



Factors Associated with Anxiety Scores in Patients with Stable Angina Pectoris in Cardiology Outpatient Clinic of Universitas Sumatera Utara Hospital

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Abstract

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BACKGROUND: Stable angina pectoris is of great interest to healthcare workers because of the high levels of anxiety observed in patients following a coronary event.

AIM: This study aims to investigate factors associated with anxiety scores in patients with stable angina pectoris.

METHODS: This cross-sectional study was conducted from November to December 2020. Subjects were patients diagnosed with stable angina pectoris in the Cardiology outpatient clinic of Universitas Sumatera Utara Hospital. Signed the informed consent was subjected to history taking, and structured interviews then were asked to fill out the HADS questionnaire.

RESULTS: A total of 200 study subjects were obtained. The majority of the subjects, 110 (55%) subjects were women. Of all subjects, 105 (52.5%) subjects were married. The majority of study subjects were employed (61.5%), had >9 years education (88%), non-smokers (70.5%), had comorbidities (73.5%), and had a family history of the disease (64%). The median age was 53 years (min 50 and max 55 years). The median value of the length of illness was 7 years (min 1 year and max 12 years). The median value of body mass index was 24.16 (min 20.11 and max 30.59).

CONCLUSION: Age, marital relationship, occupation, smoking status, comorbidities, family history of the disease, and body mass index were found to be associated with anxiety scores in patients with stable angina pectoris.

Introduction

Cardiovascular disease is the notorious cause of death worldwide and is associated with increased health care costs. In 2016, around 17.9 million people died from cardiovascular disease, representing 31% of all global causes of death [1].

Stable angina pectoris is of great interest to healthcare workers and clinical psychologists because of the high levels of anxiety and depression observed in patients following a coronary event. In Germany, cardiovascular disease is the most critical diagnosis for patient care in hospitals, with as many as 320,000 patients per year. A study conducted by Barth and Martin showed that at least one in five patients undergoing treatment in cardiac rehabilitation has psychological disorders. Accurate identification of significant anxiety and depression after the diagnosis of heart disease is essential to facilitate the delivery of effective and comprehensive treatment that takes into account the psychological symptoms. This is particularly relevant because anxiety and depression have been shown to be predictors of the cause of death in this clinical group [2].

Chen *et al.* (2019) study in China involving 5794 patients diagnosed with stable angina pectoris showed that 1839 (31.5%) had anxiety as measured by the Hospital Anxiety and Depression Scale (HADS-A). Furthermore, the study illustrated factors that associated with anxiety were low education ($p = 0.02$) and length of illness ($p = 0.03$) [3].

This study aimed to investigate factors associated with anxiety scores in patients with stable angina pectoris.

Methods

This cross-sectional study was conducted from November to December 2020. This study had obtained approval from the research ethics committee from the Faculty of Medicine, Universitas Sumatera Utara (No. 771/KEP/USU/2020).

The study subjects were patients diagnosed with stable angina pectoris in the Cardiology outpatient clinic of Universitas Sumatera Utara Hospital. The

inclusion criteria were patients aged 50–55 years diagnosed with stable angina pectoris with a depression score on HADS-D of 8, capable of reading and writing, and cooperative. Patients with a history of psychiatric disorders, other medical disorders, and history of benzodiazepine use were excluded from the study. A minimum of 200 subjects was obtained after setting a type 1 error of 5% and a type 2 error of 20%.

This study was conducted during the COVID-19 pandemic by implementing a disciplined health protocol. The authors used level 1 personal protective equipment. Subjects who signed the informed consent were subjected to history taking, and structured interviews then were asked to fill out the HADS questionnaire. The factors studied included age, gender, educational status, occupation, marital relationship, smoking status, body mass index, comorbidities, length of illness, and family history of the disease.

The HADS-A consists of 14 statements which are divided into two subscales assessing anxiety (seven statements) and depression (seven statements). Patients classify each statement into a 4-point scale, from 0 (not at all) to 3 (very often). A higher value indicates a disorder. Severe, moderate, and mild cases are represented by values of ≥ 16 , 11–15, and 8–10, respectively. A value of less than eight is not considered a case of anxiety or depression.

Results

The total number of subject included into this study was 110 (55%) subjects, was women. Of all subjects, 105 (52.5%) subjects were married. The majority of study subjects were employed (61.5%), had >9 years education (88%), non-smokers (70.5%), had comorbidities (73.5%), and had a family history of the disease (64%). The median age was 53 years (min 50 and max 55 years). The median value of the length of illness was 7 years (min 1 year and max 12 years). The median value of body mass index was 24.16 (min 20.11 and max 30.59).

Bivariate analysis of factors associated with anxiety score is presented in Table 1. Seen that the independent categorical variable has $p < 0.25$, namely, the gender variable (<0.001), marital (0.004), occupation (0.002), length of education (0.004), smoking status (<0.001), disease comorbidities (0.016), and family history of disease (0.002). Numerical scale independent variables have linearity with a score of anxiety. Independent variables have $p < 0.25$ are age (<0.001), length of illness (<0.001), and body mass index (<0.001) so that the independent variables feasible to be included in the linear regression multivariate analysis test with the framework predictive concept.

Table 1: Bivariate analysis of factors associated with anxiety score

Anxiety score	Mean or median	p
Sex		
Men	14.00 \pm 3.42	<0.001
Women	12.15 \pm 3.32	
Marital relationship		
Married	13.60 \pm 3.22	0.004
Single	12.20 \pm 3.65	
Occupation		
Employed	13.57 \pm 3.07	0.002
Unemployed	12.04 \pm 3.57	
Length of education		
>9 year	13.24 \pm 3.48	0.004
≤ 9 year	11.08 \pm 2.88	
Smoking status		
Smoker	14.85 \pm 3.37	<0.001
Non-smoker	12.20 \pm 3.23	
Comorbidities		
Present	12.63 \pm 3.46	0.016
Absent	13.96 \pm 3.37	
Family history of disease		
Present	13.54 \pm 3.40	0.002
Absent	11.99 \pm 3.43	
Age		<0.001
Length of disease		<0.001
Body mass index		<0.001

Association anxiety scores and stable angina pectoris risk factors are presented in Table 2. It can be seen that the variable age, marital relationship, occupation, smoking status, comorbidities, family history of disease, and body mass index correlated with anxiety scores instable angina pectoris.

Table 2: Multivariate analysis of factors associated with anxiety score

Factors	Correlation coefficient	Multivariate regression β	p
Constant		33.92	<0.001
Age	0.404	0.76	<0.001
Marital relationship	-0.148	-1.03	0.005
Occupation	0.124	0.88	0.018
Smoking status	-0.312	-2.37	<0.001
Comorbidities	0.142	1.11	0.007
Family history of disease	-0.172	-1.24	0.001
Body mass index	0.215	0.33	<0.001

Adjusted $R^2 = 47.5\%$.

The median age of this study subject was 53 (50–55). The multivariate analysis showed a significant relationship between age and anxiety scores ($p < 0.001$ and $r = 0.404$). The marital status of study subjects in this study was 52.5% married and 47.5% single. The multivariate analysis showed a significant relationship between marital status and anxiety scores ($p = 0.005$ and $r = -0.148$). The majority of the study subjects in this study were employed (61.5%). The multivariate analysis showed a significant relationship between working status and anxiety scores ($p = 0.018$ and $r = 0.124$). The majority of subjects were non-smokers (70.5%). The multivariate analysis showed a significant relationship between smoking status and anxiety scores ($p < 0.001$ and $r = -0.312$).

The majority of study subjects had comorbidities (73.5%). The multivariate analysis showed a significant relationship between comorbidities and anxiety scores ($p = 0.007$ and $r = 0.142$). In this study, the majority of subjects had a family history of illness (64%). The multivariate analysis showed a significant relationship between family history and anxiety scores ($p = 0.001$ and $r = -0.172$). The median (min-max) body mass index of study subjects was 24.16 (20.11–30.59). The multivariate analysis showed a significant relationship

between body mass index and anxiety scores ($p < 0.001$ and $r = 0.215$).

Discussion

This study was conducted in Universitas Sumatera Utara Hospital Medan from November to December 2020. We hypothesized that age, gender, marital relationship, occupation, length of education, smoking status, comorbidities, length of illness, family history of the disease, and body mass index are associated with anxiety scores in patients with stable angina pectoris.

The median age of this study subject was 53. The multivariate analysis showed a significant relationship between age and anxiety scores. Age is an important determinant in experiencing chest pain because chest pain increases with increasing age. This is in line with the study conducted by Wang *et al.* (2013) in China, demonstrating a relationship between age and anxiety scores in patients with stable angina pectoris ($p = 0.011$) [4], [5].

The marital status of study subjects in this study was 52.5% married and 47.5% single. The multivariate analysis showed a significant relationship between marital status and anxiety scores which is associated with family and social support. Overall, the greater the level the social support felt by angina pectoris patients is stable, the smaller the likelihood that a person will report symptoms of anxiety. This is in accordance with a study conducted by Wang *et al.* (2013) in China illustrating a relationship between marital status and anxiety scores ($p = 0.022$) [5].

The majority of the study subjects in this study were employed. The multivariate analysis showed a significant relationship between working status and anxiety scores. Rational reasons for describe the relationship between work status and anxiety sociological is where individuals who work have more burdens, stress at work, lack of sociological functions such as time structure to have a rest. This is in line with a study conducted by Saeidi *et al.* (2015) in Iran, showing a relationship between working status and anxiety ($p = 0.001$) [6].

In this study, the majority of subjects were non-smokers. The multivariate analysis showed a significant relationship between smoking status and anxiety scores. This is in line with the study conducted by Murphy *et al.* (2012) in Australia, demonstrating a relationship between smoking status and anxiety scores [7], [8]. Similarly, Saeidi *et al.* (2015) in Iran showed a relationship between smoking status and stable angina pectoris ($p = 0.007$) [6]. However, Allabadi *et al.* (2019) in Palestine illustrated no relationship between smoking status and anxiety scores ($p = 0.154$) [4].

The majority of study subjects had comorbidities. The multivariate analysis showed a significant relationship between comorbidities and anxiety scores. Comorbid disease in patient's stable angina pectoris leads to increased disease severity, complications which causes the inability to work, which causes increased anxiety scores. This is similar to a study conducted by Saeidi *et al.* (2015) in Iran, showing a relationship between comorbidities and anxiety scores [6]. However, Allabadi *et al.* demonstrated no association between comorbidities and anxiety scores in his study ($p = 0.127$) [4].

In this study, the majority of subjects had a family history of illness. The multivariate analysis showed a significant relationship between family history and anxiety scores. This is in line with the study conducted by Allabadi *et al.* showing a relationship between a family history of disease and anxiety scores ($p < 0.001$) [4]. However, Saeidi *et al.* showed no relationship between family history of illness and anxiety scores ($p = 0.35$) [6].

The median body mass index of study subjects was 24.16. The multivariate analysis showed a significant relationship between body mass index and anxiety scores. This is in line with the study conducted by Allabadi *et al.*, showing a relationship between body mass index and anxiety scores ($p = 0.010$) [4]. However, Wang *et al.* in 2013 in In China demonstrated no relationship between body mass index and anxiety scores ($p = 0.10$) [5].

The strength of this study is the multivariate analysis conducted to investigate factors related to anxiety scores. The limitation of this study is attributed to its cross-sectional design hence unable to establish the causal relationship.

Conclusion

Age, marital relationship, occupation, smoking status, comorbidities, family history of the disease, and body mass index were found to be associated with anxiety scores in patients with stable angina pectoris. Meanwhile, sex, length of illness, and educational status were not found to be associated with anxiety scores in patients with stable angina pectoris.

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