

# A Study To Assess The Effectiveness Of Individualized Education On Lifestyle Modification Among Post-Myocardial Infarction Patients In Gknm Hospital, Coimbatore

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## Abstract

**Aim:** An experimental study was conducted to assess the effectiveness of individualized education on lifestyle modification among post-myocardial infarction (MI) patients in GKNM Hospital, Coimbatore. (1) To assess the lifestyle practices of post-MI patients. (2) To assess the effectiveness of individualized education on lifestyle modification among post-MI patients. (3) To associate the lifestyle practices with selected demographic variables.

**Method and Materials:** A true experimental, post-test-only control group design was adopted. A sample of 60 post-MI patients was selected in cardiac wards of GKNM Hospital using non-probability convenient sampling technique, 30 in each experimental and control group. Demographic data were collected in both groups. Then, the activities of daily living were assessed in experimental group. Individualized education on lifestyle modification was given. Following which post-test knowledge regarding lifestyle was assessed using structured interview questionnaire which was carried out on next day after education on both the groups.

**Result:** The mean knowledge level score and standard deviation of the experimental group were higher than mean and standard deviation of the control group and “t” value 14.72. Two means for independent samples showed a significant difference in the post-test knowledge score on lifestyle modification among experimental and control group.

**Conclusion:** The study concluded that individualized education on the lifestyle modification was highly effective, eminent, and cost-effective intervention for improving the knowledge and creating awareness among post-MI patients about the lifestyle modification and helped them to adopt a healthy lifestyle post-MI.

**Keywords:** Individualized education, lifestyle modification, post-myocardial infarction

## INTRODUCTION

Cardiovascular disease is the leading cause of preventable death. According to the WHO statistics 2011, more people

died from cardiovascular diseases annually than from any other cause. An estimated 18 million people died from cardiovascular diseases during the year 2008, representing 30% of global death. Out of this, 8 million deaths were due to coronary artery disease. Coronary artery disease occurs when the myocardium is deprived of oxygen. If unattended, it causes tissue damage and ischemia and leads to myocardial infarction (MI).<sup>[1]</sup>

Heart attack or MI remains the top priority in many research studies worldwide because of the attributable cardiovascular disease, which is the leading cause of death, in spite of giant strides being made in medical field. According to the Centres for Disease Control and Prevention, the coronary heart disease

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accounted for around 71% of heart disease mortalities in the United States in the year 2002.<sup>[2]</sup>

MI develops when the myocardium is deprived of oxygen. It is a dynamic process in which more than one region of the heart experiences a severe reduction in blood supply due to lack of coronary blood flow which subsequently causes necrosis or death of the myocardial tissues. When the plaque gets accumulated in the walls of the coronary artery, the artery narrows and leads to the development of coronary heart disease. When fat accumulates heavily in a coronary artery, it reduces the oxygen-rich blood supply to the heart muscle. Blood begins to clot in the surrounding muscle tissue and predisposes to a heart attack. Such attack can lead to a greater disability or can ruin the life of an individual.<sup>[3]</sup>

The process of plaque formation is termed as atherosclerosis. The risk factors associated with atherosclerosis are high blood pressure, smoking, diabetes, and high cholesterol. They damage the endothelium and cause white blood cells, cholesterol, calcium, and other substances to get deposited. Such occurrences would not happen overnight. It takes many years to form. According to the World Health Organization 2011 report, it was observed that few behavioral risk factors were responsible for 80% of coronary heart disease which includes tobacco use, physical inactivity, and an unhealthy diet pattern.<sup>[1]</sup>

According to the inter heart South Asia study, it identified about nine risk factors for MI. They were smoking, high blood pressure, obesity, abnormal lipids, alcohol consumption, high blood sugar, stress, lack of exercise, and low fruit and vegetable consumption, which accounted for more than 90% of heart attacks among Indians.<sup>[4]</sup>

Knowledge on the risk factors of coronary heart disease in most regions of the world is unknown. Hypertension, diabetes, abnormal lipids, smoking, abdominal obesity, alcohol intake, psychosocial factors, irregular physical activity, and low consumption of fruits and vegetables account for the most common cause of MI worldwide affecting both males and females of all age groups. This finding suggests to prevent the premature causes of MI.<sup>[5]</sup>

Case-control studies indicated that high blood pressure, tobacco use, high low-density lipoprotein cholesterol, low high-density lipoprotein cholesterol, obesity with high waist-hip ratio, diabetes, abnormal apolipoprotein, sedentary lifestyles, low consumption of vegetables, and psychosocial stress are the most important determinants of cardiovascular disease in India.<sup>[6]</sup>

Diet remains the major modifiable risk factor for cardiovascular disease. An unhealthy diet practice increases the risk of MI globally and accounts for 30% of population-attributable risk. Fruits and vegetables reduce the risk for cardiovascular diseases if taken adequately. Most of the population consumes higher levels of salt than the recommended amount. High salt intake is an important determinant of high blood pressure and

cardiovascular risk. Increased consumption of transfatty acids and saturated fats was directly linked to coronary heart disease.<sup>[7]</sup>

Smoking is estimated to cause 10% of cardiovascular diseases. Almost 6 million people die due to tobacco use every year, both from active and passive smoking. By 2020, this number will increase to 7.5 million, which could account for about 10% of global deaths. The highest incidence of smoking among men is present in the lower- and middle-income generating countries (WHO, 2011).<sup>[1]</sup>

Approximately 3.2 million people die due to physical inactivity. People who are physically inactive have an increased risk of mortality ranging in between 20% and 30%. Regular physical activity reduces the risk factors of cardiovascular disease including diabetes and high blood pressure.<sup>[8]</sup>

A number of studies from different countries have reported reduced coronary heart disease rates among those who regularly consumed mild to moderate amounts of alcohol as compared to those who remained abstinent from alcohol. In contrast, various studies have reported that heavy consumption of alcohol promotes the progression of atherosclerosis and binge drinking triggers acute MI.<sup>[9]</sup>

High blood pressure is estimated to cause 7.5 million deaths, which accounts for 13% of total deaths. It is a major risk factor for cardiovascular disease. The prevalence of increased blood pressure is similar in all income groups, although it is generally lowest in high-income populations. High cholesterol increases the risk of heart disease and estimated to cause 2.6 million deaths every year. Overweight contributes to three million global deaths. Risks of heart disease increase with increasing body mass index. The prevalence of overweight is highest in middle-income countries. In the American regions, over 50% of women are obese. The highest prevalence of overweight among infants and young children is also found among the middle-income population. The guidelines given for the secondary prevention for post-MI patients by the National Institute of Health and Clinical Excellence recommend that lifestyle advice in diet, physical activity, alcohol consumption, weight management, and smoking cessation should be consistent. They also recommended to take into account of patients' current habits and recent changes and to inform the individual to improve the quality of life after infarction.<sup>[10]</sup>

## METHODS AND MATERIALS

### Research design

True experimental, post-test only control group design was selected for this study.

### Population

The population of the study comprised of all post-MI patients who were admitted in cardiac ward. GKNM Hospital, Coimbatore was the setting of this study.

### Sample and sample size

Sixty patients admitted in cardiac ward were selected as samples.

**Table 1: Distribution of activities of daily living according to the level of independence in the experimental group (n=30)**

S. No.	Level of Independence	Scoring	Experimental group			
			Frequency (f)	Percentage	Mean	SD
1	Independent	7–12	29	96.67	11.76	1.09
2	Interdependent	1–6	1	3.33		
3	Dependent	0	0	0		

### Sampling technique

Non-probability convenient sampling technique was adopted for the study.

### Sampling criteria

MI patients who had their heart attack for the first time and who were treated medically or underwent angioplasty were included in this study. MI patients who were advised for coronary artery bypass graft and who were hemodynamically unstable were excluded from the study. Data were collected in cardiac wards among post-MI patients. Sample selected was given self-introduction and an oral consent was obtained. The participants were assured about the confidentiality of the data collected and that it will be used only for research purpose. The demographic data were collected using structured interview questionnaire. The activities of daily living, lifestyle practices of each patient were assessed and individualized education was provided to the experimental group. Post-test was carried out in both the groups.

### Data analysis

Descriptive and inferential statistics were used to analyze the data. Frequency and percentage distribution were used to assess the demographic variables. Frequency, percentage, mean, and standard deviation were used to assess the anthropometric indices. *t*-test for two means was used to test the effectiveness of the individualized education in the experimental and control group. Chi-square test was used to assess the association between lifestyle practices and selected demographic variables.

## RESULTS

Table 1 reveals that a maximum number of patients were ready for education before intervention.

Table 2 reveals the essentiality of providing education to modify the lifestyle practices, to follow an excellent lifestyle.

Table 3 shows the level of knowledge about lifestyle modification in the experimental and control group.

Table 4 shows the comparison of knowledge level between the experimental and control group. There is a significant difference in the post-test knowledge score on lifestyle modification among experimental and control groups.

Table 5 shows the association of the lifestyle practices with their demographic variables.

There was an association with the lifestyle practices and religion among post-myocardial patients. No association was

**Table 2: Distribution of lifestyle practices of the experimental group (n=30)**

Lifestyle practices	Scoring	f	%	Mean	SD
Poor	0–34	0	0	62.3	0.67
Fair	35–54	5	16.67		
Good	55–69	20	66.66		
Very Good	70–84	5	16.67		
Excellent	85–100	0	0		

found with lifestyle practices and other demographic variables among post-MI patients.

## DISCUSSION

A study at the Harvard school of public health and prospectively monitored 42,847 men out of which 2183 had coronary heart disease. Five lifestyle factors such as absence of smoking, low body mass index, moderate-to-vigorous activity, moderate alcohol consumption, and healthy diet had declined the risk for coronary heart disease. Men, who practiced all the five lifestyle practices, had a lower risk of disease in comparison with those who practiced none of them. With five healthy lifestyle practices, 62% of coronary events had been prevented. Furthermore, 57% of coronary events were prevented with low-risk lifestyle among men who were taking medication for hypercholesterolemia or hypertension in contrast with the men who did not change their lifestyle during their follow-up. These findings highlight the importance of lifestyle changes after MI. Knowledge is a significant pre-requisite to implement lifestyle modification.<sup>[11]</sup>

A study to assess the level of knowledge of changeable risk factors among patients admitted in a tertiary care hospital in Karachi, Pakistan. A structured questionnaire was used to conduct interview among 720 subjects. The knowledge of four modifiable risk factors of cardiovascular diseases such as smoking, obesity, exercise, and fatty food consumption was assessed. The findings highlighted that there was lack of knowledge on modifiable risk factors for heart disease.<sup>[12]</sup>

A literature review in which individualized education was identified as the most effective need among post-MI patients. Educational preferences, social factors, and stage of recovery needs were individually assessed. Education specific to the individual patient was compiled and the most appropriate education method was chosen through which the information can be delivered.<sup>[13]</sup>

A cross-sectional Indian social class and heart survey studied the association of socioeconomic status with prevalence of

**Table 3: Distribution of level of knowledge on lifestyle modification in experimental and control group (n=60)**

S. No.	Level of knowledge	Experimental group				Control group			
		f	%	Mean	SD	f	%	Mean	SD
1	Inadequate knowledge	0	-	21.86	2.20	19	63.33	10.57	3.49
2	Moderate knowledge	2	6.67			11	36.67		
3	Adequate knowledge	28	93.33			0	-		

**Table 4: Comparison of level of knowledge on lifestyle modification in experimental and control group (n=60)**

Group	Mean	Mean difference	"t"-value	df	Table value
Experimental group	21.86	11.3	14.72*	58	2.00
Control group	10.57				

df: Degree of freedom, \*level of significance 0.05

**Table 5: Association of lifestyle practices with selected demographic variables (n=60)**

S. No	Demographic variables	Lifestyle practices			Chi square value	Table value	Level of significance
		Fair	Good	Very Good			
	Age (years)				$\chi^2 = 4.25$ df = 6	12.59	NS
1	30–39	1	2	1			
2	40–49	2	7	1			
3	50–59	1	6	0			
4	≥60	1	5	3			
	Sex				$\chi^2 = 1.01$ df = 2	5.99	NS
1	Male	5	17	4			
2	Female	0	3	1			
	Education				$\chi^2 = 2.88$ df = 4	9.49	NS
1	Illiterate	0	2	0			
2	School level	4	17	5			
3	Undergraduate	1	1	0			
	Religion				$\chi^2 = 19.12$ df = 4	9.49	S
1	Hindu	2	20	3			
2	Christian	1	0	2			
3	Muslim	2	0	0			
	Occupation				$\chi^2 = 7.25$ df = 6	12.59	NS
1	Unemployed	0	2	1			
2	Self-employed	2	14	2			
3	Government employee	0	1	1			
4	Private employee	3	3	1			
	Marital Status				$\chi^2 = 1.07$ df = 4	9.49	NS
1	Single	0	1	0			
2	Married	5	18	5			
3	Widowed	0	1	0			
	Monthly Income				$\chi^2 = 3.91$ df = 6	12.59	NS
1	≤10,000	5	14	4			
2	10,001–20,000	0	1	0			
3	20,000–30,000	0	5	0			
4	≥30,0001	0	1	0			
	Type of family				$\chi^2 = 0.05$ df = 2	5.99	NS
1	Nuclear	4	15	5			
2	Joint	1	4	1			
	Family history				$\chi^2 = 2.97$ df = 2	5.99	NS
1	Present	2	6	1			
2	Absent	2	14	5			
	Disease history				$\chi^2 = 7.515$ df = 8	15.50	NS
1	Hypertension	0	3	0			
2	Diabetes	1	3	1			
3	Hypertension and diabetes	0	0	1			
4	Others	0	2	0			
5	None	3	13	3			

NS: Non-significant, S: Significant, df: Degrees of freedom. Level of significance – 0.05

coronary artery disease and coronary risk factors among North Indians. The population was divided into social classes 1–4 based on their ownership of land occupation, education, housing conditions, per capita income, and ownership of

consumer durables. The social classes 1 and 2 were mostly high- and middle-income socioeconomic groups and 3 and 4 were low-income groups. The results showed a significant higher prevalence of hypertension, hypercholesterolemia, and

sedentary lifestyle among classes 1 and 2 in both sexes. The population also associated higher serum cholesterol, body mass index, triglycerides, and blood pressures. Thus, survey concluded that high and middle socioeconomic groups have a higher prevalence of coronary artery disease and its risk factors such as higher body mass index, hypercholesterolemia, hypertension, and sedentary lifestyle.<sup>[14]</sup>

An experimental study was to see the effect of individualized education on stylistic changes among MI patients. He adopted a true experimental, post-test research design and 60 samples of post-MI patients were selected using non-probability convenient sampling technique, 30 in each experimental and control group. The result showed a significant difference in the post-test knowledge score on stylistic changes among experimental and control group. This finding indicated that the individualized education on the stylistic changes was highly effective, eminent, and cost-effective intervention for improving the knowledge and creating awareness among post-MI patients about the stylistic changes and helped them to adopt a healthy lifestyle post-MI.<sup>[15]</sup>

## CONCLUSION

The study concluded that individualized education on the lifestyle modification was a highly effective, eminent, and cost-effective intervention for improving the knowledge and created awareness among post-MI patients and helped them to adopt a healthy lifestyle.

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## CONFLICTS OF INTEREST

There were no conflicts throughout the study

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