

Development of Psychosocial Issues Assessment Scale for Myocardial Infarction

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Abstract

Background: The patients with myocardial infarction (MI) do not only have physiological issues but also suffer from psychological and mental health issues.

Objective: This current study aimed to explore and investigate the psychosocial issues in patients with MI.

Study type, settings & duration: This pilot study was conducted in the Government hospitals of Lahore from January 2019 to September 2019.

Methodology: Twenty-five patients were interviewed and items were generated. After following the phases of scale development, a scale of 29 items with a 4-point Likert scale rating was given to MI patients for the pilot study which was administered to 200 MI for its validation and demographic variables.

Results: By using Principle Component Factor Analysis through Varimax Rotation, the results extracted three factors solutions, for naming the factors like psychosomatic complaints, rational restlessness, and social concerns. The scale resulted in satisfactory internal consistency and concurrent validity.

Conclusion: The current research study showed that psychosocial issues are associated with patients suffering from MI and the increase in psychosocial issues is positively enhancing the mental health problems of patients with MI.

Key words: Psychosocial issues, myocardial infarction, mental health issues, psychosomatic complaints.

Introduction

Chronic diseases are slowly developing and often cause long-lasting effects on individuals suffering from those particular diseases. According to the estimation of the World Health Organization (2017), cardiovascular diseases (CVDs) are the major cause of mortality as compared to any other disease. In 2010, 17.6 million population in the United States had suffered from cardiovascular diseases, in which 8.5 million population undergo myocardial infarction (MI).¹ In 2015, about 17.7 million deaths occurred from CVDs, among which 7.4 million deaths were due to coronary heart

disease or coronary artery disease. There is also a general idea that the risk of mortality will increase due to an increase in heart diseases by 2020.²

Coronary heart disease or coronary artery disease is defined as the decrease of blood flow toward the muscles of the heart.³ It occurs because of different risk factors like genetics, lifestyle and environmental factors, smoking, high blood pressure, disturbed cholesterol level, lack of physical activity, and obesity. Coronary heart diseases also include different diseases especially angina and MI.⁴ In MI, the blood oxygen level decreases or eventually stops in the part of the heart resulting in damage to the heart muscles and finally heart attack.⁵ Despite certain biological causes, certain different psychological causes also contribute to the development of heart diseases, especially heart attacks. A heart attack is an unexpected experience for the patients, which leaves them with any queries in their minds. Most patients may experience emotional symptoms along with the disease and feel themselves under the stress. MI also involves different symptoms such as increased anxiety, death fear, and botheration along with headaches. These serious conditions may sometimes increase the chances of patient hospitalization.⁶ Studies indicate that the prevalence

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TK & MR conceptualized the project. TK did the data collection. Literature search, drafting, revision & writing of manuscript were done by MR.

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of depression is higher in patients, after an attack of MI. The presence of depression in patients also negatively affects the prognosis of cardiovascular diseases. Therefore, patients under depression with cardiac diseases are high rates of death.⁷

The biopsychosocial model indicates that factors like biological, psychological, and social factors are interconnected. These factors not only give a clear understanding of the overall approach to patient care and the causes of the disease but also provide an understanding of the coping strategies involved by the patients, based on such factors.⁸ As, MI is an acute and life-threatening as well as fatal illness and the patients following an attack of myocardial infarction are under stress, which may be responsible for different psychosocial issues. Such psychological issues may vary from culture to culture. Therefore, the current study was designed to develop an indigenous scale to measure the psychological issues in patients with MI.

Methodology

During the first phase of the study, the phenomenological exploration was done on different patients suffering from myocardial infarction, about their psychosocial issues. In the next phase, indigenous scales were developed after expert validation of the responses of the participants. In the final phase, the main study was conducted on the patients by involving indigenous scales and the DASS scale.

In first phase, phenomenology was explored from the patients through an open-ended interview. They were provided with a statement about "What problems or issues, do people face commonly with the disease?" Different patients responded with different statements and their responses were noted down.

The statements, which were revised from the verbatim of different patients, were reviewed for validation by 3 experts having experience in a particular field. The Likert scale was also developed based on a rating from "never at all", "very rare", "rarely" and "always" Then, the finally evaluated scale was prepared for the pilot study.

The pilot study was done on the male and female patients from the government hospitals, to determine any ambiguity or difficulty in understanding the items. About 20 patients were selected for the pilot study. Thus, after the pilot study, it was concluded that the participants had no difficulty in comprehending and understanding the items of the scales.

A demographic questionnaire according to the literature was involved, containing information

about participants' age, gender, education, marital status, number of children, and duration of illness.

This indigenous scale Psychosocial Issues Assessment Scale for myocardial infarction scale (PIASMIS) was developed by the researcher, to measure the psychosocial issues of the patients suffering from MI. The scale consisted of 4 points Likert scale, ranging from 0 to 3 ratings. The scale comprised 29 items, with three factors. Cronbach's alpha of the scale was 0.89. The first factor is "Psychosomatic Complaints" containing 10 items; the second factor is "Rational Restlessness" containing 9 items and the third factor "Social Concerns" containing 10 items.

For concurrent validity of the Psychosocial Issues of Myocardial Infarction Scale, Pearson Product correlation was conducted with Depression Anxiety Stress Scale-21 (DASS-21), which was developed by Lovibond and Lovibond (1995). The Cronbach alpha for the anxiety, stress, and depression subscales of the DASS scale was 0.78, 0.75, and 0.80 respectively.

The study was conducted after taking permission from the Institute of Clinical Psychology, University of Management and Technology, Lahore and participants were enrolled after informed consent. The demographic questionnaire and scales were administered to the participants. Each participant took about 15 to 20 minutes in completing the questionnaire. Some of the participants were illiterate, therefore, the researcher herself read the statements on the scales, in front of the patients for data collection. Thus, a sample of 200 participants was collected almost equally from two government hospitals in Lahore. The data was analyzed through exploratory factor analysis, a data reduction tool to get the major themes/factors.

The psychometric properties of the indigenous developed scale i.e, Psychosocial Issues Assessment Scale for Myocardial Infarction Survivors, were involved by considering the Eigen Values, Inter Factor correlation, and internal consistency of the scale.

Item analysis was done by computing item-total correlation on 29 items of PIMIS, all items showed significant item-total correlation. The items above .30 loading were retained for factor structure. The value of Kaiser-Meyer-Olkin (KMO) was found to be .86 and Bartlett's test of sphericity was found to be significant ($\chi^2 (435) = 1906.13, p < .000$).

The Ethical approval was obtained from Institution Review Board Committee of Institute of Clinical Psychology, University of Management and Technology, Lahore.

Results

The final factors were extracted with .30 and above loading. Factor extraction with 2, 3, 4, and 7 factors was tried and the best suitable factor analysis or extraction was selected. Factor 1 has 10 items whereas factor 2 has 9 items on the scale and factor 3 also includes 10 items. Item no. 18 was excluded from the scale because of its loading below 0.30. The figure represented the number of items that should be extracted according to the slope of the curve in the scree plot. The figure was suggesting 2 or 3 factors to extract. However, by considering the Eigen values and dubious items, items were extracted in 3 factors solution for further analysis (Table-1).

Factor description

According to the theme of each item in a particular factor, the factors were given names after expert validation.

Factor 1: Psychosomatic complaints

It is the first factor of the scale, consisting of 10 items. An individual with a higher or increased score on this factor represented an increase in psychosomatic complaints regarding Myocardial Infarction. This factor included items like "irregular breathing", "increased in the heartbeat", "lack of sleep", "pressure on the chest", "body ache" and vice versa.

Factor 2: Rational restlessness

It is the second factor of the scale, with 9 items. This factor represents the increase in the rational restlessness of the individuals if they score higher on this factor after an event of myocardial infarction. It included items like "feeling of fear", "feeling irritability", "being dependent on family members", "feeling of anxiety" and vice versa.

Factor 3: Social concerns

It is the third factor of the scale, which is also consisted of 10 items. Individuals with higher scores on this factor determine the increase in social concerns after myocardial infarction. This factor included items like "family concerns", "increase in the expenses of treatment", "worry about the future of children", "becoming angry" and vice versa.

Psychometric properties of psychosocial issues assessment scale for myocardial infarction survivors (PIASMIs)

The psychometric properties of the PIMI scale were determined through descriptive analysis

that included the mean, standard deviation, and Cronbach's Alpha. Thus, showing the relationship among the 3 factors of the psychosocial issues assessment scale for myocardial infarction survivors (PIASMIs).

Table 1: Factor structure and eigen values of psychosocial issues assessment scale for myocardial infarction survivors with varimax rotation. (N=200)

S No.	Item No.	F1	F2	F3
1	9	.643		
2	22	.633		
3	30	.614		
4	8	.562		
5	17	.557		
6	13	.527		
7	7	.486		
8	27	.400		
9	1	.384		
10	11	.380		
11	18			
12	4		.792	
13	29		.654	
14	2	.318	.645	
15	19		.610	
16	28		.609	
17	6	.436	.561	
18	3	.494	.557	
19	25		.513	
20	5	.334	.411	
21	14			.670
22	20			.647
23	15			.591
24	24			.500
25	21			.471
26	23			.458
27	26			.457
28	10			.395
29	16			.378
30	12			.325
Eigenvalue		7.93	26.45	26.45
% Variance		2.01	6.72	33.17
Cumulative %		1.66	5.56	38.74

Note: Items with .30 or above loading are boldfaced

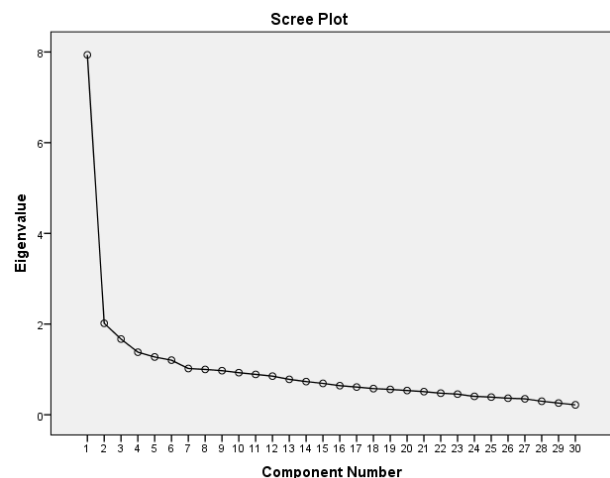


Figure: Scree plot.

Table-2, described the number of items, mean, standard deviation, and Cronbach's Alpha of each factor of the scale. The value of the results showed that Cronbach's Alpha value ranged from 0.79 to 0.89, which described that the psychosocial issues of MI, as well as its items, have high internal consistency.

Table 2: Psychometric properties of Psychosocial Issues Assessment Scale for Myocardial Infarction Survivors. (PIMIS, N=200)

Factor	K	M (SD)	Alpha (α)
1. PSC	10	16.8 (6.4)	0.79
2. RR	9	49.2 (7.0)	0.84
3. SC	10	15.3 (6.2)	0.74
4. PIMIST	29	43.6 (16.8)	0.89

Note. k = no. of items, α = Cronbach's Alpha, PSC = Psychosomatic complaints, RR = Rational restlessness, SC = Social concerns and PIMIS = Psychosocial Issues Assessment Scale for Myocardial Infarction Survivors.

Table-3, described the Pearson Product Moment Correlation to find out the strength of relationships among the factors of PIMI and the total of the PIMI scale. The results indicated that all the factors of psychosocial issues on the Myocardial Infarction scale have a significant positive correlation ($p < .01$). Further, the results also showed that the total PIMI scale has also significant positive correlation with its factors, such as with F1 ($r = .86$, $p < .01$), with F2 ($r = .86$, $p < .01$) and with F3 ($r = .79$, $p < .01$).

Table 3: Summary of inter-correlations, means, standard deviation for the scores of psychosocial issues of myocardial infarction scale (pimis) and its subscales. (N= 200)

Factor	1. PSC	2. RR	3. SC	4. PIMI T
1. PSC	-	.653**	.532**	.866**
2. RR		-	.511**	.866**
3. SC			-	.796**
4. PIMI T				-
M	16.78	11.60	15.30	43.68
SD	6.64	7.02	6.27	16.82

Note. PSC = Psychosocial complaints, RR = Rational restlessness, SC = Social concerns and PIASMIS = Total of Psychosocial Issues Assessment Scale for Myocardial Infarction Survivors: ** $p < .01$

Validation of psychosocial issues assessment scale for myocardial infarction survivors (PIASMIS)

For concurrent validity of the Psychosocial Issues of Myocardial Infarction Scale, Pearson Product correlation was conducted with Depression Anxiety Stress Scale-21 (DASS-21), which was developed by Lovibond and Lovibond (1995).

Table-4 described the mean, standard deviation, inter-correlation, and Cronbach Alpha values of the Psychosocial issues Assessment Scale for Myocardial Infarction Survivors, (PIASMIS) and Depression, Anxiety, and Stress Scale-21 (DASS-21). The result of the analysis indicated that both scales and their factors have a significant positive correlation with each other and have high reliability.

Table-5 described the means, standard deviation, t, and p values of the gender of the patients with Myocardial infarction on psychosocial issues and its factors. The overall results revealed that there was a significant mean and positive difference among patients regarding psychosocial issues in Myocardial Infarction in terms of their gender. Females were found to be more significant and positively associated with the factors like psychosomatic complaints, rational restlessness, and social concerns as well as overall psychosocial issues scale of Myocardial Infarction as compared to that of males patients with MI. Family Status and psychosocial issues, the secondary hypothesis stated that there would be a difference in psychosocial issues in Myocardial Infarction in patients living in a nuclear family system or joint family system. Therefore, an independent sample t-test was computed to test this hypothesis.

Table-6 described the means, standard deviation, t, and p values of the family status of the patients with Myocardial infarction on psychosocial issues and its factors. The overall results showed that there was a significant mean difference among patients regarding psychosocial issues in myocardial infarction in terms of their family system. The results of the analysis described that patients who live in a nuclear family system may experience more psychosocial issues like rational restlessness and social concerns as compared to that patients living in a joint family system. However, there was no significant difference found regarding psychosomatic complaints in terms of both family systems.

Discussion

The main findings of the current research study showed that the indigenously developed psychosocial issues scale among myocardial infarction survivors has high reliability and concurrent validity. The findings also showed that an increase in psychosocial issues of MI patients is equally affecting the mental health of such patients.

This research study aimed to investigate the psychosocial issues in myocardial infarction.

Table 4: Summary of inter-correlation, mean, standard deviation and cronbach's alpha of psychosocial issues of myocardial infarction scale, its factors and DASS-21. (N= 200)

Measures	1	2	3	4	5	6	7	8
1. PSC	-	.65**	.53**	.86**	.52**	.75**	.55**	.67**
2. RR		-	.51**	.86**	.64**	.69**	.61**	.72**
3. SC			-	.79**	.58**	.54**	.64**	.65**
4. PIASMIST				-	.69**	.79**	.71**	.81**
5. D					-	.68**	.79**	.91**
6. A						-	.68**	.86**
7. S							-	.92**
8. DASST								-
M	16.78	11.60	15.30	43.68	6.14	8.19	7.65	21.98
SD	6.64	7.02	6.27	16.82	4.46	4.14	4.64	11.96
A	.79	.84	.74	.89	.78	.75	.80	.90

Note: PSC = Psychosocial complaints, RR = Rational restlessness, SC = Social concerns, PIASMIST = Total of Psychosocial Issues Assessment Scale for Myocardial Infarction Survivors, D = depression, A= anxiety, S = stress, DASS T = total of Depression, Anxiety, Stress Scale. **= $p < .01$.

Table 5: Mean, standard deviation, t and p values of the gender of the patients on psychosocial issues assessment scale for myocardial infarction survivors and its factors. (N=200)

	Gender				95% CI				
	Male (117)		Female (83)		t	p	LL	UL	Cohen's d
	M	SD	M	SD					
PSC	14.51	6.30	19.98	5.76	-6.3	.000***	-7.1	-3.7	0.90
RR	9.19	6.46	15.0	6.36	-6.3	.000***	-7.6	-3.9	0.90
SC	14.07	5.81	17.0	6.52	-3.2	.000***	-4.7	-1.1	0.47
PIASMIST	37.7	15.6	52.0	14.8	-6.5	.000***	-18.5	-9.9	0.94

Note: PSC = Psychosomatic complaints, RR = Rational restlessness, SC = Social concerns, PIASMIS = Total of psychosocial issues in Myocardial Infarction, ***= $p < .001$

Table 6: Mean, standard deviation, t and p values of the family status of the patients on psychosocial issues assessment scale for myocardial infarction survivors and its factors. (n=200)

	Family Status				95% CI				
	Nuclear (67)		Joint (133)		t	p	LL	UL	Cohen's d
	M	SD	M	SD					
PSC	17.67	6.65	16.33	6.62	1.34	.18(ns)	-.62	3.30	0.20
RR	13.39	7.50	10.7	6.60	2.48	.014*	.54	4.83	0.38
SC	16.87	6.26	14.50	6.15	2.53	.013*	.51	4.20	0.38
PIASMIST	47.93	17.71	41.53	16.01	2.48	.014*	1.30	11.4	0.37

Note: PSC = Psychosomatic complaints, RR = Rational restlessness, SC = Social concerns, PIASMIS = Total of psychosocial issues in Myocardial Infarction, *= $p < .05$, ns = $p > .05$

In this study, male and female patients were involved from different Government Hospitals, from outdoor as well as indoor patient settings.

Psychosocial issues were identified after developing an indigenous scale on psychosocial issues in patients undergoing MI. The indigenous scale was developed to address the issue and problems of the patients or participants, which are culturally relevant. For this purpose, different patients were involved in open-ended interviews, in which they were asked about their issues and problems during or after the heart attack. After following each phase and step of the scale development, the issues that were identified during the research study were related to "psychosomatic complaints", "rational

restlessness" and "social concerns". According to the results of our study, patients experiencing MI may suffer more psychosocial issues after the event. A research study concluded that in the case of heart failure, psychosocial issues are considered the most important risk factors for the patients especially issues like depression and lack of social support, which increase their chance of morbidity and admission back to the hospitals.⁹ Research conducted in Central Denmark, on hospitalized patients throughout the whole year of 2009, also found that depression, anxiety as well as a decrease in the mental health of heart attack patients might increase their ratio of negative outcomes and new cardiac events in their life. Of 1940 patients, who

were visiting hospitals for follow-up, 277 patients undergo another new cardiac event or even died due to a heart attack.¹⁰ Psychological or mental health issue like depression involves an increase in hormone level called cortisone, which may change the lifestyle of the patients by changing the blood glucose level, heart rate, and blood pressure, thus also increasing the chances for MI.¹¹ The result of a cohort study conducted on 173 patients indicated that 19.4% of patients having a paid job as well suffered from the diagnosis of Major depressive episodes while, 11.3% experience symptoms of anxiety after an event of MI, within 3 months.¹² Thus, depression and anxiety may increase the chances of heart failure.¹³

A research study conducted in Pakistani culture also reported the presence of psychological issues or mental health problems like depression and anxiety among cardiac patients. According to the results of that study by Dogar et. al. (2010), the presence of depression was 74% in women whereas 58% in male patients, and on the other hand, the presence of anxiety was 65% in women and 54% in the men population. The results of the study also found gender differences in the case of psychosocial issues as females are more affected by psychosocial issues after the cardiac event rather than males. According to the studies, the difference in gender or sex also affects and influences the expression of psychological distress and coping strategies.¹⁴ Thus, according to the results of the study conducted in Norway, depression, family-related stress, and disturbances in sleep were more experienced and reported by females as compared to those males before the first event of MI.¹⁵

One of the studies concluded that women have greater chances of experiencing and suffering from mental health problems rather than males. Similarly, females also experience more psychological issues in later life after the incident of MI as compared to males suffering from MI.¹⁶ Another study revealed that the chances of depression are increased in women, which also further enhances the risks of developing cardiovascular diseases including a heart attack in near future and those patients who may go through depression along with heart attack may tend to have the worst prognosis as well.¹⁷ Some of the studies also revealed that anxiety and the presence of depressive symptoms may enhance the risk factors for developing cardiac events like MI, as the presence of such psychological issues may weaken the immune system of the patients while increasing the formation of platelets and easing or giving rise to cardiovascular diseases.¹³

According to the findings of the study, patients who are living in a nuclear family system may also undergo more psychosocial issues than patients who are living or residing in a joint family system. A study has also found that a lack of social support networks may also increase the ratio of morbidity and mortality of patients suffering from MI. Similarly, researchers have also revealed that in the case of negative health situations or stressful life events, the presence of social support plays a protective factor for such patients.¹⁸ Another study also concluded that low social support is also linked with negative health consequences and psychological issues like depression.¹⁹

This scale will be helpful in the assessment of the psychosomatic complaint, rationale restlessness, and social concerns. Despite the implications of the current study in the assessment of psychosomatic complaints, rationale restlessness, and social concerns, the study has certain limitations as well. The study was conducted only in Lahore city and cannot be generalized to a larger population of Pakistan. Therefore, there is a need to conduct such a study in other cities for increasing the reliability and validity of the results. The indigenously developed tools must be administered to a larger population to increase their reliability and validity. Socio-economic status must be considered to determine and investigate the psychosocial issues and mental health problems in patients who suffered from MI. However, as per findings of the current research study psychosocial issues due to Myocardial infarction are increasing in our country "Pakistan" and this increase in psychosocial issues are also negatively influencing the mental health of such patients.

Conflict of interest: None declared.

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