/m2 (range 14.7035.40-kg/m2). Investigating on the frequency distribution of overweight and obesity in patients based on BMI, it was found that 10% of the patients were underweight and 34% had normal BMI, but 56% were overweight or obese while the obesity background in participants was 14%. Of the participants, 21% and 44% mentioned history of hyperglycemia and hyperlipidemia, respectively. Blood test indicated hyperglycemia and hyperlipidemia in 12% and 21%, respectively. History of hypertension was present in 39% of participants. Mean of systolic blood pressure, diastolic blood pressure and heart rate was 131.70, 82.60 and 74.29, respectively. Other demographic characteristics of the samples are presented in (Table 1).

**Table 1** *Demographic characteristics of people with MI*

| Specifications (variable) | | Frequency (percent) |
|---|---|---|
| Frequency of MI | Once | 81(81) |
| | Two times and more | 19 (19) |
| Frequency of hospital admission | Once | 72(72) |
| | Two times and more | 28(28) |
| Job | Housewife | 28(28) |
| | Employed | 49(49) |
| | Others | 24(24) |
| Economic status | Good and Excellent | 17(17) |
| | Fair and weak | 73(73) |
| History of smoking | Yes | 22(22) |
| | No | 78(78) |
| History of MI in family members | Yes | 41(41) |
| | No | 59(59) |

Findings resulted from investigations on self-care level in various dimensions of general needs, developmental needs and deviation from health in three domains of knowledge, motivation and skills are shown in (Table 2).

**Table 2** *Level of self-care in patients suffering from MI according to knowledge, motivation and skill*

| | Excellent (Above 75%) n(%) | Good (50.01%-75%) n(%) | Fair (25.01%-50%) n(%) | Weak (Less than 25%) n(%) | Total |
|---|---|---|---|---|---|
| Knowledge | 3(3) | 39(39) | 50(50) | 8(8) | 100 |
| Motivation | 8(8) | 50(50) | 2(2) | 40(40) | 100 |
| Skill | 1(1) | 55(55) | 44(44) | - | 100 |

In the above Table, the weak level of self-care indicates serious educative and supportive need. The relationship between some of the variables with self-care on dimensions such as knowledge, motivation and skill were measured which are shown in (Table 3).

Based on the table, there is a significant relationship between blood sugar and blood

**Table 3** *The relationship between some demographic variables and health situation with self-care level in knowledge, motivation and skill dimensions*

| Variables | Knowledge | | P* | Motivation | | P* | Skill | | P* |
|---|---|---|---|---|---|---|---|---|---|
| | Appropriate (n=42) | Inappropriate (n=58) | | Appropriate (n=58) | Inappropriate (n=42) | | Appropriate (n=56) | Inappropriate (n=44) | |
| | Mean(SD) | | | Mean(SD) | | | Mean(SD) | | |
| Age | 58.88(15.55) | 57.60(12.65) | 0.652 | 57.90(13.53) | 58.48(14.52) | 0.838 | 59.93(13.58) | 55.86(14.01) | 0.147 |
| Education level | 1.14(0.89) | 1.25(1.05) | 0.566 | 1.31(0.99) | 1.07(0.97) | 0.234 | 1.25(1.04) | 1.15(0.91) | 0.650 |
| Economic status | 3.14(0.89) | 3.19(0.85) | 0.788 | 3.16(0.85) | 3.19(0.86) | 0.839 | 3.20(0.82) | 3.14(0.90) | 0.729 |
| Duration after MI | 237.31(126.87) | 259.93(109.35) | 0.342 | 255.97(116.88) | 242.80(118.1) | 0.581 | 243.32(123.50) | 259.48(108.76) | 0.496 |
| Number of MI | 1.24(0.53) | 1.22(0.50) | 0.893 | 1.24(0.54) | 1.21(0.47) | 0.795 | 1.23(0.50) | 1.23(0.52) | 0.962 |
| Number of hospital admissions | 1.48(0.77) | 1.34(0.64) | 0.354 | 1.41(0.68) | 1.38(0.73) | 0.817 | 1.39(0.68) | 1.41(0.73) | 0.909 |
| Family history of MI | 1.50(0.50) | 1.66(0.48) | 0.126 | 1.64(0.09) | 1.52(0.50) | 0.257 | 1.55(0.50) | 0.257 | 0.409 |
| History of smoking | 1.79(0.41) | 1.78(0.42) | 0.908 | 1.81(0.40) | 1.74(0.45) | 0.394 | 1.80(0.40) | 1.75(0.44) | 0.526 |
| Systolic blood pressure | 132.86(26.18) | 130.86(20.09) | 0.680 | 129.22(21.001) | 135.12(24.80) | 0.202 | 133.84(23.28) | 127.98(22.009) | 0.291 |
| Diastolic blood pressure | 82.86(15.07) | 82.41(11.25) | 0.873 | 81.03(10.50) | 84.76(15.54) | 0.182 | 83.75(13.08) | 81.14(12.70) | 0.318 |
| BMI | 24.83(4.81) | 25.65(4.10) | 0.364 | 25.82(4.005) | 24.58(4.87) | 0.164 | 25.40(4.41) | 25.18(4.45) | 0.814 |
| Serum lipid | 0.12(0.33) | 0.28(0.45) | 0.04 | 0.25(0.44) | 0.14(0.35) | 0.164 | 0.25(0.43) | 0.15(0.37) | 0.272 |
| Blood sugar | 0.14(0.35) | 0.10(0.30) | 0.554 | 0.12(0.33) | 0.12(0.33) | 0.980 | 0.17(0.38) | 0.04(0.21) | 0.03 |
| Gender | 42people-42% | 44people44% | 0.337 | 58people58% | 56people56% | 0.618 | 44people44% | 58people58% | 0.262 |
| Marital status | 42people-42% | 44people44% | 0.219 | 58people58% | 56people56% | 0.885 | 4people44% | 58people58% | 0.377 |

Independent sample T-test *

lipid with skill and knowledge of self-care, but no significance relationship was shown between other variables with dimensions of knowledge, motivation and skill.

**Discussion**

This study was conducted to investigate self-care level based on Orem's model in patients suffering from myocardial infarction and to determine their educative and supportive needs. Findings revealed that most patients were male and married and their mean age was 58.14 years old. Mohamad Hassani, in a study on patients suffering from coronary artery diseases in Tehran in 2009, reported their age as 58.83 and most of them (63.5%) were male and all of them were married [20]. Dehdari also reports the highest incidence of MI in Tehran among 55 to 59 years old age group. Dadson calculated the mean age of people suffering from MI in 2012 as 59.3 % years old and 68.2% were male [22]. Therefore, the mean age of the participants in this study as well as the higher prevalence of MI in men follows the pattern of other studies in and out of the country. In BMI calculation, 56% of the participants were overweight and obese while obesity record was 14% and this indicates the participants' weight increase after MI.

39% of the participants had history of hypertension (above 140.90) and in Najafi's study 62.5% in experimental group and 59.4% in control group mentioned history of hypertension [23]. In Bergman's study, 11% of the participants had hypertension [24]. This is while the mean of systolic and diastolic blood pressure in participants (131.70) and (82.60) was not showing a high blood pressure after MI. In this study, most patients did not have a history of smoking, but in Najafi's and Dehdari's study, 60.93 % and 60% of the patients, respectively, mentioned history of smoking [21,23]. Therefore, the samples were in a relatively proper situation regarding cigarette use and hypertension. 81% had MI only once and 28% were rehospitalized due to MI. Zand, in his study on patients with MI in Arak city in 2009, reported the rate of rehospitalization in experimental group as 39.47% and in control group as 48.64% [25]. Paying attention to decreasing hospital readmission is very important since each readmission signifies the improvements in cardiovascular damages and threatens one's life and can be attributed to low self-care [26].

In the present study, four levels of self-care including excellent, good, fair and weak are reported in two levels of appropriate and inappropriate. 58% of the participants in knowledge domain, 42% in motivation domain and 44% in skill domain had inappropriate self-care level. In other words, 58% needed to gain information and increase their knowledge regarding MI and self-care. On the other hand, 44% and 42% of them did not have adequate skill and motivation, respectively, to resolve self-care needs and only 12% were in excellent and appropriate level. In Coyle's study on MI patients, it was shown that self-care behavior was reduced 30 days after MI [27].

The mean of self-care behavior in Coeling's study was 55% and the self-care ability in people suffering from hypertension was reported at fair level in Akyol's study [29]. In Mohammad Hassani's study, the self-care level in patients with coronary artery disease, 9.1% of participants were in good level, 74.6% were in fair level and 16.3% were in weak level. Good level of self-care was also reported in Siam's study [20,30].

Najafi also has calculated the total score of life quality before self-care education in people with MI as 54.30 which is in line with the present study [23]. According to Orem's theory, if the individual does not have adequate knowledge motivation and skill in order to resolve his self-care needs, he will face the limitation or reduction of his self-care and would deviate from the balance status. This person needs education, counseling and support [31]. Paying attention to the issue that lack of individual's awareness on how to self-care in relation to the disease and following therapeutic and nutrition diets would lead to negative consequences on his

health and repeated hospitalization [32], shows the importance of educating and supporting this group of patients.

Teaching self-care behaviors could lead the individual toward gaining and maintaining health and getting the feeling of wellbeing as well as increasing his adjustment with the disease and would lead to the reduction in treatment costs and rehospitalization [33]. Having knowledge regarding the disease especially the warning symptoms of MI is very important. In Rezaei's study in Bushehr 2005, the most prevalent reason for patient's delay to go to the hospital was their unawareness (34.2%) regarding their symptoms and their importance.

The mean awareness of people with MI in Taherian's study was reported 8.8 [35]. It seems that the educational content in physicians offices or that taught to the patients during hospital admission is not presented in an applicable way, therefore, it is essential that doctors and nurses pay attention to all the three domains of knowledge, motivation and skill all at the same time during their training programs and be concerned about their education and support. Findings of the present study revealed that there were no significant relationship between disease duration, number of MI and number of hospitalizations with self-care level, so that by increasing disease duration and repeated hospitalization, the self-care ability of the patients did not change. This finding shows the importance of paying more attention to the quality of educational content.

In Emery et al. study on patients with heart diseases, there was a significant relationship between the disease duration and life quality [36] but Simpson, in a study on the quality of life in patients with MI, showed that there is no significant relationship between disease duration and life quality [37]. One of the reasons for the compatibility between the present study and Simpson's study is that less than one year had passed since the MI in most patients and the number of hospitalization and MI was mostly one time.

Based on the findings in the present study, there is no significant relationship between age, gender, marital status, economic status, education level, family history of MI and blood pressure with each of the domains of knowledge, motivation and skill [23,38]. Yet, there is a significant relationship between blood sugar level, blood lipid with skill and knowledge of self-care which necessitate more education and support and improvements of self-care level in this group who are at higher risk. This is while there is no significant relationship between education level and self-care ability in MohamadHassani's study as well as diabetes with life quality in Najafi's study [20,23]. But, in Siam's study, a significant relationship was observed between education and heart disease duration with self-care behavior [30].

Akyol et al. purported that higher education results in better working situation and better salary, therefore, it affects the quality of life and self-care in individuals, as it was observed in his study that there was a significant relationship between education level and self-care ability [29] but this relationship was not significant in the present study.

Because self-care has various dimensions, it is important that nurses pay attention to its various aspects while planning for taking care of patients because nurses have a prominent role in taking care of the patients. By supporting patients and their families, they can empower patients. Moreover, an outcome of self-care education in the long term is to make the feeling of recovery and wellbeing, increasing life expectancy, improving life quality with more independence and better management of the symptoms.

## Conclusion

Because the level of self-care in patients suffering from MI who participated in this study as well as other studies conducted on the same issue are far from the desired level and paying attention to self-care is particularly important to control the disease and to prevent the complications and decrease rehospitalization, therefore, it is recommended to teach self-care and support the individuals based on the scientific method (Orem's model)

to improve self-care abilities. Because this study was conducted at the regional level and on few participants, it is suggested that future studies be carried out on larger populations in order to get information on self-care situation of this group of patients and to determine their real needs in various parts of the country.

**Acknowledgements**
This article is a part of Master's thesis funded by Gonabad University of Medical Sciences. The authors would like to thank this university, the authorities and collogues in Gonabad, Bajestan, Torbat-e-Heydariyeh and all the patients who participated in this study.

**Contributions**
Study design: AM, NR, SHKH, AA
Data collection and analysis: NR, AA
Manuscript preparation: AM, NR, SHKH, AA

**Conflict of interest**
"The authors declare that they have no competing interests."

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