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Prevalence and Predictors of Psychological Disorders Following Acute Coronary Syndrome in Iraq: A Cross-Sectional Study

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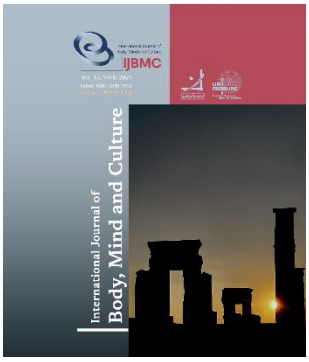

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ABSTRACT

Objective: To determine the prevalence of psychological disorders among patients with acute coronary syndrome (ACS) in Iraq and identify sociodemographic and clinical predictors associated with these disorders, aiming to inform future psychological and medical interventions.

Methods and Materials: A descriptive cross-sectional study was conducted at the Najaf Cardiology Center from February 2023 to January 2025. The sample included 400 ACS patients aged 45–75 years. Psychological assessments were performed during hospitalization and 6–8 weeks post-discharge using validated tools: PHQ-9 (depression), GAD-7 (anxiety), and PCL-5 (PTSD). Data were analyzed with chi-square tests, Pearson correlation, and logistic regression to identify predictors.

Findings: Overall, 35% of patients experienced psychological disorders post-ACS, including depression (31%), anxiety (19%), and PTSD (11%), while 50% reported general psychological symptoms. Higher prevalence was observed in females, younger patients, and those with low socioeconomic status, poor social support, or without post-crisis psychological rehabilitation ($p<0.05$). Severity of cardiac event (e.g., shock, STEMI) and prior psychiatric history significantly increased the risk of psychological distress. Logistic regression confirmed low economic status, lack of social support, and high clinical severity as independent predictors.

Conclusion: Psychological disorders are common after ACS and are strongly influenced by both clinical and socioeconomic factors. Integrating routine psychological screening, early intervention, and tailored rehabilitation programs into cardiac care—particularly for high-risk groups—could improve both psychological and cardiovascular outcomes.

Keywords: Acute coronary syndrome, psychiatric disorders, post-traumatic stress disorder, depression.

Introduction

Acute coronary syndrome (ACS) is one of the most significant cardiac conditions requiring medical and scientific attention, given its widespread prevalence and significant impact on individuals' health and quality of life. Despite significant advances in the diagnosis and treatment of this condition, the pressing challenge remains the early and effective identification of comorbid mental health disorders (Thombs et al., 2018). These disorders can negatively impact treatment outcomes and patient adherence to the care plan. This highlights the importance of accurate knowledge of its prevalence and predictors in this context (Lichtman et al., 2022).

It is worth noting that global and international studies indicate that the prevalence of mental health disorders among ACS patients varies greatly, due to differences in health, social, and economic environments, as well as the criteria used to assess and diagnose these disorders. Conversely, low-resource countries, particularly in the Middle East, face numerous challenges that hinder early diagnosis and evidence-based psychological interventions (Edmondson et al., 2019). This is due to the lack of mental health infrastructure, the scarcity of trained personnel, and the lack of community awareness about the importance of mental health after heart attacks (Carney et al., 2017).

This research gap is evident, as we note the paucity of studies examining the prevalence of mental health disorders after acute coronary syndrome (ACS) in resource-limited settings and the impact of socioeconomic factors (Whooley et al., 2018). There is a need to understand the true prevalence of these disorders and identify predictive factors that may help identify patients at higher risk. This initiative aims to enhance early diagnosis and develop psychological intervention programs tailored to the health and social context of these communities (European Society of Cardiology, 2023).

The importance of this study lies in shedding light on the psychological state of ACS patients in Iraq, a healthcare priority, as the psychological aspect of their treatment is often overlooked. The study's findings may contribute to the development of realistic and appropriate strategies that enhance mental health practices within the cardiac care system and promote attention to the social and economic situations that influence mental health in the context of cardiac disease. This will enhance scientific contributions in this field and serve as a foundation for building a robust evidence base to inform health policies in resource-limited settings.

In light of this, this study aims to measure the prevalence of psychological disorders among patients with acute coronary syndrome in Iraq and to identify the factors that can predict the presence of these disorders, with a focus on understanding the relationship between socioeconomic factors and clinical manifestations of cardiac disease on the one hand, and psychological disorders on the other. This goal reflects the effort to contribute to improving treatment and awareness programs in the Iraqi context and to provide scientific evidence supporting the need to develop targeted psychological interventions for such cases, especially in light of the challenges imposed by the local environment.

Methods and Materials

Study Design and Site

A descriptive cross-sectional study was conducted from February 2023 to January 2025 at the Najaf Cardiac Center, a tertiary-level specialized medical institution providing cardiac intervention services in Iraq. The study aimed to assess the prevalence of psychiatric disorders and their associated predictors among patients with acute coronary syndrome (ACS).

Participant Selection

The study included 400 patients aged 45 to 75 years who were admitted to the hospital with a diagnosis of acute coronary syndrome (ACS), based on clinical symptoms and electrocardiogram (ECG) changes. ACS patients were defined as those with non-ST-segment elevation myocardial infarction (NSTEMI), ST-segment elevation myocardial infarction (STEMI), or unstable angina.

The inclusion criteria included the following:

- A clear diagnosis of acute coronary syndrome based on clinical criteria and ECG changes.
- Ability to communicate and provide sufficient information for participation.
- Willingness to participate with written informed consent.

While exclusion criteria included the following:

- Presence of known psychiatric illness before ACS (e.g., schizophrenia, bipolar disorder, or other psychotic disorders).
- Cerebral or neurological injury that impacts psychological assessment (e.g., stroke, head injury).
- Inability to complete the questionnaires due to cognitive impairment or health status.
- Chronic conditions with significant psychological impact, such as advanced cancer, or patients undergoing active psychiatric treatment before the study.

Data Collection

Clinical and demographic data were collected through structured interviews with participants, including

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medical history, clinical status, and medical examination results. Participants' psychological status was assessed at two stages: during hospitalization and after discharge, over a period of more than six weeks, to evaluate the long-term psychological consequences (American Heart Association, 2023).

To analyze psychological status, reliable and locally validated assessment tools were used:

- The PHQ-9 Depression Scale, with scores of more than 9 being considered indicative of clinical depressive disorder.

- The GAD-7 Anxiety Scale, with scores above 9 indicating comorbid anxiety.

- The PCL-5 for Posttraumatic Stress Disorder (PTSD), with scores above 33 being considered indicative of PTSD, according to internationally accepted criteria, and with appropriate Arabic and local documentation.

Procedures and Assessment Methods

All patients were diagnosed according to standardized forms and provided medical care consistent with local and international protocols, including interventional interventions where possible (Khawaldeh & Muna Mohammad, 2025). Patients were classified into two categories based on the severity of their cardiac injury: severe (such as shock and myocardial infarction with elevated ECG) and non-severe. Psychological status was assessed during the inpatient stay and then reassessed 6-8 weeks after discharge to identify changes and shifts in psychological status over a long period, with this time considered sufficient to distinguish persistent or newly emerging psychological symptoms (Kumar et al., 2020)

Statistical Analysis

Approved statistical programs were used, and data were presented as means ± standard deviations, percentages, and 95% confidence intervals for each estimate. Chi-square tests were performed to analyze the relationship between categorical variables (such as gender, marital status, education level, and injury type) and the presence of psychological disorders. Analysis of variance (AOCO) was also performed. Correlation techniques (such as Pearson's correlation coefficient) were used to analyze the relationship between cardiac injury severity and psychological distress scores. Logistic analysis was applied to identify independent factors contributing to the presence of psychological disorders among patients. A statistical significance level of $p < 0.05$ was used to evaluate statistically significant results.

Processing and Documentation

All data were meticulously documented and analyzed to ensure accuracy and reliability. All study procedures were subject to continuous oversight to ensure adherence to ethical protocols and scientific standards, while respecting patient confidentiality and privacy.

Findings and Results

Four hundred patients with acute coronary dissection (ACS) were studied, and the syndrome was categorized as unstable myocardial infarction (45%), direct myocardial infarction (30%), and indirect myocardial infarction (25%). The results showed that 35% of patients developed post-acute psychiatric symptoms, with an overlap and diversity in the associated symptoms. Forty-two patients were recorded to have depression, 28 to have severe anxiety disorder, and 14 to have post-traumatic stress disorder (PTSD). In addition, 56 patients had general psychiatric symptoms, as shown in Table 1.

Table 1

Prevalence of psychiatric disorders after ACS by symptom type

Type of disorder	Before crisis (%)	After crisis (%)	Estimation period (95% CI)	Probability value (p)
Depression	4	31	0.21 - 1.03	0.01
Anxiety	2	19	15 – 37.13	0.01
Posttraumatic Stress Disorder	0	11	0.11 – 0.19	0.01
General Psychological Symptoms	10	50	18 – 39.2	0.01

Note: female and younger patients are at a higher risk of developing post-ACS psychological disorders

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As for the distribution by risk factors, the results showed that women and young adults were more likely to develop psychological disorders after ACS. Furthermore, lower socioeconomic status was associated with increased symptom severity, with 75% of patients with lower socioeconomic status experiencing severe psychological disorders (p = 0.005). Lack of social support was a contributing factor to increased risk, with 70% of these patients experiencing psychiatric disorders and deteriorating psychological conditions. Failure to receive post-crisis psychological rehabilitation programs was associated with higher rates of psychiatric symptoms, as shown in Table 2.

Table 2

Risk factors associated with an increased likelihood of developing psychiatric disorders after ACS

Causative Factor	Prevalence Before Crisis (%)	Post-Crisis Prevalence (%)	Probability Value (p)
Previous Psychiatric History	5	4.5	< 0.001
Crisis Severity (Shock, STEMI)	22.5	15	0.01
Low Economic Status	15	10	0.005
Lack of Social Support	7.5	5	0.005
Not Receiving Psychological Rehabilitation	30	12.5	0.005

Regarding the type of acute coronary syndrome, the incidence of psychological distress was higher among patients who had suffered from an ascending aorta myocardial infarction (CAI), and the likelihood of developing it increased with the severity of the condition. The presence of shock or heart failure was significantly associated with an increased incidence of psychological distress (previous studies have examined a large body of research indicating a close relationship between crisis severity and the onset of psychological symptoms).

"Previous psychiatric history" was included as a risk factor, as 20% of patients had a prior psychiatric history, which increased the likelihood of developing psychological distress after the crisis, with a statistically significant difference (p < 0.001).

These findings underscore the importance of recognizing various risk factors, particularly prior psychological state, crisis severity, and level of social support, in mitigating and treating psychological distress after acute coronary syndrome.

Discussion and Conclusion

This study highlights the prevalence of psychiatric disorders after acute coronary syndrome (ACS), with approximately 35% of patients reported to suffer from psychiatric disorders of varying severity, including depression, anxiety, post-traumatic stress disorder (PTSD), and general psychological symptoms. Although these findings are consistent with some previous studies that focused on subjective and self-reported outcomes, cultural biases and personal expectations may affect the accuracy of psychiatric assessment and classification. Therefore, relying solely on subjective instruments may not provide the whole picture, and adopting more objective and reproducible assessment methods is essential.

The results of our study highlight a critical issue that often undermines recovery after acute coronary syndrome (ACS): psychological distress, a significant problem after acute cardiac insult, and one that most physicians do not pay more attention to. Posttraumatic stress disorder (PTSD) is a common psychological problem after cardiac insult and is strongly associated with poor clinical outcomes and reduced quality of life.

Previous studies have shown that depression alone can significantly increase the risk of ACS and also increase the risk of mortality by up to 2-3 times in patients with ACS (Majalia & Salehb, 2025; Martinez et al., 2021)

Anxiety disorders and PTSD are also associated with poverty after ACS, although less well-studied than other forms of psychological distress. These disorders have been associated with poor compliance with medication, as well as less compliance with exercise and avoidance of physical activity, factors that reduce the chance of cardiac recovery. Despite significant associations between psychological distress and cardiac disease, psychological care is rarely included or integrated into standardized cardiac rehabilitation protocols, especially

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in low- and middle-income countries (O'Neill et al., 2022).

This gap may be responsible for several systemic challenges, as it impacts the mental health infrastructure. Current cardiac rehabilitation guidelines, while acknowledging the importance of psychological assessment, often fail to mandate evidence-based interventions or routine screenings, such as pharmacotherapy, cognitive behavioral therapy (CBT), or psychosocial education (Park et al., 2020).

This study demonstrated a significantly increased risk of psychological distress after acute coronary syndrome (ACS) in patients with a prior psychiatric history, lack of social support, low economic status, and acute coronary syndrome at the time of presentation.

Some limitations of this study include the limited data collected regarding self-reported symptoms, the concentration of data in a single setting, potential cultural variations, and the lack of long-term follow-up due to the cross-sectional study design. However, these limiting factors also highlight the need for more structured screening tools and longitudinal research in this area.

Implications for Practice

- All patients presenting with acute coronary syndrome should undergo routine psychological screening during hospitalization and follow-up.
- Well-trained mental health professionals and standardized psychological care must be involved in Cardiac rehabilitation programs.
- In future guidelines, psychological problems must be treated as a core component of cardiovascular rehabilitation, not a secondary consideration.

In conclusion, the results of this study highlight the importance of recognizing and addressing the mental health of acute coronary syndrome patients, particularly in the Iraqi context. The study showed that a significant proportion of patients have various psychological disorders after the injury, specifically depression, anxiety, and post-traumatic stress disorder (PTSD), in addition to general psychological symptoms. This highlights the need to develop comprehensive treatment strategies that include psychological aspects, along with physical therapy, to enhance patients' quality of life and long-term psychological well-being.

The results highlight that risk factors associated with a higher likelihood of developing these disorders include poor social support, limited economic background, and the absence of post-crisis psychological rehabilitation programs. The study also confirmed that the severity of the illness, such as trauma and acute conditions such as cardiogenic shock and myocardial infarction, increases the likelihood of developing psychological problems, requiring special attention when evaluating the patient's comprehensive treatment plan.

The value of this research is that it highlights the importance of providing integrated psychological care to patients with acute coronary syndrome, particularly women and young people, and emphasizes the need for early intervention to reduce psychological complications and improve overall health outcomes. The findings also call for the adoption of proactive health policies that include awareness, psychological support, and psychological rehabilitation programs, which would contribute to improving the quality of healthcare and achieving sustainability in the provision of comprehensive medical services. Thus, this research represents an important scientific addition to our knowledge about the impact of heart attacks on mental health and demonstrates the need to integrate psychological dimensions into healthcare plans for heart patients. This reflects the importance of integrating psychological and physical factors in more effective patient management.

The research findings recommend the use of more flexible methodologies, such as mixed designs that combine cross-sectional and longitudinal studies, or randomized controlled trials, to conduct therapeutic interventions. This helps overcome current shortcomings and produce more accurate and reliable results, thereby facilitating the development of more effective preventive and therapeutic strategies for patients with ACS.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study included the fact that participation was entirely optional. Ethical approval was obtained from the university's Institutional Review Board (approval number: 22351), along with written informed consent from all participants. Data confidentiality and protection of participants' rights were ensured (World Health Organization, 2023).

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contribute to this study.

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