

Psychological Assessment of Patients with Myocardial Infarction

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Abstract: Myocardial infarction (MI) is a world wide life threatening condition. Psycho- social factors contribute significantly to the pathogenesis and expression of myocardial infarction, which includes: Depression, anxiety, personality factors, social isolation and chronic life stress. **The aim of the study:** Psychological assessment of patients with myocardial infarction. **Patients and methods:** The study included 119 patients (78 (65.6%) males and 41(34.4%) females). The study was recruited at cardiac outpatient clinic of Assiut University Hospital during one year duration from 1st December 2009 until 30th November 2010. **Methods:** Each patient was assessed through Symptoms Check list-90-Revised (SCL- 90- R), Beck depression inventory (BDI) and Norbeck social supportive scale. **Results:** The highest percentage of subjects were males (65.6%), above 50 years old, resided in urban areas, illiterate, with low socio economic state, not working, had acute onset of ischemia, (had hypertension, diabetes, smoking, obesity, not practice exercise and with family history of MI) as risk factors, also 25.2% had complication of MI, 59.7% with bad social supportive network, according to SCL- 90 –revised symptoms, revealed that high percentage of patients had psychiatric symptoms, 88.2% had symptoms of depression, 90.8% anxiety, 67.2% stress, 65.5% Somatization, 37.8% sensitivity, 37.8% hostility, 42.9% paranoia, 44.5% phobia, 54.6%obsession, 36.1% psychosis. **Conclusion and Recommendation:** Psychiatric symptoms are very frequent findings in patients with myocardial infarction and have to be detected and managed accordingly.

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1. Introduction

Coronary heart disease (CHD) is now the main cause of death in many countries. One of the most common manifestations of CHD is myocardial infarction. Myocardial infarction (MI) is the development of ischemia and necrosis of myocardial tissue ⁽¹⁾. It results from sudden decrease in coronary perfusion or an increase in myocardial oxygen demand without adequate coronary perfusion ⁽²⁾. Myocardial infarction is more common in individuals with risk factors such as smoking, hyperlipidemia, high blood pressure, positive family history of coronary heart disease, obesity, physical inactivity, stress, and use of oral contraceptives ⁽³⁾.

Myocardial infarction is a major threatening event in the life of patients and constitutes a crisis for both the patient and family. The prevalence of myocardial infarction is more in males than females, in both sexes it occurs mainly between the ages of 40 to 65 years. It's a single largest killer for both sexes in USA, causes more million deaths per year. ⁽⁴⁾.

The incidence of MI increases with age; however, the actual incidence is dependent on predisposing risk factors for atherosclerosis, approximately 50% of all MIs in the united states occur in people younger than 65 years. However, in the future, as demographics shift and the mean age of

the population increase, a larger percentage of patients presenting with MI will be older than 65 years. ⁽⁵⁾

Six primary risk factors have been identified with the development of atherosclerotic coronary artery disease and MI: hyperlipidemia, diabetes mellitus, hypertension, tobacco use, male gender, and family history of atherosclerotic arterial disease. ⁽⁶⁾

According to statistics of Ministry of health and population in Egypt, (1998), the cardiovascular diseases are the sixth leading cause of mortality. Approximately about 34.83% of total deaths died in Egypt during 1998 as a result of cardiovascular disease. In local non- published data, 1673 myocardial infarction patients were admitted to the coronary care unit in Assiut university hospital in the period between 1995-2000.

In Egypt, it was estimated that the total number of admission to the Coronary Care Unit (CCU) at the main Alexandria University Hospital in the year 1993 was 355, of these about 13.7% died.

Rozanski, ⁽⁷⁾ reported that psycho-social factors contribute significantly to the pathogenesis and expression of myocardial infarction, which includes depression, anxiety, personality factors, social isolation and chronic life stress . As psychiatric syndromes can occur associated with coronary heart

diseases, therefore the psychiatric liaison nurse plays an important role in defining and identifying areas of psychosocial needs for patients with myocardial infarction ⁽⁸⁾.

2. Subjects and methods:

Research Design:

The design followed for this study was a cross-sectional descriptive research design.

Setting:

The study was conducted in the Assiut University Hospitals, one of the largest hospitals in Egypt. During the period from 1st December 2009 to 30th November 2010 the outpatient clinic of cardiology department received 1380 patient suffering from heart diseases (Coronary artery diseases which include angina and myocardial infarction, rheumatic heart diseases and hypertension). During this period the outpatient clinic received number of myocardial infarction patients during this period was 170 patients (12.5%) of the total patients (Assiut University Hospital statistical records).

Subjects:

Subjects of the study comprised of 119 patients with myocardial infarction who accept to participate in the study and give an informed oral and written consent during one year period. The studied sample consisted of 78 (64%) Males and 41 (36%) Females.

Tools of the study:

Five tools were used for data collection:

(1) Clinical data sheet: This sheet was developed by the researcher. It includes personal and clinical data. The personal data included patient's (name, age, sex, level of education, occupation, and address). And the clinical data included (Diagnosis, present complains, onset of illness, predisposing factors, present treatment, family history, complication, life style changes).

(2) Socio Economic Status Scale: This scale was designed by **Abd-El-Tawab**, ⁽⁹⁾ to assess socioeconomic status of the family and consists of 4 dimensions, which include the following:

- Parent's level of education it included 8 items.
- Parent's occupation it included 2 items.
- Total family monthly income it included 6 items.
- Life style of the family it included 3 items.

(3) The Symptom Checklist- 90-Revised (SCL-90-Revised): This scale was developed by **Elbehairy** ⁽¹⁰⁾, the SCL-90-R is a 90-item self-report symptom inventory developed by Clinical Psychometric Research. It was designed primarily to reflect the psychological symptoms pattern of psychiatric and medical patients.

Each item of the "90" was rated on a 5-point scale of distress (0-4), ranging from non-at-all at one pole to "extremely" at the other pole. The "90" was

scored and interpreted in terms of 9 primary symptom dimensions and 3 global indices of distress that were labeled:

1. Somatization.
2. Obsessive compulsive.
3. Interpersonal sensitivity.
4. Depression.
5. Anxiety.
6. Hostility.
7. Phobic anxiety.
8. Paranoid ideation.
9. Psychoticism.

(4) Beck Depression Inventory: this scale was developed by **Beck**, ⁽¹¹⁾, the Arabic version of Beck depression inventory scale which modified by **Ghareeb**, ⁽¹²⁾. This second edition of the BDI composed of a 13-question multiple-choice self-report inventory. Subjects report the severity of symptoms on a Likert scale ranging from 0 (none) to 3 (severe); possible total scores each containing four statements ranked in order of severity, The higher score on the BDI, the greater is the severity of depressive symptoms.

* Scores ranged from 0-39 used the following definition of severity levels:-

1. Not depressed from 0-9
2. Mildly depressed from 10-15
3. Moderate depressed from 16-24
4. Severe depression from 25-39

(5) Norbeck Social Support Questionnaire (NSSQ): This scale was developed by **Norbeck**, ⁽¹³⁾ to measure patient's social support. It was translated into Arabic language by **Taha & Wehieda**, ⁽¹⁴⁾ and used in different studies as **Abd El-Aziz**, ⁽¹⁵⁾. It includes 6 questions, concerned with care and love, respect, confidence, support of thoughts or actions, short term financial aid, long term aid. The scale was rated from 1-5, for each question. The sum of total scores in the response of the six questions reveals if the patient receive good or bad social supportive network

- Good social supportive if the scores is 15 degree or more
- Bad social supportive network if the score is less than 15 degree

Methods of data collection:

1. An official letter from the dean of the faculty of nursing – Assiut University directed to the director of Assiut University Hospital in order to get permission to conduct the study.
2. Arranged of the study with medical staff and supervisors of cardiac outpatient clinic.
3. A pilot study was conducted at the beginning of the study. It included 10% of the total sample to investigate the feasibility of data collection tools and their clarity. The pilot study revealed that the

tools used properly assess the psychological state of the patients. Patients included in the pilot study were excluded from the actual study.

4. The aim of the study explained to the patients before starting data collection. Patients informed about what will be done for them.
5. Consent was taken from all patients who reassured about the confidentiality of the obtained information to avoid misunderstanding.
6. Collect data about the medical history of the patient through a tool prepared for the study.
7. Socioeconomic assessment scale was used to assess the socioeconomic level.
8. psychological assessment of each patient was done using the following scales:
 - a. The Arabic version of the Symptom Chick List-90-R
 - b. The Arabic version of the Beck depression inventory scale
9. Social supportive network assessment scale used to assess the social supportive network for MI patients.
10. The time spent with the patient varies from 20-30 minute during the interview and each patient was interviewed individually.
11. The obesity (BMI>25kg/ m2) was identified through calculation of the body Mass Index (BMI) which equal (Wt kg / Ht m2). The normal range is (18- 25).

Statistical analysis:

The data were computerized and verified by using the SPSS (Statistical Package for Social Science) version 11.5 to perform tabulation and statistical analysis. Qualitative variables were described in frequency and percentages, while quantitative variables were described by mean and standard deviation. Analysis of collected data was done through the use of several statistical tests.

3. Results:

Results of the present study showed that:

In the present study, 78 (65.6%) were males while 41 (34.4%) were Females. The mean age was 51.3 ± 7.3 years 61.3 % of patients at age of 50 years or more and age ranged from 40-75 years. As regard level of education most of patients (33.6%) either illiterate or 27.7% read and write and 42% of them not working. Most of the studied groups (87.4%) are in the middle level of socioeconomic status and 57.1% live in urban areas. Most of males and females at the age of 50 years or older and live in urban residence and also in the middle social class, but most of males (33.3%) were employee and 32.1% read and write but most of females (53.7%) are illiterate and 78% of them not working. Table (1)

Table (2) shows the Clinical characteristics of

the studied group which indicates that the majority of patients (79%) with acute onset myocardial infarction. Studying the risk factors for myocardial infarction, 42.9% have family history of myocardial infarction, 52.9% had hypertension, 23.5% had diabetes and 20.2% were obese (Body Mass Index >25). Most of the studied patients (96.6%) not practice exercise and 29.4% were smokers with smoking index 23.1 ± 13.4 . The majority of patients (80.7%) had myocardial infarction once, 25.2% of patients had complication 10.1% had pericarditis, 5.9% had Acute pulmonary edema, 5.9% had Pericardial effusion, 3.3 had More than one complication.. Most of males and females had acute onset myocardial infarction, hypertension as risk factor, not practicing exercise, had once recurrence of myocardial infarction, had complication and take the same drug but most of males (44.9%) are smokers, 44.9% had family history of myocardial, most of females (46.3%) were obese (Body Mass Index >25) as a risk factor of myocardial infarction.

Regarding to impact of myocardial infarction on life style, 99.2% had Fluid and food restrictions, 97.5% had Changes in family roles and responsibilities, 91.6 % decrease ability to fulfill long range future life goals, 68.1% decrease financial status, 66.4 % loss of their occupation. Table (3)

Table (4) reveals distribution of levels of social supportive network among the studied group, the study illustrate that 59.7% of the total patients have bad social supportive network and this extended to males (60.3%) and females (58%).

Table (5) shows frequency of patients who exceed the cut-off point on different symptoms dimensions of SCL- 90 R, the cutting point of each symptoms either 60 or above in order of frequency of symptoms 65.5% Somatization, 54.6% obsession, 45.4% anxiety, 44.5% phobia, 42.9% paranoia, 39.5% depression, 37.8% hostility, 37.8% sensitivity, 36.1% psychosis. Most of males were suffering from phobia (46.2%), depression (44.9%), sensitivity (41%) than females; females have a higher percentage of hostility than males (41.5%).

Table (6) shows, mean score of patients on different symptoms dimensions of SCL- 90 R, in order of frequency of symptoms 2.69 ± 0.57 Somatization, 2.42 ± 0.72 obsession, 2.24 ± 0.94 anxiety, 2.04 ± 0.86 phobia, 2.28 ± 0.70 paranoia, 2.24 ± 0.87 depression, 2.09 ± 0.82 hostility, 2.18 ± 0.81 sensitivity, 1.88 ± 0.75 psychosis.

Table (7) shows frequency the severity of depression according to Beck depression inventory (BDI), which reveals that 69.7% (83) of the total group have depression (70.7% (29) of females and 69.2% (54) of males), 31.9% (38) of the total group have severe depression (33.3% (26) of males and 29.3% (12) of females). No statistical significance

difference between males and female's severity of depression has been found.

Table (1): Demographic characteristics of patients with myocardial infarction (no=119)

Demographic characteristics	Male (n= 78)		Female (n= 41)		Total (n= 119)		P-value
	No.	%	No.	%	No.	%	
Age (years):							
40 - < 50	32	41.0	14	34.1	46	38.7	0.464
≥ 50	46	59.0	27	65.9	73	61.3	
Mean ± SD	51.0 ± 7.3		51.8 ± 7.4		51.3 ± 7.3		
Marital status:							
Single	16	20.5	2	4.9	18	15.1	0.014*
Married	51	65.4	26	63.4	77	64.7	
Widow	11	14.1	13	31.7	24	20.2	
Level of education:							
Illiterate	18	23.1	22	53.7	40	33.6	0.022*
Read & write	25	32.1	8	19.5	33	27.7	
Primary	10	12.8	4	9.8	14	11.8	
Secondary	14	17.9	4	9.8	18	15.1	
University	11	14.1	3	7.3	14	11.8	
Occupation:							
Not work	18	23.1	32	78.0	50	42.0	--
Employee	26	33.3	6	14.6	32	26.9	
High skilled	17	21.8	2	4.9	19	16.0	
Non-skilled	13	16.7	1	2.4	14	11.8	
Professional	4	5.1	0	0.0	4	3.4	
Residence:							
Urban	42	53.8	26	63.4	68	57.1	0.316
Rural	36	46.2	15	36.6	51	42.9	
Socioeconomic status:							
Low	1	1.3	0	0.0	1	0.8	--
Middle	66	84.6	38	92.7	104	87.4	
High	11	14.1	3	7.3	14	11.8	

Table (2): Clinical characteristics of the studied group (no=119)

Medical history	Male (n= 78)		Female (n= 41)		Total (n= 119)	
	No.	%	No.	%	No.	%
1. Onset of illness:						
Acute myocardial infarction	63	80.8	31	75.6	94	79.0
Chronic myocardial infarction	15	19.2	10	24.4	25	21.0
2. Risk factor for myocardial infarction:						
Family history of myocardial infarction	35	44.9	16	39.0	51	42.9
Hypertension	40	51.3	23	56.1	63	52.9
Diabetes	18	23.1	10	24.4	28	23.5
Cholesterol (hyperlipidemia)	0	0.0	1	2.4	1	0.8
Alcohol	1	1.3	0	0.0	1	0.8
Obesity	5	6.4	19	46.3	24	20.2
Exercise:						
Not practicing	75	96.2	40	97.6	115	96.6
Smoking:						
Positive Smokers	35	44.9	0	0.0	35	29.4
Passive smokers	0	0.0	10	24.4	10	8.4
3. Recurrence of myocardial infarction:						
Once	66	84.6	30	73.2	96	80.7
Twice or more	12	15.4	11	26.8	23	19.3
4.Complications:						
Pericarditis	6	7.7	6	14.6	12	10.1
Acute pulmonary edema	6	7.7	1	2.4	7	5.9
Pericardial effusion	6	7.7	1	2.4	7	5.9
More than one complication	3	3.9	1	2.4	4	3.3

Table (3) Impact of myocardial infarction on life style changes among studied group (no=119)

Impact of myocardial infarction on life style changes	Male (n= 78)		Female (n= 41)		Total (n= 119)	
	No.	%	No.	%	No.	%
Decrease financial status	73	93.6	8	19.5	81	68.1
Loss of occupation	72	92.3	7	17.1	79	66.4
Fluid and food restrictions	77	98.7	41	100.0	118	99.2
Changes in family roles and responsibilities	76	97.4	40	97.6	116	97.5
Decrease ability to fulfill long range future life goal	73	93.6	36	87.8	109	91.6

Table (4): Distribution of levels of social supportive network among the studied group (no=119)

Social supportive	Male (n= 78)		Female (n= 41)		Total (n= 119)		P-value
	No.	%	No.	%	No.	%	
Good	31	39.7	17	41.5	48	40.3	0.856
Bad	47	60.3	24	58.5	71	59.7	

NB: Good social support i.e. total score of 15 or more

Bad social support i.e. total score of less than 15 According to Norbeck social support scale.

Table (5) Frequency of patients who exceed the cut-off point on different symptoms dimensions of SCL- 90 R (no=119)

Symptoms	Male (n= 78)		Female (n= 41)		Total (n= 119)	
	No.	%	No.	%	No.	%
Somatization	53	67.9	25	61.0	78	65.5
Obsession	41	52.6	24	58.5	65	54.6
Sensitivity	32	41.0	13	31.7	45	37.8
Depression	35	44.9	12	29.3	47	39.5
Anxiety	36	46.2	18	43.9	54	45.4
Hostility	28	35.9	17	41.5	45	37.8
Phobia	36	46.2	17	41.5	53	44.5
Paranoia	34	43.6	17	41.5	51	42.9
Psychosis	28	35.9	15	36.6	43	36.1

N.B: cut- off point i.e. T score on different symptoms dimension equal to 60 or more

Table (6): Mean score of patients on different symptoms dimensions of SCL- 90 R (no=119)

Symptoms	Male (n= 78)	Female (n= 41)	Total (n= 119)	P-value
	Mean \pm SD	Mean \pm SD	Mean \pm SD	
Somatization	2.65 \pm 0.58	2.78 \pm 0.56	2.69 \pm 0.57	0.224
Obsession	2.39 \pm 0.72	2.48 \pm 0.72	2.42 \pm 0.72	0.493
Sensitivity	2.15 \pm 0.83	2.23 \pm 0.77	2.18 \pm 0.81	0.623
Depression	2.21 \pm 0.86	2.32 \pm 0.88	2.24 \pm 0.87	0.500
Anxiety	2.22 \pm 0.93	2.27 \pm 0.97	2.24 \pm 0.94	0.798
Hostility	2.08 \pm 0.83	2.12 \pm 0.81	2.09 \pm 0.82	0.815
Phobia	1.96 \pm 0.86	2.21 \pm 0.83	2.04 \pm 0.86	0.121
Paranoia	2.26 \pm 0.72	2.31 \pm 0.67	2.28 \pm 0.70	0.676
Psychosis	1.89 \pm 0.76	1.88 \pm 0.76	1.88 \pm 0.75	0.944

Table (7): Frequency the Severity of depression according to Beck depression inventory (BDI)

Depression	Male (n= 78)		Female (n= 41)		Total (n= 119)		P-value
	No.	%	No.	%	No.	%	
Normal	24	30.8	12	29.3	36	30.3	0.865
Depression:	54	69.2	29	70.7	83	69.7	
Mild	18	23.1	14	34.1	32	26.9	--
Moderate	10	12.8	3	7.3	13	10.9	
Severe	26	33.3	12	29.3	38	31.9	

4. Discussion:

Lumleian⁽¹⁶⁾ stated that patients with cardiac disease have been thought to exhibit characteristic emotional features. The results of work conducted in the 20th century suggested that several psychosocial risk factors contribute to the development of cardiovascular disease and influence the course of those who have it; these risk factors included anger, hostility, social isolation, stress, anxiety, and depression. Similar strong associations were thought to exist between cardiovascular disease and personality traits (e.g., the so-called type A personality) characterized by aggressiveness, hostility, and a chronic sense of urgency. Psychological disorders that are particularly common among patients with myocardial infarction generally have a negative impact on important coronary end-points, such as functioning and recurrence of cardiac events, as well as on lifestyle changes **Wolf**,⁽¹⁷⁾.

In the present study the mean age of patients was 51.3 ± 7.3 years ranged from 50-75 years old. This is similar to that reported in other studies as **Melek**,⁽¹⁸⁾ and **Rubin et al.**,⁽¹⁹⁾ which found that most of myocardial infarction occurs in people over 50 years, and added that it, become more common with increasing age. Some authors considered aging as a respectable risk factor to develop myocardial infarction in old age and explained that due to the physiological changes and the effects of *pon1-192* genotypes on the association of the older age – category and myocardial risk was *geno-dosage* related *pon1* activity decreases as a function of age in persons homozygous for the Q allele (**Berger et al.**,⁽²⁰⁾ **(Mariano et al.)**⁽²¹⁾ Found that coronary heart disease can develop in patient under the age of 45 year that might be due to the psychosocial risk factors (excessive work demand combined with boredom at work and associated with tobacco consumption). Again the study of **Ignatius et al.**,⁽²²⁾ and **Romon**,⁽²³⁾ reported that elderly patients cannot be considered a homogeneous group of the high risk for developing MI and the age constitutes an independent prognostic factor for MI. The authors added that changing life styles, improvement in medical care are more effective than focusing on age as a risk factor.

In the present study about 65.6% of patients were males. The highest percentage of male patients was consistent with other reports of many authors. Those expressed the difference in the prevalence of MI in both sexes such as the study of **Khader**,⁽²⁴⁾ who found that MI was three times more common in men than women and reported that men in their 40 years have a higher risk of cardiac attack than women. Also **Melek**,⁽¹⁸⁾ and **Mosca et al.**,⁽²⁵⁾ demonstrated that women were less prone to atherosclerotic coronary heart disease which tends to develop at a

late age and when they get older their risk increases so that, it is almost equal to men risk. It might be due to the protective effect of estrogen in premenopausal stage. Also it was observed that the use of oral contraceptive pills was associated with increase risk to develop MI (**Mosca et al.**)⁽²⁶⁾.

The majority of the studied patients (89.2%) have low level of education (illiterate, read and write, primary, secondary) and 64.7% were married that congruence with the study of **Frank**,⁽²⁷⁾ who demonstrated that most of MI patients were married and with low level of education and added that the marital factors contribute more to educational differences in the risk of MI and improving marital circumstances in lower educational patients may from an important strategy in reduction of the incidence and mortality of MI. Also the study of **Framingham**,⁽²⁸⁾ found that approximately 60% of all heart attacks patients were married and that could be related to the burdens of family roles on the person more than his abilities.

In addition to the study of **Winslow**,⁽²⁹⁾ **Ramos et al.**,⁽³⁰⁾ and **Sofia et al.**,⁽³¹⁾ found that MI patients with poorer reading and writing skills in both gender trigger to risk of incidence and mortality of MI than patients with high education and reported this may be related to inability to understand a health care providers directions and lack of knowledge of self care. Moreover the study of **Qiu et al.**,⁽³²⁾ added that men with low educational levels were more socially isolated and experienced more stress than men with higher educational levels and exposed them to the risk of MI twice as likely to die from subsequent cardiac events.

In the present study, the majority of studied patients were not working that consistent with the study of **Perokyo**,⁽³³⁾ who stated that there was a close relation between MI, duration and type of work, it was found that most of female's patients were housewives and most of male patients were not working. **Dubery**,⁽³⁴⁾ added that change or modification of previous occupation among patients with myocardial infarction either temporarily or perhaps permanently was very observable among those patients. Most of studied sample came from urban areas (57.1%) that consistent with the study of **Julian et al.**,⁽³⁵⁾ who stated that urban population have a higher incidence of coronary heart diseases than rural population and reported, it was related to sedentary life styles and lack of physical movements. In contrast, the study of **Ansar**⁽³⁶⁾ and **Andrew**⁽³⁷⁾ found that the incidence, readmission and mortality rate of MI were higher in rural population than urban population and explained that, presence of many factors such as low level of education, low socioeconomic status, poor community health

services in these areas and longer waiting times.

Socioeconomic status lies an important role in patient with MI as patients in lowest socioeconomic have the highest risk of development of cardiovascular events and may be an interaction between socioeconomic status in the development of cardiovascular risk factors for both men and women **Billantyne** ⁽³⁸⁾. In the present study most of patients were have low / middle social class. **Friberge**, ⁽³⁹⁾ reported that different components of socioeconomic status construction (income, education,) affect on men and women and may result in social isolation and lack of social support that trigger risk of MI. On the other hand the study of **Julian et al.**, ⁽³⁵⁾ found that people in high social class more risky for MI than others in middle and low social class, which related to sedentary life style, unhealthy food and lack of physical movements.

The study findings suggest that most of the studied sample had acute ischemia, these results are consistent with the study of **Ulrich et al.**, ⁽⁴⁰⁾ who reported that acute ischemia represent 80% of cases of MI and that related to silent ischemia. That in contrary with the study of **Davis et al.**, ⁽⁴¹⁾ who showed that the onset of symptoms of MI was gradual and rarely instantaneous and most of cases can be discovered later on by ECG or autopsy without a prior history of related complaints.

As regard the risk factors of MI, the present study revealed that 42.9% of patients had family history of MI, 23.5% had diabetes mellitus, 52.9% had hypertension, 20.2% were obese, and 96.6% not practicing exercise, 29.4% were smokers. These traditional risk factors were reported in many studies as (**Schomig et al** ⁽⁴⁰⁾; **Bholasingh et al** ⁽⁴²⁾; **Appel**, ⁽⁴³⁾; **Wallentin**, ⁽⁴⁴⁾; **Yuichi et al.**, ⁽⁴⁵⁾; **Tasi et al.**, ⁽⁴⁶⁾; **Friedman et al.**, ⁽⁴⁷⁾; **Cntor et al.**, ⁽⁴⁸⁾; **Kontos** ⁽⁴⁸⁾; **Weustink et al.**) ⁽⁴⁹⁾.

Concerning the recurrence of MI the present study found that the majority of patients had MI once (80.7%) only 15.4% had MI twice or more that may be related to the short duration from the incidence until follow-up (6-12 month) . These findings were supported by **Johannes et al.**, ⁽⁵⁰⁾ who found that most of MI patients suffering from acute ischemia once but the recurrence of MI mostly common from 3-5 years post MI that related to social stressors made recurrence of cardiac symptoms in follow up after rehabilitation were more common.

As regarding the complication of MI the current study stated that 25.2% of patients had complications as pericarditis (10.1%), acute pulmonary edema (5.9%), and pericardial effusion (5.9). These results were similar to what reported in the study of **Sylvia**, ⁽⁵¹⁾ and **Tureson et al.**, ⁽⁵²⁾ who found that there were numerous complication that may arise as a

consequences of MI and stated that the most common complications were reclusion of an infarct (5% to 30%), post infarction angina (25%), cardiogenic shock (5-20%), ventricular septal rupture (0.2%), acute mitral regurgitation (7%), left ventricular aneurysms (2-15%), right ventricular failure (10%), pericarditis (10%), arrhythmias (20%), mural thrombosis and systemic embolism (20%), dressler's syndrome (1%).

Myocardial infarction leads to impaired physical, emotional, social and role performance and that affect men three times more than women and that might be related to the feeling of disability at least one year after hospital discharge and this was a significant predictor of mortality in men 10 years post MI (**Ron et al.**) ⁽⁵³⁾. In the present study most of studied patients suffering from decrease financial status, loss of occupation, food and fluid restriction, changes in family roles and responsibility and decrease the ability to fulfill long range future life goals as a consequences of MI and that affects men more than women.. The study of **Thompson**, ⁽⁵⁴⁾ suggested that changes on the patient's life might be related to fatigue and pain.

In healthy population social support plays an important role in handling stressful events with respect to cardiac health. Moreover, it was not social support itself but also, the way of social support was perceived by the individual that influences whether social support was helpful or not **Rubenach**, ⁽⁵⁵⁾. The present study found that 59.7% of studied patients had bad social supportive net work. These finding was confirmed with **Johannes et al.**, ⁽⁵⁰⁾ who found that lack of social supportive was significantly more prevalent among MI patients and there was appositve association between the incidence of first time acute myocardial infarction, recurrence, complication, mortality and the recovery process after MI and between social support. Also **Sodiq et al.**, ⁽⁵⁶⁾ suggested that improvement of social support for those patients may be decrease 20% of the risk for the incidence, recurrence and mortality of MI.

Research over the past two decades has shown that the prevalence of depression in MI patients was very high (**Pratt et al.**, ⁽⁵⁷⁾; **Hirschfeld et al.**) ⁽⁵⁸⁾. According to symptoms Checklist-90-R, Depression. subscale 39.5% of patients have depressive symptoms, those patients need clinical psychiatric intervention as scores in this scale reaching the cut-off point of the scale, the mean score of depression in symptoms Checklist-90- R was 2.24± 0.87. According to Beck depression inventory scale (BDI) 69.5% of patient had depression 31% of them had severe depression.

Strik et al., ⁽⁵⁹⁾ reported that the wide range of prevalence rates of depression appears to be due

almost exclusively to differences in measurement instruments used and even to differences in threshold criteria applied from study to study when the same instrument was used. In general, the reported prevalence of potentially significant symptoms of depression was higher when this diagnosis was based on Beck depression inventory scale score of 10 or higher. When compared with the Symptom Checklist-90 Depression scale, this difference may be attributed to the BDI's inclusion of somatic symptoms that may overlap with MI symptoms and this appeared clearly that 65% of patients had higher scores on somatization scale.

(National Institute of Mental Health,) ⁽⁶⁰⁾ Reported that women with coronary artery disease (CAD) were at increased risk for developing depression. At roughly twice the rate of men, regardless of racial, ethnic, or economic backgrounds and women should be aware that depression and anger have been linked to heart-related health risks for their gender. That contrasts with the present study which showed that there were no significance differences between males and females depression.

First studies of heart disease and depression found that people with heart disease were more likely to suffer from depression than otherwise healthy people and for people who do not have heart disease; depression increases the risk of heart attack and coronary disease (Nemeroff ⁽⁶¹⁾). In addition, researchers in Montreal and Canada found that heart patients who were depressed were four times as likely to die in the next 6 months as those who were not depressed (Frasure-smith et al., ⁽⁶²⁾; Frasure-smith et al., ⁽⁶³⁾). In general about one of every 3-5 patient who have survived a heart attack experiences a major depression during the 12 months after an acute MI. In addition to its effect on quality of life, post-MI depression also deserves attention as a result of increased a 3-fold risk of morbidity and mortality (Regier et al., ⁽⁶⁴⁾; Taylor et al., ⁽⁶⁵⁾; Bush et al., ⁽⁶⁶⁾; Carney et al., ⁽⁶⁷⁾; Lesperance et al., ⁽⁶⁸⁾)

Anxiety was an expected reaction in individuals who experience myocardial infarction. Anxiety may be observed during the early stages of MI, since as an individual was faced with the feeling of apprehension and fear against this threatening danger (death). Individuals with such affective processes found it difficult using effective coping mechanisms implemented to solve problems (heart attack). The volume of heart beat, cardiac output, and the blood pressure turn to increase that due to the activation of sympathetic nervous system and the heart was incapable of withstanding the load brought by stress, these manifestation can expand the infarct size, increase complication and resulting in poor prognosis. (James et al., ⁽⁶⁹⁾). In the present study according to

symptoms Checklist-90-R anxiety subscale 54.4% of the patients have anxiety symptoms that threshold to need clinical psychiatric help as scores in this scale reaching the cutting off point of the scale, with mean score is 2.24 ± 0.94 .

The stress response was a complex phenomenon that involves both physiological and psychological changes. Serious illnesses, such as an acute myocardial infarction, can be considered major stressors. Alterations such as increased sympathetic nervous system activation and diminished parasympathetic activity, which lead to alterations in coagulation and fibrinolysis, and reduced compliance with treatment programs and associated with a poorer prognosis (Joan, ⁽⁷⁰⁾). It was appeared in the present study that the majority of patients suffering from stress (67.2%), 37% of them had severe stress. These findings are similar to the study of Nancy, ⁽⁷¹⁾ who found that a highest level of psychological stress symptoms among patient with MI after hospital discharge and associated with a close to threefold increase in risk of cardiac mortality over 5 year and 1.5 fold increase in risk of reinfarction over the same period. The author added that the high level of stress was related to the implication of life style changes on the patient.

According to Symptoms Check List (SCL-90-R), Somatization presented in high rates in studied MI patient (65.5%) and that reported by others (Rief et al., ⁽⁷²⁾; Barsky, ⁽⁷³⁾) and this most properly related to impaired heart rate, an amplification of bodily signals, that mean patients with MI perceive exogenous and autonomic physical sensation as more intense (Barsky, ⁽⁷³⁾). Obsession was reported in high rates in studied MI patient (54.6%) and patients need clinical psychiatric intervention that was observed in the present study and reported by others (Francesco et al., ⁽⁷⁴⁾) who found that 20% of patients with MI have obsessive compulsive disorders and that arise from intolerance for uncertainty and difficulties in taking decision making and that lead to cognitive beliefs or meta- beliefs (obsessive compulsive disorders) on those patients.

Phobia from persons, objects, places or situation was reported in 44.5% of the studied patients and men's phobias represent 46.2% exceed female's phobias 41.5%. Phobias in patients with MI might be related to the fear pathways and stress response delineated central functions for the no adrenergic system in anxiety spectrum disorders such as phobias in addition to fear of sudden death. Men fear's excess women's fear related to the burdens of family roles if they leave (Gregory et al., ⁽⁷⁵⁾) Social phobia represent 50% of patients suffering from MI as a marker of anxiety induced cardiac dysregulation and caused QTD (QT dispersion) (Eitan et al., ⁽⁷⁶⁾).

Paranoia was reported in 42.9% of studied patients similar findings was reported by **Thomas et al.**,⁽⁷⁷⁾ who found that 15% of MI patients suffering from circumscribed distortion of reality in the form of paranoid thinking and that were impervious to the normative process of consensual validation. These distortions were often postulated as a means of bolstering lowered self-esteem and portrayed an artificially positive, grandiose self-image and a defensive abstractness.

Hostility was reported in 37.8% of the studied patients (women were affected more than men). These findings were consistent with the study of **Stephen et al.**,⁽⁷⁸⁾ who evaluated the relation of hostility and the incidence of myocardial infarction and reported that hostility was more prominent after the incidence of MI and this might be due to the feeling of anger toward the stressful events, lack of social support, inability to fulfillment of the responsibilities, burdens of drugs costs and feeling of low self-esteem after the illness that particularly in women more than in men.

4. Conclusion:

Based upon the study results, it is concluded that, psychological symptoms are more frequent among patients suffering from myocardial infarction which includes symptoms of depression affect approximately 69.7%, anxiety 90.8%, somatization 65.5%, obsession 54.6%, phobia 44.5%, paranoia 42.9%, sensitivity 37.8%, hostility 37.8%, psychosis 36.1%, stress 67.2% of the studied sample, and those patients need clinical psychiatric intervention as well as physical intervention.

Recommendations:

From the previous conclusion, the following recommendations are suggested:

1. Increase awareness of nurses about psychological status of myocardial infarction might help in their management plan.
2. Nurses as a care giver to myocardial infarction patients should focus on psychological aspects as well as physical aspects of myocardial infarction patients
3. Proper treatment of any psychological disorders might help in preventing complication of myocardial infarction.
4. To confirm the previous results, structured psychiatric clinical interview based researches are recommended.
5. We have to encourage improvement of social supportive net work of myocardial infarction patients to help in improving either physical or psychological status of the patients.

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