

4dsq scale in acute myocardial infarction

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Ischemic heart disease remains the leading global cause of mortality, with acute myocardial infarction representing its most severe manifestation. Psychological and psychosocial factors, including depression, anxiety, distress, and somatization, are increasingly recognized as important modifiers

of cardiovascular risk and outcomes. However, data comparing psychological profiles between ST-elevation myocardial infarction and non-ST-elevation myocardial infarction are limited.

Objective: To compare psychological symptom burden between STEMI and NSTEMI patients using the Four-Dimensional Symptom Questionnaire and to assess associations with one-year all-cause mortality.

This prospective cohort study included 356 patients with first AMI (178 STEMI, 178 NSTEMI) hospitalized between March and December 2022 at the University Clinical Center in Kragujevac. Psychological assessment was performed at discharge using the 4DSQ measuring distress, depression, anxiety, and somatization. Sociodemographic, behavioral, and clinical data were collected. One-year mortality was the primary outcome.

Abnormal psychological symptoms were highly prevalent: distress (59.8%), anxiety (51.1%), depression (47.8%), and somatization (48.0%). NSTEMI patients showed significantly higher levels of depression, anxiety, and distress, while STEMI patients demonstrated higher somatization (all $p < 0.01$). No significant associations were found between 4DSQ domains and one-year all-cause mortality (11.2%).

Psychological and somatic symptoms are common early after AMI, with distinct profiles between STEMI and NSTEMI. Although not predictive of one-year mortality, the high symptom burden supports routine multidimensional psychological screening in AMI care and suggests potential value for tailored psychosocial interventions.

Keywords: Acute myocardial infarction; STEMI; NSTEMI; psychological distress; Four-Dimensional Symptom Questionnaire (4DSQ)

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Ishemijska bolest srca ostaje vodeći uzrok smrtnosti u svetu, pri čemu akutni infarkt miokarda predstavlja njenu najtežu manifestaciju. Psihološki i psihosocijalni faktori, uključujući depresiju, anksioznost, psihološki distres i somatizaciju, sve više se prepoznaju kao značajni modifikatori kardiovaskularnog rizika i ishoda lečenja. Međutim, podaci koji upoređuju psihološke profile pacijenata sa infarktom miokarda sa ST elevacijom (STEMI) i bez ST elevacije (NSTEMI) su ograničeni.

Uporediti psihološko opterećenje kod pacijenata sa STEMI i NSTEMI primenom Četvorodimenzionalnog upitnika simptoma (4DSQ) i proceniti njihovu povezanost sa jednogodišnjim ukupnim mortalitetom.

Ova prospektivna kohortna studija obuhvatila je 356 pacijenata sa koji su po prvi put preležali akutni infarkt miokarda (178 STEMI i 178 NSTEMI), hospitalizovanih u periodu od marta do decembra 2022. godine u UKC u Kragujevcu. Psihološka procena sprovedena je prilikom otpusta iz bolnice korišćenjem 4DSQ upitnika, koji se koristi kao mera pokazatelja psihičkog distresa, depresije, anksioznosti i somatizacije. Prikupljeni su sociodemografski, bihejvioralni i klinički relevantni podaci. Primarni ishod bio je jednogodišnji ukupni mortalitet.

Patološki psihološki simptomi bili su zastupljeni: distres (59,8%), anksioznost (51,1%), depresija (47,8%) i somatizacija (48,0%). Pacijenti sa NSTEMI imali su značajno više nivoe depresije, anksioznosti i distresa, dok su pacijenti sa STEMI pokazivali viši nivo somatizacije (sve $p < 0,01$). Nije utvrđena značajna povezanost između domena 4DSQ upitnika i jednogodišnjeg ukupnog mortaliteta (11,2%).

Psihološki i somatski simptomi su česti u ranom periodu nakon akutnog infarkta miokarda, pri čemu postoje različiti obrasci njihove zastupljenosti kod STEMI i NSTEMI pacijenata. Iako se nisu pokazali kao prediktori za jednogodišnji mortalitet, visoka učestalost ovih simptoma podržava rutinski multidimenzionalni psihološki skrining u zbrinjavanju pacijenata sa akutnim infarktom miokarda i ukazuje na potencijalnu vrednost ciljano prilagođenih psihosocijalnih intervencija.

Ključne reči: akutni infarkt miokarda; STEMI; NSTEMI; psihološki distres; Četvorodimenzionalni upitnik simptoma (4DSQ).

Introduction

Ischemic heart disease (IHD) remains the leading cause of mortality worldwide and a major contributor of the global cardiovascular burden, despite major therapeutic and preventive advances over the past decades. According to the Global Burden of Disease (GBD) estimates, IHD has consistently been the single most common cause of death globally, with a rising prevalence, particularly within the working-age population [1]. Among the IHD spectrum, acute myocardial infarction (AMI) represents the most acute manifestations and the most important predictor of cardiovascular (CV) mortality [2].

Beyond traditional CV risk factors, psychological and psychosocial determinants have gained attention as significant contributors of the development and unfavourable outcomes of acute coronary syndrome (ACS). Numerous large-scale cohorts and meta-analyses have demonstrated that depression, anxiety, and psychological stress are independently associated with an increased risk of ACS development and adverse outcomes among patients with established coronary disease, including mortality, recurrent ischemic events, and impaired quality of life [3,4]. Proposed mechanisms through which psychological distress could contribute to ACS development and adverse outcomes, in addition to specific behavioral pathways linked with poor adherence, are perceived through neuroendocrine, autonomic, inflammatory, and endothelial mechanisms, resulting in promoted atherogenesis, plaque destabilization and poor functional recovery [5,6,7]. Additionally, psychological stress, as a pronounced sympathetic state, has been recognized as a myocardial ischemia trigger: by inducing plaque destabilization in type 1 AMI, or by promoting coronary vasospasm and spontaneous coronary artery dissection (SCAD) in myocardial infarction with non-obstructive coronary arteries (MINOCA) [7].

Despite the increasing recognition of psychological factors as modifiers of CV risk, data comparing psychological profiles between different ACS subtypes, such as ST-segment elevation myocardial infarction (STEMI) and non-STEMI (NSTEMI), are lacking and even inconsistent [6,7]. Therefore, the study aimed to assess the psychological status of the AMI patients using the The Four-Dimensional Symptom Questionnaire (4DSQ), compare different psychological domains (anxiety, depression, somatization, and distress) between STEMI and NSTEMI subtypes, as well as to

determine the potential association of distress, depression, anxiety, and somatization with one-year mortality.

Aim of the study

The objective of this prospective cohort study was to compare the psychological profiles of patients hospitalized with their first acute myocardial infarction (AMI) between STEMI and NSTEMI subgroups and to assess the prevalence and severity of psychosomatic symptoms, specifically distress, depression, anxiety, and somatization, as measured by the Four-Dimensional Symptom Questionnaire (4DSQ). The study also sought to determine whether psychosomatic symptom burden during index hospitalization was associated with one-year all-cause mortality, as well as how behavioral and sociodemographic factors affected these outcomes.

Material and Methods

An observational, prospective cohort study was conducted on 356 patients hospitalized with a first AMI in the University Clinical Centre Kragujevac (Kragujevac, Serbia) between March and December 2022. The study was conducted in accordance with the Declaration of Helsinki, and all participants provided written informed consent. Inclusion criteria: (1) age ≥ 18 years; (2) provided written informed consent; (3) confirmed diagnosis of AMI [8]. Exclusion criteria: (1) prior mental illness and/or use of psychiatric medication; (2) terminal phase of chronic non-communicable disease; (3) life-expectancy < 3 years; (4) lack of variables of interest.

Data collection

During the eight-month enrollment period, a total of 464 patients diagnosed with AMI were hospitalized at the Cardiology Clinic (University Clinica Centre Kragujevac). According to the inclusion and exclusion criteria, 356 patients were finally included in the study: 178 STEMI and 178 NSTEMI patients.

All patients completed the Four-Dimensional Symptom Questionnaire (4DSQ) for self-assessment of psychosomatic symptoms during the index hospitalization. Psychosomatic symptoms were assessed on the day of hospital discharge (median of 7 days, with interquartile range 5-10). The 4DSQ is a self-report tool made up of 50 items divided into four subscales: distress, depression, anxiety, and somatization—each scored separately. It evaluates general psychological stress, distinguishes nonspecific distress from depressive and anxiety disorders, and is not dependent on a specific underlying cause. The questionnaire assesses psychological distress experienced during the past seven days. Items were rated on a five-point Likert scale (“no”, “sometimes”, “regularly”, “often”, “very often or always”). For scoring, responses were coded as 0 for “no,” 1 for “sometimes,” and 2 for all other categories. Subscale scores were calculated by summing item scores. Although the four subscales are related, each evaluates a different construct [9].

- The Distress subscale (16 items; score range 0–32) measures stress-related symptoms related to exposure to stressors and the effort to manage them. Severity categories were defined as following: mild (0–9), moderate (10–20), severe (≥ 21).
- The Depression subscale (6 items; score range 0–12) captures depressive thoughts, including suicidal ideation and loss of pleasure (anhedonia). Severity categories were defined as following: mild (0–1), moderate (2–5), severe (≥ 6).
- The Anxiety subscale (12 items; score range 0–24) assesses symptoms of generalized anxiety, panic attacks, phobic and avoidance behaviors. Severity categories were defined as following: mild (0–7), moderate (8–12), severe (≥ 13).
- The Somatization subscale (16 items; score range 0–32) includes typical psychosomatic symptoms (muscle pain, headaches, gastrointestinal issues, palpitations, shortness of breath), which can be normal stress responses when mild to moderate, while higher scores may suggest somatoform disorders. Severity categories were defined as following: mild (0–9), moderate (10–20), severe (≥ 21).

In addition to psychological assessment, data included socio-demographic (age, sex, employment status) and behaviour data (drinking, smoking). During the one-year follow-up period, overall mortality was observed as a primary end-point.

Statistical analysis

Statistical analysis was performed using SPSS Statistics, version 25.0 (IBM Corporation, Armonk, NY, USA). Data is presented as mean with standard deviation (SD) for continuous, or as percentage distribution with number of cases (N). Differences between groups were analyzed using: Student's t-test or Mann–Whitney U test for continuous variables, and Chi-square or Fisher's exact test for categorical variables. Statistical significance was defined as $p < 0.05$.

RESULTS

The study included 356 patients hospitalized for AMI, with equal STEMI and NSTEMI representation. The mean age of the cohort was 64.2 (SD 18.5) years, without significant difference between the AMI subtype groups (63.4 years for STEMI, and 65.7 for NSTEMI group, respectively). The male sex was more represented within the cohort (66.0%), as well as within the STEMI (61.2%) and NSTEMI (70.8%) groups, without significant difference. Nicotine abuse was present in slightly less than half of the patients (43.8%), while every tenth patient reported alcohol abuse; none of the characteristics differed significantly between the AMI subtypes (Table 1).

Table 1 Socio-demographic characteristics of the cohort

VARIABLE	VARIABLE	COHORT	STEMI	NSTEMI	P
Age [years]	Age [years]	64.2 (SD 18.5)	63.4 (SD 17.4)	65.7 (SD 19.2)	0.785
Sex	Male	66.0% (n=235)	61.2% (n=109)	70.8% (n=126)	0.688
Sex	Female	34.0% (n=121)	38.8% (n=69)	29.2% (n=52)	0.688
Alcohol abuse	Yes	10.4% (n=37)	11.8% (n=20)	9.6% (n=17)	0.728
Alcohol abuse	No	89.6% (n=319)	88.2% (n=158)	90.4% (n=161)	0.728
Nicotine abuse	Yes	43.8% (n=156)	47.8% (n=85)	39.9% (n=71)	0.165
Nicotine abuse	No	56.2% (n=200)	52.2% (n=93)	60.1% (n=107)	0.165
Employment status	Employed	60.4% (n=215)	60.1% (n=107)	60.7% (n=108)	0.688
Employment status	Unemployed	12.1% (n=43)	13.5% (n=24)	10.7% (n=19)	0.688
Employment status	Retired	27.5% (n=98)	26.4% (n=47)	28.7% (n=51)	0.688

In the 4DSQ scale analysis at the cohort level, we note that abnormal levels of anxiety were present in 51.1% (35.7% moderate and 15.5% severe), of depression in 47.8% (26.7% moderate and 21.1% severe), of psychosomatic distress in 59.8% (33.4% moderate and 26.4% severe), and of somatization in 48.0% (26.4% moderate and 21.6% severe) (Table 2). All four 4DSQ domains differed significantly between STEMI and NSTEMI patients.. STEMI patients had more pronounced disturbances in level of somatization ($p<0.001$). In contrast, NSTEMI patients had more pronounced disturbances in level of depression ($p<0.001$), anxiety ($p<0.001$), and distress ($p=0.007$). The overall one-year mortality was 11.2% ($n=40$). The mortality was slightly higher in the NSTEMI group (12.9% vs. 9.6% in STEMI), without statistical significance ($p=0.314$). None of the examined 4DSQ domains showed a significant association with one-year mortality, either at the cohort level or after stratification by STEMI and NSTEMI subtype (Table 3).

Table 2 4DSQ scale analysis by AMI subtypes

4DSQ SCALE	4DSQ SCALE	COHORT	STEMI	NSTEMI	P
Anxiety subscale	No/mild	48.9% (n=174)	65.2% (n=116)	38.2% (n= 68)	< 0.001
Anxiety subscale	Moderate	35.7% (n=127)	24.7% (n=44)	46.6% (n=83)	< 0.001
Anxiety subscale	Severe	15.5% (n=55)	10.1% (n=18)	20.8% (n=37)	< 0.001
Depression subscale	No/mild	52.2% (n=186)	64.6% (n=115)	39.9% (n=71)	< 0.001
Depression subscale	Moderate	26.7% (n=95)	24.2% (n=43)	29.2% (n=52)	< 0.001
Depression subscale	Severe	21.1% (n=75)	11.2% (n= 20)	30.9% (n=55)	< 0.001
Distress subscale	No/mild	40.2% (n=143)	48.3% (n=86)	32.0% (n=57)	0.007
Distress subscale	Moderate	33.4% (n=119)	28.1% (n= 50)	38.7% (n=69)	0.007
Distress subscale	Severe	26.4% (n=94)	23.6% (n=42)	29.2% (n= 52)	0.007
Somatization subscale	No/mild	52.0% (n=185)	41.6% (n=74)	62.3% (n=111)	< 0.001
Somatization subscale	Moderate	26.4% (n=94)	30.4% (n=54)	22.5% (n=40)	< 0.001
Somatization subscale	Severe	21.6% (n=77)	28.1% (n=50)	15.2% (n=27)	< 0.001

Table 3: Mortality according to 4DSQ subscales, at the cohort level and by the STEMI / NSTEMI subgroups.

„4DSQ scale		COHORT			STEMI			NSTEMI		
	Category	Alive	Dead	P	Alive	Dead	P	Alive	Dead	P
Anxiety subscale										
	No/mild	0.892	0.108	0.884	0.905	0.095	0.488	0.868	0.132	0.934
	Moderate	0.898	0.102		0.932	0.068		0.879	0.121	
	Severe	0.873	0.127		0.834	0.166		0.892	0.108	
Depression subscale										
	No/mild	0.888	0.112	0.689	0.904	0.096	0.644	0.888	0.112	0.854
	Moderate	0.895	0.105		0.93	0.07		0.873	0.127	
	Severe	0.855	0.145		0.857	0.143		0.855	0.145	
Distress subscale										
	No/mild	0.888	0.112	0.839	0.895	0.105	0.83	0.875	0.125	0.884
	Moderate	0.879	0.121		0.909	0.091		0.855	0.145	
	Severe	0.904	0.096		0.928	0.072		0.885	0.115	
Somatization subscale										
	No/mild	0.89	0.11	0.854	0.901	0.099	0.865	0.883	0.117	0.803
	Moderate	0.871	0.129		0.889	0.111		0.846	0.154	
	Severe	0.896	0.104		0.92	0.08		0.852	0.148	

Discussion

The present study evaluated the psychological symptom burden in patients hospitalized for a first episode of AMI, using a multidimensional instrument capable of differentiating distress, depression, anxiety, and somatization. Several important observations arise from our findings.

First, psychological symptoms were highly prevalent during index hospitalization. Nearly half of the patients exhibited abnormal levels of depression and anxiety, while distress was present in almost 60% of the cohort (Table 2). These findings are consistent with previous meta-analyses demonstrating that depressive symptoms occur in approximately 20–35% of AMI survivors, with considerable variability (9.17 - 65.9%) depending on the assessment tool and timing of evaluation [10,11,12,13]. Anxiety symptoms are similarly frequent in the early post-AMI period, particularly during hospitalization and within the first weeks after the event, accounting for up in half of patients [14,15,16,17]. The relatively high prevalence observed in our cohort may reflect the early timing of assessment (median 7 days), capturing acute emotional responses rather than established

psychiatric disorders. The high prevalence of psychological symptoms in this study is in line with previous reports showing that depression and anxiety are common after AMI, although published estimates vary considerably depending on the timing of assessment, the instrument used, and whether symptoms or formal psychiatric diagnoses are evaluated [18–21]. In a large review of AMI survivors, the prevalence of depression differed markedly according to the assessment method, ranging from lower rates with structured diagnostic interviews (7.3%) to higher rates when symptom questionnaires were used (31.1%) [22]. More recent meta-analytic data also support a substantial burden of depression after myocardial infarction, with wide heterogeneity across studies (range 9.2%-65.9%) [23]. Our findings extend this literature by showing that early psychological burden after AMI is not limited to depression or anxiety, but also includes nonspecific distress and somatization, domains that are less frequently assessed in cardiology cohorts.

The timing of psychological assessment is particularly relevant. In the present study, the 4DSQ was administered at hospital discharge, a median of seven days after AMI. Therefore, the reported symptoms should be interpreted primarily as early post-AMI psychological reactions rather than established psychiatric disorders. This distinction is clinically important. Acute hospitalization for AMI includes pain, fear of death, invasive procedures, uncertainty regarding prognosis, separation from usual daily functioning, and concern about future recurrence. These factors may transiently increase distress, anxiety, depressive affect, and bodily vigilance. At the same time, early psychological symptoms may identify patients who are vulnerable to persistent post-AMI mental health problems. Recent data suggest that a considerable proportion of AMI patients show clinically relevant psychological symptoms within the first days after the event, and that early depressive and trauma-related symptoms may predict later depression or PTSD [24-26].

Majority of cardiovascular studies rely on single-domain instruments such as PHQ-9, GAD-7, or HADS, which are useful, high-specificity screening tools, but mainly focus on depression and/or anxiety. In contrast, the 4DSQ was developed to distinguish nonspecific distress from depression, anxiety, and somatization [27]. This multidimensional approach is particularly suitable in AMI patients, because emotional symptoms and physical symptom reporting may overlap. For example, fatigue, sleep disturbance, chest discomfort, palpitations, dyspnea, and reduced functional capacity

can reflect cardiac disease, hospitalization, medication effects, psychological distress, or a combination of these mechanisms [28,29]. Therefore, the 4DSQ does not replace psychiatric diagnosis, but it may provide a broader clinical picture of early psychosomatic response during AMI hospitalization.

A central observation of the present study was the higher burden of depression, anxiety, and distress among NSTEMI patients. Direct comparisons of psychological symptoms between STEMI and NSTEMI patients are relatively scarce, and available findings are not fully consistent. Palabiyik et al. reported similar HADS anxiety and depression scores in patients with STE-ACS and NSTEMI-ACS during hospitalization [30]. In contrast, Shajrawi et al. found that post-STEMI patients had higher anxiety but not higher depression four weeks after discharge, while post-NSTEMI patients had lower physical activity and more sedentary behavior [31]. These differences across studies may reflect variation in sample selection, timing of assessment, psychometric instruments, cultural context, and whether patients are assessed during hospitalization or after discharge.

Several explanations may account for the higher depression, anxiety, and distress observed in NSTEMI patients in our cohort. NSTEMI often occurs in patients with a more chronic cardiovascular risk profile and are more likely to be associated with higher comorbidity burden, diffuse coronary artery disease, recurrent ischemic symptoms, diagnostic uncertainty, and a more prolonged clinical course. Compared with the highly protocolized and immediately reperfused STEMI pathway, NSTEMI management frequently involves risk stratification, serial biomarker testing, and variable timing of invasive evaluation, which may increase uncertainty during hospitalization [32-34].

In contrast, STEMI patients had significantly higher levels of somatization. STEMI usually presents as a sudden, intense, and clearly life-threatening event, often requiring urgent reperfusion therapy. Such an abrupt experience may heighten attention to bodily sensations and increase the reporting of physical symptoms in the early recovery period. The 4DSQ somatization domain includes symptoms such as palpitations, dyspnea, pain, gastrointestinal complaints, and other bodily sensations, many of which may also be directly or indirectly related to the AMI itself, post-procedural status, anxiety, or hospitalization. Therefore, higher somatization in STEMI patients should not be interpreted as evidence of a somatoform disorder. Rather, it may reflect acute interoceptive vigilance

and symptom amplification after a sudden cardiac threat, a phenomenon conceptually consistent with the broader literature on functional somatic symptoms and medical illness [35].

Sociodemographic variables did not significantly influence psychological subscale distributions between AMI subtypes. This could suggest that, in the acute phase, the clinical presentation and subjective meaning of the cardiac event may be more relevant for early psychological response than the measured demographic characteristics. Still, the absence of significant associations should be interpreted cautiously, because the analysis was not designed to explore complex interactions between sociodemographic factors, comorbidity, infarct severity, treatment pathway, and psychological response. Future studies with larger samples and multivariable modelling should evaluate whether sex, employment, social support, education, previous psychiatric history, and cardiometabolic burden modify the relationship between AMI subtype and psychological symptoms.

No significant association was observed between any 4DSQ domain and one-year all-cause mortality. This finding differs from a large body of literature suggesting that depression and anxiety after myocardial infarction may be associated with adverse outcomes, including mortality, recurrent events, and rehospitalization [36,37]. However, the present mortality analysis has several important limitations. First, only 40 deaths occurred during follow-up, which limits statistical power, particularly after stratification by STEMI/NSTEMI subtype [38]. Second, the endpoint was all-cause mortality, whereas psychological symptoms may be more strongly related to cardiovascular events, rehospitalization, medication adherence, participation in cardiac rehabilitation, functional recovery, or quality of life [39,40]. Third, symptoms were measured only once during hospitalization; persistent or worsening symptoms over time may have greater prognostic relevance than a single early measurement [41,42]. Finally, the analysis was not adjusted for clinical severity markers [43]. Therefore, the absence of a significant association in this cohort should not be interpreted as evidence that psychological symptoms are prognostically irrelevant after AMI.

From a clinical perspective, these findings support the value of early psychological screening as part of comprehensive AMI care. The high frequency of abnormal 4DSQ scores indicates that emotional and psychosomatic symptoms are common even among patients without known prior

mental illness or psychiatric medication use. Screening during hospitalization may help identify patients who require reassurance, psychoeducation, structured follow-up, referral for psychological support, or more intensive secondary prevention [40-44]. The observed subtype-specific patterns also suggest that different emphases may be appropriate: NSTEMI patients may particularly benefit from screening for distress, depression, and anxiety, whereas STEMI patients may require additional attention to bodily vigilance, symptom interpretation, and reassurance regarding expected recovery symptoms.

Several limitations should also be acknowledged. The study was conducted at a single center, which may limit generalizability. Psychological symptoms were assessed by self-report and should not be equated with formal psychiatric diagnoses. The timing of assessment during hospitalization may have captured acute stress reactions and somatic symptoms related to the infarction, procedures, medications, or recovery rather than persistent psychopathology. The analysis did not include detailed clinical variables such as previous cardiovascular disease burden, comorbidities, infarct size, left ventricular ejection fraction, coronary anatomy, revascularization strategy, complications, or discharge treatment. Finally, the mortality analysis was limited by the number of events and by the absence of adjusted time-to-event modelling.

In conclusion, psychological and psychosomatic symptoms were highly prevalent during hospitalization for first AMI episode. NSTEMI was associated with higher depression, anxiety, and distress, whereas STEMI was associated with higher somatization. These findings suggest that early post-AMI psychological response is heterogeneous and may differ according to AMI subtype. Although 4DSQ domains were not significantly associated with one-year mortality in this cohort, the high symptom burden supports the integration of multidimensional psychological screening into routine AMI care and provides a rationale for larger studies evaluating symptom trajectories, clinical correlates, and patient-centered outcomes after STEMI and NSTEMI.

Limitations

This study has a number of limitations that should be noted. Initially, the research was carried out at a single tertiary care facility, which might restrict the findings' applicability to different demographics and medical environments. Second, psychological symptoms should not be regarded

as official psychiatric diagnoses because they were evaluated through a self-report questionnaire. Despite the fact that the 4DSQ is a validated tool for assessing somatization, anxiety, depression, and distress, self-reported symptoms can be impacted by reporting bias and personal perception. Third, psychological evaluations were administered during index hospitalization, with a median of seven days following an acute myocardial infarction. Thus, rather than chronic psychological disorders, the observed symptom burden may be partially due to acute emotional and physiological reactions to the cardiac event, hospitalization, invasive procedures, and uncertainty about the prognosis. There were no repeated assessments during follow-up, so it was not possible to look at how symptoms changed over time and how they related to long-term outcomes. Furthermore, the analysis was conducted using all-cause mortality and did not account for clinical severity markers or employ multivariable time-to-event models. Consequently, the study may have been underpowered to detect modest associations between psychological symptoms and mortality.

Conclusion

Among patients admitted for their first acute myocardial infarction, psychological and psychosomatic symptoms were very common. Approximately one-half of the patients exhibited anxiety, depression, and somatization, while over half of the cohort exhibited abnormal levels of distress. Patients with NSTEMI exhibited significantly higher levels of depression, anxiety, and distress, whereas those with STEMI exhibited more pronounced somatization. Distinct psychological profiles were observed between AMI subtypes. No significant association was observed between 4DSQ domains and one-year all-cause mortality, either in the overall cohort or after stratification according to AMI subtype. However, the high prevalence of psychological symptoms found during hospitalization emphasizes how crucial it is to incorporate multidimensional psychological testing into standard AMI treatment. Early identification of psychological distress may help provide timely psychosocial support and support a more thorough patient-centered strategy for recovery and secondary prevention after myocardial infarction. Therefore more multicenter studies with longer follow-up and more psychological tests are needed to find out what these symptoms mean for the future and how they change over time.

AMM Paper Accepted

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