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HEALTH RELATED QUALITY OF LIFE AMONG CORONARY HEART DISEASE PATIENTS, WITH AND WITHOUT ANXIETY & DEPRESSION

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Contribution
AUR conceived the idea, planned the study and drafted the manuscript. SFK did statistical analysis and critically revised the manuscript and SP reviewed the literature. TJ helped in acquisition of data. All authors contributed significantly to the submitted manuscript.

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ABSTRACT

Objectives: To investigate and compare anxiety, depression and health related quality of life among coronary heart disease(CHD) patients with and without anxiety and depression.

Methodology: This case control study was conducted at Faisalabad Institute of Cardiology (FIC) from 1st January 2015 to 28th February 2015. The purposive sampling technique was used to select the sample. Hospital Anxiety and Depression Scale (HADS) was used to measure the anxiety and depression and Health Related Quality of Life Inventory (HRQoL) SF-36 was used to measure the quality of life of patients.

Results: The sample comprised of 150 CHD patients (Male) and 150 healthy controls(Male) with age ranging from 45 to 65 years. Higher anxiety was observed among CHD patients as compared to healthy controls ($M = 10.84 \pm 4.12$ vs 4.64 ± 3.27, $p < .05$). Similarly higher depression was observed among CHD patients ($M = 9.79 \pm 4.91$ vs 3.97 ± 2.94 , $p < .05$). CHD patients had lower HRQoL ($M = 57.70 \pm 27.88$ vs 80.41 ± 20.36 , $p = .05$) and patients with anxiety and depression had more poor HRQoL after word depression ($M = 51.72 \pm 27.39$ vs 63.68 ± 27.24 , $p < .05$).

Conclusion: Anxiety and depression are risk factors for health related quality of life among CHD patients.

Key Words: Coronary Heart Disease, Healthy Controls, Anxiety, Depression, Health Related Quality of Life

INTRODUCTION

Almost 50% of cardiovascular disease patients are suffering from depression regardless of cardiac disease history, depression escalates the probability of cardiac mortality two to four times.[1,2] According to the assessment of World Health Organization, it is believed that depression and cardiovascular disease will be the two main bases of disability till the year 2020.[3]

According to the statistics about 17.5 million persons died with cardiovascular diseases in the year 2012 which is the 31% of all global deaths. It is reported that 7.4 million persons died due to coronary heart disease and 6.7 million died due to stroke. More than 82% of deaths due to cardiovascular disease occurred in the low & middle income countries.[4] Pakistan, Bangladesh, India, Sri Lanka and Nepal contain the top most rates of cardiovascular disease in the world.[5] Coronary heart disease (CHD) is the highest cause of hospitalization and death in the United States (US) and in Europe.[6] Although the ratio of cardiac disease is excessive in developed countries, but however in developing countries the percentage of cardiac disease is increasing.[7]

There are several types of cardiac diseases, but each and every one endangers the circulatory system in one or the other way. Cardiac disease may be so serious that disturbance of the blood supply to any component of the body may lead to tissue impairment or death within no minutes. Coronary heart disease (CHD) belongs to a set of disorders occurred due to the progression of atherosclerosis that is a deposit of plaque in the coronary arteries over a period of several years as a result of different risk factors concerned to a chain of biochemical, immune-inflammatory and hemodynamic progressions. The most usual clinical signs of coronary heart disease are angina and myocardial infarction.[8] Myocardial infarction (death or damage of the heart muscles) is caused by the obstructed blood supply to the heart muscles. Myocardial infarction symptoms are severe, prolonged chest pain and a fall in blood pressure that mostly leading to shock.[9]

The experience of a coronary heart disease event, may lead to negative changes in ones mental health, lifestyle and social life. Depression is a most medical dilemma and is highly prevalent among coronary heart disease patients.[10] Depression is a hazard for cardiac morbidity and mortality among coronary heart disease patients, particularly in those having a recent history of acute coronary syndrome.[11]

The disease and ill health have a deep effect on relations, emotions and cognitive ability. Proped up health and boosting in health-related domains can recover the patient's experience of disability and competence to cope.

Quality of life reveals how an individual positions his own satisfaction with life. Health-related quality of life has been described as how an individual's quality of life in lieu of satisfaction in those extent of life, liable to be involved by health status. Health-related quality of life is multidimensional, subjective and sequential.[12]

Health-related quality of life is a vital consequence for patients who are diagnosed with coronary heart disease. Life expectancy persists to get better after a medical treatment of coronary heart disease patients.[13] Accordingly, there are certain interests in isolating descriptions related with impairments or enhancements in the quality of these prolonged life years.[14]

During the course of this study an extensive literature review was made, especially about the adverse effect of depression and anxiety on cardiac morbidity and mortality. Literature depicts a significantly higher level of morbidity and mortality among cardiovascular patients with depression compared to those without depression.[15]

The level of depression in cardiac patients after an acute myocardial infarction is three times higher as compared to the general population.[16] The level of depression is significantly higher among women cardiac patients, particularly young women cardiac patients as compared to men.[17] Depression may be very much associated with anxiety which may counter the adversative cardiac effects.[18]

Chronic life stress, social isolation, meticulous behaviors, social metaphors in depressed patients , tobacco abuse and eating habits may lead to the advancement of coronary disease and ineffectiveness of medication adherence.[19] Depression lowers the potential of effective cardiac rehabilitation and significantly reduces the quality of life with additional high healthcare expenditures. Depression directly and indirectly negatively distracts cardiac consequences, so it is necessary to monitor and alleviate depression.[20]

There were numerous assumptions that describe the relationship between cardiovascular disease and depression, i.e. enhanced platelet activity, alterations in the immunology and in hypothalamic pituitary adrenocortical axis, inflammation and raised activity of the sympathetic nervous system that is concerned for the development of the arrhythmia and metabolic syndrome.[21]

The extensive literature proofs clinically significant relationships between chronic medical illness and psychiatric illness. Patients with severe mental disorders have almost two times more risk for coronary heart disease (CHD).[22] Anxiety escalates the heart pace and blood pressure which make worse effects in myocardial ischemia and exacerbates the heart failure. As the severity of heart failure escalates anxiety also escalates.[23] Among stable coronary heart disease patients, anxiety is related to raising serotonin-mediated platelet reactivity, anxiety also exhibit high independent correlation with platelet functions.[24]

Psychological disorders are widespread aspect of heart disease patients and perhaps it may be as a result of the biochemical setting. Co-morbidity of anxiety, depression and heart failure has a number of clinical consequences on the prognosis of the patients. Moreover, there are many side effects of antidepressant drugs on cardiovascular disorders, whereas their care and effectiveness in heart failure has not been completely clarified still. The appropriate choice of antidepressant medicine in cardiac diseases is a matter of great importance as it can change the clinical effect of the patients.[25]

A multi-specialty consensus study on the evidence relating depression to coronary heart disease advocate, the different rate of depression is generally reported in coronary heart disease patients and is independently associated with heightened cardiovascular morbidity and mortality. For the assessment of depression, screening tests should be used to investigate patients who may need further assessment and medication. Healthcare providers are advised to screen, refer and manage depression.[26]

METHODOLOGY

This case control study was conducted at Faisalabad Institute of Cardiology (FIC), Faisalabad from 1st January 2015 to 28th February 2015. The data was collected by purposive sampling technique. The study population consisted of males with age ranging from 45 to 65 years. Hospital Anxiety and Depression Scale (HADS) by Zigmond & Snaith, (1983) is a self-report questionnaire used to expose anxiety and depression. It contains 14 items as seven items deal with anxiety and seven items deal with depression, each item measured from 0 to 3. On the sub scale, the score for anxiety and depression may range from 0-21. The scores for anxiety and depression are grouped, normal (0-7), mild (8-10), moderate (11-14) and severe (15-21). The scores for the whole scale range from 0-42. The higher scores are considered more distress. Cronbach alpha was observed .93 for anxiety scale and .90 for depression scale.[27] The Hospital Anxiety and Depression Scale has been used in a wide-ranging of clinical settings as a screening device where significant anxiety and depression may subsist with the symptoms of physical complaints.[28] This scale has been commonly used to assess anxiety and depression in cardiac patients.[29] Standardized Urdu version of HADS by Mumford &Tareen, was used for this study.

The Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) version 2 by Ware, (2000) is a self-report questionnaire used to expose health-related quality of life. The scale contains 36 items as ten items deal with physical functioning, four items with role-physical, three items with role-emotional, four items with vitality, five items with mental health, two items with social functioning, two items with body pain and six items deal with general health. Physical Component Summary (PCS) and Mental Component Summary (MCS) are the two indices of health related quality of life (SF-36).[30]

Scoring of the scale may range (0-100), as zero is the poorest observed health status and 100 the best observed health status. The Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) has been widely used in a clinical setting as a screening device for health related quality of life.[31]

In order to observe the difference, the level of anxiety and depression, the health related quality of life and its relation with anxiety and depression, a series of t test was computed by SPSS 16 version.

RESULTS

The sample consisted of 150 coronary heart disease patients and 150 healthy controls . As per the first objective of the study to find out the difference of anxiety and depression between coronary heart disease patients and healthy persons, t test was computed, the mean values with their standard deviation as shown in table1.

As appeared in table 1, higher anxiety ($M = 10.84 \pm 4.12$) was observed among coronary heart disease patients as compared to healthy control ($M = 4.64 \pm 3.27$) , ($t = 14.44$, $p < .05$) and higher depression ($M = 9.79 \pm 4.91$) was observed among coronary heart disease patients as compared to healthy control ($M = 3.97 \pm 2.94$), ($t = 12.46$, $p < .05$).

As per the second objective of the study to find out the difference of health related quality of life among coronary heart disease patients and healthy persons, a series of t test was computed on 8 domains and as overall on SF 36 as shown in table 2.

In table 2, overall low health related quality of life among coronary heart disease patients ($M = 57.70 \pm 27.88$) was observed as compared to healthy control ($M = 80.41 \pm 20.36$), ($t = 8.06$, $p < .05$). A significant difference of poor health related quality of life among coronary heart disease patients on eight domains of SF 36 (Physical Functioning, Role Physical, Body Pain, General health, Vitality, Social

Table 1: Difference of Anxiety and Depression between CHD Patients and Healthy Controls on Hospital Anxiety Depression Scale (HADS)

	CHD Patients n=150		Healthy Controls n =150			
	M	SD	M	SD	t	p
Anxiety	10.84	4.12	4.64	3.27	14.44	.000
Depression	9.79	4.91	3.97	2.94	12.46	.000

df = 298, *p < .05

Table 2: Difference of Health Related Quality of Life between CHD Patients and Healthy Control on Sub-Scales and Overall of Medical Outcome Study (SF-36)

	CHD Patients n = 150		Healthy Controls n = 150			
	M	SD	M	SD	t	p
Physical Functioning	56.40	25.81	88.74	15.50	13.16	.000
Role Physical	49.14	38.91	83.10	29.30	8.54	.000
Body Pain	51.35	27.62	82.60	20.64	11.10	.000
General Health	56.34	18.13	74.40	21.50	7.86	.000
Vitality	53.26	26.18	72.50	18.20	7.39	.000
Social Functioning	67.43	31.64	87.27	20.10	6.48	.000
Role Emotional	68.14	35.49	78.48	23.67	2.97	.003
Mental Health	59.51	16.77	76.20	14.00	9.36	.000
Overall	57.70	27.88	80.41	20.36	8.06	.000

functioning, Role Emotional, Mental Health) as compared to healthy controls was also observed.

As per the third objective of the study to find out the difference of health related quality of life among coronary heart disease patients with anxiety and depression and without anxiety and depression, a series of t test was computed on 8 domains and as overall on SF 36 as shown in table 3.

As appeared in table 3, overall low health related quality of life among coronary heart disease patients with anxiety and depression (M= 51.72 ± 27.39) was observed as compared to coronary heart disease patients without anxiety and depression (M= 63.68 ± 27.24), ($t = 8.06$, $p < .05$), as well as a it was observed that there was a significant difference of poor health related quality of life among coronary heart disease patients with anxiety and depression on eight domains of SF 36 (Physical Functioning, Role Physical, Body Pain, General health, Vitality, Social functioning, Role Emotional, Mental Health) as compared to coronary heart disease patients without anxiety and depression.

DISCUSSION

From the literature, different rate of anxiety and depression was seen among coronary heart disease patients. According to the Ormel et al. anxiety is the important factors in heart disease patients and the rate of anxiety in heart disease patients was higher as compared to healthy persons.[32] The sample of that survey was taken from 17 countries in Europe, Americas, Asia, Middle East, South Pacific Africa.

Kuper et al. furnished the proof of a relationship between depression and coronary heart disease etiology and observed that depression has adverse effects on the prognosis of cardiac incidents particularly after myocardial infarction.[33] Patients having high levels of depression are more expected to incident different cardiac problems.

In the present study, we observed the higher level of anxiety and depression among coronary heart disease patients as compared to healthy control. Our valuation of anxiety and depression in the present study endorses the previous findings of different studies conducted on heart disease patients versus healthy controls.

In order to rate the effects of coronary heart disease on the quality of life of patients, SF-36 inventory was used on coronary heart disease patients and the same scales were also applied to healthy controls and the statistics was calculated. For the comparison of health related quality of life between coronary heart disease patients and healthy controls, a comparison was made on 8 domains and as overall. We observed that health related quality of life is

Table 3: Difference of Health Related Quality of Life between CHD patients with and with out Anxiety and Depression on Sub-Scales and Overall of Medical Outcome Study (SF-36)

	CHD Patients without Anxiety & Depression n = 84		CHD Patients with Anxiety & Depression n = 66			
	M	SD	M	SD	t	p
Physical Functioning	61.30	24.31	51.50	27.44	2.31	.022
Role Physical	55.82	41.54	42.46	36.34	2.06	.041
Body Pain	58.10	31.29	44.60	23.79	2.91	.004
General health	61.39	16.77	51.29	20.18	3.35	.001
Vitality	58.24	25.18	48.28	22.59	2.51	.013
Social functioning	73.48	29.18	61.38	33.68	2.35	.020
Role Emotional	75.07	34.91	61.21	36.47	2.37	.019
Mental Health	66.01	14.71	53.01	18.66	4.77	.000
Overall	63.68	27.24	51.72	27.39	2.66	.009

$p < .05$

substantially reduced both in physical and psychosocial dimensions in coronary heart disease patients compared with healthy persons.

For rating the effects of anxiety and depression on the health related quality of life of CHD patients, the comparison was made on 8 domains and as overall on SF 36 . We observed from the results of the present study that health related quality of life is significantly lowered among coronary heart disease patients with anxiety and depression and anxiety and depression impacts all dimensions of health related quality of life experienced by the coronary heart disease patients. Whereas the coronary heart disease patients, with no anxiety and depression was observed better on health related quality of life status on all dimensions. The results of the present study support previous verdicts that depression is a frequent co-morbidity of coronary heart disease and has a significant adverse effect on health related quality of life.

According to the study of Pedersen et al. conducted in Holland, the patients having anxiety and depression registered a higher risk of poor health condition as compared to patients without anxiety and depression.[34]

Cruz et al. conducted a study in Brazil.[35] As per this study, chronic coronary heart disease patients exposed with depression were projecting the worse health related quality of life in all of the SF-36 domains. All the variables were calculated on the multiple linear regression analysis and depression was observed the independent variable with higher significance relation to worse health related quality of life.

Hofer et al. noticed that anxiety and depression are the highly significant factors affecting on health related quality of life among heart disease patients.[36] They decided that particularly anxiety and depression, the mediating factors must be taken into attention in clinical practice when health related quality of life is considered as a clinical prerequisite.

A study was conducted by Tasic et al. on coronary artery disease patients admitted for cardiovascular treatment, the purpose of this study was to evaluate the effect of the depression on the health-related quality of life.[37] According to this research, depression significantly involved in the declining the health related quality of life of coronary artery disease patients in both physical component summary (PCS) and mental component summary (MCS).

Ruo et al. conducted the study to evaluate the impacts of depressive symptoms and rates of cardiac function to the health condition of coronary artery disease patients.[38] Among coronary disease patients, depressive symptoms were significantly related with patient health status, as well as symptom hampers, quality of life, physical limitation and overall health.

He, H. G., Koh, K., Thompson et al. worked a correlational study with a sample of 106 coronary disease patients taken from a hospital.[39] This study was designed to investigate health related quality of life and identify its predictors among coronary disease patients in Singapore. Significant negative correlations were observed between anxiety and depression and physical and mental health. Anxiety and depression were assessed the significant predictors of health related quality of life among coronary disease patients.

Dickens et al. conducted a study to examine the effect of depression on health related quality of life among coronary heart disease patients.[40] In the Dickens´ study, it was observed that only the depression not having the significant effect on health related quality of life of CHD patients, but when anxiety were added to the regression model then depression and anxiety both having significant effect on the health related quality of life among coronary disease patients.

The results of the present study endorse the said previous researches on the similar construct and reveal that coronary heart disease is a significant obstruction in normal life and has a substantial impairment of health-related quality of life. The results of the study advocate that clinical variables such as coronary heart disease is exactly related to psychological interface leading to lower quality of life and coronary heart disease related disability.

LIMITATIONS

The limitations of the present study are, first we did not include the demographic variables in this study, like gender, marital status, monthly income, urban or rural, level of education and the length of illness. Secondly the data were cross sectional so we can't draw any causal relationship between different variables.

CONCLUSION

The fact has been confirmed from the current study that anxiety and depression are risk factors for health related quality of life among coronary heart disease patients. Therefore, in the clinical treatment when the medicine is prescribed for the coronary heart disease patients, it is need of time to scan anxiety and depression considering as the risk factors for coronary heart disease patients. Psychiatric engagement is necessary to treat and control the anxiety and depression in every cardiology unit. Psychiatric medications will recover the psychological adjustment of patients and boost their capability to cope with physical illness. The present study revealed that the coronary heart disease, anxiety, depression and health related quality of life are strongly interconnected.

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