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A Study to Assess the Occurrence of Type-D Personality and Economic Burden Among Patients with Coronary Heart Disease in A Selected Hospital of Kolkata, West Bengal

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ABSTRACT

Type D is a type of distressed personality first coined in the 1990s by Johan Denollet, which is majorly associated with coronary heart disease. Within the economic context, along with type-D personality, the disease burden of coronary heart disease is quite high, which results in affecting the treatment process and decrease therapeutic response. So, a study to assess the occurrence of type-d personality and economic burden among patients with coronary heart disease, in a selected hospital, Kolkata, West Bengal was conducted with the aim to assess the occurrence of type-d personality and economic burden among patients with coronary heart disease. Descriptive survey approach was used to collect data from 184 patients selected by non-probability convenience sampling technique. One standardized tool DS-14 scale questionnaire, structured checklist was administered by self-report method to collect data. Findings revealed that out of 184 patients, 35 (19.02%) of them had type-d personality and 118 patients (64.13%) had low economic burden. Correlation co-efficient showed that type-d personality and economic burden had negative low correlation. Computed χ^2 showed significant association between type-D personality and selected variables like age, length of hospital stays and family history of psychiatric illness and significant association was also found between economic burden and selected variables like educational status, occupational status and monthly family income. Present study had several implications in nursing practice, education, administration and research. The study recommends to conduct this same study on a larger population and in government set up.

Keywords: Type-D personality, economic burden, coronary heart disease

INTRODUCTION

"Personality is an unbroken series of successful gestures." -F. Scott Fitzgerald

Mental health emphasizes the holistic development of an individual, where one realizes his or her own capacities, can adjust with his surroundings, can handle the normal stresses of life, can work effectively, and is able to make a contribution to his or her society. Mental health is an essential part of health and refers to a person's emotional, spiritual, psychological and social well-being. Mental health involves how an individual can think, feel, behave and make choices.[1] The personality describes the behavioural tendencies, habits of thought

and ways of relating to the world. An important study in European Archives of Psychiatry and Clinical Neuroscience helped to clarify the picture to the researchers' knowledge, to look simultaneously at people's personality, life events and mental health problems as they unfold over time.[2]

Different personality types were first discovered by cardiologists in the 1950's to identify patients who are at a higher risk for heart disease. As research has continued to develop over time, more personality types have been recognized and indicated with specific letters to represent a found group of personality features.[3]

One of the particular personality traits is known as Type D, a specific personality type first labelled in the 1990s by Belgian psychologist and researcher Johan Denollet. The letter "D" stands for distressed and it represents to a group of personality characteristics that involve features like feelings of worry, anxiety, desperation, depressed mood, irritability, pessimistic outlook, despairing, negative thoughts, avoidance of social situations, lack of self-confidence, fear of rejection, appearing gloomy, hopelessness. [3]The type D personality (TDP)comprises of two components namely social inhibition (SI) and negative affectivity (NA). Social inhibition means that people tend to shy away from social interactions, mainly due to fear of rejection or judgment and they lack confidence in social situations. Negative affectivity involves valuing of negative emotions such as dejection, poor self-esteem, pressured, worry, and irritability. [3]

According to a study by Chiara Conti and Danilo Carrozzino, a clinical link has been established between type D personality and diabetes. [4] The specific association with diabetes mellitus and Type D personality indicated that it is a significant predictor of both poor medication adherence and unhealthy behaviours, by speculating negative mental health consequences like depressed mood, anhedonia, and anxiety. [4]

Type D personality has also been associated with increased co-existing conditions like osteo-arthritis, back pain and health care utilization among cancer survivors, where nineteen percent of survivors had a type-D personality.[5]

Type D personality also played an important factor in the prognosis of the cardiovascular patients as per the meta-analysis report conducted by Gesine Grande, & Matthias Romppel. The systematic review included cohort studies with an assessment include of type D personality and its related outcome of cardiac events like CHD, CAD, arrhythmia. Twelve studies have been conducted on a sample size of 5,341 patients which included the findings of marked association of type D personality and prognosis of cardiovascular diseases.[6]

According to the economic context, a cost or burden of illness represents the resources consumed in disease prevention, detection, and treatment. According to a recent survey by World Health Organization at least three-quarters of the world's death occurs from cardiovascular diseases and it causes most of the health care expenditure. [7]

Although type-D personality has been used in the subjects with cardiovascular disorders, it could be also used to detect the relatively long-term stable trait of suicidality regardless of cardiovascular disorders, due to difference in socio-economic classes.

Recently, one study reported that type D personality emerged as a risk factor for suicide in low income general population.[8] Moreover, the relationship between type D personality and suicidality differ among socioeconomic classes, although most suicide studies in low-income populations were based on aggregate data, for which personality traits could not be easily explored[9] thus indirect relationships could be observed between type-D personality and economic burden. In a cross sectional study by Kanchan Mukherjee and Akashdeep Chauhan, which was carried out in a private super specialty hospital and a government tertiary care hospital, where 102 households

were chosen based on non-probability purposive sampling method, where one member of the family was suffering from CHD. Economic burden was assessed by estimating out of pocket expenditure and distress financing among the households.[10]
In another descriptive study by Atul Kumar and Vijaydeep Siddharth, it was revealed that the cost of treating cardiovascular diseases in India is expensive where in-patient cost constituted almost 70% of the total cost, equipment cost accounted for more than 50% followed by human resource cost which is about 28%, eventually causing an economic burden.[11]
From the above studies it can be concluded that type-D personality is shown as a major risk factor in cardiovascular diseases and one of the potent personality distresses that could be observed in coronary heart disease patients, as it greatly influences disease progression. As coronary heart disease is a leading cause of death in the country, it also accounts an impact on health care expenditure and thereby causes a burden on the patients of CVDs.

Purpose

The purpose of the study is to assess the occurrence of type D personality and economic burden among patients with coronary heart disease in a selected hospital of Kolkata

Objectives

1. To assess occurrence of type D personality among patients with CHD
2. To assess economic burden on patients with CHD
3. To find the relationship between type D personality and economic burden
4. To find association between type D personality with selected variables

LITERATURE REVIEW

The related research and non-research literature were reviewed from published and unpublished thesis, books, journals through online search regarding type-d personality and economic burden among coronary heart disease patients. The relevant research and non-research related literature were reviewed and organised under following headings:

- Occurrence of type D personality among coronary heart disease patients
- Economic burden among coronary heart disease patients

Occurrence of type D personality among coronary heart disease patients

Torgersen KS, Sverre E, Weedon-Fekjaer H, Andreassen OA. et al. conducted a prospective multicenter cohort study on Type D personality and events in outpatient department of coronary heart disease patients. The aim of the study was to investigate the relationship between Type D personality and cardiovascular risk factors along with risk of recurrent MACE (major adverse cardiac events) in CHD outpatients. This study included 1083 patients after a myocardial infarction and/or a revascularization procedure. The data was collected using a questionnaire including assessment of Type D personality (DS14), anxiety and depression (Hospital Anxiety and Depression Scale (HADS), medication adherence and risk factors which includes hypertension, smoking, diabetes, low physical activity, waist circumference, low-density lipoprotein cholesterol and C-reactive Protein. The results have shown that the prevalence of Type D was 18% at baseline. Type D patients were younger at the index event (59.3 vs 62.1 years, p= 0.001), more likely to be female (26.4 vs 19.8 %, p=0.038), scored higher on HADS anxiety (8.4 vs 3.9, p < 0.001), HADS depression (3.2 vs 7.0, p <0.001), reported lower medication adherence (14.2 vs 9.2 %, p=0.042), and were more likely to report smoking (29.0 vs 18.9%, p=0.002) compared to those without type D personality. The researcher at the end concluded that Type D personality was only associated with low medication adherence and smoking which may represent potential mechanisms linking type D to cardiovascular prognosis. [12]

Economic burden among coronary heart disease patients

Kumar L, Prakash A, Gupta SK. conducted a cross-sectional study on economic burden and quality of life among patients with coronary artery disease. The main aim of the study was to estimate the annual economic burden which includes both direct and indirect cost along with quality of life in stable CAD patients at a Government Tertiary Care Hospital of Delhi, India. The participants included all diagnosed and stable coronary artery disease patients who were selected based on inclusion and exclusion criteria. Economic burden was assessed with a pre-structured questionnaire, where data regarding sociodemographic characteristics, clinical history, medical costs, travelling costs were collected and quality of life was measured using SF-36 scale of survey. The results have shown that the total average annual cost incurred by patients of stable CAD was amounting to rupees 15691.45, of which 78.49% was attributable to direct cost (drugs, supplements, diagnostic tests, and transportation charges) while 21.5% to the indirect costs (wage loss of the patient and caretaker, during the days of hospitalization). It was also seen that both the components of QOL, namely, physical component score (PCS) and mental component score (MCS) were reduced in the stable CAD patients. The researcher has concluded that coronary artery disease poses an economic burden on the patient, family, and the society and is also associated with impairment of QOL of the patient. [13]

MATERIALS & METHODS

A quantitative descriptive survey research approach was adopted to collect data from 184 patients selected by non-probability sampling technique. Standardised DS-14 scale questionnaire to assess type-d personality and structured checklist to assess economic burden were administered by self-report method to collect data and a semi-structured interview schedule was administered to assess the demographic data.

STATISTICAL ANALYSIS

Descriptive and inferential statistical analysis were used to analyze the data. Data related to Type-D personality and economic burden were analyzed by descriptive statistics. Correlation co-efficient were computed to find relationship between type-D personality and economic burden. Chi square test was computed to find association between type-D personality, economic burden with selected demographic variables.

RESULT

The findings showed that out of 184 patients, 35 (19.02%) of them had type-D personality, whereas 149(80.09%) had non-type-D personality. Again, out of 184 patients 118 (64.13%) of them had low economic burden, whereas 66 (36%) had high economic burden. The main components associated with economic burden are consultation visits, diagnostic procedures, medicines, hospital charges, transportation costs, therapeutic diet and private attendant.

Table 1: Association between Type-D personality with selected demographic variables. n=35

		Type-D personality					
SL NO	**DEMOGRAPHIC VARIABLES**	**< median**	**≥ median**	**χ^2**	**df**	**Tabulated value**	**Significance**
1	Age (in years)			28.582	1	3.841	S*
1.1	Up to 60	12	4				
1.2	Above 61	5	14				
2	Gender			1.571	1	3.841	NS
2.1	Male	11	15				
2.2	Female	6	3				
3	Marital status			0.474	1	3.841	NS
3.1	Married	13	12				
3.2	Widow	4	6				

4	Educational status			0.736	3	7.815	NS
4.1	Primary	5	4				
4.2	Secondary	4	3				
4.3	Higher Secondary	3	4				
4.4	Graduate and above	5	7				
5	Type of family			0.7199	1	3.841	NS
5.1	Nuclear	7	10				
5.2	Joint	10	8				
6	Occupational status						
6.1	Private and govt service	5	4	6.303	3	7.815	NS
6.2	Self-employment	5	3				
6.3	Retirement	2	9				
6.4	Home-maker	5	2				
7	Monthly family income						
7.1	Up to Rs 30,000	7	12	2.067	1	3.841	NS
7.2	Above Rs 31,000	10	6				
8	Family History of CHD			0.046	1	3.841	NS
8.1	Yes	5	5				
8.2	No	12	13				
9	No of hospitalization			0.76	2	5.991	NS
9.1	Never	6	4				
9.2	Once	8	11				
9.3	Twice	3	3				
10	Length of hospital stays			6.255	1	3.841	S*
10.1	1-5 days	9	4				
10.2	6-10 days	4	13				
11	Family History of Psychiatric illness			4.11	1	3.841	S*
11.1	Yes	1	6				
11.2	No	16	12				
12	History of Smoking			0.0472	1	3.841	NS
12.1	Yes	11	11				
12.2	No	6	7				
13	History of alcohol consumption			0.255	1	3.841	NS
13.1	Yes	10	12				
13.2	No	7	6				
14	Presence of co-morbidities			0.25	1	3.841	NS
14.1	Yes	13	15				
14.2	No	4	3				

$p \leq 0.05$ **S: Significant** **NS: Not Significant**

The data presented in the table 1 showed that the χ^2, computed between type-D personality with selected variables. The data shows that type-D personality among CHD patients was significantly associated with selected variables like age, length of hospital stays and family history of psychiatric illness. So, the null hypothesis is rejected for age, length of hospital stays and family history of psychiatric illness. But type-D personality was not significantly associated with selected variables like gender, marital status, educational status, occupational status, type of family, family history of CHD, no of hospitalization, history of smoking, alcohol and presence of any co-morbidities. Accordingly, the null hypothesis is failed to be rejected for gender, marital status, educational status, occupational status, type of family, family history of CHD, no of hospitalization, history of smoking, alcohol and presence of any co-morbidities. Hence it can be concluded that type-D personality is independent and was not associated with gender, marital status, educational status,

occupational status, type of family, history of CHD, no of hospitalization, history of smoking, alcohol and co-morbidities, whereas Type-D personality is dependent on age, length of hospital stays and family history of psychiatric illness at 0.05 level of significance.

Table 2: Association between economic burden with selected variables. n=184

		ECONOMIC BURDEN					
SL NO	**VARIABLES**	**High**	**Low**	**χ^2**	**df**	**Tabulated value**	**Significance**
1	Age (in years)						
1.1	Up to 60	32	56	0.018	1	3.841	NS
1.2	Above 61	34	62				
2	Gender						
2.1	Male	51	88	0.16	1	3.841	NS
2.2	Female	15	30				
3	Marital status						
3.1	Married	47	95				
3.2	Widow	19	23	2.07	1	3.841	NS
4	Educational status						
4.1	Primary	14	11	13.11	3	7.815	S*
4.2	Secondary	20	20				
4.3	Higher Secondary	15	31				
4.4	Graduate and above	17	56				
5	Type of family			1.114	1	3.841	NS
5.1	Nuclear	26	56				
5.2	Joint	40	62				
6	Occupational status						
6.1	Private and Govt. service	22	48	11	3	7.815	S*
6.2	Self-employment	22	16				
6.3	Retirement	10	30				
6.4	Home-maker	12	24				
7	Monthly family income						
7.1	Upto 30,000	43	41	15.772	1	3.841	S*
7.2	Above 31,000	23	77				
8	History of CHD						NS
8.1	Yes	25	59				
8.2	No	41	59	2.506	1	3.841	
9	No of hospitalization						
9.1	Never	21	45	0.740	2	5.991	NS
9.2	Once	33	54				
9.3	Twice	12	19				
10	Duration of hospital stays			0.014	1	3.841	NS
10.1	1-5 days	27	40				
10.2	6-10 days	20	31				
11	History of Psychiatric illness			0.088	1	3.841	NS
11.1	Yes	10	16				
11.2	No	56	102				
12	History of Smoking			0.690	1	3.841	NS
12.1	Yes	39	77				
12.2	No	27	41				
13	History of alcohol consumption			0.072	1	3.841	NS
13.1	Yes	35	65				
13.2	No	31	53				

14	Presence of co-morbidities			1.480	1	3.841	NS
14.1	Yes	48	95				
14.2	No	18	23				

p≤0.05 **S: Significant** **NS: Not Significant**

The data presented in the table 2 showed that the χ^2, computed between economic burden with selected variables. The data revealed that economic burden among CHD patients was significantly associated with selected variables like educational status, occupational status and monthly family income. So, the null hypothesis is rejected for educational status, occupational status and monthly family income. But economic burden was not significantly associated with selected variables like age, gender, marital status, type of family, family history of CHD, no of hospitalization, length of hospital stays, family history of psychiatric illness, history of smoking, alcohol and co-morbidities. Accordingly, the null hypothesis is failed to be rejected for age, gender, marital status, type of family, family history of CHD, no of hospitalization, length of hospital stays, family history of psychiatric illness, history of smoking, alcohol and co-morbidities. Hence it can be concluded that economic burden is independent and not associated with age, gender, marital status, type of family, history of CHD, no of hospitalization, length of hospital stays, family history of psychiatric illness, history of smoking, alcohol and co-morbidities, whereas economic burden was dependent on educational status, occupational status and monthly family income at 0.05 level of significance.

DISCUSSION

The present study findings were considered and discussed with the findings of similar studies based on the objectives and hypotheses of the study.

The sample characteristics showed that, majority (52.17%) of the CHD patients belonged to the age group of above 61 years, majority of the patients were males (76%), majority (77%) of the patients were married, maximum (40%) of the patients were graduate and above, majority (55%) of the patients belonged to joint families, maximum (38%) of the patients had private and government service , majority (53%) of the patients had an income of above Rs 31,000, majority (54%) of them did not have any family history of CHD, maximum (47%) of the patients were hospitalized once, maximum (35.4%) of them had a history of hospitalization for 1-5 days, majority (86%) of the patients did not have any family history of psychiatric illness, majority (63%) of the patients had a history of smoking, majority (54.34%) of the patients had a history of alcohol consumption, majority (78%) of them had co-morbidities.

The present findings were supported by further studies:

Manoj MT, Joseph KA, Govindan Vijay. conducted a case control study on Type-D personality and myocardial infarction in tertiary care hospital in Trivandrum, Kerala, India. The study showed that most of the study population was in the age group of 55-65 years, most of them were males (76.7%), majority of them were married (79.3%), maximum of them had graduate level of education (37.3%), about (26%) had a high monthly income, maximum patients had habits of smoking (59.3%) and alcohol (60.3%) with a history of coronary heart disease (35.3%) [14]

Margarita Staniute, Julija Brozaitiene. conducted an observational study on Type-D personality, social support, mental distress and health-related quality of life in coronary artery disease patients with heart failure. The result of the study showed that among the participants 74% were males, majority were between 60-70 years (64.5%), majority (81.5%) were married. [15]

The first objective was to assess the occurrence of Type-D personality among patients with CHD

In the present study, Type-D personality was assessed by DS-14 scale questionnaire. The present study showed that out of 184 patients, 35 (19.02%) of them had Type-D personality and 80.09% of the patients have non- Type-D personality.

The present findings were supported by further studies:

Leu Bang Huesn, Wang Ji Hun, et al. conducted a study on impact of type D personality on clinical outcomes in Asian patients with stable coronary artery disease. The study showed that out of 777 participants, 122 of them had Type-D personality (15.77%) and thus it was concluded that Type-D personality was an independent predictor of CV outcomes in an Asian cohort of stable CAD patients. [16]

The second objective was to assess economic burden among patients with CHD

In the present study, economic burden was assessed by a structured checklist. The present study showed that out of 184 patients 118 (64.13%) of them had low economic burden, whereas 66 (36%) had high economic burden. So, majority (64.13%) of patients had low economic burden. The mean±SD score for low economic burden was 3.93±1.42 and for high economic burden mean±SD was 8.15±1.09.

The present findings were supported by further studies:

Kumar Lalit, Prakash Anupam, Gupta SK. conducted a cross-sectional study at a government tertiary care hospital on assessment of economic burden and quality of life among patients with stable coronary artery disease. The study showed that total average annual cost spent by patients of stable CAD was INR15691.45, of which 78.49% was obtainable to direct cost which included drugs, supplements, diagnostic tests, and transportation charges, while 21.5% to the indirect costs which included wage loss of the patient and caretaker, during hospitalization. Thus, it can be concluded that CAD poses an economic burden on the patient, family, and the society. [13]

The third objective was to assess the relationship between Type-D personality and economic burden among patients with CHD

Present study showed that there is negative low correlation (-0.325) between Type-D personality and economic burden which is significant at 0.05 level of significance.

The findings were supported by following study

Ogińska-Bulik N. conducted a study on Type-D personality and quality of life after myocardial infarction, on a total of 86 patients treated at cardiology outpatient clinic. The study showed that Type-D personality was negatively correlated (r= -0.18) with financial situation of life. [17]

The fourth objective was to find association between Type-D personality with selected demographic variables

Present study showed that Type-D personality among CHD patients was significantly associated with selected variables like age, length of hospital stays, family history of psychiatric illness.

The present study findings were supported by further studies:

Daisuke Yamaguchi, Atsushi Izawa conducted a prospective and observational study of 89 patients with CAD, between August 2016 and July 2018 on association of depression on Type-D personality and coping strategies among patients with CAD. The study showed that there was a significant association of Type-D personality with family history of depression and length of hospital stays. [18]

The fifth objective was to find association between economic burden with selected demographic variables

Present study showed that economic burden was significantly associated with educational status, occupational status and monthly family income at 0.05 level of significance.

The present study findings were supported by further studies:

Sharma Varun, Sharma Seema conducted a cross-sectional study on the economic impact of coronary heart disease at household level. The results showed that direct costs constituted 62.9% and indirect costs 37.1% of the total costs. The study also showed that direct and indirect costs is associated with lower income groups. [19]

CONCLUSION

Maximum patients of coronary heart disease had low socio-economic burden. There was negative low correlation between Type-D personality and economic burden at 0.05 level of significance. Type-D personality is significantly associated with age, length of hospital stays and family history of psychiatric illness. Economic burden is significantly associated with educational status, occupational status and monthly family income. So, it is evident that type-d personality causes a significant impact on patient's health suffering from coronary heart disease along with economic burden So, a preliminary counseling regarding the psychological complications should be done for every patient before discharge.

Declaration by Authors

Ethical Approval:

Administrable approval was taken from Principal of B.M. Birla College of Nursing and ethical approval was taken from ethics committee of B.M. Birla Heart Research Centre, Kolkata and from all the participants.

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