

Anxiety Levels in Acute Coronary Syndrome (ACS) Patients Before Percutaneous Coronary Intervention (PCI)

Desak Putu Meiwulan^{1*}, Ni Kadek Yuni Lestari², Ni Nyoman Ayuningsih³

¹²³*Program Studi Keperawatan Program Sarjana, Sekolah Tinggi Ilmu Kesehatan Wira Medika
Bali, Denpasar, Indonesia*

**Corresponding author: Desak Putu Meiwulan Ratnasari, Program Studi Keperawatan Program Sarjana, Sekolah Tinggi Ilmu Kesehatan Wira Medika Bali, Denpasar, Indonesia; Email: desakputumeiulan@gmail.com*

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Abstract

Acute Coronary Syndrome (ACS) patients scheduled for Percutaneous Coronary Intervention (PCI) may experience anxiety because of uncertainty about the procedure and its outcomes. This study aimed to describe anxiety levels among ACS patients before PCI in an emergency department. A quantitative descriptive study with a cross-sectional approach was conducted among 55 ACS patients scheduled for PCI at the Emergency Department of Prof. Dr. I.G.N.G. Ngoerah Hospital, Denpasar, Bali, Indonesia. Participants were recruited consecutively during the data-collection period from 14 May to 15 June 2026. Anxiety was assessed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS), and data were analyzed descriptively using frequency and percentage distributions. Most respondents were aged 56–65 years (40.0%), male (89.1%), had senior high school education (41.8%), and had no previous PCI history (94.5%). Moderate anxiety was the most common category (61.8%), followed by severe anxiety (20.0%), very severe anxiety/panic (10.9%), and mild anxiety (7.3%). These findings indicate that moderate anxiety was common among ACS patients before PCI. Routine anxiety screening, clear pre-PCI education, and therapeutic communication should be considered as part of nursing care to support patient preparedness before the procedure.

Keywords: Acute Coronary Syndrome, Anxiety, Percutaneous Coronary Intervention.

Introduction

Acute Coronary Syndrome (ACS) is an acute cardiovascular condition associated with myocardial ischemia and/or infarction caused by a sudden reduction in coronary blood flow. ACS includes ST-segment elevation myocardial infarction, non-ST-segment elevation myocardial infarction, and unstable angina ¹. Percutaneous Coronary Intervention (PCI) is an important revascularization strategy for selected patients with coronary artery disease and ACS ¹. Although PCI is minimally invasive, invasive coronary procedures may be stressful and anxiety-provoking for patients because of the invasive nature of the procedure and potential pain or discomfort ^{2,3}. Previous studies have reported anxiety and stress among patients undergoing cardiac catheterization, as well as concerns related to anxiety and pain during the procedure ^{2,3}.

Anxiety is an emotional response that may occur when patients perceive a medical procedure as threatening or uncertain. Patients undergoing cardiac catheterization may experience anxiety and stress related to the procedure ². Similarly, anxiety and pain have been identified as relevant concerns among patients undergoing cardiac catheterization ³. In patients undergoing PCI, adequate information and preprocedural education may help reduce anxiety. Zhuo et al. reported that preoperative education tailored to patients' information-seeking styles was effective in reducing anxiety among patients undergoing PCI ⁴. In addition, Perdana et al. reported that therapeutic communication could help reduce anxiety in patients with coronary heart disease undergoing cardiac catheterization ⁵.

The Amsterdam Preoperative Anxiety and Information Scale (APAIS) is a brief instrument developed to assess preprocedural anxiety and information needs ⁶. The Indonesian version of APAIS has demonstrated good validity and reliability, with Cronbach's alpha values of 0.825 for the anxiety component and 0.863 for the information-need component ⁶. The present study was conducted in the emergency department to describe anxiety levels among ACS patients scheduled for PCI. This is clinically relevant because preprocedural education tailored to patients' information-seeking styles has been shown to reduce anxiety among patients undergoing PCI ⁴. Describing the distribution of anxiety levels may therefore provide baseline information to support nursing assessment and preparation before PCI.

Although previous studies have examined anxiety among patients undergoing cardiac catheterization and PCI, recent studies have also investigated interventions aimed at reducing preprocedural anxiety, including individualized preoperative education and therapeutic

communication ^{4,5,7}. However, descriptive information regarding the distribution of anxiety levels among patients with acute coronary syndrome scheduled for PCI in the emergency department remains limited. Therefore, this study aimed to describe the characteristics and anxiety levels of ACS patients scheduled for PCI in an emergency department.

Method

1. Research Design

This study used a quantitative descriptive design with a cross-sectional approach. The study aimed to describe the anxiety levels of patients with acute coronary syndrome (ACS) who were scheduled to undergo percutaneous coronary intervention (PCI). Data were collected at a single point before the PCI procedure.

2. Setting and Samples

Data were collected from 14 May to 15 June 2026 in the emergency department. The target population consisted of patients diagnosed with ACS who were scheduled to undergo PCI. The sample consisted of 55 respondents. The sample size was determined using the sample size formula proposed by Sugiyono (2018):

$$S = \frac{2 \cdot N \cdot P \cdot Q}{d^2 (N - 1) + 2 \cdot P \cdot Q}$$

$$S = \frac{3,841.62.0,5.0,5}{0,05^2 (62 - 1) + 1^2.0,5.0,5}$$

$$S = \frac{59,53}{0,0025 (61) + 3,841 \cdot 0,25}$$

$$S = \frac{59,53}{0,15 + 0,96}$$

$$S = \frac{59,53}{1,11}$$

$$S = 54,11 \text{ Rounded up to 55 respondents.}$$

Description:

S = Sample size

χ^2 = Chi-square value, which depends on the degrees of freedom and significance level.

For 1 degree of freedom and a 5% significance level, the Chi-square value is 3.841.

The Chi-square values for significance levels of 1% and 10% are 6.63 and 2.706, respectively.

N = Population size

P = Probability of success (0.05)

Q = Probability of failure

d = Difference between the sample mean and population mean. The difference may be set at 0.01, 0.05, or 0.10.

Based on the calculation, the required sample size was 55 respondents. Participants were recruited using consecutive sampling, in which eligible patients who met the inclusion criteria were recruited consecutively until the required sample size was achieved.

The inclusion criteria were patients diagnosed with ACS who were scheduled to undergo PCI, were clinically stable, were able to communicate and complete the questionnaire, and agreed to participate in the study. Clinical stability was assessed by the attending physician before data collection. Patients who were unable to provide adequate responses or whose condition prevented completion of the questionnaire were excluded from the study.

3. Measurement and Data Collection

An Indonesian version of the Amsterdam Preoperative Anxiety and Information Scale (APAIS) was used to assess preprocedural anxiety. APAIS is a six-item instrument developed by Moerman et al. to assess preoperative anxiety and information needs. Each item is rated on a five-point Likert scale ranging from 1 (not at all) to 5 (very much). Four items (1, 2, 4, and 5) assess anxiety, while two items (3 and 6) assess the need for information ⁶.

The Indonesian version of APAIS has demonstrated good reliability, with Cronbach's alpha coefficients of 0.825 for the anxiety component and 0.863 for the information-need component ⁶. In this study, the total APAIS score was interpreted using the classification adopted from Firdaus, namely: 6 points, no anxiety; 7–12, mild anxiety; 13–18, moderate anxiety; 19–24, severe anxiety; and 25–30, very severe/panic anxiety. This classification has also been used in Indonesian studies applying the Indonesian version of APAIS.

Data collection was performed after the patient had been assessed as clinically stable by the attending physician and before the PCI procedure. After providing informed consent, respondents completed the APAIS questionnaire. Two nurse enumerators assisted the principal researcher in participant recruitment and questionnaire administration. Before data collection, the

enumerators received standardized instructions regarding the study objectives, participant eligibility, and questionnaire administration procedures.

4. Data Analysis

Data were processed through editing, coding, data entry, and data cleaning. Descriptive statistical analysis was performed using IBM SPSS Statistics version 24. The results were presented as frequencies and percentages to describe respondent characteristics and the distribution of anxiety levels.

Results

Table 1. Characteristics of respondents (n=55)

Characteristic	n	%
Age 36–45 years	6	10.9
Age 46–55 years	14	25.5
Age 56–65 years	22	40.0
Age >65 years	13	23.6
Male	49	89.1
Female	6	10.9
Primary education (SD)	10	18.2
Junior high school (SMP)	8	14.5
Senior high school (SMA)	23	41.8
Diploma/Bachelor	14	25.5
Previous PCI: Yes	3	5.5
Previous PCI: No	52	94.5

Among 55 respondents, the largest age group was 56–65 years (22; 40.0%). Most respondents were male (49; 89.1%). The most common educational level was senior high school (23; 41.8%), and most respondents had never undergone PCI previously (52; 94.5%).

Table 2. Anxiety level before PCI (n=55)

Anxiety category	n	%
Non anxiety	0	0
Mild	4	7.3
Moderate	34	61.8
Severe	11	20.0
Very severe/panic	6	10.9
Total	55	100.0

Moderate anxiety was the most frequent category, affecting 34 respondents (61.8%). Severe anxiety was identified in 11 respondents (20.0%), very severe anxiety/panic in 6 respondents (10.9%), and mild anxiety in 4 respondents (7.3%).

Discussion

The main finding of this study was that moderate anxiety was the predominant anxiety category among patients with ACS awaiting PCI. This finding is consistent with a recent Indonesian study by Kurnia et al., in which moderate anxiety was also the most common category before health education, occurring in 13 of 16 respondents (81.2%).⁸ The predominance of moderate anxiety may be understood in the context of the psychological demands associated with both acute cardiac illness and preparation for an invasive cardiac procedure. Patients awaiting PCI may experience uncertainty regarding the procedure and its outcomes, concerns about their health condition, and unfamiliarity with the intervention. The need for adequate information about the procedure may also be relevant, as studies among patients undergoing PCI have demonstrated the importance of preprocedural education in addressing anxiety.^{4,7} In the study by Kurnia et al., the authors noted that patients may experience anxiety because they have limited knowledge about the PCI procedure, and anxiety decreased following health education.⁸

In the present study, the predominance of moderate anxiety may reflect the psychological response of patients who were simultaneously facing an acute cardiac condition and preparing for an invasive intervention. Patients may recognize the seriousness of their condition and the upcoming procedure while still retaining some ability to cope with the situation. Previous research among patients with ACS undergoing PCI has demonstrated that patients' perceptions of their illness are related to their anxiety, suggesting that how patients interpret their condition may be relevant to their psychological response before PCI.⁹ In addition, qualitative research on patients undergoing emergency PCI has identified anxiety and uncertainty about the future as important aspects of patients' experiences.¹⁰

The predominance of moderate anxiety may also be interpreted in relation to the acute and uncertain nature of the clinical situation. Patients awaiting PCI in the emergency department must adapt rapidly to a new cardiac condition and the prospect of an invasive intervention. Recent research among patients with ACS has examined uncertainty in illness and social support in relation

to anxiety, highlighting the relevance of these psychological and social factors in the experience of anxiety.¹¹ According to the stress and coping perspective, anxiety may arise when individuals perceive a situation as threatening or difficult to manage in relation to their available coping resources. This perspective suggests that patients may respond differently to the same clinical situation depending on their previous experiences, perceptions, coping mechanisms, and available social support. However, the predominance of moderate anxiety in the present study should be interpreted as a description of the psychological response observed in this sample rather than as evidence of a specific causal factor, because the study used a descriptive design and did not examine factors associated with anxiety levels.

The result is consistent with previous reports describing anxiety among patients undergoing or awaiting cardiac catheterization and PCI. Anxiety before cardiac intervention may be related to uncertainty regarding the procedure, concerns about its outcomes, unfamiliarity with the intervention, and the need for adequate information.^{4,7,8} The present finding therefore highlights the importance of considering psychological responses alongside the physiological management of patients with ACS before PCI.

The largest age group in this study was 56–65 years. This distribution should be interpreted as a characteristic of the study sample rather than as evidence that age was associated with anxiety, because the present study was descriptive and did not statistically test the association between age and anxiety. Moderate anxiety was also common among respondents aged 56–65 years. Individual psychological responses may differ according to patients' perceptions, coping resources, previous experiences, and social circumstances.

Most respondents were male. This distribution is descriptive and should not be interpreted as evidence that men experience greater anxiety than women. Moderate anxiety was observed in both male and female respondents. However, the small number of female respondents limits meaningful comparison between sexes. Therefore, sex differences in anxiety cannot be inferred from the present findings.

Senior high school was the most common educational level among respondents. Education may influence how individuals understand health information and interpret a medical condition. In patients undergoing PCI, recent Indonesian studies have highlighted the relevance of knowledge and understanding of the procedure to anxiety before PCI.^{12,13} Nevertheless, the present study did

not measure health literacy, knowledge, or perceptions of the PCI procedure and did not statistically examine the relationship between educational level and anxiety. Therefore, educational level should be considered as part of the respondent characteristics rather than as a determinant of anxiety.

Most respondents had never undergone PCI. For patients undergoing a first invasive cardiac procedure, limited previous procedural experience may be accompanied by uncertainty regarding what they will experience before, during, and after PCI. Previous research has identified procedural outcomes and the possibility of further treatment as important concerns among patients undergoing PCI.¹⁴ Nevertheless, previous experience does not necessarily eliminate anxiety. The three respondents with previous PCI in this study also included patients with higher anxiety scores. This observation may indicate that previous procedural experience alone is not sufficient to prevent anxiety, as patients may still perceive the current clinical situation as threatening or may have concerns related to previous experiences, perceived risk, or changes in their current health condition. Because only three respondents had previous PCI, this observation should be interpreted cautiously and should not be generalized.

The predominance of moderate anxiety has important implications for nursing practice in the emergency department. Psychological assessment should be considered alongside physiological stabilization in patients with ACS awaiting PCI. Nurses can identify anxiety early through brief assessment, provide clear and concise information about the planned procedure, use therapeutic communication to allow patients to express their concerns, and assess individual information needs.^{4,5} These approaches may help patients understand the planned procedure, address their information needs, and strengthen their ability to cope with the upcoming intervention. Previous intervention studies involving patients before PCI have reported benefits of pre-procedural education in reducing anxiety.^{4,7,8} Therefore, the finding of predominantly moderate anxiety in this study supports the importance of individualized psychological and educational support as part of comprehensive nursing preparation before PCI.

Overall, the findings indicate that moderate anxiety was commonly observed among patients with ACS awaiting PCI, while variations were also present across individual respondent characteristics. The findings emphasize the importance of recognizing psychological needs as part of nursing care before invasive cardiac procedures. Routine anxiety assessment and individualized

pre-PCI communication should be incorporated into nursing preparation to support patient readiness and psychological comfort before invasive cardiac care.

Limitation

This study was descriptive and used a relatively small sample from one tertiary referral setting; therefore, the findings should not be interpreted as causal relationships or generalized to all ACS patients. Potentially relevant factors such as knowledge about PCI, family support, pain intensity, and previous procedural experiences were not analyzed as explanatory variables. Anxiety was also assessed at a single point before PCI.

Conclusion

Among 55 ACS patients scheduled for PCI, moderate anxiety was the most common category (61.8%). Most respondents were aged 56–65 years, male, had senior high school education, and had no previous PCI history. Routine anxiety assessment and individualized pre-PCI communication should be incorporated into nursing preparation to support patient readiness and psychological comfort before invasive cardiac care.

Ethical Considerations

The study received ethical approval from the Health Research Ethics Committee of the Faculty of Medicine, Udayana University, with ethical approval number 1995/UN14.2.2.VII.14/LT/2026. Written informed consent was obtained from participants before data collection. Participation was voluntary, and confidentiality of participant information was maintained.

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Conflict of Interest

The authors declare no conflict of interest.

Author Contribution

Desak Putu Meiwulan Ratnasari contributed to study conception, data collection, data analysis, manuscript preparation, and revision. Ni Kadek Yuni Lestari and Ni Nyoman Ayuningsih

contributed to supervision, methodological guidance, and critical review of the manuscript. All authors approved the final manuscript.

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