A STUDY OF CORONARY ARTERY DISEASE (CAD) RISK BEHAVIOR AND THE EFFECT OF PLANNED HEALTH COUNSELING ON RISK BEHAVIOR OF SELECTED POPULATION AT KOLKATA

Sonali Ganguly | Principal, B M Birla College of Nursing. PhD scholar, M Sc in Medical Surgical Nursing.

ABSTRACT 1.In view of the wide prevalence of cardiovascular disease, it was necessary to focus our attention to preventive aspect, rather than curative aspect alone. With this view, a quasi experimental design Two groups pre-test, intervention and post-test control group design was applied. The study aimed to find out the risk factors in developing the CAD risk behavior among high literate secondary school teachers and a low literacy group in an urban slum community, and the effectiveness of planned health counseling (awareness) program. A multi-stage random probability sampling technique was adopted for the selection of school teachers. A non- probability convenience sampling technique was used for the selection of community (low literacy group) subjects. The tool used for the study was CAD risk assessment tools, Structured knowledge questionnaire, Subscale A of Spiel Berger's state anxiety scale. – A standardized tool, Checklist on biochemical and clinical measurement scale. Study finding showed that among secondary school teachers 80% were at moderate risk whereas in low literacy group 74% were at moderate risk. In secondary school teachers after six months of counseling mean of knowledge was increased from 20.60 ± 3.50 to 33.85 ± 3.84. . The mean post test knowledge of both the experimental groups were higher than the mean pre test knowledge. So it could be concluded that not only awareness program was effective. The present study has implication in the field of Nursing Research, Administration, Nursing Education and Practice A similar study can be conducted by administering a booklet on prevention of coronary artery disease' which can serve as a reference material for the public.

KEYWORDS :

BACKGROUND:

The present study is aimed at developing planned health counseling program to help individuals to identify risk factors present in them which are detrimental to CAD that have the potential to enhance their susceptibility in CAD. Since CAD is caused by multiple factors the investigator used fishbone mode to identify the risk behavior in two groups, educated school teachers and low literate slum dwellers. Two groups were selected keeping in mind their general education, knowledge of health and economic conditions.

Need of the Study

The incidence of cardiovascular diseases (CVD) is on the rise in modern world. There are several factors contributing to its steady increase, the common ones are industrialization leading to rapid urbanization, general improvement in economic status and its collective effects on peoples lifestyle. Cardiovascular disease is not a single disease but a category of disorders affecting the heart & blood vessels. Coronary artery disease (CAD), cerebrovascular disease (stroke), atherosclerosis, congenital heart disease and hypertension are all forms of CVD. Among men and women & across all racial & ethnic groups, cardiovascular disease is the world's leading killer.

The present study is aimed at developing planned health counseling program to help individuals to identify risk factors present in them which are detrimental to CAD that have the potential to enhance their susceptibility in CAD. Since CAD is caused by multiple factors the investigator used fishbone model (Fig –No 2)to identify the risk behavior in two groups, educated school teachers and low literate slum dwellers. Two groups were selected keeping in mind their general education, knowledge of health and economic conditions.

Problem Statement

A study of Coronary Artery Disease (CAD) risk behavior and the effect of Planned Health counseling (awareness) on risk behavior of selected population at Kolkata.

Objectives of the Study

1. To identify the CAD risk factors among secondary school teachers (group I) and selected low literate group (Group II) with a view to identify the modifiable risk factors.
2. To develop and validate a planned health counseling program based on identified risk behavior for two experimental groups (I A and II A).
3. To find out the effectiveness in terms of changes (i) cholesterol, (ii) blood pressure, (iii) body weight and (iv anxiety (v) blood sugar of those who are diabetic vi) changes in lifestyle with regard to smoking habit and alcohol consumption in (group I and group II) after 6 months of intervention.
4. To find out the effectiveness of planned health-counseling

program in terms of increase in health knowledge after 6 months of intervention in both experimental groups.
5. To compare the two study groups on their knowledge and risk factors, before and after the intervention

Assumption

1. Some degree of risk factors for CAD has been identified in literature and research studies in Coronary Artery Disease (CAD). These are defined as modifiable and non modifiable risk factors.
2. It is a recognized fact that purpose of planned health counseling program is to bring about changes in knowledge which may bring about desirable changes in the individuals health behavior.
3. The teachers and low literacy group would be interested and willing to co-operate in the study.
4. The teachers and low literacy group would have some knowledge about the preventive measures of CAD.
5. Changes in selected health behaviors are observable such as blood sugar, cholesterol, body- weight etc.
6. State of anxiety is measurable using standardized tools.

Variables

Independent Variable:- Planned Health Counseling Program (PHCP) developed on the basis of identified risk factors of adult population in the form of group teaching.

Dependent Variable: 1. CAD Risk factors.
(i) Modifiable Risk Factor
(ii) Non modifiable risk factor

Extraneous Variable: - This refers to age, sex, income, education, Exposure to mass media.

Methodology:

The present study was conducted in two phases. The design adopted for the study was survey in phase **I** and a quasi experimental design with two non-equivalent pre-test - post-test control group designs was planned in phase **II**.

Phase I: A survey was conducted on 1000 subjects. Five hundred school teachers and 500 low literacy group subjects were selected from the slum community to identify CAD risk factors using risk assessment scale. Subjects chosen had no previous history of known heart disease.

Phase II: From each group 200 high scorers indicating high risk behavior were selected. In each group, subjects were randomly placed in experimental (groups IA and IIA) and control groups. (I B and IIB)

Two Post intervention assessments were made after two months and six months of planned health counseling (awareness) program. Re-

counseling (awareness) was done after two months following assessment.

Hypotheses
All the hypotheses are tested at 0.01level of significance.

H_1: The mean post-test knowledge score on CAD risk behavior and its prevention is significantly higher than that of pre- test mean score after the implementation of planned Health Counseling program in two experimental groups (secondary school teachers Group I A experimental) and low literacy group (Group IIA experimental).

H_2: There is significant reduction of the following parameters in two experimental groups after 6 months of intervention in terms of.:
* Cholesterol level
* Blood Pressure – systolic and diastolic
* Blood Sugar (Fasting for those who are diabetic)
* Body weight for those who are obese interns of BMI.
* Anxiety score

H_3: There is absence or significant reduction in the following risk factors, 6 months after the implementation of Planned Health Counseling program:
* Smoking Habit
* Alcohol consumption

H_4: There is greater reduction of CAD risk scores in educated group I than that of the low literacy group II.

H_5: Mean gain in knowledge is significantly higher in teachers than the low literate group.

Setting
The study was conducted in selected High schools of Kolkata, West Bengal. There are five school zones in Kolkata, i.e. east, west, south, north and central. Schools are administered by the Government or private bodies. Information on secondary schools of different zones of Kolkata was obtained from the comprised list published by West Bengal Board of Secondary schools [45, 46.] South and east zones were selected randomly.

Several NGO groups were approached for the selection of slum areas. In south eastern zone of Kolkata- slums were identified under the administration of "Tomorrow's Foundation". Administrative permission could be obtained from two selected blocks. These slum areas are located in Chetla. Slum dwellers mainly belong to the states of West Bengal, Bihar and Orissa. Residents have facilities for health check up by health centers run by the NGO.

Population
For phase **I** of the study the school teacher population consisted of all teachers of government and non-government schools of Kolkata.

The group II population consisted of all adult male and female subjects of two slums blocks under the administration of "Tomorrow's foundation" of south zone. As per the voter's list total population was 43,569.

Sample and Sampling
In the first stage of selecting school teachers, 12 schools, both Government and nongovernment, were selected randomly from east and south zones of Kolkata. All high school teachers were selected from those 12 schools situated in two selected zones. Of these, 200 top risk scorers were selected randomly and equally assigned in experimental and control groups (group IA and group IB) for phase II of the study.

In the first stage of selecting low literacy group subjects a door to door visit was made and the first available 500 adults who met the inclusion criteria were selected for the study using non-probability convenience sampling technique. Of these 200 top risk scorers were selected (group IIA and group IIB) for phase II of the study.

Sample Criteria: Male and female High School teachers, between the ages of 25-58 yrs, who were not known cases of CAD, and willing to undergo blood tests. Similarly both male and female low literacy group subjects between the age of 25-58 yr who were not known cases of CAD and willing to undergo blood tests were selected

Sample size: The phase I of the study included 500 high school teachers from different zones of Kolkata and 500 selected low literate/ uneducated people from a selected urban community/ slum. In phase II of the study 200 high scorers were chosen from each group and placed in experimental and control groups, randomly.

Sample Selection Criteria
Sample consisted of:
Secondary school teachers and low literacy group
* who were not known to have Coronary Artery Disease
* those who were willing to participate in the study.
* In the low literacy group, those who were available at the time of study.
* In the low literacy group, those who were able to read and write.

Sampling Technique: A multi-stage random probability sampling technique was adopted for the selection of school teachers. A non-probability convenience sampling technique was used for the selection of community (low literacy group) subjects.

Data Collection Tool
An appropriate instrumentation is critical to good research and that study instruments should accurately and completely reflect the conceptual definition of the study variables

Following tools were used for the study:
1. Demographic Performa - Prepared by the investigator
2. CAD risk assessment tools – Translated version of the tool prepared by Sr. Nancy[8]
3. Structured knowledge questionnaire – Prepared by the investigator
4. Subscale A of Spiel Berger's state anxiety scale. – A standardized tool
5. Checklist on biochemical and clinical measurement scale.- Prepared by the investigator

Reliability
The structured knowledge questionnaire Bengali tool after validation and pre-testing was subjected to test for its reliability. The tool was administered to 30 secondary school teachers. Internal consistency of the questionnaire was computed using split half technique. The reliability was found 0.88 and hence the structured knowledge questionnaire was considered a reliable tool. Item analysis was also done to find out the difficulty index and discriminating index. According to the difficulty level and discriminating index 7 items were modified in stem and options and 6 items were to be rejected according to the items analysis but researcher felt those are important and kept those items after necessary modification.

Bengali version of CHD risk assessment scale and anxiety scale were administered to 10 subjects who knew both Bengali and English and correlation between scores was computed by rank difference method and found to be 0.87 and 0.82 respectively

Plan for Data Analysis
A master data sheet was prepared with the responses given by the participants. Risk status was presented in frequency and percentages. The total knowledge scores of all subjects was summarized in terms of mean, median and standard deviation The t value was computed to find the effectiveness of the teaching programme interims of knowledge gain, reduction of selected risk, and clinical parameters ; comparison were made using parametric and nonparametric tests within groups and between groups.
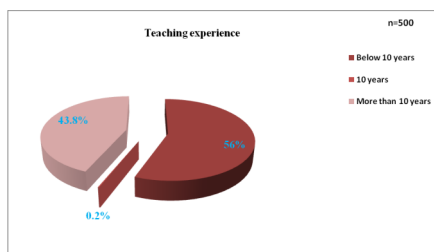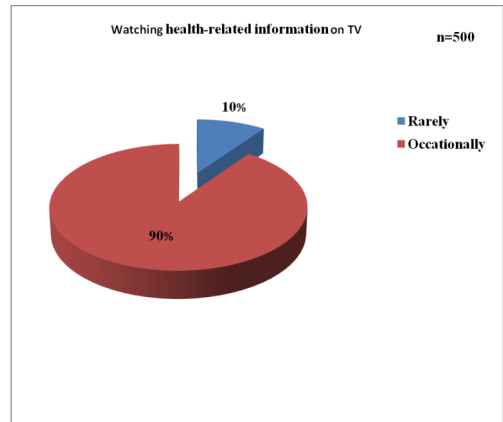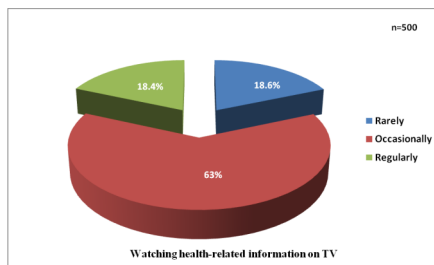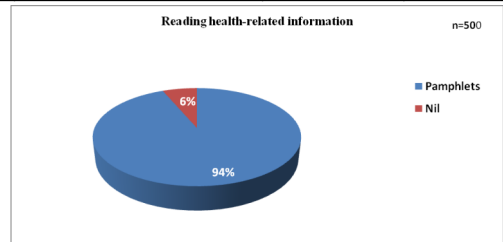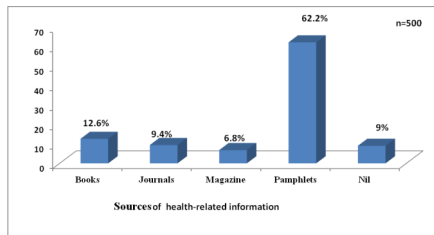
Pilot Study
The pilot study was conducted in 2008 to assess the feasibility and practicability of the design. Twenty five secondary school teachers and 25 low literacy group were taken from a selected community. The CAD risk assessment tool, demographic proforma and structured knowledge questionnaire were administered and the risk status and pretest knowledge of teachers were found out. The group IA (school teachers)were given PHCP programme on prevention of CAD to find out the feasibility of the study, clarity of language in the tools as well as in the planed counseling (awareness) programme and to finalize the plan for analysis. The planned health counseling (awareness) program was found to be feasible.

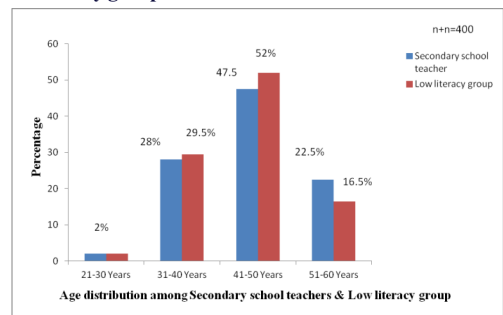**Analysis and Interpretation of the study**
PHASE -I

Sample Characteristics
Table-6

Description of sample characteristics (Secondary School Teachers) n=500		
Sl.No	Sample characteristics	Frequency (f)	Percentage (%)

Sl.No	Sample characteristics	Frequency (f)	Percentage (%)
1	**Age in years**		
	21-30	3	0.6
	31-40	123	24.6
	41-50	278	55.6
	51-60	96	19.2
2	**Gender**		
	Male	260	52
	Female	240	48
3	**Marital status**		
	Single or Unmarried	76	15.2
	Married	379	75.8
	Divorced/ Widow/Widower	45	9
4	**Religion**		
	Christian	4	0.8
	Muslim	29	5.8
	Hindu	467	93.4
5	**Educational status**		
	Graduate	59	11.8
	Post graduate	415	83
	Other (M.Phil and PhD)	26	5.2

Sources of health-related information   n=500

Watching health-related information on TV   n=500

Teaching experience   n=500

Sample characteristics
Table-7: Description of sample characteristics (Low literacy group)   n=500

Sl.No	Sample characteristics	Frequency (f)	Percentage (%)
1	**Age in years**		
	21-30	3	0.6
	31-40	106	21.2
	41-50	263	52.6
	51-60	128	25.6
2	**Gender**		
	Male	243	48.6
	Female	257	51.4
3	**Marital status**		
	Single or Unmarried	125	25
	Married	369	73.8
	Divorced/ Widow/Widower	6	1.2

Sl.No	Sample characteristics	Frequency (f)	Percentage (%)
4	**Religion**		
	Christian	0	0
	Muslim	33	6.6
	Hindu	467	93.4
5	**Educational status**		
	Graduate	0	0
	Post graduate	0	0
	Other (Nil)	500	100

Reading health-related information   n=500

Watching health-related information on TV   n=500

Stage-II Demographic distribution of secondary school teachers and low literacy group

Age distribution among Secondary school teachers & Low literacy group

Gender distribution among Secondary school teachers & Low litercy group

Marital stataus among Secondary school teachers &Low literacy group

Religionity among Secondary school teachers and Low literacy group

Educational status among Ssecondary school teachers and Low literacy group

Habit of watching television for health-related information among Secondary school teacher & Low literacy group

Reading habit of health-related materials among Secondary school teachers & Low literacy group
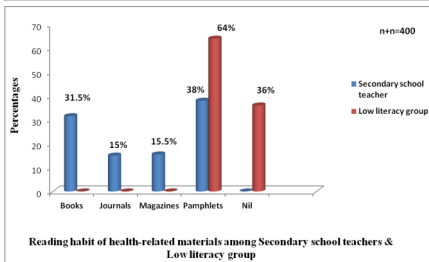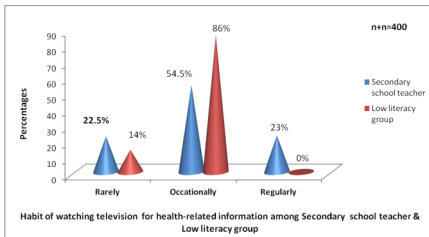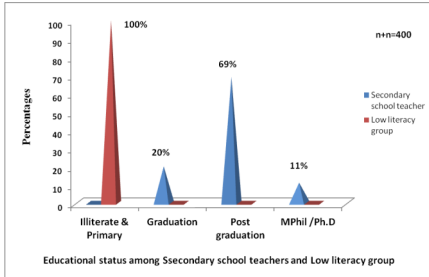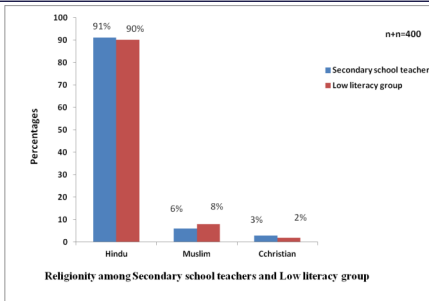
Table 11: Risk status of coronary artery disease among all Secondary school teachers and low literacy group

n+n=1000

S.no	Risk status	Secondary School teachers		Low Literacy Group	
		Frequency	Percentage	Frequency	Percentage
1	High risk	1	0.2	0	0
2	Moderate risk	491	98.2	500	100
3	Low risk	8	1.6	0	0

Table-12 : Risk status of coronary artery disease among secondary school teachers and low literacy group in experimental and control group

n+n=400

		Secondary School teachers				Low Literacy Group			
		Exp-Group		Control Group		Exp-Group		Control Group	
	Risk status	IA		IB		IIA		IIB	
S.no		f	%	f	%	f	%	f	%
1	High	1	1	Nil	Nil	Nil	Nil	Nil	Nil
2	Moderate	91	91	97	97	100	100	100	100
3	Low	8	8	3	3	Nil	Nil	Nil	Nil

Table-13: Description of clinical parameters (body weight) of experimental and control group (secondary school teachers and low literate group)

n=200+200

Category Body Weight	Secondary School Teachers				Low literacy Group			
	Exp (IA)		Control (IB)		Exp (IIA)		Control (IIB)	
	0 mths	6mths	0 mths	6mths	0 mths	6mths	0mths	6 mths
Above ideal	17	17	23	23	22	23	8	8
Below ideal	21	19	10	10	18	17	12	12
Ideal	62	64	67	67	60	60	80	80

PHASE II:

Table 14: Distribution of selected clinical parameters, pre-test, post-test on 8th day, 2 months and 6 months. of experimental secondary school teachers and low literate group.

Mean and SD for secondary school teachers (Experimental group) for all variables;

Variables	Pre test	Post test		
	Mean SD	8 days	2 Months	6 Months
		Mean SD	Mean SD	Mean SD
Knowledge	20.60 ± 3.50	25.88 ± 3.45	30.08 ± 4.16	33.85 ± 3.84
SBP	142.16 ± 9.609		135.90 ±9.172	129.59 ±8.762
DBP	88.64 ± 5.036		84.54 ± 5.147	79.92 ± 3.584
Cholesterol	173.44 ±11.93		161.96 ± 12.712	149.87 ± 13.24
Sugar	131.32± 8.71		122.76 ± 8.18	113.25 ±8.31
Anxiety	57.83 ± 5.39		54.88 ± 5.36	52.31 ± 5.40
Number of cigarette smoking per day	4.12 ±6.706		3.30 ± 5.43	2.59 ±4.33
Alcohol intake	13.20 ±20.59		5.70±13.94	2.70 ±8.62

Table-15: Mean and SD of selected clinical parameters in control group of secondary school teachers

n=100

Variables	Pre-test	Post-test		
	Mean SD	8 days	2 Months	6 Months
		Mean SD	Mean SD	Mean SD
Knowledge	15.23± 2.40		24.881± 2.41	31.87±3.27
SBP	141.27 ± 8.471		134.69 ±7.340	127.84 ±6.740
DBP	88.82 ±6.031		83.36 ±5.194	79.56 ± 4.446
Cholesterol	165.23 ±20.08		161.20 ±19.75	158.73 ±19.77
Sugar	154.43 ±8.840		141.37 ±10.144	128.68 ± 10.075
Anxiety	47.04 ±9.215		44.92 ±9.204	42.18 ±8.781
Number of cigarette smoking per day	7.80 ±6.537		6.26 ±5.382	4.56 ±4.150
Alcohol intake	17.40 ±20.529		11.10±16.323	9 ± 14.460`

Table-16: Mean and SD for low literacy control group for all variables

n=100

Variables	Pre test	Post test		
	Mean SD	8 days	2 Months	6 Months
		Mean SD	Mean SD	Mean SD
Knowledge	5.75±1.81		12.92±1.61	13.87±1.53
SBP	154.43 ±6.176		147.96 ±7.251	140.42. ±7.852
DBP	88.02 ±5.314		84.53 ±5.114	81.90 ±4.044
Cholesterol	157.04 ±6.91		148.84 ±6.43	137.04 ±11.75
Sugar	160.34 ±7.715		151.36 ±8.539	140.37 ±8.788
Anxiety	57.83 ±5.390		54.88 ±5.366	52.31 ±5.47
Number of cigarette smoking per day	8.97± 5.811		6.90 ±4.598	4.86± 3.511
Alcohol intake	16.50± 20.516		10.50± 17.774	6.90±14.681

Table-17: Mean and SD for low literacy (experimental group) for all variables

n=100

Variables	Pre test	Post test		
	Mean SD	8 days	2 Months	6 Months
		Mean SD	Mean SD	Mean SD
Knowledge	5.75 ±1.81	7.68±1.76	12.63 ±2.10	14.68 ±1.92
SBP	141.05 ±8.299		134.21 + 7.084	127.58+6.521
DBP	88.74 ±6.108		83.46±5.233	79.66±4.431
Cholesterol	160.64 ± 20.7		156.38 ±19.83	152.90 ±19.0
Sugar	157.02±8.979		148.38± 10.597	127.76±9.428
Anxiety	47.47 ± 9.942		45.09±9.806	43.08 ± 9.555
Number of cigarette smoking per day	5.27 ± 7.118		4.20 ±5.803	3.13 ±4.382
Alcohol intake	16.50±23.884		9.60 ±16.992	5.70 ±12.57

DISCUSSION

The findings of the study were discussed with reference to the objectives and hypothesis and with the findings of the studies. The issues emerged from the findings of the analyzed data.

The conceptual framework consists of certain predisposing factors in the development of CAD. They are divided into modifiable and non-modifiable risk factors. These risk factors are unknown or little known to the normal individual. While doing risk assessment, the samples will gain knowledge regarding their risk status and this will motivate them to attend the awareness programme and further change their lifestyle to prevent the occurrence their CAD. In this study it is showed that majority of the participants in both the groups belonged to moderate risk of developing CAD and only 4% of secondary school teachers had high risk. Juliet (2000) and Mathai (1998) also observed that majority of participants fell in moderate risk category(Juliet 85.33%, Mathai-59.5%).This findings support the Rosenstock's health behavior model. The knowledge of the risk status motivates the participants to take preventive health behavior. This made them to listen to the planned health counseling program on CAD.

Initially many of the participants did not have sufficient knowledge on risk factors of CAD and Bhaswati (2008) found that the knowledge on diet to prevent cardiac diseases was poor among the school teachers. Praveena (2002) also found that college teachers had low level of knowledge on planned teaching program on prevention of Coronary Heart Disease.

The mean post-test knowledge scores obtained were significantly higher than the mean pre-test scores. This indicated that the awareness program had improved the knowledge of the participants on various aspects of CAD and its Prevention. Thus it could be suggested that the effective awareness program could increase the knowledge of individuals.

A study conducted by John (2000) to evaluate the effectiveness of a planned patient counseling program on prevention of recurrence of renal calculi in terms of gain in knowledge , change in dietary practices and selected biochemical components in serum and urine of patients with renal calculi. The findings showed that the planned counseling program was effective in improving the participants knowledge and brought about the changes in dietary practices and reduction in blood sugar levels in diabetic clients. Studies conducted by Manju(2007),Manashi(2005), Pritha(2003) had observed significantly higher knowledge in the post-test following the administration of a teaching program. Thus the finding of the present study was similar to others' findings. This confirmed that the awareness program had an impact in improving the knowledge of the participants.

Effectiveness of health counseling programme in terms of changes (i) cholesterol level, (ii) blood pressure, (iii) body weight and (iv) anxiety level (v) blood sugar level of those who are diabetic (vi) changes in lifestyle with regard to smoking habit and alcohol consumption in (group I and group II) after 6 months of intervention.

It was assumed that the numbers of factors influences the lifestyle of an individual, knowledge on preventive health behavior was very much necessary for a healthy lifestyle. The present study revealed that there was less but significant changes were observed in cholesterol level, (ii) blood pressure, (iii) body weight and (iv) anxiety level (v) blood sugar level of those who are diabetic (vi) changes in lifestyle with regard to smoking habit and alcohol consumption

CONCLUSIONS

The following conclusions were drawn based on the findings from the present study.
1. The risk for developing Coronary Artery diseases as the age advances.
2. Majority of the participants were at moderate risk of developing CAD
3. Majority of the participants in both groups were at risk of CAD when factors like physical activity, dietary habits, salt intake, sugar intake and emotional stress are taken into consideration. This suggested that modification of lifestyle with regard to diet, physical activity and emotional stress and overall awareness to health promotion and disease prevention would reduce the risk of coronary artery disease.
4. The mean post test knowledge of all the groups was higher than the mean pre test knowledge. So it could be concluded that not only awareness program was effective, but repeated interaction with both the groups might help them to gather information.

REFERENCE:
1. Shah, B. Integrated Disease Surveillance Project (IDSP). NCDS, Tamil Nadu. 2007-2008; National Institute of Medical Statistics and Division of Non-Communicable Diseases, Indian Council of Medical Research, New Delhi, India.
2. Park K. Preventive and Social Medicine(18th edition). M/S Banarsidas Bhanot Publishers, 2005.
3. Stone S.C., Comprehensive Family and Community Health Nursing . St. Louis: Mosby Year book, 1991,3rd edition.
4. Smeltzer C.S.,and Bare G. Brenda., Brunner and Suddarth's Text- Book of Medical –Surgical Nursing- Lipincott,1996, 8th edition.
5. Yavagal S.T., Prevention is Better than Cure- Cradiological Society of India- objective htm , 2009,1-4. Retrieved No. 11.
6. Stuart. G. W., Sundeen. S. T., Principals and Practice of Psychiatry Nursing. C.V. Mosby & Co, 1995, Page 269 – 271.
7. Stone,S.C.(1991). Comprehensive family and community health nursing. (3rd edn).St. Louis: Mosby year book.
8. Nancy.(1988). A study to develop and evaluate a self administered tool to assess coronary heart disease risk status of normal adults and an analysis of selected risk factors. Unpublished Master of Nursing thesis, University of Delhi New Delhi.
9. K.R. Pravenna.(2002). A study of the effectiveness of a planned awareness programme on prevention of Coronary Artery Disease among teachers and teachers trainees of selected colleges of Udupi District.Unpublished Master of Nursing Thesis. Manipal Academy of Higher Education . Manipal.
10. Juliet, R.M.(2000).The study of risk status and the effectiveness of two planned awareness programmes on the prevention of hypertension of college faculty members of Mangalore. Unpublished Master of Philosophy thesis. Manipal Academy of Higher Education, Manipal.
11. Brnner,L.S.and Suddarth, D.S.91996).Medical –Surgical Nursing .(6thedn). Philadelphia: J.B.Lippincott Company.
12. Black, J.M.and Jacobs,E.M.(1996).Medical-Surgical Nursing. Clinical management and Positive Outcomes, 7th ed. Elsever Publications; Mosby; 2004.