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An Epidemiological Study on the Occurrence of Depression Among the Patients with Cardiovascular Disorders Admitted in a Tertiary Care Hospital in India

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Abstract

Background: Depression and stress related events impose a major toll in patients with cardiovascular disorders. It is essential to diagnose and treat depression and stress to reduce the incidence and severity of cardiovascular ailments in the tropical regions.

Objective: This epidemiological study aimed to find out the occurrence of depression, and, if any, associated stress related life events among 170 patients with cardiovascular disorders admitted in a tertiary care teaching hospital in India. Different risk factors for the occurrence of depression had also been tried to find out.

Materials and methods: This was a hospital based observational and descriptive type of epidemiological study of sample size n=170 with different inclusion and exclusion criteria. Study tools comprised of General Health Questionnaire (GHQ), Self Regulation Questionnaire (SRQ), Stress Assessment Questionnaire (SAQ) and bed head tickets of individual patients. Statistical analysis was done with SPSS (version 16) for interpretation of results.

Results: 44.1% patients were found to be suffering from depression with male and middle-age predilection.

Conclusion: A huge proportion of the patients with cardiovascular disorders were suffering from depression. However, there was no statistically significant association of depression with any life related stress factors mentioned. Measures should be taken to create a good doctor-patient relationship, to be able to counsel the patient properly and come to a consensus about the best approach of more detailed clinical analysis, psychological counseling, and drug therapy to minimize the morbidity and mortality of cardiovascular disorders among them.

Introduction

Depression is very a common psychiatric disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration which can become chronic or recurrent and leads to substantial impairments in an individual's ability to take care of his or her everyday responsibilities. According to the World Health Organization, depression is the leading cause of disability and the 4th leading contributor to the global burden of disease in 2000. By 2020, depression is projected to reach 2nd place of the ranking of Disability Adjusted Life Years (DALYs) calculated for all ages and sexes [1]. However, depression can be reliably diagnosed and treated in primary care, but only a less number of people with depression receive adequate treatment, particularly in the tropical subcontinents. [1]

Major depression and depressive symptoms, resulting from stress related life events, although commonly encountered in medical populations, are frequently under diagnosed and under treated particularly in patients with cardiovascular disorders. Stressful life events and lifestyle factors are seen to be closely related with the occurrence of depression in tropical countries like India. This is of importance, as several studies have shown that depression and stressful life events are major risk factors for developing cardiovascular disorders and consequent morbidity and mortality [2-6]. So, it is necessary to diagnose and treat subclinical and clinical cases of depression among patients with cardiovascular disorders with enough importance [7-12].

This project aimed in studying the occurrence and diverse possible factors associated with depression among the patients with cardiovascular disorders admitted in the indoor department of cardiology in a tertiary care teaching hospital in India using a follow up design for a period of 6 months.

Materials and Methods

The study was done with the patients with cardiovascular disorders admitted in the indoor department of cardiology in a tertiary care teaching hospital in India. It was conducted after getting permission of the institutional ethics committee. Each patient's identity was kept confidential. Informed consent was taken from each of the patients.

Study design: This study was a descriptive and observational type of epidemiological study.

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Study type: This study was a hospital based cross sectional study.

Study duration: The study had a total duration of 6 months. Data collection was started on 01/07/2012 and ended on 30/11/2012 (5 months). Analysis of results was done for another 1 month.

Inclusion criteria: The study was carried out among all the patients above 18 years of age with cardiovascular disorders, admitted in the indoor department of cardiology in the hospital within first 5 months of the study period who remained alive at the time of interview.

Exclusion criteria: Seriously ill patients (those who were under ventilation support and in altered mental status) and patients not giving consent were excluded from the study.

Sample size: Total 206 patients were screened. 6 patients died before the interview. 5 patients refused to participate in the study and did not give consent. 25 patients were under ventilator support and with altered mental status and excluded by exclusion criteria. Total number of subjects included in the study was n=170 (both male and female). All of them were included in the analysis.

Study tools: The study tool comprised of predesigned and pretested questionnaires containing:

General health questionnaire (GHQ) containing questions about present illness, significant past medical history and family history for screening of psychiatric illness [13].

Self Regulation Questionnaire (SRQ) for assessing depression based on "The Hospital Anxiety and Depression Scale" [14].

Stress Assessment Questionnaire (SAQ) [15].

Bed head tickets of the patients containing detailed clinical & treatment records.

Study variables: Age, sex, residence (rural/urban), Anthropometric measurements (height, weight, body mass index), type and size of family, literacy status, marital status, occupation, financial status, smoking habits, tobacco chewing, alcohol consumption, past and family history of cardiovascular diseases, hypertension and diabetes mellitus, presence of recent grief or concerns in personal or professional life.

Sample collection: Data pertaining to the study variables were collected by interviewing the patients, observation, examination and review of records. By observation and examining records in bed head tickets; gender, age, anthropometric measurements, significant past and present medical history of the patients were documented. Different stress related life events were enumerated by serial interviewing. Then, each of the study subjects was followed up till their discharge period during the 4 months of study period.

Data analysis phase including statistical analysis: These collected and compiled data were analyzed and interpreted by SPSS (version 16) using frequency distribution tables and chi square. (P<0.5 was considered significant.)

Results

The results of the occurrence of depression and associated stress related events among 170 patients have been enumerated in (Tables 1-3).

Overall depression was found among 44.1% of the studied subjects with a male (70.7%) predilection. Age specific occurrence of depression obtained from this study showed that depression was more prevalent among patients of 45-69 years age group (41.4%) followed by in 25-44 years age group (32%). Interestingly among the patients who are of 70 years age or older, the occurrence was significantly less (21.3%). Most persons (90.7%) suffering from depression were married. 26.7% of housewives complain of depressive symptoms. Depression was more prevalent (57.3%) with persons having educational qualifications below secondary level. 26.7% depressed persons had past history of cardiovascular diseases. 26.7% diabetic and 25.3% hypertensive persons developed depression following cardiac diseases. 14.7% had other systemic diseases and 17.3% had family history of cardiovascular diseases. Surprisingly, depression was more prevalent (69.3%) among persons with a normal B.M.I. than those with overweight or obesity. Persons living in nuclear families (92%) and in urban areas (73.3%) were mostly found depressed. 28% of the patients suffering from depression were smokers, 20.0% were tobacco chewers and 24.0% of them were alcoholics. 24% of people had suffered from disturbance in sleep due to these depressive symptoms. Only 2.7% depressed patients experienced sexual dissatisfaction and only 6.7% experienced some infidelity. 20% of the patients had familial and marital conflict and 21.3% had experienced deterioration of financial status in recent times. 9.3% experienced recent grief for any other reasons. 21.3% had deterioration of financial status and 13.3% had concerns in professional and social life. These may have resulted in more stress in life leading to

Occurrence of depression as per SRQ score		
Yes	Count (%) (%)	75 (44.1)
No	Count (%) (%)	95 (55.9)
Total	Count (%) (%)	170 (100)

Table 1: Distribution of study population according to the occurrence of depression. (n=170).

Distribution of study population according to age			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Age groups	>25 yrs	Count (%)	4 (5.3)	10 (10.5)	14 (8.2)	Chi square value: 6.96 P value: 0.07307207
	25-44 yrs	Count (%)	24 (32.0)	41 (43.2)	65 (38.2)	
	45-69 yrs	Count (%)	31 (41.4)	35 (36.8)	66 (38.8)	
	≥ 70yrs	Count (%)	16 (21.3)	9 (.5)	25 (14.7)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to sex			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Sex	Female	Count (%)	22 (29.3)	22 (23.2)	44 (25.9)	Chi square value: 0.83 P value: 0.3613505
	Male	Count (%)	53 (70.7)	73 (76.8)	126 (74.1)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	

Table 2: Distribution of study population according to age and sex in relation to the occurrence of depression. (n=170).

Distribution of study population according to marital status			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Marital status	Married	Count (%)	68 (90.7)	87 (91.6)	155 (91.2)	Chi square value: 0.04 P value: 0.835
	Unmarried	Count (%)	7 (9.3)	8 (8.4)	15 (8.8)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to residence			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Residence	Rural	Count (%)	20 (26.7)	22 (23.2)	42 (24.7)	Chi square value: 0.28 P value: 0.598
	Urban	Count (%)	55 (73.3)	73 (76.8)	128 (75.3)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to family type			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Family type	Joint	Count (%)	6 (8.0)	8 (8.4)	14 (8.2)	Chi square value: 0.01 P value: 0.921
	Nuclear	Count (%)	69 (92.0)	87 (91.6)	156 (91.8)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to literacy status			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Literacy status	Illiterate	Count (%)	7 (9.3)	12 (12.6)	19 (11.2)	
	Primary	Count (%)	36 (48.0)	45 (47.4)	81 (47.6)	
	Secondary	Count (%)	12 (16.0)	17 (17.9)	29 (17.1)	Chi square value: 1.46 P value: 0.832
	Higher Secondary	Count (%)	12 (16.0)	15 (15.8)	27 (15.9)	
	Graduate	Count (%)	8 (10.7)	6 (6.3)	14 (8.2)	
	Total	Count (%)	75 (100)	170 (100)	170 (100)	
Distribution of study population according to occupation			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Occupation	Unemployed	Count (%)	5 (6.7)	6 (6.3)	11 (6.5)	Chi square value: 7.39 P value: 0.286
	Housewife	Count (%)	20 (26.7)	20 (21.1)	40 (23.5)	
	Daily wage earner	Count (%)	15 (20.0)	21 (22.1)	36 (21.2)	
	Farmer	Count (%)	22 (29.3)	18 (18.9)	40 (23.5)	
	Government Service	Count (%)	8 (10.7)	12 (12.6)	20 (11.8)	
	Business	Count (%)	3 (4.0)	11 (11.6)	14 (8.2)	
	Retired persons	Count (%)	2 (2.7)	7 (7.4)	9 (5.3)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to smoking habit			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Smoking habit	Yes	Count (%)	21 (28.0)	25 (26.3)	46 (27.1)	Chi square value: 0.06 P value: 0.806
	No	Count (%)	54 (72.0)	70 (73.7)	124 (72.9)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to tobacco chewing			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Tobacco chewing	Yes	Count (%)	19 (20.0)	9 (12.0)	28 (16.5)	Chi square value: 1.95 P value: 0.163
	No	Count (%)	76 (80.0)	66 (88.0)	142 (83.5)	
	Total	Count (%)	95 (100)	75 (100)	170 (100)	
Distribution of study population according to alcohol intake			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Alcohol intake	Yes	Count (%)	18 (24.0)	25 (26.3)	43 (25.3)	Chi square value: 0.12 P value: 0.730
	No	Count (%)	57 (76.0)	70 (73.7)	127 (74.7)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to past history of cardiovascular diseases			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Past history of cardiovascular disease	Yes	Count (%)	20 (26.7)	19 (20.0)	39 (22.9)	Chi square value: 1.05 P value: 0.304
	No	Count (%)	55 (73.3)	76 (80.0)	131 (77.1)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of diabetes mellitus			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		
Presence of diabetes mellitus	Yes	Count (%)	20 (26.7)	22 (23.2)	42 (24.7)	Chi square value: 0.28 P value: 0.598
	No	Count (%)	55 (73.3)	73 (76.8)	128 (75.3)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of hypertension			Occurrence of depression as per SRQ score		Total	Statistical analysis
			Yes	No		

Past history of hypertension	Yes	Count (%)	19 (25.3)	26 (27.4)	45 (26.5)	Chi square value: 0.09 P value: 0.765
	No	Count (%)	56 (74.7)	69 (72.6)	125 (73.5)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of other systemic diseases			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of other systemic diseases	Yes	Count (%)	11 (14.7)	12 (12.6)	23 (13.5)	Chi square value: 0.15 P value: 0.700
	No	Count (%)	64 (85.3)	83 (87.4)	147 (86.5)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of family history of cardiovascular diseases			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of family history of cardiovascular diseases	Yes	Count (%)	13 (17.3)	14 (14.7)	27 (15.9)	Chi square value: 0.04 P value: 0.835
	No	Count (%)	62 (82.7)	81 (85.3)	143 (84.1)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to Body Mass Index (B.M.I.)			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Body Mass Index (B.M.I.)	Underweight	Count (%)	9 (12.0)	10 (10.5)	19 (11.2)	Chi square value: 1.29 P value: 0.744
	Normal	Count (%)	52 (69.3)	70 (73.7)	122 (71.8)	
	Overweight	Count (%)	7 (9.3)	5 (5.3)	12 (7.1)	
	Obese	Count (%)	7 (9.3)	10 (10.5)	17 (10.0)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of sleeping disturbances			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of sleeping disturbances	Yes	Count (%)	18 (24.0)	21 (22.1)	39 (22.9)	Chi square value: 0.09 P value: 0. 720
	No	Count (%)	57 (76.0)	74 (77.9)	131 (77.1)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of familial and marital conflicts			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of familial and marital conflicts	Yes	Count (%)	15 (20.0)	16 (16.8)	31 (18.2)	Chi square value: 0.28 P value: 0.596
	No	Count (%)	60 (80.0)	79 (83.2)	139 (81.8)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of recent grief for any other reasons			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of recent grief for any other reasons	Yes	Count (%)	7 (9.3)	13 (13.7)	20 (11.8)	Chi square value: 0.76 P value: 0.381
	No	Count (%)	68 (90.7)	82 (86.3)	150 (88.2)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of sibling concerns			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of sibling concerns	Yes	Count (%)	20 (26.7)	21 (22.1)	41 (24.1)	Chi square value: 0.48 P value: 0.490
	No	Count (%)	55 (73.3)	74 (77.9)	129 (75.9)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of deterioration of financial status			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of deterioration of financial status	Yes	Count (%)	16 (21.3)	21 (22.1)	37 (21.8)	Chi square value: 0.01 P value: 0.903
	No	Count (%)	59 (78.7)	74 (77.9)	133 (78.2)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to concerns in professional and social life			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
concerns in professional and social life	Yes	Count (%)	10 (13.3)	7 (7.4)	17 (10.0)	Chi square value: 1.66 P value: 0.198
	No	Count (%)	65 (86.7)	88 (92.6)	153 (90.0)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of sexual dissatisfaction			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of sexual dissatisfaction	Yes	Count (%)	2 (2.7)	9 (9.5)	11 (6.5)	Chi square value: 2.18 P value: 0.139
	No	Count (%)	73 (97.3)	86 (90.5)	159 (93.5)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	
Distribution of study population according to presence of infidelity			**Occurrence of depression as per SRQ score**		**Total**	**Statistical analysis**
			Yes	No		
Presence of infidelity	Yes	Count (%)	5 (6.7)	7 (7.4)	12 (7.1)	Chi square value: 0.03 P value: 0.859
	No	Count (%)	70 (93.3)	88 (92.6)	158 (92.9)	
	Total	Count (%)	75 (100)	95 (100)	170 (100)	

Table 3: Distribution of study population according to various other factors in relation to the occurrence of depression. (n=170).

development of cardiac disease and depression. Probably due to same reason 26.7% of them were concerned about future of their child.

Discussion

Overall depression was found very high in the studied subjects and interestingly it was more prevalent among the males and the middle aged persons than those who were 70 years or older. This results matches with the current trend of growing occurrence of depression among middle-aged people than older persons [16]. But still in developing countries like India, depression following cardiac attack is more prevalent among older peoples. [17].

Depression was more common in married persons and housewives. This result among females correlates with findings of other studies [18]. Depression was more prevalent with persons having educational qualifications below secondary level. Also, depression was more in diabetic, hypertensive persons and those with past history of cardiovascular disorders. This relates to results of other current studies that depression following cardiac cause is more among them [19-20]. Depression was found in greater proportion in patients living in nuclear families and in urban areas. This may be due to the fact that urban lifestyle and food habit of people living in urban areas are potentially more in favour of developing cardiac disease, [21] so also the loneliness of nuclear families may predispose to development of depression. Depression was more prevalent among smokers, tobacco chewers and alcoholics. It may be due to the fact that excessive smoking and alcohol intake predisposes to heart diseases and consequent depression [21]

However, it is essential to mention about this study that none of the statistical tests led to any statistically significant (P<0.05) results relating depression with various factors. The probable reasons could be:

a) The study population involved (n=170) may not correctly represent the entire population of the community.

b) There might be some confounding factors affecting the results.

c) A cross sectional study was done, rather than a longitudinal study.

d) A multivariate analysis might have proved more statistically significant results.

As such significant numbers of people develop depression following cardiovascular disorders, several studies both in abroad and in India have been conducted to find out the cause of this association. That will help to combat the development of depression among cardiac patients to reduce their morbidity and mortality. Antidepressant medication and brief structured forms of psychotherapy are very effective for those affected and can be delivered in primary care. However, a very less number of people receive such treatments. Barriers to effective care include the lack of resources, lack of trained providers, and the social stigma associated with mental disorders including depression. To reduce its occurrence we should take measures to create a good doctor-patient relationship, to be able to counsel the patient properly and also their relative about how to prevent and control depression among these cardiovascular risk subjects, to educate patients, family members, providers about depression, to reduce the stigma associated with depression and to train primary care personnel regarding the diagnosis and management of depression. In these ways the occurrence and severity of various cardiovascular diseases can surely be minimized.

Finally, it may be pertinent here to discuss about some limitations of the above study like:

a) Due to economic and logistic constraints, the sample size was not fairly adequate.

b) The study was a cross sectional epidemiological study. No conclusion about different causal factors of depression could be properly ascertained.

c) The study was a hospital based epidemiological study, and so the study subjects involved might not correctly represent the entire population of the community.

Conclusion

44.1% patients with cardiovascular disorders were found to be suffering from depression with a male and elderly predilection in the tertiary care teaching hospital in India. However, there was no statistically significant association of depression with any life related stress factors mentioned.

A systemic approach of defining, data collecting and analyzing is essential. It is important to come to a consensus about the best approach of more detailed clinical analysis, psychological counselling, and drug therapy to minimize the morbidity and mortality of cardiovascular disorders and occurrence of depression among them.

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