Association of stressful life events and depression among cardiovascular patients: A quantitative cross sectional study

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ABSTRACT

Objective: To assess the relationship between stressful life events and depression among cardiovascular patients along with the evaluation of differences based on demographic variables.
Study Design: Quantitative cross sectional study.
Place and Duration: From 15th February 2017 to 12th July 2017 at Multan Institute of Cardiology and the cardiology ward of Nishtar Hospital Multan.
Methodology: The data was collected through structured questionnaires from 200 cardiovascular patients. The Holmes-Rahe life stress inventory (43 life events to be scored by the patients) was used to measure stressful life events while Beck depression inventory (BDI) having 21 items was used to measure depression level of the patients. Pearson product moment test was used to assess the relationship between stressful life events and depression.
Results: Among 200 cardiovascular patients a positive correlation (.271) between depression and stressful life events was detected. Majority of the patients (45.5%) reported minimal level of depression while 16.5 percent patients reported mild depression and 19.5 % patients had severe depression. Cardiovascular patients in early middle adulthood were less stressed out as compared to early adulthood and later adulthood patients (p=.033*). Level of depression is higher in those cardiovascular patients who have very low income as well as very high income (p=0.006).
Conclusions: Stressful life events are positively associated with depression in cardiovascular patients. Moreover, depression and stress level significantly differ in cardiovascular patients with different age, income level and marital status.
Keywords: Stressful life events, Prevalence, Depression, Cardiovascular patients, Marital status, Income level.

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INTRODUCTION

Cardiovascular diseases are a class of disease that involves the heart or blood vessels[1]. Several studies explored the effects of stress in terms of the effects of acute versus long-term stressors on cardiac functioning and the results showed those stressors' lead to multiple maladies[2,3]. Moreover, chronic stress is identified with increased cardiovascular sickness among heart patients[4,5]. Similarly, another study showed a direct relationship between stressful life events and physical infirmities specifically changes in heart rate, immune system and hormonal system[6]. It is very crucial to focus on the psychological factors in the perspective of cardiovascular diseases to improve the regime of cardiovascular diseases. Types of stressful life events such as relationship difficulties and losses were uniquely associated with depression[7]. Stressful life events are events which disrupt a person's everyday life activities and require readjustment. Holmes and Rahe found a positive correlation of 0.118 between stressful life events and health problems[8].

Depression is a mental state accompanied by feelings of sadness and sleeplessness which leads to ischemic heart disease and this relationship is bidirectional[9-11]. According to APA's annual report the people of early adulthood have very high stress level as compared to people of middle adulthood[12]. Moreover, job instability in early adulthood is responsible for

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higher stress level in later adulthood[13]. Mortality rate of adults who are unmarried is significantly high than it is for those who are happily married. Although the association is significant for divorced and widowed but it is much stronger for those who were unmarried[14,15]. Furthermore, depressive manifestations and the absence of marital support are critical risk components for poor prognosis in heart patients[16].

Low income aggravates the stress while on the other hand high level income group also does not find happiness because money destroys people's ability to enjoy every day life's positive emotions like happiness, joy, self-fulfillment and life satisfaction[17, 18]. A research conducted in Canada shared about a negative relationship between income and the prevalence of depression ($p < 0.0001$) in Canadians[19].

The primary focus of this study was to assess the relationship between stressful life events and depression and to check the frequency of depression and stressful life events among cardiac patients. The associated variables of age, marital status and income were also checked for depression and stressful life events. To fulfill this aim, the present study was conducted at the two tertiary care hospitals in Multan city which is biggest city of south Punjab. We conducted this study with an objective to assess the relationship between stressful life events and depression among cardiovascular patients along with the evaluation of differences based on demographic variables.

METHODOLOGY

This quantitative cross-sectional study was conducted among cardiovascular patients. Data was collected through Non probability purposive sampling from 200 participants (cardiovascular patients) of both genders. Participants were approached at the Cardiology ward of the Nishtar Hospital Multan and Multan Institute of Cardiology during the period between 15th February to 12th July 2017. While the age of the participants ranged between 20 years to 85 years old. All patients who were diagnosed for specific cardiac problem like Hypertension, Arteriosclerosis, Atherosclerosis, Angina pain, Heart attack, Cardiomyopathy and Cardiomegaly and their treatment was continued for at least last one year were included in the study on contrary those who had only minor symptoms and were coming for initial screenings were not included in the study. The researcher had used structured questionnaires to measure target constructs e.g. stressful life events and depression and a brief interview to find out the specific type of demographic variables and to check inclusion exclusion criterion. The major demographic characteristics such as marital status, age, sleeping hours, level of income was noticed.

The Holmes-Rahe life stress inventory[8] consisting of 43 life events was used to measure stressful events experienced by the participant during previous one year. As the national language of people in Pakistan is Urdu so, first the instrument was translated into Urdu through back to back translation method and Cronbach's alpha of the translated scale was 0.813. Scores of less than 150-300 and above 300 indicates low susceptibility, 50% chances and 80% chances of health breakdown respectively in next two years. Beck depression inventory (BDI) was used to measure depression level which was a summative Likert scale consisting of 21 items. Scores ranging from 11-20, 21-30, 31-40 and above 40 represents mild, moderate, severe and extreme depression respectively. BDI showed high concurrent validity with Hamilton Depression Scale (0.77) moreover BDI have high internal consistency as the value of α is 0.91[20].

After obtaining informed consent, questionnaires were administered on a sample of 200 participants and all these participants were approached individually. Moreover, participants were informed about the purpose of the research. Different techniques of descriptive and inferential statistics were used including Pearson product moment correlation, ANOVA and independent sample t-test.

Data Analysis: The descriptive statistics were used to calculate frequencies and percentages whereas Correlation, t-test and ANOVA were used to link and compare different groups by using IBM SPSS 21 version. P values < 0.05 have been reflected as significant.

RESULTS

A total of 200 participants were studied and among them the level of depression and stress-full life events were measured by using Beck Depression Inventory (BDI) and Stress-full Life Events Scale respectively. Correlation between Beck Depression Inventory (BDI) and Stress-full Life Events Scale was .271. Thus, a mild but positive correlation has been found between these two variables.

Table-I: Description of depression level among cardiovascular patients (N=200)

Levels of Depression	Frequency (%)
Minimal	91(45.5%)
Mild	33(16.5%)
Moderate	37(18.5%)
Severe	39(19.5%)
Total	200(100.0%)

Table-I describes the level of depression among the patients. As described above 91 patients were having minimal level of depression while 16.5% patients reported mild level of depression and 37(18.5%) patients reported moderate level while 39(19.5%) reported severe level of depression.

According to the graph given above the average SLE score of the respondents Under 30 years is less but when the age of the respondents increase (31-45 years) then SLE score increases and after that with the further increase in age the SLE score sharply decreases until the age of 61 to 75 with the further increase in age, average SLE score increases as in the case of above 75 years shown in the graph.

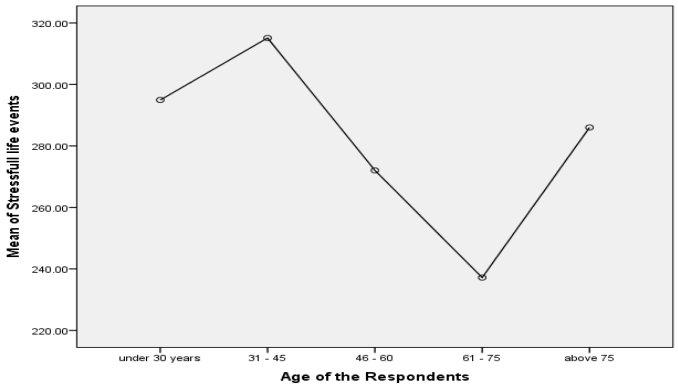

Figure-1: Graphical representation of mean scores of stressful life events (SLE) scale among patients with different age groups (N=200)

Table-II: Analysis of variance (ANOVA) for stressful life events among patients of different age groups (N=200)

	Sum of Squares	DF	Mean Square	F	Sig.
Between Groups	154591.115	4	38647.779	2.672	.033*
Within Groups	2820529.080	195	14464.252		
Total	2975120.195	199			

Table-II shows significant difference among all age groups in the stressful life events as "p" value is less than the level of significance (.033). Participants were categorized in the age groups of under 30, 31 to 45, 46 – 60, 61 – 75 and above 75.

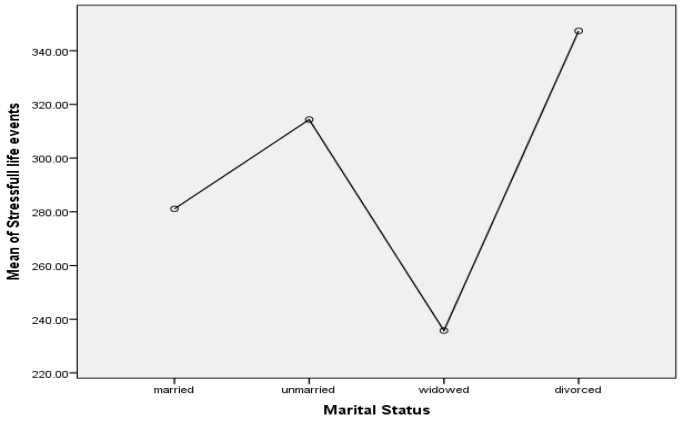

Figure-2: Graphical representation of mean scores of stressful life events scale among patients with different marital status (n=200)

Fig-2 display the means plot of SLES score among patients with different marital status. Among married group average SLES score is moderate while in unmarried group it is quite higher but in widowed group it is very low while on the other hand in divorced group it is very high as shown in the plot above. Analysis of Variance (ANOVA) for BDI, SLES among patients with different Income levels (n=200) show a significant difference in the scores of SLES and BDI among patients with different income levels as p-value is less than level of significance. The comparison groups of income level were created as patients whose income was less than 30 thousand, 51 to 70 thousand and above 70 thousand.

DISCUSSION

We are living on a planet overwhelmed by stressors, it is very crucial to focus on the psychological factors in the perspective of cardiovascular diseases to improve the regime of disease. We experience the unfortunate effects of stress in our body like our blood pressure may increase and we may feel the tension in our muscles[9].

The results informed about the prevalence of depression in the Patients although majority of them reported minimal level of depression. Patients with cardiovascular diseases have more Depression than the overall public. People with melancholy will probably in the long run develop CVD and furthermore have a higher death rate than the all-inclusive community. Depressed patients with cardiovascular maladies have more dreadful result as compared to patients without depression thus a bidirectional relationship exists between cardiovascular problems and depression[9,11]. According to the results, depression is prevalent in the cardiovascular patients.

The study finds the existence of a positive correlation between stressful life events and depression among cardiac patients. Existing literature indicates that cardiac patients were more likely to have psychological distress (depression and anxiety) as compared to non-cardiac patients[21]. A study done in Korea showed that experience of a recent stress full life events is associated with a lower resting heart rate in Korean adults so, are more likely to develop CVDs then people who have higher resting heart rate[2]. Similarly, Dimsdale in 2008 explored the effect of stress in terms of the effects of acute versus long-term stressors on cardiac functioning and the results showed those stressors' lead to multiple maladies like myocardial infarction, myocardial ischemia in addition changes in cardiac rhythms[3]. An examination of Hispanics in U.S suggested that chronic stress lead to increased risk of cardiovascular disease[4]. The literature says that stress and depression both leads to cardiovascular problems and current study results reveal that stressful life events and depression is positively corelated. According to results of this study, stressful life events and depression both are prevalent in cardiovascular patients.

The results of this study revealed that Stress full life events scores of the patients increase with age. Two separate studies: one done by Jonge and Roest[10] and other by Nemeroff[11] and his colleagues claimed that cardiovascular patients in middle adulthood are less stressed out as compared to early adulthood and later adulthood patients. The results reveal that patients of different age groups experience different level of stressful events in their life.

This study reveals that divorced cardiovascular patients experience significantly higher stressful life events than widowed cardiovascular patients. This research has been conducted in the context of southern province of Punjab, Pakistan where usually patients are Muslim by religion. So, bearing the trauma of being widowed is easy as the attribution is external while regarding divorce attribution is internal so

experience of every event of the rest of their life which is slightly difficult becomes extremely stressful for them. Studies done by Nancy[12], Harris et al[13], Rosengren and his colleagues[22] have reported that stressful life events are extremely high in unmarried people, significantly high in divorced and widowed people hence they have negative health outcomes accordingly. It is very clear that stressful life events in the life of patients can increase the intensity of the problems and marital status plays important role in the life of cardiovascular patients.

Further, results exposed a significant difference in the scores of SLES and BDI among patients with different income levels. According to Barolia and Sayani rates of cardiovascular problems related deaths have diminished in various high-income nations yet expanded in low-income nations with around 80% of the weight. Regardless of the reality of cardiovascular illnesses in low-income nations, negligible consideration is given to the counteractive action of cardiovascular sicknesses in South Asia, especially in Pakistan where economy and political precariousness is quickening the rates of cardiovascular maladies in the nation[23]. In this study, level of depression is higher in cardiovascular patients who have very low and very high income. There was an inverse relation between income and the prevalence of depression among cardiovascular patients. Consequently, Socioeconomic status is very important factor in the development and treatment of cardiovascular disease and its related predictors.

Limitations of Study: Many more psychological factors can be studied in the perspective of cardiovascular diseases but only few were focused in this study. Privacy of the patients was limited because during collection of data respondent's family members were there too especially female respondents were not be able to fully express their true feelings in terms of "stressful life events scale". Some of the patients were illiterate thus, for them interview was conducted regarding each item of a scale so; Interviewer's paralinguistic might affect the patient's response. The sample for the current study was taken from only the one district of Punjab which is limited area may lead to premature results.

CONCLUSION

Stressful life events are positively associated with depression in cardiovascular patients. Moreover, patients with different age, income level and marital status experience different level of depression and stress level.

CONTRIBUTION OF AUTHORS

Bajwa RS: Conceived idea, Designed research methodology, Statistical analysis, Data interpretation, Manuscript final reading and approval

Mubashir K: Data collection, Literature review, manuscript writing

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