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Biopsychosocial experiences based on Perception of Coronary artery disease patients: A medical anthropological study

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Abstract

Coronary heart disease (CHD) or Coronary Artery Disease (CAD) is major cause of death in many countries. Psychosocial factors have not received adequate attention in the cardiovascular aetiological studies. In the present study, biopsychosocial experiences of 100 (50 males and 50 females) medically diagnosed patients of coronary heart disease admitted at PGIMER, Chandigarh were investigated based on psychometric analysis using DS14 scale and in-depth interviews. The results revealed that family history, unhealthy eating habits, sedentary life style, stress, anxiety and depression (type D personality) were major determinants. Pearson chi-square test revealed significant gender difference for Type of CAD whereas no significant gender differences were observed for type D personality and its sub-traits and co-morbities (Diabetes and Hypertension) in coronary artery disease patients. It was suggested that cardiac patients require multiple-level treatment from a variety of clinical professionals including cardiologists, psychologists, physical therapists and non-paramedical staff; besides effective medical intervention by these experts, effective psycho-social support by family or friends or others may provide a holistic and multidimensional treatment.

Keywords: Biopsychosocial experience, coronary heart disease, cardiac patients, experiences, personality.

Introduction

Cardiovascular disease (CVD) refers to a wide variety of heart and blood vessel diseases and conditions, including coronary heart disease (CHD), stroke, high blood pressure, and high blood cholesterol. Coronary heart disease (CHD) or Coronary Artery Disease (CAD) is one of the deadly diseases causing lot of mortality. CHD are alarmingly increasing in both developed and developing countries. Rates were predicted to increase by 120% in women and 137% in men from 1990 to 2020 in developing countries[1.] Sixty percent of the world's patients with heart disease, including CHD, were predicted to live in India[2]. India alone is burdened with approximately 25% of cardiovascular-related deaths and would serve as a home to more than 50% of the patients with heart ailments worldwide within next 15 years[3]. The seriousness of present scenario could be supported by the fact that most CAD sufferers in India happens to be in their productive age which may potentially impose huge socioeconomic burden and devastating consequences over the coming years.

This increase in heart disease could be attributable to ageing ,increased vulnerability due to lifestyle changes (tobacco, alcohol, inappropriate diet, physical inactivity, obesity, hypertension, diabetes and dyslipidaemias)[4] various psycho-social risk factors (anger, depression, isolation, social inhibition, lack of social support)[5-6]. Coronary heart disease (CHD) association with personality traits was reported nearly 50 years ago with the concept of type A behaviour which characterizes hostility, competition, anger, and dominance characteristics[7-8]. Personality traits may in fact be able to explain individual differences in distress, morbidity, and mortality in cardiac patients'[9].

Type D personality is defined as the combined effect of Negative Affectivity (NA) (the tendency to experience negative emotions) and Social Inhibition (SI) (the tendency to inhibit the expression of these emotions in social interaction) [10]. Type D in CAD patients is associated with a range of negative factors, such as reduced health status [11] reduced quality of life[12-13], more cardiac symptoms, more worries [14] and fatigue[15], and a high risk for future depression and anxiety [16]. Type D patients experience low levels of social support, and are less likely to engage in positive health behaviour (e.g. healthy eating, physical activities, regular medical check-ups) [17] or to seek help[18]. Type D is associated with reduced treatment effects[6], and an increased risk of cardiac morbidity and mortality[6-7, 10, 13, 18-19]. CAD can be divided to various sub-categories, as it produces few broad categories of clinical syndromes – Angina, Unstable angina and Acute Coronary Syndrome (Myocardial Infarction).

Literature review reveals that systematic analysis of different components of personality Type D and Heart Disease has not been done on any Indian population. Major objectives of the study are i. To analyze the symptoms of the disease biological, psychological and social experiences of the patients diagnosed with CAD. ii. To study incidence of personality D and its subcomponents among male and female CAD patients

Material and Methods

Qualitative and quantitative approach which focused on in-depth interview and schedule to elicit the biological (age, disease symptoms, co-morbities and type of CAD), psychological (type D personality) and social factors (Social support, socio-economic status) of the patients was used for data collection. The present cross-sectional study was carried out at advanced cardiac centre (ACC), Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, among 100 (50 females and 50 males) individuals medically diagnosed as coronary heart disease patients in the age range 36-77 years with mean age 56.69±8.84 (table 1) from northwest India mainly Punjab, Haryana, Himachal Pradesh and Chandigarh.

Information on type of CAD, hypertension, and diabetes etc were obtained from the clinical records of these patients at PGIMER. Type D personality was measured with the help of 14-item Type D Personality Scale (DS14) developed by Denollet (2005). The scale comprises of mainly two subscales, negative affectivity (NA) and social inhibition (SI), containing seven items respectively. These items are answered on a five-point Likert scale responses, i.e. 0 (false), 1(rather false), 2 (neutral), 3 (rather true) to 4 (true). A predetermined cut-off of ≥10 for both NA and SI was used to determine with a Type D personality (Denollet 2005). NA and SI have good test–retest validity and high internal validity with Cronbach's alpha of 0.88 and 0.86 for the negative affectivity and social inhibition subscales, respectively (Denollet 2005). Socio economic status was assessed with the help of SES scale (Aggarwal et al 2005). Pearson chi-square was used to test the variables for significance level $P<0.05$. Statistics was performed using SPSS 18 package.

Results and Discussion

Results: The data on respondent's age, place of origin and socio-economic status are presented in Table 1. Most of the respondents were from lower middle (46% males and 58% females) and upper middle socio-economic status (46% males and 28% females). Pearson chi-square value showed gender differences were insignificant for age, socio-economic status and place of origin, thus the data was pooled. All the patients belonged to Northwest India mainly Punjab, Himachal Pradesh, Haryana, and Chandigarh visiting PGIMER for treatment. Pearson chi-square value (table 2) showed significant gender differences with respect to type of CAD. It was seen that 62% of males had MI as compared to 24% MI females. 34% Female had unstable Angina, 42% females had angina as compared to 16% and 22% males respectively.

Table-1
The profile of respondents which includes the age group categories, place of origin and Socio-economic status

	Categories		Males	Females	Pearson $\chi 2$	p-value
Age	30-40	N	1	4	7.792	0.99
		%	2	8		
	40-50	N	9	15		
		%	18	30		
	50-60	N	23	11		
		%	46	22		
	60-70	N	16	9		
		%	32	38		
	Above 70	N	1	1		
		%	2	2		
Place of Origin	Punjab	N	20	20	0.519	0.915
		%	40	40		
	Haryana	N	12	14		
		%	24	28		
	H.P.	N	16	15		
		%	32	30		
	Chandigarh	N	2	1		
		%	4	2		
Socio-economic Status	Poor	N	2	6	5.215	0.157
		%	4	12		
	Lower middle	N	23	29		
		%	46	58		
	Upper middle	N	23	14		
		%	46	28		
	High	N	2	1		
		%	4	12		

Table 3 shows that about two-third of the males and females had Type D personality i.e. 68% of females were Type D as compared to 64% in males and there were no significant gender differences. The Patient with Type D personality was further investigated for sub-traits of Type D personality i.e. Negative Affectivity (NA) and Social inhibition (SI) and the results are presented in Table 4. It shows that 83 % of the total CAD patients had "high" or "very high" Negative Affectivity. The incidence of "very high" NA was higher in females (62%) than males (42%). The incidence of social inhibition varied from 'low' to 'very high' but majority (64%) of the CAD patients were in the categories varying from below average to above average. No apparent statistical gender differences were observed for negative affectivity and social inhibition.

Incidences of Diabetes and hypertension co-morbities among patients are given in table-5. 64% females and 58% males suffered from diabetes while 72% females and 62% males suffered from hypertension showing that diabetes and hypertension are major co-morbities for Coronary Artery Disease. No significant gender differences were observed for these co-morbities.

Table-2
Gender differences for type of cad

		CAD Type			Total	χ2/p-value
		MI	USA	Angina		
Gender	Female	12	17	21	50	**14.76/0.01***
		24%	34%	42%	100.0%	
	Male	31	8	11	50	
		62%	16%	22%	100.0%	
Total		43	25	32	100	
		43%	25%	32%	100.0%	

Table-3
Type D personality among Males and Females

		TYPE D			χ2/p-value
Gender		NO	YES	TOTAL	
Female	N	16	34	50	0.178 /0.673*
	%	32%	68%	50%	
Male	N	18	32	50	
	%	36%	64%	50%	
TOTAL	N	34	66	100	
	%	34%	66%	100%	

Table-4
Incidence of sub traits of Type D personality i.e. Negative affectivity (NA) and Social Inhibition (SI) among Male and Females

NA		Gender		Total	SI	Gender		Total
		Female	Male			Female	Male	
Low	N	-	-	-	Low	5	4	9
	%	0%	0%	0%		10.0%	8.0%	9.0%
Below average	N	1	3	4	Below average	10	8	18
	%	2.0%	6.0%	4.0%		20.0%	16.0%	18.0%
Average	N	2	2	4	Average	13	8	21
	%	4.0%	4.0%	4.0%		26.0%	16.0%	21.0%
Above average	N	3	6	9	Above average	10	15	25
	%	6.0%	12.0%	9.0%		20.0%	30.0%	25.0%
High	N	13	18	31	High	10	11	21
	%	26.0%	36.0%	31.0%		20.0%	22.0%	21.0%
Very high	N	31	21	52	Very high	2	4	6
	%	62.0%	42.0%	52.0%		4.0%	8.0%	6.0%
Total	N(%)	50(100%)	50(100%)	100(100%)	Total	50(100%)	50(100%)	100(100%)
χ2/ P-value		4.73/0.316*				3.238/0.663*		

Table-5
Incidencence of co-morbities (Diabetes and hypertension) among patients

Gender		Diabetes		χ2/ p-value	Hypertension		χ2/ p-value
		No	Yes		No	Yes	
Female	**N**	18	32	0.378/0.539	14	36	0.735/0.391
	%	36%	64%		28%	72%	
Male	**N**	21	29		18	32	
	%	42%	58%		36%	64%	
Total	**N**	39	61		32	68	
	%	39 %	61%		32%	68%	

Biological Perspective: The patients' experiences of physical symptoms were recorded and the main symptoms are given below: i. Chest pain/ pain radiating to arms/ legs/ back, ii. Sweating, iii. Dyspnea (Breathlessness), iv. Numbness in different body parts, v. General body weakness, vi. Increase of heart beat, vii. Infarction.

Disease symptoms were felt at workplace or at home. Majority of the respondent patients' were unaware of the disease when the symptoms occurred for the first time and were not able to associate the symptoms with the heart disease. All female respondents' were non-smoker and non-alcoholic, 60% of the males were alcoholic and 48% were smokers.

Case Studies: All the respondents were interviewed to collect information related to various socio-psychological and lifestyle factors. Two case studies, one of male respondent and another of female respondent are narrated. Healthy lifestyle and, experiences of sound/good living conditions, family/social supports had affirmative effects to their overall well-being. The above is supported by case study given below.

"….KS, 65 year old retired employee (18,000/ month pension) from cooperative sugar mill. He lived in a village at Morinda, Punjab. He had his wife and 4 children (1 son and 3 daughters, all married,) in his family. He was suffering from heart disease since august 2010 and comes for follow-up every 4-6 month. He consumes alcohol occasionally. He was suffering from hypertension, he was mostly sad, depressed, unhappy/ low mood as he kept on thinking about his family's financial condition after retirement; as family income was less and also about his daughter who was defund and married to a person who was not able to see from one eye, but her in-laws sent her back. He was closed type personality and did not like to get socialized. He never let his anger comes out and he thought that this was the reason of his problem as he cannot express what he felt. His life was going on normally but the occurrence of disease added negative effect on him and his family as he was not able to cope with cost of treatment which was above two lakh; whether to consider it case of economic condition or ill-health condition, only the stress has increased as he knew that he is heart patient for life. His family supported him in every aspect with which he was satisfied completely….."

The above case study reflects satisfaction of individual with the social system/support system in which he lived but occurrence of disease lead to disruption of socio-economic balance due to lack of income source. On the contrary the lack of social support was stressful and occurrence of disease added more stress over the patient illustrated by the case study below….

"…… Mrs JK, aged 64 years from Punjab living with her two grandchildren told that stress had been a part of her life. She could not stay away from tensions and worries, as one or the other member of the family died due to some reason within past few years. In 2005 her son died in an accident her daughter-in-law left home and re-married leaving the grandchildren. In 2007 her daughter's husband expired due to heart attack. After 3 years (2010) hver daughter's husband died due to liver failure as he was severe alcoholic. In 2013 her husband died; now with this heart problem added another stress in her life as she was the only guardian of her grandchildren. Life gave her no happiness and she felt lonely after her husband's death due to which she became somewhat irritating. She was not financially strong. The treatment cost was taken care of by her daughter and son-in law. She said family support was much important, but there was none to fall back upon. She lost charm in her life….."

The above case supports the arguments that positivity and conducive social environment with supportive social capital helps in coping and adjusting towards hardships of everyday life. The lady in case in a way lacked these support system which she needed and her already aggrieved situation was accentuated by the persistent hardships of life.

Discussion: The Incidence of type D personality was 66% (66 out of 100 patients) in the present study which is much higher than that reported by 38%[19-20], 26% among German and Italian popultion[21-22], 18% among Norwegian population[23], 27-31% incidence of Type D in cardiac patients and 19% in the general population[10], 18.6% in Dutch MI patients [24] to 38.6 % in healthy UK individuals[17] and 53% in Belgian hypertensive patients[10]. These observations reveal that Indian CAD patients suffer more from Type D personality than those reported by others. It has been observed in the present study that the patients with anxiety, depression, tensions and who tend to be more worried might have indulged in activities leading to unhealthy lifestyles. Recent findings support the cross-cultural association of Type D

personality with psychological distress such as, from Denmark[25], Germany[26] and the United States[27]. Type D patients are more vulnerable for clustering of psychologic risk factors, including depression, irritability, anxiety, low levels of self-esteem, well-being, and positive affect[13, 28-30]. It has been reported that Type D personality may lead to unhealthy behaviour patterns such as physical inactivity, poor treatment adherence, and which promote CAD development[31].

It is suggested that people with Type D personality are to be counselled to follow active and healthy lifestyle and meditation, so as to avoid stress emanating from their psychological outlook. Previous research with patients experiencing symptoms like those of Type D patients has also suggested that cognitive-behavioural and interpersonal psychotherapy, social skills training; stress management, emotional support, and relaxation techniques (e.g., diaphragmatic breathing, progressive muscle relaxation) may reduce stress in these patients and improve their ability to express their emotions to others[31-32]. Type D personality or distressed personality construct may be used to identify cardiac patients who were vulnerable to emotional and interpersonal difficulties[5].

Conclusion

Significant gender differences were found in some biological parameters like higher risk of MI among males. Type D personality may be of high relevance for health care. Physiological, behavioural, and psychological pathways are distinguishable in the aetiology of disease, signifying differences in people may respond to stressful encounters and critical life changes. Effective treatment of heart disease involves an integration of medical interventions with psycho-educational and psychosocial interventions, including family counselling.

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