# An Observation Into The Influence Of Anger On The Development Of Cardiovascular Diseases



**Jayanth Kumar P[1], Syamala Devi Bandaru*[2], Soumya Mishra[3], Rahmath A[4], Sai Sailesh Kumar Goothy[5], Anita Choudhary[6]**

[1]Associate Professor, Department of Physiology, ASRAM Medical College, Eluru, Andhra Pradesh, India.
*[2]Professor& Head, Department of Physiology, Konaseema Institute of Medical Sciences, Amalapuram, Andhra Pradesh, India.
[3]Associate Professor, Department of Physiology, Kalinga Institute of Medical Sciences, KIIT Deemed to be University, Bhubaneswar, Orissa, India.
[4]Reader, Department of Physiology, Malabar Dental College and Research Centre, Kerala, India.
[5]Associate Professor, Department of Physiology, R.D. Gardi Medical College, Ujjain, Madhya Pradesh, India.
[6]Professor & Head, Department of Physiology, R.D. Gardi Medical College, Ujjain, Madhya Pradesh, India.
***Corresponding Author: -** Syamala Devi Bandaru

## Abstract

**Background:** There are limited studies that observed the role of anger in the development of left ventricular hypertrophy.
**Objective:** The present study was undertaken to observe the role of anger in the development of left ventricular hypertrophy.
**Materials and methods:** A total of 80 male and female patients admitted to the cardiac center were recruited for the study after obtaining informed consent. Demographic data was recorded and a standard proforma was used to assess the anger. This proforma was obtained from the literature.
**Results:** The majority of patients belong to age groups of 41-50 and 51-60 years. There are more females who are having left ventricular hypertrophy than males. The majority of them were employed. The majority of them are having severe anger. The majority of them are having severe left ventricular hypertrophy.
**Conclusion:** The study highlights that anger has a severe effect on the development of left ventricular hypertrophy. Further detailed studies are needed in this area.

**Keywords:** Anger, Left ventricular hypertrophy, Emotions

**DOI Number: 10.14704/nq.2022.20.9.NQ44151** **Neuro Quantology 2022; 20(9):1316-1318**

## Introduction:

Throughout the globe cardiovascular diseases are the prime cause of mortality when compared with any other disease. Even in non-communicable diseases, cardiovascular diseases will remain a major part that is responsible for morbidity and mortality. Further, the deaths due to cardiovascular are expected to increase in upcoming years. Anger is one of the negative emotions one experiences when one gets treated badly or an unfair incident happens to them. The reaction to anger varies from person to person as it is subjective. Someone may shout at the individual responsible and someone may hurt them. It was reported that those with higher anger were more prone to develop cardiovascular diseases than other individuals. Anger causes changes in the heart and arteries which is the direct action of the hormones released during the anger. During anger, the fight and flight response is triggered which leads to the release of the stress hormone cortisol and norepinephrine which has an action on the heart and blood vessels. Due to this action, there will be tachycardia and hypertension. Though this is a protective mechaniskm in emergencies, it causes harmful effects if activated repeatedly. Because the sustained increase in the blood pressure leads to the damage of the organs. There are limited studies that observed the role of anger in the development of left ventricular hypertrophy. Hence, the present study was undertaken to observe the role of anger in the development of left ventricular hypertrophy.

## Materials and methods:

**Study design:** Observational study

**Study participants:** A total of 80 male and female patients admitted to the cardiac center were recruited for the study after obtaining informed consent.

**Inclusion criteria:** Willing males and female patients, with in the age group 0f 30-60 years, who underwent echocardiography and can follow Telugu were included in the study

**Exclusion criteria:** Participants with any severe complications were excluded from the study.

**Methods:** Demographic data was recorded and a standard proforma was used to assess the anger. This proforma was obtained from the literature.

**Ethical consideration:**
The current study protocol was approved by the institutional human ethical committee.

**Statistical analysis:**
Data was analyzed using SPSS 20.0 version. Data was qualitative data so presented as frequency and percentage.

**Results:** Table 1 presents the age-wise distribution of the participants. The majority of patients belong to age groups of 41-50 and 51-60 years. Table 2 presents the gender-wise distribution of the participants. There are more females who are having left ventricular hypertrophy than males. Table 3 presents the employment-wise distribution of the participants. The majority of them were employed. Table 4 presents the anger level of the participants. The majority of them are having severe anger. Table 5 presents the left ventricular hypertrophy of the participants. The majority of them are having severe left ventricular hypertrophy.

**Table 1:** Age-wise distribution of the participants (n=80)

| Age (years) | Frequency | Percentage |
|---|---|---|
| 30-40 | 24 | 30 |
| 41-50 | 28 | 35 |
| 51-60 | 28 | 35 |

Data were presented as frequency and percentage

**Table 2:** Gender-wise distribution of the participants (n=80)

| Gender | Frequency | Percentage |
|---|---|---|
| Male | 32 | 40 |
| Female | 48 | 60 |

Data were presented as frequency and percentage

**Table 3:** Employment-wise distribution of the participants (n=80)

| Employment | Frequency | Percentage |
|---|---|---|
| Employed | 51 | 63.75 |
| unemployed | 29 | 36.25 |

Data were presented as frequency and percentage

**Table 4:** Anger level of the participants (n=80)

| Anger level | Frequency | Percentage |
|---|---|---|
| Mild | 2 | 2.5 |
| Moderate | 30 | 37.5 |
| Severe | 48 | 60 |

Data were presented as frequency and percentage

**Table 5:** Left ventricular hypertrophy of the participants (n=80)

| Anger level | Frequency | Percentage |
|---|---|---|
| Mild | 15 | 18.75 |
| Moderate | 25 | 31.25 |
| Severe | 40 | 50 |

Data were presented as frequency and percentage

**Discussion:** The present study was undertaken to observe the role of anger in the development of left ventricular hypertrophy. The majority of patients belong to age groups of 41-50 and 51-60 years. There are more females who are having left ventricular hypertrophy than males. The majority of them were employed. The majority of them are having severe anger. The majority of them are having severe left ventricular hypertrophy. The study highlights that anger has a severe effect on the development of left ventricular hypertrophy. Further detailed studies are needed in this area. The studies on anger and the development of cardiovascular diseases are not consistent.[1] Few studies reported positive correlation and few reported negative correlations.[2-4] Three types of anger expressions were reported.[5] This may be the reason why there is inconsistency in the results. The present study results clearly explain that majority of patients who experienced severe anger are more prone to develop cardiovascular disorders.

**Conclusion:** The study highlights that anger has a severe effect on the development of left

ventricular hypertrophy. Further detailed studies are needed in this area.

**Conflicts of interest:** None declared

**Source of funding**: Self-funding



## References:

Suls J, Bunde J. Anger, anxiety, and depression as risk factors for cardiovascular disease: the problems and implications of overlapping affective dispositions. Psychological Bulletin. 2005; 131(2):260–300.

Eng PM, Fitzmaurice G, Kubzansky LD, Rimm EB, Kawachi I. Anger expression and risk of stroke and coronary heart disease among male health professionals. Psychosomatic Medicine. 2003; 65(1):100–110.

Chang PP, Ford DE, Meoni LA, Wang NY, Klag MJ. Anger in young men and subsequent premature cardiovascular disease: The Precursors study. Archives of Internal Medicine. 2002; 162(8):901–906.

Eaker ED, Sullivan LM, Kelly-Hayes M, D'Agostino RB, Sr, Benjamin EJ. Anger and hostility predict the development of atrial fibrillation in men in the Framingham Offspring study. Circulation. 2004; 109(10):1267–1271.

Davidson KW, MacGregor MW, Stuhr J, Dixon K, MacLean D. Constructive anger verbal behavior predicts blood pressure in a population-based sample. Health Psychology. 2000; 19(1):55–64.