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ASSESSMENT OF DEPRESSION IN POST MYOCARDIAL INFARCTION PATIENT IN PRIVATE HOSPITAL LAHORE, PAKISTAN

By

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Thesis submitted in partial fulfillment of the requirements for the degree of

MASTER IN PUBLIC HEALTH (MPH)



Government College University Faisalabad

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DEDICATION

The thesis is dedicated to **Almighty Allah**, the most merciful and the most beneficent, who give me strength to fulfill my goal.

Then to my **beloved Prophet (PBUH)**.

My parents **MR & Mrs. Muhammad Ashraf**

siblings, **Faiza, salman & zeeshan**, who devoted

their lives for the fulfillment of my education

Supervisor Prof Dr. Syed Amir Gilani and Prof Dr. Asif Hanif, who

provided me proper guidelines and were always there whenever I need.

This thesis is dedicated to

My best friends and loved ones, **atiqa&memoona**,

They own I a lot and I despite of my best efforts unable to pay them back.

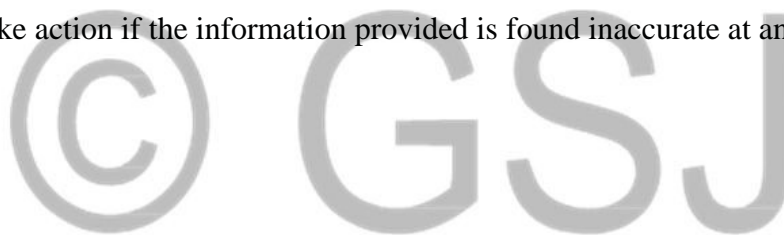
Ayesha Ashraf

APPROVAL LETTERS

DECLARATION

The proposed work reported in this thesis was carried out by me under the supervision of Prof.Dr Amir Gilani institute Afro-Asian Institute affiliated with GC University, Faisalabad, Pakistan.

I hereby declare that the title of proposed research Assessment of depression in post MI patients in Bahria international hospital Lahore, Pakistan. Its contents are the product of my own proposed research and no part will be copy from any published source (except the references, standard mathematical or genetic models /equations /formulas /protocols etc). I further declare that this work has not been submitted for award of any other degree /diploma. The University may take action if the information provided is found inaccurate at any stage.



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CERTIFICATE BY SUPERVISORY COMMITTEE

We certify that the contents and form of thesis submitted by Miss Ayesha Ashraf, Registration No 2018-GCUF-077652 has been Found satisfactory and in accordance with the prescribed format. We recommend it to be processed for the evaluation by the external examiner for the award of degree.

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LIST OF ABBREVIATIONS

S/N	Abbreviations	Full Form
1	MDD	Major depressive disorder
2	CHD	Coronary heart disease
3	AMI	Acute myocardial infarction
4	CAD	Coronary artery disease
5	CABG	Coronary artery bypass graft
6	HADS	Hospital anxiety and depression scale
7	MSIMI	Mental stress induced myocardial infarction
8	RCT	Randomized control trial
9	PTSD	Post-traumatic stress disorder
10	CBT	Cognitive behavioral therapy

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ABSTRACT

Background:

Depression (major depressive disorder) is a common and serious medical illness that negatively affects how you feel the way you think and how you act. Prevalence rates of depression have been shown to be higher among women in the general population and among cardiac patients, with recent evidence suggesting that young women may be at particularly high risk for depression after AMI. Different studies were done on depression with myocardial infarction in Pakistan but this study was conducted at Bahria international hospital Lahore, before the time no such study was conducted over there.

Objective:

To assess depression in post myocardial infarction patients .

Methodology:

Study was conducted in coronary care unit at Bahria international hospital Lahore, Pakistan. Sample size was 122. Purposive nonrandom sampling was used. Population was selected only that patients who had with myocardial infarction. Data collection was done from the patients through Hospital Anxiety and Depression Scale (HADS) to measure anxiety and depression. During data collection history about demographic (age, gender, family history, socio-economic status), medical history (diabetic, hypertension, smoking) were also taken. Inclusion criteria

were age 25-64 years and Patients having coronary conditions admitted to coronary care unit at Bahria International Hospital Lahore. Data was analyzed by using SPSS 22.

Results:

Risk of depression was high in post myocardial patients with 6 months of duration after. It indicates that there was a strong co relation between depression and myocardial infarction. Mean age between 24-45 years was high. 92% population had positive family history. Smokers were more to myocardial infarction in study. According to time duration less than 6 months with the onset of myocardial infarction 49% were depressed and anxious, between 7-12 months 26.2% and more than one year percentage was 24%. According to questionnaire scoring 8-10 borderline 23.8% depressed and 19.8% were anxious and 11-21 were considered abnormal 39.3% depressed and 41.5% anxious respectively. P value for anxiety and depression is 0.002 in the patients who had history of myocardial infarction. Patients who had recent exposure to MI were more depressive than those who had history of more than one year.

Conclusion:

The current research study was conclude that the prevalence rate of depression and anxiety scoring was high in patients who had recent incident of acute myocardial infarction.

Hospital Anxiety and Depression Scale (HADS) was notably increased. Most of the risk factors were controllable. In addition, Male patients were more prevalent in the group where they had

recent history of AMI as compared to female. Early identification and prevention of these risk factors were reduced the further cardiac anomalies.

Key words:

Depression, myocardial infarction, anxiety

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Chapter #1

INTRODUCTION

Depression (major depressive disorder) is a common and serious medical illness that negatively affects how you feel the way you think and how you act. Fortunately, it is also treatable. Depression causes feelings of sadness and/or a loss of interest in activities once enjoyed. It can

lead to a variety of emotional and physical problems and can decrease a person's ability to function at work and at home.(Gelenberg& Hopkins, 2007)

Symptoms of depression can vary from severe to mild and includes, feeling sad, having a depressed mood, changes in appetite and weight, early fatigue, insomnia and feeling of worthlessness. Disposition, disturbed sleep, dysfunction, discouragement and female sex appear as major predisposing factors for the depression in older community.(Olfson, Blanco, & Marcus, 2016)

Depression is the psychological impression of situation of the ego-helplessness and the egopowerlessness to meet the decisively made egotistical expectation. If all of the egotistical expectation comes true in reality or in thoughts, the conclusion is bliss and exhilaration.

Immature treatment to suspicion of the helplessness leads to the depression. Specifically, depression is the primary response to the state of egotistical disappointment.(Waqas et al., 2015)

A household evaluation revealed that environmental factors are vital source for depression. Although, genetic factors are also assessed as common source for depression Bio Chemistry, genetics, personality and environmental factors are most common etiologies for depression.(Nabeshima&Kim,2013)

Depression is an ongoing problem, not a passing one. It consists of episodes during which the symptoms last for at least 2 weeks. Depression can last for several weeks, months, or years. It comes in phases some times. It is a treatable condition with medications and behavioral therapies. Coronary artery disease develops when the major blood vessels that supply your heart with blood, oxygen and nutrients (coronary arteries) become damaged or diseased. Cholesterolcontaining deposits (plaque) in your arteries and inflammation are usually to blame for coronary artery disease.(Hajar, 2017)

When plaque builds up, it narrows your coronary arteries, decreasing blood flow to your heart. Eventually, the decreased blood flow may cause chest pain (angina), shortness of breath, or other coronary artery disease signs and symptoms. A complete blockage can cause a heart attack.(Mahmood, Levy, Vasan, & Wang, 2014)

Because coronary artery disease often develops over decades, you might not notice a problem until you have a significant blockage or a heart attack. But there's plenty you can do to prevent and treat coronary artery disease. A healthy lifestyle can make a big impact. Chest pain, shortness of breath and heart attack are most common symptoms of coronary heart disease. There may be wide range of symptoms from heart burn, gastric discomfort to pain in left arm or neck. It may complicate to worse conditions. It is treatable condition through different range of interventions and medications along with life style change. Depression is commonly present in patients with coronary heart disease (CHD) and is independently associated with increased cardiovascular morbidity and mortality. Screening tests for depressive symptoms should be applied to identify patients who may require further assessment and treatment.(Thombs et al., 2006)

Depression is 3 times more common in patients after an acute myocardial infarction (AMI) than in the general community.(Kessler, 2003)

Prevalence rates of depression have been shown to be higher among women in the general population and among cardiac patients, with recent evidence suggesting that young women may be at particularly high risk for depression after AMI. Major depression and elevated depressive symptoms are associated with worse prognosis in patients with CHD. (Pilote et al., 2007)

There are exciting findings in the field of depression and coronary heart disease. Whether diagnosed or simply self-reported, depression continues to mark very high risk for a recurrent acute coronary syndrome or for death in patients with coronary heart disease. (Frasure-Smith & Lesperance, 2005)

Many intriguing mechanisms have been posited to be implicated in the association between depression and heart disease, and randomized controlled trials of depression treatment are beginning to delineate the types of depression management strategies that may benefit the many coronary heart disease patients with depression. CHD patients are quite likely to have subsyndromal or syndromal depression, which is associated with compromised quality of life, increased health care and societal costs, increased recurrence of CHD, and shortened life. (R.M.Carneyetal.,2008)

Chapter # 2

Literature Review

The reported Prospective Validation of the Emergency Heart Failure Mortality Risk Grade for Acute Heart Failure was done by Lee DS, et al..Improved hazard stratification of intense cardiovascular breakdown in the crisis division may advise doctors' choices in regards to quiet confirmation or early discharge attitude. Their study led a multicenter,

forthcoming approval investigation of patients with intense cardiovascular breakdown at 9 medical clinics. Model separation expanded no significantly by 0.014% when doctors' appraisals joined with

EHRMG7(emergency heart failure mortality rate grade) were contrasted and EHRMG7 alone. The c-measurement for EHRMG30-ST alone was 0.77 and 30-day model separation expanded no significantly by expansion of doctor evaluated hazard to 0.78(PER7;C-Statistics 0.71; 95% CI 0.64-0.78). Net renaming improvement with EHRMG7 was 0.763.

A clinical model permitting synchronous expectation of mortality at both 7 and 30 days recognized intense cardiovascular breakdown patients with low risk of occasions.(Lee et al., 2019)

A Randomized control trial was done by Jouni J.K. Jaakkola et.al in patients of coronary artery diseases (CAD) which also includes the safety of these patients. Pre-selection of 18 CAD patients was done by cardiologists. Exercise physiologist also did their physical capacity test.

Each patient was subjected to four different experimental interventions. In 72 experiments, temperature and level of exercise i.e rest and brisk walking were varied for 30 minutes randomly. Perceived exertion and symptoms of chest pain was investigated in the experiments under the supervision of nurses and medical doctors. All the patients were dealt on the spot except one. Responses were related to depression and post-exercise

hypotension. This study was designed for the safe implementation of RCT to cardiac patients.(Ikäheimo et al., 2019)

Another randomized control trial was done by Debra Moser et al in patients of coronary heart disease. Face to face education and counseling intervention designed to decrease patients delay in seeking treatment.3522 patients with confirmed coronary diseases were divided into 2 groups... Out of which one group was given a 45 mins education and counseling session in which different aspects of coronary symptoms were discussed(control group) .Repeated measures and analysis were done. There were significant differences btw the two gropes. Anxiety level was stable in patients of control group as compared to the intervention one.(Farquhar, Stonerock, & Blumenthal, 2018)

A randomized trial for cardiac patients were done by Emery(e.t). Study were done in patients with obstructive pulmonary disorder.79 older adults were included in this with 53% female and 47% males. Two group were made group A were treated with exercise therapy and stress management and group B were treated with stress management and educational lectures. These patients were examined before and after intervention. It was seemed that group A patients were improved by the period of 10 weeks. So it was concluded that exercise therapy and stress management were effective in patients with chronic obstructive pulmonary disorder.(Sanjuan et al., 2016)

One more Randomized controlled trial (RCT) was done by BirteOstergaard et al in elder patients of coronary artery bypass grafting (CABG).The aim of this study was to compare health related quality of life (HRQoL) in elderly moderate to high risk patients 3 months,12 months and 8 years either to off-pump or on-pump coronary artery bypass grafting (CABG).For this study, 120 patients filled the Medical Outcome Study Short Form 36(SF-36) before and after the surgery. No significant difference was found in the change of SF-36 scores between the groups except in social functioning subscale, where the 8 year score was significantly higher for the on-pump group than off-pump group which indicated that HRQoL SF-36 scores improved more in patients undergoing on-pump CABG rather than off-pump CABG.(Ostergaard, Holbaek, Sorensen, & Steinbruchel, 2016)

A Randomized trial to determine the cost effectiveness of a collaborative care(CC)depression and anxiety treatment was done by Christopher M celano et all the aim of this study was to compare health related quality of life (HRQoL)with enhanced usual care (ECU) over the 24week post discharge period using independent samples t tests and and random effects regression models costs for both CC and ECU were calculated a cost effectiveness acceptability plot was created using non parametric bootstrapping with 10000 replications and CC intervention's cost effectiveness was assessed using standard cutoffs the CC intervention was more costly than EUC intervention but was associated with significantly greater increases in quality-adjusted lifeyears.(Celano et al., 2016)

Randomized control trial was done by Carney RM et al. In 2016. The main objective of this study was to predict that the outcomes of depression treatment and cardiac treatment also show poor responses to depression treatment in patients with CHD. For this one hundred fifty seven patients with stable CHD were treated with cognitive behavior therapy (CBT) for 16 weeks with or without an antidepressant. The result showed that stressful events during first and last 8 weeks of treatment and the completion of CBT showed outcomes of depression. However anxiety symptoms, antidepressant therapy and medical hospitalization did not show treatment outcomes. Thus it was concluded that patients who are under considerable stress did not respond to the evidence based treatment for depression than the patients with less stress did. (Robert M. Carney, Freedland, Steinmeyer, Rubin, & Rich, 2016)

Randomized controlled trial (RCT) was done by LiljaG et al to investigate anxiety and depression among out-of-hospital cardiac arrest survivors. OHCA survivors randomized to some targeted temperature with in TTM-trials attended a follow up after 6 months that included the questionnaire (HADS) the STEMI completed the same follow up. one-fourth of OHCA-survivors reported symptoms anxiety or depression which was similar with STEMI-controls. Anxiety or depression were associated with increased risk of psychological distress (Lilja et al., 2015)

This study randomized control trial (RCT) was done by 'Mastromauro CA' et al, in patients of cardiovascular disorders who were also suffering from depression, anxiety and other mental issues. Single blind randomized trial was given to study assessors in group from September 2010 through July 2013 .Psychiatric treatment was given to 183 patients were provided with CC .Improvement in mental health related patients was compared between groups using a randomeffects model in an intent-to-treat analysis. The questionnaire was employed for outcome. There was greater degree of improvement in patients randomized to CC in 24 weeks than patients of CC. The mental health of both groups were improved which lead to Improvement in there cardiovascular events.(Huffman et al., 2014)

Randomized control was done by Murphy BM, et al. Depression and Anxiety has great effect on heart diseases. In history, it was particularly seen in cultural environment. With the help of some factors, researchers have proved it. Samples of 275 patients admitted after sever heart attack and others like coronary intervention were interviewed six weeks after discharge. With help of Hospital Anxiety and Depression Scale (HADS) their diet and physical activities including smoking were self reported. 41% patients were depressed and 68% were anxious. Both were highly addicted to smoking and have high intake of fats. Depressed patients show low physical activity while other patients show no activities All these factors are independent to socio demography except smoking. To modify the lifestyle on survival of cardiac event, their priority should be a cardiac rehabilitation (Murphy et al., 2013)

Responses of Myocardial Ischemia to Escitalopram Treatment trial was done by Stephen H. Boyle et al in 2013. The objective of this study was to examine the associations between depressive symptoms and mental stress-induced myocardial ischemia (MSIMI) in patients with coronary heart disease (CHD). For this study, 283 adult patients with CHD were recruited, each of which was subjected to three mental stress tests followed by an exercise test. Results showed that 42% of these patients were found to have MSIMI while 32% showed ESIMI (exercise stress-induced myocardial ischemia). Thus, depressive symptoms were associated with a higher probability of MSIMI in patients with CHD.(Boyle et al., 2013)

Another randomized controlled trial(RCT)was done by Rebecca meister at al .trials.2013 in patients of (PTSD)which occurs after exposure to life threatening illness. The sample consists of 426 patients aged 18 years or older who are at "high risk" to develop clinically relevant post traumatic stress symptoms. High risk patients are identified with three single - item questionnaires asking about pain during MI. Patients will randomly allocated to 45 minutes counseling session targeting either specific MI triggered traumatic reaction (velum intervention).The outcome is the interviewer rated post-traumatic stress level at three month follow-up,which is hypothesized to be least 20%lower in velum group than in control group using t-test.(Meister et al., 2013)

A Randomized control trial (RCT) was done by celanoCM,etal. Depressive patients hospitalized on inpatients cardiac units and decompensate heart failure. The purpose of this study was to analyze the multiple medical and psychological covariates. Measurement of depression, anxiety and adherence scale was obtained at baseline, 6 weeks, 12 weeks and 6 months. Lesser improvement in depressive symptoms and increased likelihood of depression persistence at 6 months, independent of multiple relevant covariates (Celano et al., 2012).

Another randomized controlled trial (RCT) was done by Bauer LK, et al. Am J Cardiol.2012 on recently hospitalized cardiac patients. This study assessed the association between improvements in depression/anxiety to health behaviors in depressed cardiac patients in the 6 months after cardiac hospitalization. Data were analyzed from 134 depressed patients on inpatient cardiac units who were suffered from many relevant diseases. Outcomes were obtained at baseline, 6 weeks 12 weeks, and 6 months. In conclusion, in a cohort of depressed cardiac patients, improvement in depression was consistently and independently associated with superior selfreported adherence to medications and secondary prevention behaviors across a 6-month span, whereas improvement in anxiety was not.(Bauer et al., 2012)

Randomized control trial was done by Tymchak W, et al in 2011 to assess the viability of strategy in pre- hospital environment among patients with non- ST- elevation myocardial infarction. Back to back patients with ST- elevation myocardial infarction were examined

and separated according to their mode of transport to hospital. 35% of patients presented via emergency medical service and percutaneous coronary intervention hospitals is 64.5% versus 44.1% .Electrocardiogram analysis revealed ST depression and risk of heart failure and composite death among EMS transported patients. To overcome the risk of ST-elevation myocardial infarction timely diagnosis and early medical therapy was considered.(Tymchak et al., 2011)

This study randomized controlled trail was done by Huffman Jc, et al.in 2011 on hospitalized cardiac patients to improve depression consequences. A 12 week collaborative Care program was held and usual care for 175 depressed patients. Study results assessed using mixed regression models to compare groups at 6, 12 weeks and 6 months. It led to greater refinement and collaborative care of 59.7 % versus usual care 37.7% . It was concluded that such kind of

depression management programs led to significant enhancement in depressed patient's i.e medical outcomes.(Huffman et al., 2011)

A cross-sectional correlation design was done by Lynn V.Doeringet in patients suffering from depressive symptoms and coronary heart disease (CHD). There was a little research on gender characteristics for their treatment and outcomes. The relevant questionnaire was done to measure anxiety and other mental issues in 1951 patients suffering from depressive

symptoms. The mortality rate for men was 11% and for women was 16%. There were more female patients suffering CHD and depressive symptoms. (Doering et al., 2011)

Chapter # 3

Problem statement

Is there any association between depression and post Myocardial infarction patient status?

Research objective:

To assess depression in post myocardial infarction patients.

Purpose of study:

The find out the association between depression and post myocardial infarction patients and development of new strategies to get better the quality of care for patient with MI following depression requires through understanding the mechanism that influenced by depression and anxiety.

Operational definitions:

Different risk factors associated with the acute myocardial infarction were assessed in the study. Cases of other circulatory body disturbance, genetic problems and traumatic heart

injury were excluded. Demographic risk factors (age, gender, socio-economic status), personal history, family history, modified risk factors (hypertension, diabetic and smoking) were assessed self measured as yes and no. All these risk factors were studied one by one with the history of MI. Depression and anxiety score was measured by Hospital Anxiety and Depression scale (HADS) questionnaire and score as 0-7 (normal), 8-10 (borderline) and 11-21 (abnormal).

Conceptual definitions:

Depression is a general mental disorder affecting more than 264 million people worldwide. It is characterized by persistent sadness and a lack of interest or pleasure in previously satisfying or enjoyable activities. It can also disturb sleep and appetite; tiredness and poor concentration are common (WHO).

Myocardial infarction is defined by the exhibition of myocardial cell necrosis due to significant and persistent ischemia. It is usually, but not always, an acute manifestation of atherosclerosis-related coronary heart disease. MI results from either coronary heart disease, which implies obstruction to blood flow due to plaques in the coronary arteries or, much less frequently, to other obstructing mechanisms (e.g. spasm of plaque-free arteries) (WHO).

Ethical Considerations:

The research committees of Afro-Asian University approved the thesis and allow to working on the project. A summary of the thesis was written on every questionnaire for the information of the participants. Verbal consents were taken before the involvement of every participant and making sure that all the information was remains confidential.

- Rights and dignity of all individuals was the prior consideration □ Research process did not cause any harmful to the subjects.
- Accurate information to patients was provided, and written consent was taken from the subject.
- Subject's details and data confidentiality was maintained at every level.
- Ethical clearance was taken from the ethical committee of the university.

Chapter # 4

Materials & Methods

□ Study Design

Observational:

Cross sectional study of 122 patients known case of acute MI first time.

- **Place of Study**

Coronary care unit at Bahria International Hospital Lahore, Pakistan.

- **Duration**

In almost six months, after the synopsis approval.

- **Study Population**

Patients with cardiac abnormalities specifically ischemic heart injury first time.

□ Sample Size

$$n = \frac{Z^2 \alpha P(1-P)}{2d^2} \text{ (WHO CALCULATOR)}$$

$$CI (1-\alpha) = 95\%$$

Level of significance=

$$5\% P = 72\%(9)$$

$$d = 8\%$$

$$n = 122$$

□ Sampling Technique

Non-Probability sampling technique (Purposive)

Sample Selection criteria:

□ Inclusion Criteria

The patients were included according to the following criteria:-

- Subjects with age 25-64 years
- Patients with coronary conditions admitted to coronary care unit at Bahria International Hospital Lahore.
- The questionnaires were limited to the Lahore due to some limitation.

□ Exclusion Criteria

- Traumatic injuries of heart
- Circulatory disturbances of body

Data Collection Procedure & Tools:

Participant consent forms were signed by the subject. Questionnaire was filled by each patient.

Primary mode of data collection:

- Questionnaire

Depressive symptoms were assessed by using the Hospital Anxiety and Depression Scale (HADS) (total score 0-21).

- Data collection, tabulation, analysis and interpretation were done

Study Variables:

- Age
- Gender
- Socio-economic status
- Family history
- Modified risk factors diabetic, hypertension, and smoking.

Outcome measures tool:

The Hospital Anxiety and Depression Scale (HADS) is a commonly used screening tool that has verified good sensitivity and specificity for psychological disorders.

Validity & Reliability:

HADS is a reliable and valid instrument to detect anxiety and depression and can be used in both hospital and community settings, helping physicians to identify anxiety or depressive symptoms in patients who require special psychiatric care. (Irfan et al., 2013)

Data analysis plan for descriptive statistics:

The results were expressed as the adjusted ratio. The association and co-relation between depression and myocardial infarction patients were assessed by chi-square. Data recording, storage and assessment was carried out with the help of SPSS software. Descriptive statistics of demography, family history, medical history and modified risk factors were also assessed. Level of significance 0.05% was used for different variables. CI(1-a) 95%. Results were shown significant as probability 0.002 less than 0.05% indicates the strong positive association.

GANTT CHART:

ACTIVITY	MONTHS					
	1	2	3	4	5	6
Synopsis Writing						
Questionnaire Development						
Synopsis						

Submission						
Data Collection						
Data Analysis AND Interpretation						
Thesis Compilation						
Thesis Presentation, Correction AND Submission						



Chapter # 5

RESULTS

Table # 1

Descriptive Statistics			
	MI	anxiety	depression
N	122	122	122
Mean	1.7541	9.3770	8.9262
Std. Deviation	.82634	4.21396	4.34498

Total number of participants is 122. The categories were divided by their mean and S.D of MI , anxiety and depression.

Mean and S.D of MI was 1.7541 and 0.82634 respectively.

Mean and S.D of anxiety was 9.3770 and 4.21396 respectively.

Mean and S.D of depression was 8.9262 and 4.34498 respectively.

Table # 2

Frequency of anxiety with history of post MI

Frequency of anxiety with passing time post MI		
Post MI	Frequency	Percent
6 months	60	49.2
7 months to 1 year	32	26.2
1 year to 2 year	30	24.6
Total	122	100.0

According to table.2 anxieties was assessed in post myocardial infarction patients with the history of time of onset as divided into 6 months ,7-12 months and above than 1 year.

49.2% patients were anxious after MI within 6 months of duration.

26.2% patients were anxious with the passage of time within 7-12 months after MI.

24.6% patients was having history of 1 year or above with MI

Under these three sub divisions of time duration after MI, Highest percentage was lie 6 months of duration after MI develop anxiety.

Table # 3

Frequency of anxiety according to percentile

	Frequency of Anxiety	
	Frequency	Percent
2.00	2	1.6
3.00	3	2.5
4.00	11	9.0
5.00	9	7.4
6.00	12	9.8
7.00	11	9.0
8.00	10	8.2
9.00	12	9.8
10.00	2	1.6
11.00	13	10.7
12.00	9	7.4
13.00	3	2.5
14.00	4	3.3
15.00	7	5.7
16.00	7	5.7
17.00	5	4.1
18.00	1	.8
19.00	1	.8
Total	122	100.0

According to table.no.3 the frequency of anxiety was assessed by the questions asked as in questionnaire. The scoring was divided as below 8 normal, 8-10 borderline and the 11-21 having abnormal anxiety levels.

The above table shows the maximum percentage 10.7% lie in the 8th percentile of the data.

Most of cases lie in the borderline anxiety scoring as per criteria.

Table # 4

Frequency of depression in post myocardial infarction patients

Frequency of Depression		
	Frequency	Percent
.00	4	3.3
1.00	4	3.3
2.00	4	3.3
3.00	2	1.6
4.00	4	3.3
5.00	8	6.6
6.00	10	8.2
7.00	9	7.4
8.00	12	9.8
9.00	10	8.2
10.00	7	5.7
11.00	10	8.2
12.00	8	6.6
13.00	12	9.8
14.00	11	9.0
15.00	1	.8
16.00	3	2.5
18.00	1	.8
19.00	1	.8
20.00	1	.8
Total	122	100.0

According to table.4 the depression scoring was assessed in post MI patients and the maximum association in terms of percentage was identified.

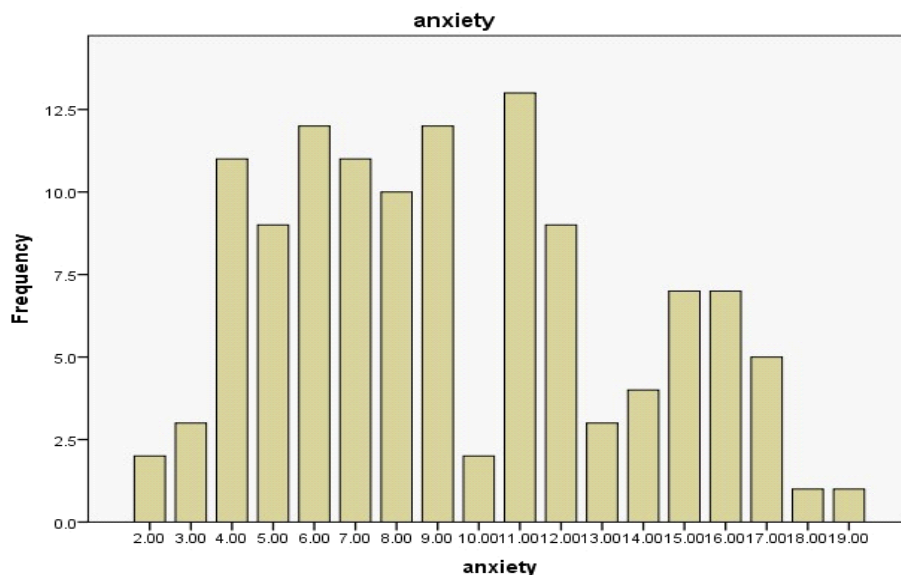
Frequencies of depression were assessed by the questions asked by the patients and divided into three divisions.

Below 8 normal, 8-10 borderline and 11-21 considered abnormal cases.

According to the above frequencies the maximum percentages of depression was 9.8% and 8.2% lie in 8th and 11th percentile, shows the borderline and abnormal cases of depression respectively.

Figure # 1

Bar chart for frequency of anxiety according to scoring



According to figure given above the association of anxiety in the post myocardial patient explained in terms of percentile.

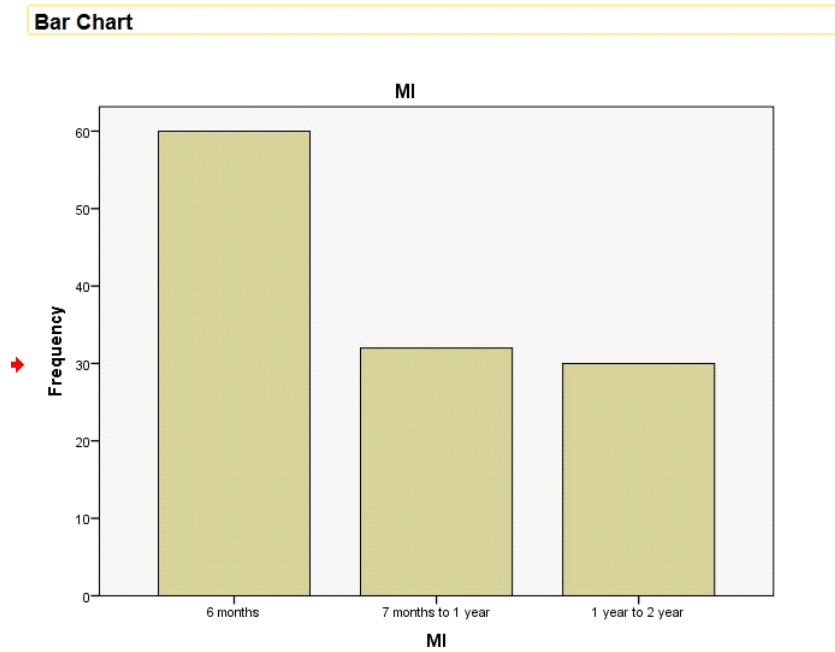
Total number of participants was 122 and the percentile shows as in figure above between the anxiety and post myocardial infarction.

X-axis shows the anxiety percentile and the y-axis shows the frequency.

Maximum participants lay the 11th number of anxiety scale.

Which represents that anxiety exists as borderline according to scoring.

Figure #2 Bar chart for frequency of anxiety with history of MI with time duration of their onset



According to chart frequency lie on y-axis and patient with MI on x-axis .

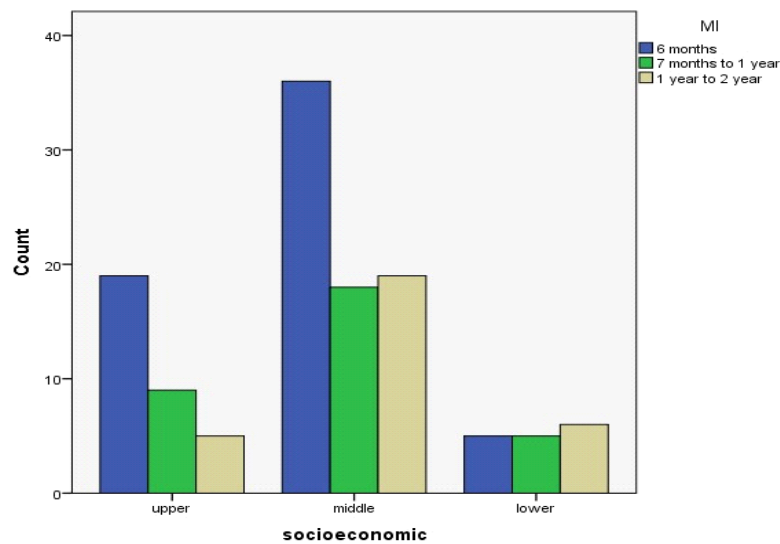
Further the patients were divided according to the time to develop depression in post MI.

Maximum percentage of anxiety and depression lie within 6 months after onset of MI.

Moderate patients develop anxiety within 7-12 months and mild were develop anxiety after 1 year or above.

Figure # 4

Bar- chart of socio-economic status and history of MI.



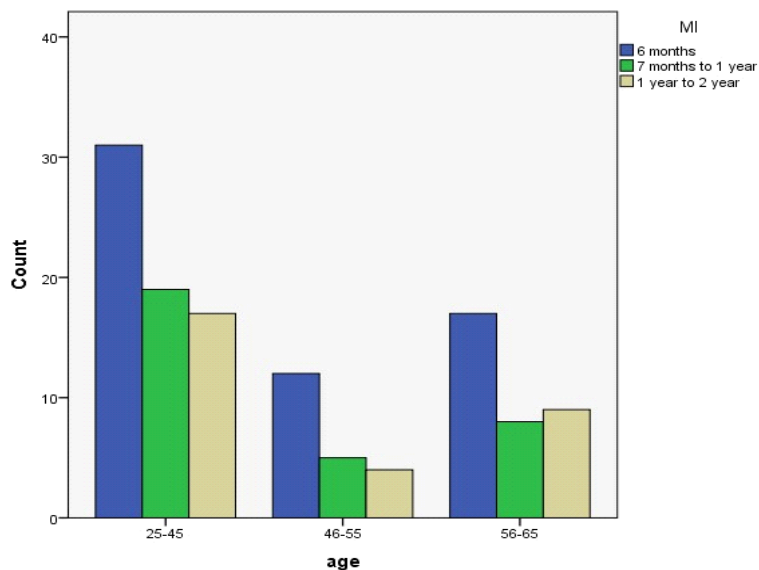
According to the figure the socio-economic status of the patients were discussed with history of myocardial infarction patients.

Maximum values lie between socioeconomic status and history of acute MI in middle class and mild to moderate in upper class and lower class respectively.

Figure also indicates the maximum of the patients having MI develop depression within 6 months.

Figure # 5

Bar chart for frequency of age with History of MI

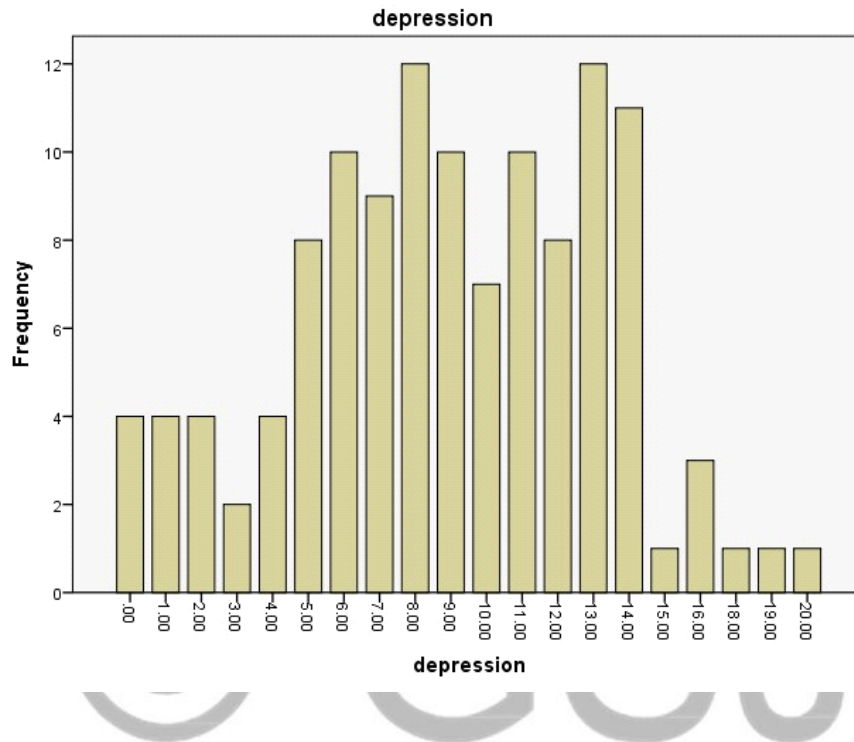


According to above figure the age and the onset of MI was describing. Total population of 122 patients were included. maximum of the between 25-45 years having the depressive symptoms after the onset of MI within 6 months.

Maximum values lie between 25-45 mild in 46-55 years and moderate symptoms was assessed in 56-65 years of age.

Figure # 5

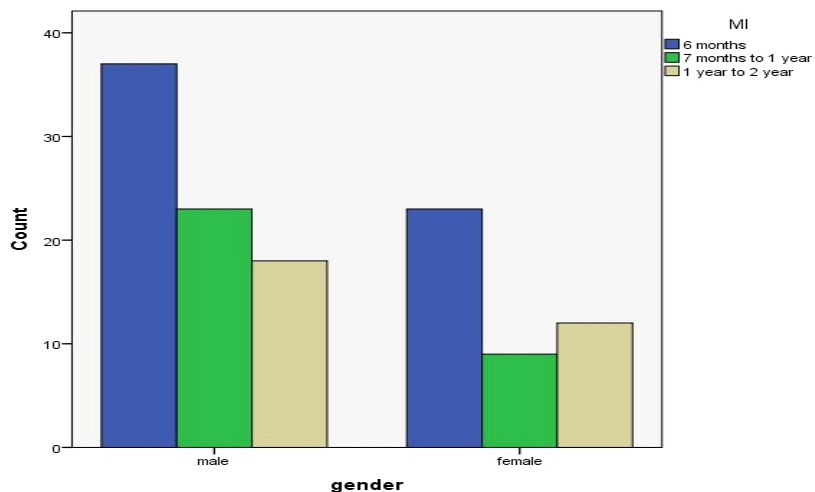
Bar chart for frequency of depression and post MI according to percentile



According to the chart given above the frequency of depression in post MI patients were assessed by the questionnaire scoring according to percentile. Below 8th percentile was considered normal 8th – 10th percentile was border line and the 11th -21th was considered abnormal as per scale. Maximum lie between 8th and 11th percentile shows depression exist.

Figure # 6

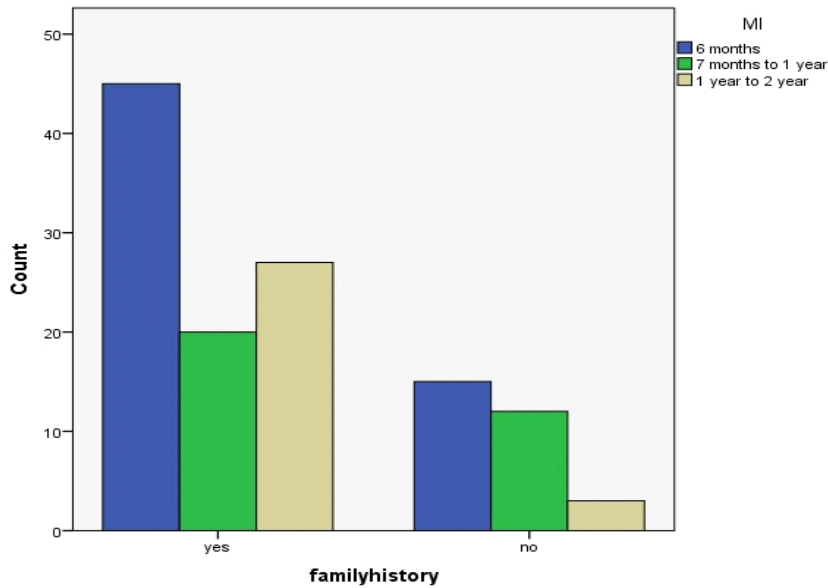
Bar chart for frequency of gender and History of MI



According to figure no 6, the association of MI and gender was assessed.

The maximum of the participants having the MI were male. Also the maximum percentile within 6 month of onset of depression and anxiety patients were male as compared to female.

Figure # 7 Bar chart for family history and history of MI



According to the above bar chart the family history was assessed in MI patients.

Maximum of the patients have the positive family history.

About 96% was positive family history of MI in study.

Table # 5

Analysis for frequency of anxiety and post MI

Symmetric Measures		
	Asymp. Std. Error ^a	Approx. Sig.
Interval by Pearson's R Interval N of Valid Cases	.044	.000 ^c

According to the table no.5 the descriptive test analysis was done of frequency of anxiety and pos MI patients.

Level of significance 0.05 was used.

P value indentified as 0.000 which shows the significant association between the anxiety and post myocardial infarction patients.

Table # 6

Chi-Square Tests				
Approx.	Df	Asymp. sided)	Sig.	(2-
Pearson Chi-Square	34	.000		
Likelihood Ratio	34	.000		
Linear-by-Linear Association	1	.000		

According to the given table the chi-square test were show the association between the anxiety and Myocardial infarction patients.

Level of significance was used 5%

Likelihood ratio of the test and the degree of freedom given as above. P values shows the 0.000 having the significant and strong association.

Table # 7

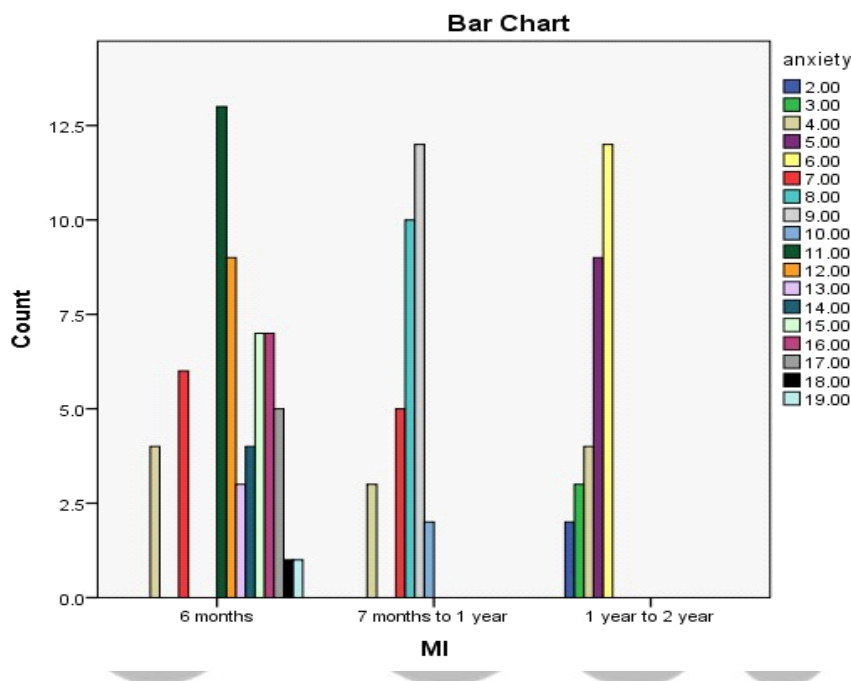
Frequency of anxiety and history of MI with the onset of depression within 6months, 7-12 months and above 1 year.

Descriptive statistics for frequency of anxiety and history of AMI																				
	Anxiety																			Total
	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00		
MI	6 months	0	0	4	0	0	6	0	0	0	13	9	3	4	7	7	5	1	1	60
	7 months to 1 year	0	0	3	0	0	5	10	12	2	0	0	0	0	0	0	0	0	0	32
	1 year to 2 year	2	3	4	9	12	0	0	0	0	0	0	0	0	0	0	0	0	0	30
Total		2	3	11	9	12	11	10	12	2	13	9	3	4	7	7	5	1	1	122

P Value =0.002 represents that there is association between history of acute myocardial infarction and anxiety. Maximum values lay 8th percentile.

Figure # 8

Bar chart for frequency of anxiety percentile scoring according to scale and history of AMI



According to the chart the maximum percentile of anxiety develop within 6 months of duration after MI. Within 6months the maximum percentage lie 8th percentile shows the maximum cases of borderline score.

Table # 8

Frequency of depression and history of AMI

		Descriptive statistics for frequency of depression and history of AMI																					
		Depression																					Total
		.00	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	18.00	19.00	20.00		
M	6 mont	0	1	0	0	0	4	2	2	4	5	4	4	7	10	10	1	3	1	1	1	60	

hs																						
7 months to 1 year	2	2	0	2	1	3	6	3	4	3	1	2	1	2	0	0	0	0	0	0	0	32
1 year to 2 year	2	1	4	0	3	1	2	4	4	2	2	4	0	0	1	0	0	0	0	0	0	30
Total	4	4	4	2	4	8	10	9	12	10	7	10	8	12	11	1	3	1	1	1	122	

P values represents the 0.002 with the level of significance 5% shows the association significant between depression and myocardial infarction patients.

Maximum of the percentile between 8th and 11th according to table which indicate the borderline and abnormal cases in study.

Table # 9

Depression and post MI association

Chi-Square Tests		
	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38	.002
Likelihood Ratio	38	.000
Linear-by-Linear Association	1	.000

Pearson chi-square test was identified the association between the depression and post MI patients.

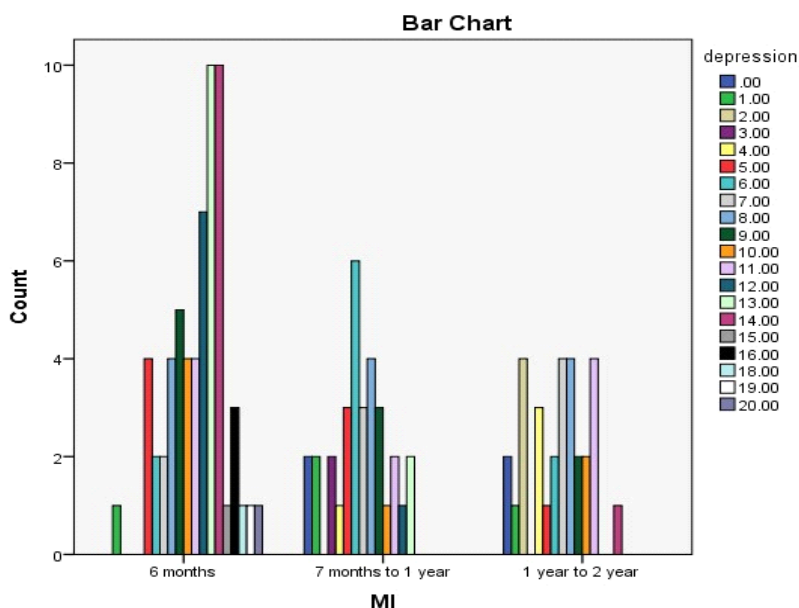
Level of significance was used 5%.

P –value was 0.002 (significant).

Less than 0.05

Figure #9

Chart of frequency of depression in MI patients



According to the above figure the x axis shows the cases of MI and the duration of onset of depression with 6 months 7-12 months and above 1 year. While y-axis shows the frequency. The maximum of the percentile shows the depressive cases within 6 months of developing the depression.

Discussion

The current research was conducted to assess the prevalence of depression & anxiety and other symptoms of psychological stress in hospitalized patients who had recently faced myocardial infarction.

The detected mean values of age of females who participated in the study in present study showed that minimum age for patients is 25 years and maximum age was 65 according to inclusion/ exclusion criteria. Age is an independent variable and mean age or maximum and minimum age for subjects can vary depending upon participants. But as the study was about post myocardial depression assessment so specific age population were selected for this study. These results were comparable to the previous studies. Among total population a major proportion was male i.e. 89 patients, while only 33 patients were female. Males are more prone to cardiac infarctions.

In the present study socio-economic status of the participants was determined. Socio-economic status can change subjects 'perception about living status, quality of life and prevalence of negative psychological factors. It can also effect participation of the patients in study. In this study we formed three classes of socio-economic status i-e lower class, middle class and upper class. Majority of the patients were in middle class socio-economics. According to this study low socio-economic status can highly influence the

psychological phenomena in favor of depression. Results are variable and should be investigated more thoroughly.

Family history of depression and myocardial infarction was assessed in the study. Results showed a strong association of depression and myocardial infarction in patients with a family history of the problem. Ninety-two patients had a family history of the problem, while 30 participants didn't have any MI in their family history.

Modifiable risk factors i-e diabetes, hypertension and tobacco smoking were also assessed during this study. Presence of more DM, HTN and smoking directly enhanced the chances of myocardial infarction. Our results are closer to the previous studies, according to previous study on anxiety and depression in post MI patients; it was revealed that smokers and hypertensive are more prone to depression and anxiety. Smoking, diabetes and hypertension is directly linked to increase depression and anxiety. 41% patients were depressed and 68% were anxious. Both were highly addicted to smoking and have high intake of fats. Depressed patients show low physical activity while other patients show no activities all these factors are independent to socio demography except smoking. To modify the lifestyle on survival of cardiac event, their priority should be a cardiac rehabilitation.

Participant's MI was classified based on the period of MI. 49.2% of the participants had MI in less than six months' period. Those who had MI 7 to 12 months old were 26.2%, while patients with MI of greater than 1-year-old were 24.6%. In patients with less than six

months of MI they showed more anxiety and depression on scale and majority of abnormal category patients had MI

in less than six months' duration. As the MI got aged, prevalence of anxiety and depression started falling off.

Hospital anxiety and depression Scale was used to assess post myocardial depression and anxiety in hospitalized patients. The mean scores for depression in above study were as 8.92 and the mean scores for anxiety were as 9.37. These results indicate that depression and anxiety are an important cause of disability and distress in post-myocardial hospitalized patients. Detailed results indicated that as the age of MI passes more patients were normal for anxiety which means they had symptoms of anxiety in a range which is considered normal. 36.9% patients had normal scores for depression and 39.3% were normal for anxiety.

Patients who had scores between 8-10 were considered as borderline depressive or anxious persons. 23.8% patients had depression scores in this category while 19.7% patients had anxiety scores in this range. This is almost a major portion of population which means depression and anxiety are affecting QoL and especially psychological wellbeing of hospitalized patients of Post

MI. Those patients whose score is between 11-21 are considered abnormal, and they have had a huge impact of depression and anxiety on their quality of life. In above study 39.3%

patients had results more than 11 in depression assessment and it shows the significance to reduce the depression in these patients. 41% patients had scores in abnormal category of anxiety and proved that anxiety is a leading factor in affecting the quality of life in patients of MI who are in hospitals.

Above assessment of depression and anxiety provided us with the facts that age and gender have significant role in psychological health after MI. More males have MI and post MI depression as compared to females. Greater is the age more are the chances of post MI depression and anxiety. Socio-economic status affects the overall wellbeing and quality of life. But improved social status has higher influence in depression and anxiety. More detailed investigations are needed in this aspect. Diabetes, hypertension and smoking have direct association with enhanced depression and anxiety in hospitalized patients with MI. In patients with less than six months of MI they showed more anxiety and depression on scale and majority of abnormal category

patients had MI in less than six months' duration. As the MI got aged, prevalence of anxiety and depression started falling off.

Chapter # 6

SUMMARY

Research was conducted in coronary care unit at Bahria hospital Lahore, Pakistan.

Objective of study was to assess the depression in post myocardial infarction patients in

hospital. Observational study designed was used. Sample was collected through purposive nonrandomized technique. Target population was coronary artery abnormality especially acute myocardial infarction first time. Sample size was 122 calculated through formula. Data collection was done through the Hospital anxiety and depression scale (HADS). Scoring of the questionnaire was below 8 normal, 8-10 borderlines and 11-21 were considered abnormal cases of depression and anxiety. Modified risk factors such as diabetic, hypertension, smoking history, demographic history was collected through interview and closed ended questions. Ethical consideration was done through the informed consent filled by the participants. Each information kept confidential. no any information to be leak to any un authorized person. Many of the questions were analyzed by the frequencies, bar charts, tabulations, but others were comparison through the adjusted ratio and chi-square test. SPSS soft ware was used for analyzed the data. P-value 0.002 less than 0.05 indicate the strong association between the depression and MI patients. Factors which were associated with depression were significant high in post myocardial patient within 6 months of onset of disease. There should be early identification, assessment of anxiety and depressive symptoms and awareness of the occurrences of depression after myocardial infarction to decrease the risk of morbidity and mortality in patients.

CONCLUSION

The current research study has anxiety and depression scores for the patient who had recent incident of AMI. Hospital Anxiety and Depression Scale (HADS) was notably increased specially in admitted patients in hospitals. In addition, Male patients were more prevalent in the group where they had recent history of AMI while female patients were less in 6 months' post AMI. Most of the incidence of cases of depression and anxiety according to data within six months of developing myocardial infarction in admitted patients and mild to moderate to one year due to sudden onset, family history, noncompliance to management, lack of knowledge and awareness about risk factors and disease process and their rehabilitation etc. A great understanding of the risk factors related to MI may help to reduce the prevalence of depression and anxiety and associated risk factors of cardiac morbidity and mortality.

RECOMMENDATIONS

- Identifications of specific individual who are having particular vulnerability to prevent the depression in community.
- One of the major limitations of this study were it totally depended on participants' response and their point of view, through Hospital anxiety and depression scale and self-constructed questioner for modified risk factors

which can be further updated and improved, recoding data can be performed by direct observation of the subject by the psychologist along with participants' response.

- Accessibility to health care centers must be improved in collecting, analyze the data at the time of admission and diagnostic procedures and available treatment of these problems.
- Mass screening should be recommended for early detection and prevalence of depression and anxiety in general population.
- Free checkup should be recommended on regular follow up after MI to find out the risk and increase the quality of life to improve in health status.
- Educational programs on community health basis should be conducted to high risk areas for awareness about the adverse effect of anxiety and depression on health.
- Further researches must be conducted to detect the other possibilities to improve in health status and limited the harmful effects of these problems on health.
- Community awareness should be recommended for about depression, genetic counseling and psycho-socio environmental causes in community.

LIMITATIONS OF THE STUDY

Although the current study succeeded in many aspects to achieve its maximum goals and a specific and targeted number of patients that is 122, with a good follow-up rates was productively accomplished on time. However, the current study has many limitations which are following:

- The time for the study was too short.
- The number of participants who participated in the study (sample number) is too low to generalize the outcomes for whole population.
- Self-report measurements were used in the questionnaire which was largely dependent on participant's response, their levels of understanding to the question and their own way of expression.
- Some of the participants were not literate and they were unable to understand the terminology.

Consent form

CONSENT FORM (ENGLISH):

Description of the Research and Your Participation

You are invited to participate in a research study conducted by Miss Ayesha Asharf related to Assessment of the risk of depression in post myocardial infarction in general population.

Risks and Discomforts

There are no known risks associated with this informative scale. This is to improve the effectiveness of the treatment of cardiac patients and evaluate the risk of developing depression and anxiety.

Potential Benefits

This research may help us to understand how the potential harm to your health and worse the condition of cardiac patients due to anxiety and depression and enhance the knowledge and awareness about the psychiatric illness.

Protection of Confidentiality

We will do everything we can to protect your privacy. Your identity will not be revealed in any publication resulting from this study.

Right to withdraw

Your participation is voluntary and you can answer only those questions that you are comfortable with.

You will not be penalized in any way should you decide not to participate or to withdraw from this study. Contact Information: If you have any questions or concerns about the study or if any problem arise, please contact **Ayesha Ashraf : 03027066606**

Documenting Consent:

My signature below indicates that I have read and understand the description provided. I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records. Name of Participant Signature Date _____

_____ Researcher's Signature Date .**A copy of this consent will be**

left with you, and a copy will be taken by the researcher

CONSENT FORM (URDU)

شمولیت کی دعوت دینا/دی تیار ہونے پر سرچ شدہ ٹڈی میں شرکت کا دعوت نامہ

اس تحقیق سے کسی قسم کے نقصان یا تلافی کا اندیشہ نہ ہو، نہ نقصانات اور تلافی:

کچھ کریں گے جو ہم کہہ رہے ہیں آپ کی معلومات کے تحفظ کے لیے وہ سب رازداری کا تحفظ:
سکتے ہیں۔ تحقیق کے متعلق کبھی کبھی یہی تمام معلومات کو ان تہائی ذخیرہ رکھا
جائے گا۔ ڈیٹا انٹری اور تجزیے کے دوران آپ کے متعلق وہ تمام معلومات جن سے آپ کی
شناخت ہو سکتی ہو کہ وہ ختم کر دیا جائے گا۔ اس تحقیق کے نتیجے میں شائع ہونے والی
کسی

ہی اشاعت میں آپ کی شناخت کو ظاہر نہیں کیا جائے گا۔

اس تحقیقی مطالعہ میں آپ کی شرکت رضاکارانہ ہے۔ آپ کو شرکت رضاکارانہ شمولیت:
نہ کرنے اور کسی بھی وقت پر غیر وجہ بتانے اس تحقیق میں شمولیت کو چھوڑنے کا
اختیار ہے۔ شرکت نہ کرنے یا

ورت میں آپ کے خلاف کوئی کارروائی نہیں کی جائے اس میں شمولیت کو چھوڑنے کی ص
گی

رابطے کے معلومات:

اگر آپ کو اس مطالعے میں کوئی سوالات یا خدشات ہیں یا اگر کوئی دوسرا سوال یا خدشات
اب طہ کریں۔ نمونہ ڈائل

03027066606

عام معامہ پینہارڈ ایڈریس کے ذریعے ہونے پر شدہ امکانات: ری سرچ کا عنوان

یہ معلوماتی شیڈ جو کہ تحقیق کی وضاحت کر رہی ہے کو سمجھ لیا ہے اور مجھے م

تحقیق

کے

سوالات

کرنے
موقع کا
دیا گیا
تھا۔

میں سمجھ گیا/گی ہوں کہ میری شرکت ر ضاک ارانہ ہے اور یہ کہ میں کسی بھی وقت اپنا ارادہ بدل
سکتا/سکتی ہوں اور

تحقیق سے

دست بردار ہو

سکتا/سکتی

میں سمجھ گیا/گی ہوں کہ میرے جوابات خفیہ رکھے جائیں گے۔ میں مدقیقین کو اس بات
کی اجازت دینا/دینے

وہ ہوں گے

جوابات کو جانچ

سکتے ہیں۔

میں سمجھ گیا/گی ہوں گے معلومات میرے نام کے بدلے نمبر کی صورت میں محفوظ کی
سی بھی طرح سے شناخت نہ کی جا سکے اور اس کے دوران جائیں گی۔ تاکہ میں نہ تاج
سکوں۔ میں اس بات سے رضامند ہوں گے جو معلومات
مجھ سے لی جائیں گی وہ تحقیق میں اسد تعال ہوں گی۔

میں اوپر بتائی گئی تحقیق میں شامل ہونے کے لیے رضامند ہوں اور مدقیقین کو اپنا پتہ
 تبدیل ہونے کی صورت میں مطلع

گیا/گی۔

کروں

میں نے یہ اجازت نامہ پڑھا ہے اور مجھے سوال پوچھنے کا موقع دیا گیا ہے۔ میں اس رضامندی:
سندھی میں شرکت کے راضی ہوں۔

شرکت کے ذمہ دار کا نام _____ دستخط _____ تاریخ _____

اجازت لینے والے کا نام _____ دستخط _____ تاریخ _____

اس اجازت نامہ کی ایک نفل آپ کو دی جانی چاہے۔

References

Bauer, L., Caro, M., Beach, S., Mastromauro, C., Lenihan, E., Januzzi, J., & Huffman, J.

(2012). Effects of Depression and Anxiety Improvement on Adherence to Medication and

Health Behaviors in Recently Hospitalized Cardiac Patients. *Am J Cardiol*, 109, 1266-

1271. doi:10.1016/j.amjcard.2011.12.017

Boyle, S. H., Samad, Z., Becker, R. C., Williams, R., Kuhn, C., Ortel, T. L., . . . Jiang, W.

(2013). Depressive symptoms and mental stress-induced myocardial ischemia in patients

with coronary heart disease. *Psychosom Med*, 75(9), 822-831.

doi:10.1097/PSY.0b013e3182a893ae

Carney, R. M., Freedland, K. E., Steinmeyer, B., Blumenthal, J. A., Berkman, L. F.,

Watkins, L. L., . . . Jaffe, A. S. (2008). Depression and five year survival following acute myocardial

infarction: a prospective study. *J Affect Disord*, 109(1-2), 133-138.

doi:10.1016/j.jad.2007.12.005

Carney, R. M., Freedland, K. E., Steinmeyer, B. C., Rubin, E. H., & Rich, M. W. (2016).

Clinical predictors of depression treatment outcomes in patients with coronary heart

disease. *Journal of psychosomatic research*, 88, 36-41.

doi:10.1016/j.jpsychores.2016.07.011

Celano, C. M., Healy, B., Suarez, L., Levy, D. E., Mastromauro, C., Januzzi, J. L., & Huffman, J.

C. (2016). Cost-Effectiveness of a Collaborative Care Depression and Anxiety Treatment Program in Patients with Acute Cardiac Illness. *Value Health*, 19(2), 185-191. doi:10.1016/j.jval.2015.12.015

Celano, C. M., Mastromauro, C. A., Lenihan, E. C., Januzzi, J. L., Rollman, B. L., & Huffman, J. C. (2012). Association of baseline anxiety with depression persistence at 6 months in

patients with acute cardiac illness. *Psychosom Med*, 74(1), 93-99. doi:10.1097/PSY.0b013e31823d38bc

Dekker, R. L. (2011). Cognitive therapy for depression in patients with heart failure: a critical review. *Heart failure clinics*, 7(1), 127-141. doi:10.1016/j.hfc.2010.10.001

Doering, L. V., McKinley, S., Riegel, B., Moser, D. K., Meischke, H., Pelter, M. M., & Dracup, K. (2011). Gender-specific characteristics of individuals with depressive symptoms and coronary heart disease. *Heart Lung*, 40(3), e4-14. doi:10.1016/j.hrtlng.2010.04.002

Farquhar, J. M., Stonerock, G. L., & Blumenthal, J. A. (2018). Treatment of Anxiety in Patients With Coronary Heart Disease: A Systematic Review. *Psychosomatics*, 59(4), 318-332.

doi:10.1016/j.psym.2018.03.008

Frasure-Smith, N., & Lesperance, F. (2005). Reflections on depression as a cardiac risk factor.

Psychosom Med, 67 Suppl 1, S19-25.

doi:10.1097/01.psy.0000162253.07959.db

Gelenberg, A. J., & Hopkins, H. S. (2007). Assessing and Treating Depression in Primary

Care Medicine. *Am J Med, 120(2)*, 105-108. doi:10.1016/j.amjmed.2006.05.059

Hajar, R. (2017). Risk Factors for Coronary Artery Disease: Historical Perspectives. *Heart*

Views, 18(3), 109-114. doi:10.4103/heartviews.Heartviews_106_17

Huffman, J. C., Mastromauro, C. A., Beach, S. R., Celano, C. M., DuBois, C. M., Healy, B.

C., . . . Januzzi, J. L. (2014). Collaborative care for depression and anxiety disorders in patients with recent cardiac events: the Management of Sadness and Anxiety in Cardiology (MOSAIC) randomized clinical trial. *JAMA Intern Med, 174(6)*, 927-935.

doi:10.1001/jamainternmed.2014.739

Huffman, J. C., Mastromauro, C. A., Sowden, G., Fricchione, G. L., Healy, B. C., &

Januzzi, J. L. (2011). Impact of a depression care management program for hospitalized cardiac

patients. *Circ Cardiovasc Qual Outcomes, 4(2)*, 198-205.

doi:10.1161/circoutcomes.110.959379

Ikäheimo, T. M., Länsitie, M., Valtonen, R., Hintsala, H. E., Ryti, N., Perkiömäki, J., . . .

Jaakkola, J. J. K. (2019). Good safety practice in a randomized controlled trial

(CadColdEx) involving increased cardiac workload in patients with coronary artery disease. *BMC Cardiovascular Disorders*, 19(1), 69. doi:10.1186/s12872-019-1051-

1

Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders*,

74(1), 5-13. doi:[https://doi.org/10.1016/S0165-0327\(02\)00426-3](https://doi.org/10.1016/S0165-0327(02)00426-3) HYPERLINK
"[https://doi.org/10.1016/S0165-0327\(02\)00426-3](https://doi.org/10.1016/S0165-0327(02)00426-3)"- HYPERLINK
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"[https://doi.org/10.1016/S0165-0327\(02\)00426-3](https://doi.org/10.1016/S0165-0327(02)00426-3)"

Lee, D. S., Lee, J. S., Schull, M. J., Borgundvaag, B., Edmonds, M. L., Ivankovic, M., . . .

Tu, J. V. (2019). Prospective Validation of the Emergency Heart Failure Mortality

Risk Grade

for Acute Heart Failure. *Circulation*, 139(9), 1146-1156.

doi:10.1161/circulationaha.118.035509

Lilja, G., Nilsson, G., Nielsen, N., Friberg, H., Hassager, C., Koopmans, M., . . . Cronberg, T.

(2015). Anxiety and depression among out-of-hospital cardiac arrest survivors.

Resuscitation, 97, 68-75. doi:10.1016/j.resuscitation.2015.09.389

Mahmood, S. S., Levy, D., Vasan, R. S., & Wang, T. J. (2014). The Framingham Heart

Study and the epidemiology of cardiovascular disease: a historical perspective.

Lancet,

383(9921), 999-1008. doi:10.1016/s0140-6736(13)61752-3

Meister, R., Princip, M., Schmid, J. P., Schnyder, U., Barth, J., Znoj, H., . . . von Kanel, R.

(2013). Myocardial Infarction - Stress PRevention INTervention (MI-SPRINT) to reduce the incidence of posttraumatic stress after acute myocardial infarction through traumafocused psychological counseling: study protocol for a randomized controlled trial. *Trials*, *14*, 329. doi:10.1186/1745-6215-14-329

Murphy, B. M., Grande, M. R., Navaratnam, H. S., Higgins, R. O., Elliott, P. C., Turner,

A., . . . Goble, A. J. (2013). Are poor health behaviours in anxious and depressed cardiac patients explained by sociodemographic factors? *Eur J Prev Cardiol*, *20*(6), 995-1003.

doi:10.1177/2047487312449593

Nabeshima, T., & Kim, H. C. (2013). Involvement of genetic and environmental factors in the onset of depression. *Exp Neurobiol*, *22*(4), 235-243.

doi:10.5607/en.2013.22.4.235

Olfson, M., Blanco, C., & Marcus, S. C. (2016). Treatment of Adult Depression in the United

States. *JAMA Intern Med*, *176*(10), 1482-1491.

doi:10.1001/jamainternmed.2016.5057 %J JAMA Internal Medicine

Ostergaard, B., Holbaek, E., Sorensen, J., & Steinbruchel, D. (2016). Health-related quality

of life after off-pump compared with on-pump coronary bypass grafting among elderly high-risk patients: A randomized trial with eight years of follow-up. *Eur J Cardiovasc Nurs*, *15*(2), 126-133. doi:10.1177/1474515115571041

Pilote, L., Dasgupta, K., Guru, V., Humphries, K. H., McGrath, J., Norris, C., . . . Tagalakakis, V.

(2007). A comprehensive view of sex-specific issues related to cardiovascular disease. *Cmaj*, 176(6), S1-44. doi:10.1503/cmaj.051455

Sanjuan, P., Montalbetti, T., Perez-Garcia, A. M., Bermudez, J., Arranz, H., & Castro, A. (2016).

A Randomised Trial of a Positive Intervention to Promote Well-Being in Cardiac Patients. *Appl Psychol Health Well Being*, 8(1), 64-84. doi:10.1111/aphw.12062

Thombs, B. D., Bass, E. B., Ford, D. E., Stewart, K. J., Tsilidis, K. K., Patel, U., . . . Ziegelstein,

R. C. (2006). Prevalence of depression in survivors of acute myocardial infarction. *J Gen*

Intern Med, 21(1), 30-38. doi:10.1111/j.1525-1497.2005.00269.x

Tymchak, W., Armstrong, P. W., Westerhout, C. M., Sookram, S., Brass, N., Fu, Y., &

Welsh, R. C. (2011). Mode of hospital presentation in patients with non-ST-elevation myocardial infarction: implications for strategic management. *Am Heart J*, 162(3), 436-443.

doi:10.1016/j.ahj.2011.06.011

Waqas, A., Rehman, A., Malik, A., Muhammad, U., Khan, S., & Mahmood, N. (2015).

Association of Ego Defense Mechanisms with Academic Performance, Anxiety and Depression in Medical Students: A Mixed Methods Study. *Cureus*, 7(9), e337.

doi:10.7759/cureus.337

DEMOGRAPHIC CHARACTERISTICS

S/N	Variables
1	Age
2	Gender
3	Socio-economic status
4	Family history
5	Diabetic
6	Hypertension
7	Smoking

- Frequency of anxiety and depression with time frame after MI :
- Within 6 months, 7 months to 1 year and 1 year to 2 year.

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Hospital Anxiety and Depression Scale (HADS)

Tick the box beside the reply that is closest to how you have been feeling in the past week.
Don't take too long over you replies: your immediate is best.

D	A		D	A	
		I feel tense or 'wound up':			I feel as if I am slowed down:
3		Most of the time	3		Nearly all the time
2		A lot of the time	2		Very often
1		From time to time, occasionally	1		Sometimes
0		Not at all	0		Not at all
		I still enjoy the things I used to enjoy:			I get a sort of frightened feeling like 'butterflies' in the stomach:
0		Definitely as much		0	Not at all
1		Not quite so much		1	Occasionally
2		Only a little		2	Quite Often
3		Hardly at all		3	Very Often
		I get a sort of frightened feeling as if something awful is about to happen:			I have lost interest in my appearance:
3		Very definitely and quite badly	3		Definitely
2		Yes, but not too badly	2		I don't take as much care as I should
1		A little, but it doesn't worry me	1		I may not take quite as much care
0		Not at all	0		I take just as much care as ever
		I can laugh and see the funny side of things:			I feel restless as I have to be on the move:
0		As much as I always could		3	Very much indeed
1		Not quite so much now		2	Quite a lot
2		Definitely not so much now		1	Not very much
3		Not at all		0	Not at all
		Worrying thoughts go through my mind:			I look forward with enjoyment to things:
3		A great deal of the time	0		As much as I ever did
2		A lot of the time	1		Rather less than I used to
1		From time to time, but not too often	2		Definitely less than I used to
0		Only occasionally	3		Hardly at all
		I feel cheerful:			I get sudden feelings of panic:
3		Not at all		3	Very often indeed
2		Not often		2	Quite often
1		Sometimes		1	Not very often
0		Most of the time		0	Not at all
		I can sit at ease and feel relaxed:			I can enjoy a good book or radio or TV program:
0		Definitely	0		Often
1		Usually	1		Sometimes
2		Not Often	2		Not often
3		Not at all	3		Very seldom

Please check you have answered all the questions

Scoring:

Total score: Depression (D) _____ Anxiety (A) _____

0-7 = Normal

8-10 = Borderline abnormal (borderline case)

11-21 = Abnormal (case)