Brief Report

Anxiety and Depression in Patients with Coronary Heart Disease: A Study in a Tertiary Hospital

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Abstract

Anxiety and depression could reduce the quality of life, and exacerbate physical symptoms and even mortality amongst patients with coronary heart disease (CHD). The aim of this study was to investigate the incidence of anxiety and depression in patients with acute CHD. In a period from March to December 2008, the views of 108 CHD patients, hospitalized in a tertiary hospital, were solicited using Hospital Anxiety and Depression Scale (HADS) and sociodemographic questionnaires. Patients with CHD had a low level anxiety and depression scores. There was significant differences in the total HADS score of participants stratified for marital status (P=0.027) or co-morbidity of diseases (P=0.012). Also, there were significant differences in the scores of depression subscale stratified for marital status (P=0.021) or co-morbidity of disease (P=0.007). However, there was no significant difference between the total HADS score or depression subscale score of the participants stratified based on age, gender, race, education, or income. Moreover, unmarried CHD respondents possessed higher depression level compared to the married respondents, and CHD respondents with co-morbid diseases showed a high level of depression. The findings might be taken as evidence to suggest that CHD patients should be evaluated early for the detection of anxiety and depression for appropriate referral and support.
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Keywords ● Coronary heart disease ● anxiety ● depression ● quality of life

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Introduction

A study, performed by the National Heart Association of Malaysia, has reported that the majority of coronary heart disease (CHD) patients are in their forties and fifties.[1] It has also been reported that CHD is a major cause of premature deaths in Malaysia, and has significant psychosocial and economic implications for the country.[2] The anxiety and depression of CHD patients have significant impact on their compliance with treatment, and prognosis. The preconceived ideas and past problems experienced by the patients may exacerbate their physical symptoms, and may subsequently affect their quality of life.[3]

Studies have reported that CHD individuals are prone to suffer from mood labile, and end up with overt depression.[4] A previous study has revealed that 33-64% of CHD patients experienced severe emotional reactions in the first four months after a heart attack.[5] In addition, there was an increased cardiac mortality

in patients who developed post-myocardial infarction depression, while pre-myocardial infarction depression did not carry any additional risk of mortality.[5] Moreover, in post-acute myocardial infarction (AMI) patients assessed using hospital anxiety and depression score (HADS), 13.6% showed moderate and severe anxiety, and 7.3% showed moderate or severe depression at the end of three months.[5] Anxiety and depression were frequent problems encountered by the CHD patients.[6] It has been shown that anxiety and depression strongly affect overall well-being, cardiac and non-specific symptom reporting, and overall quality of life.[6] This has been reported as a convergent evidence supporting the role of emotional stimuli in triggering off acute coronary syndrome (ACS), unstable angina and myocardial infarction.[6]

Emotion acts as a trigger for individuals belonging to lower socio-economic status. Emotional upsets often trigger off the pathophysiological changes underlying plaque rupture, formation of a prothrombotic vascular environment, thrombus formation, and other neuroendocrine and autonomic processes, which results in cardiac rhythm disturbances.[6,7] Confounding psychosocial factors have a direct relationship with the development of atherosclerosis and heart diseases. Significant confounding factors include depressive and anxiety disorders, anger, hostility and chronic life stressor.[8] Other confounding factors include low socio-economic status, poor social support, work stress, and marital problems.[8] The working environment can be a risk factor for the development of severe depressive symptoms, and depend on gender, other different factors might play a role as well. Furthermore, reviews of depression and CHD suggest a causal relationship between depression and risk of adverse cardiovascular outcomes.[9]

Studies have documented that treatment of depression in cardiac patients reduces cardiac disease symptoms, and decreases patients' morbidity and disabilities, thereby improving the quality of life.[9,10] Poor adjustment to a chronic illness can lead to depression and anxiety as well as functional declines. Although some patients may subsequently adjust to a new or progressing illness, others continue to exhibit symptoms of depression, anxiety, and impairment. Subsequently, depression is associated with reduced adherence to medication, reduced participation and increased drop-out rates in cardiac rehabilitation programs, which encourage lifestyle changes.

The objective of the present study was to assess the anxiety and depression in CHD patients in order to identify potential problems, and to recommend appropriate interventions for assessment and support.

Patients and Methods

This was a cross-sectional study conducted on 108 CHD patients in Universiti Kebangsaan Malaysia Medical Center (UKMMC). The study was approved by the institutional Ethics and Research Committees (FF-019-2009). All of the CHD patients, who were hospitalized in the coronary care unit from March to December 2008, were recruited for the study. The case notes for all of the cardiac patients were used. The inclusion criteria were CHD patients, who aged above 18 years old and consented to participate in the study. The CHD patients, who had been hospitalized or had history of psychiatric illness were excluded from the study.

Two sets of validated questionnaires including HADS,[11] and socio-demographic profiles questions were administered to the CHD patients. The HADS questionnaire was adopted and translated back to local Bahasa Malaysia language, which was used by Malaysian respondents. The questionnaire was validated by a Professor from the Department of Psychiatry, UKMMC. A previous study reported that the sensitivity and specificity for English and Bahasa Malaysia versions of the HADS to be approximately 0.80.[12] In a previous study it was reported that Cronbach's alphas for anxiety and depression were 0.83 and 0.80, respectively indicating the reliability of the HADS questionnaire.[13]

The HADS questionnaire has been widely used to screen depression among cardiac patients in the hospitals.[11,12,14,15] The HADS questionnaire has 2 subscales including anxiety and depression, each of which comprised of items rated on 4-point Likert scales.[16] The total HADS score ranged between 0-42 with 0-14 being considered as low, 15-28 considered as moderate, and 29-42 being considered as high. For each subscale (anxiety and depression subscales), the scores ranged between 0 to 21, where 0-7 was considered low, 8-14 being moderate, while 15-21 was considered high.

Statistical Analysis

Descriptive analysis including frequency of the respondents' socio-demographic, median and interquartile range (IQR) of HADS score were used for data analysis. Mann-Whitney or Kruskal Wallis tests were used to analyze the socio-demographic data and HADS score of the respondents. Data analysis was performed using Statistical Package for Social Science (SPSS

version 12.1). A P value of <0.05 was considered statistically significant.

Results

Respondents' socio-demographic data including gender, age, race, marital status, number of children, education level, occupation, income, and co-morbidity disease are shown in table 1.

The scores for total HADS, anxiety subscale and depression subscale were 8.96±8.04, 4.25±4.30 and 4.71±4.50, respectively. The median score and IQR for HADS, and anxiety and depression subscales were as follows; HADS: 6.5 and 14, anxiety subscale: 3.0 and 7, and depression subscale: 3.0 and 7 (table 2).

There was no significant difference between the total HADS score of the participants stratified based on age (P=0.178), gender (P=0.471), race (P=0.657), education (P=0.626) or income (P=0.323) (table 3). However, there was significant differences in the total HADS score of participants stratified for marital status (P=0.027) or co-morbidity of diseases (P=0.012). Unmarried

Table 1: Respondents' socio-demographic profiles

Characteristics	Variables	Frequency (N)	Percentage (%)
Gender	Male	77	71.3
	Female	31	28.7
Age	21-40	6	5.6
	41-60	40	37.0
	>60	62	57.4
Race	Malay	43	39.8
	Chinese	53	49.1
	Indian	11	10.2
	Others	1	0.9
Marital status	Single	6	5.6
	Married	101	93.5
	Divorced	1	0.9
Education level	Primary school	50	46.3
	Secondary school	45	41.7
	Tertiary education	13	12.0
Income	Low	72	66.7
	Medium	31	28.7
	High	5	4.6
Co-morbidities	Yes	47	43.5
	No	61	56.5

Table 2: The mean±SD and the median of interquartile range (IQR) of scores of anxiety and depression subscales and total hospital anxiety and depression scale (HADS) of the study participants

HADS	Mean±SD	Median (IQR)
Anxiety	4.25±4.271	3.0 (6)
Depression	4.71±4.493	3.0 (6)
Total score	8.96±8.037	6.5 (11)

Table 3: The median of interquartile range (IQR) stratified based on socio-demographic characteristics (gender, age, race, marital status, level of education and co-morbidity of diseases) of the study participants

Characteristics	Socio-demographic profile (N)	Median (IQR)	P value
Gender	Male (77)	7.00 (11)	0.471
	Female (31)	6.00 (10)	
Age	21-40 (6)	11.50 (16)	
	41-60 (40)	6.00 (16)	0.178
	>60 (62)	5.50 (8)	
Race	Malay (43)	5.00 (10)	
	Chinese (53)	7.00 (11)	0.657
	Indian (11)	11.00 (14)	
Marital status	Single (6)	16.00 (15)	0.027*
	Married (101)	6.00 (9)	
Education levels	Primary (50)	5.00 (8)	
	Secondary (45)	7.00 (11)	0.636
	Tertiary (13)	5.00 (14)	
Income	<RM1000 (72)	7.00 (11)	
	RM1001-4000 (31)	5.00 (10)	0.323
	>RM4000 (5)	13.00 (23)	
Co-morbid diseases	Yes (80)	7.00 (11)	0.012*
	No (28)	4.00 (8)	

*indicate significant difference at P value <0.05

respondents had higher HADS scores compared to the married respondents. In terms of co-morbidity of diseases, respondents with a co-morbid disease has higher HADS score than respondents without a co-morbid disease (table 3).

There were significant differences in the scores of depression subscale stratified for marital status (P=0.021) or co-morbidity of diseases (P=0.007). There was no significant difference in the scores of depression subscale stratified based on age (P=0.268), gender (P=0.453), race (P=0.720), education (P=0.784) or income (P=0.249) (table 4). Unmarried respondents reported to possess a higher depression subscale score compared to married respondents. The respondents with a co-morbid disease had higher subscale depression score than respondents without a co-morbid disease (table 4).

Discussion

This study showed relatively low scores for HADS, and anxiety and depression subscales. These findings are similar to those of an earlier study, which used the HADS to screen for anxiety and depression in cardiac patients in the United States. [12] The low scores anxiety and depression of CHD patients indicates that most of them were coping well. The CHD respondents' abilities to accept the condition and restructure their lifestyles after cardiac rehabilita-

tion program may be the possible reason for the low scores. Moreover, the cohesiveness of family and social support may be the contributing factors in adjusting and modifying the essential needs to accomplish the psychological outcome. Earlier studies stated that an environment with good social support from family may have a buffering effect on an individuals coping mechanism. [12,14]

The findings of the study show that unmarried CHD patients had a higher level of depression. Several studies have reported similar findings indicating that unmarried status was associated with life dissatisfaction. [15,17] It has been reported that the wax and wane of depression mostly reflect life-cycles gains and losses related to marriage, employment, and economic well-being. [17,18] Furthermore, in our local Malaysian setting, individuals are brought up and inculcated family cohesiveness, which includes family values, filial piety, and religious beliefs. Subsequently, the commitment of spouse and family members are pivotal to provide ultimate care and support to individual family members, who are succumbed to CHD.

In this study, CHD patients with co-morbid diseases had greater degrees of depression. The co-morbid diseases comprised of hypertension, diabetes mellitus, kidney diseases and hypercholesterolaemia. Most importantly respondents, who had other co-morbid diseases, had more signs and symptoms related to their diseases such as easy fatigue, pain, edema,

Table 4: The median of interquartile range (IQR) scores for depression subscale stratified based on socio-demographic characteristics (gender, age, race, marital status, level of education and co-morbidity of diseases) of the study participants

Socio-demographic profile (N)	Median (IQR)	P value
Gender		
Male (77)	3.00 (6)	0.453
Female (31)	4.00 (5)	
Age		
21-40 (6)	5.50 (9)	
41-60 (40)	3.00 (6)	0.268
>60 (62)	3.00 (5)	
Race		
Malay (43)	3.00 (4)	
Chinese (53)	3.00 (7)	0.720
Indian (11)	5.00 (6)	
Marital status		
Single (6)	10.00 (12)	0.021*
Married (101)	3.00 (5)	
Education level		
Primary (50)	3.00 (6)	
Secondary (45)	3.00 (6)	0.784
Tertiary (13)	2.00 (6)	
Income		
<RM1000 (72)	4.00 (5)	
RM1001-4000 (31)	2.00 (5)	0.249
>RM4000 (5)	4.00 (11)	
Co-morbidity of disease		
Yes (80)	4.00 (6)	0.007*
No (28)	2.00 (3)	

*indicate significant difference at P value <0.05

restlessness and breathlessness. In addition to the burden of co-morbid diseases, the respondents' situations were exaggerated by the different types of drugs they were prescribed. These problems might interrupt the daily activities of the respondents, and caused them to feel anxious and more depressed. Other studies have reported that higher level of acute mental stresses have an adverse effect on future cardiovascular risk status.[17,18]

A recent meta-analysis showed that depression was associated with a 46% increased risk of cardiovascular disease. The impact of depression on cardiac death (55% increased risk) in the present study was comparable to the impact of anxiety found in that meta-analysis.[19] Several studies also reported that the respondents with both generalized anxiety disorder and major depressive disorder were at the greatest risk of subsequent cardiac death, suggesting that anxiety and depression might also interact synergistically to affect CHD.[20-22] A study reporting on the adolescents exposed to chronic negative stressors that worsened over time showed that cardiovascular reactivity was so heightened that put them at risk for subclinical atherosclerosis.[23-25]

Conclusion

The present study showed that scores for psychological indices among the CHD respondents were relatively low. Unmarried CHD respondents possessed higher depression level compared to the married respondents. Moreover, CHD respondents with co-morbid diseases showed a high level of depression. The findings might imply that CHD patients should be evaluated early for the detection of anxiety and depression for appropriate referral and support. A periodic evaluation and appropriate referral should be part of the comprehensive management of the CHD patients. The clinical implication of this study might be that anxiety and depression should be considered a prognostic factor in patients with CHD.

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Conflict of Interest: None declared

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