

ADOPTION OF DIET, YOGA AND RELAXATION THERAPY FOR YOUNG WOMEN WITH HIGH RISK FOR CARDIOVASCULAR DISEASE

* THILAGAMANI.S
** AARTHI.S

Introduction

The second half of the twentieth century has witnessed major shift in the pattern of disease, in addition to marked improvements in life expectancy. This period is characterised by profound changes in diet and life style which in turn have contributed to an epidemic of non communicable diseases (Karnik, 2010). The World Health Organisation has identified India as one of the nations with most of the lifestyle disorders in the near future gaining another dubious distinction of becoming the lifestyle-related disease capital (Sharma, 2010). Modern lifestyle is responsible for the growth of heart disease among the Indian youth and the average age at which a person may suffer a heart attack has come down from 40 to 30 years. Women generally live longer than men, but their lives are not necessarily healthy or happy, their extra years are increasingly compromised by chronic diseases and injuries (Riemer, 2009). The rapid escalation of the risk factors such as smoking, hypertension, dyslipidemia, diabetes and metabolic syndrome by the age of 30 to 39 years was noted in urban

Asian Indians and clearly stressed on the interventions upon these individuals (Gupta et al., 2009).

Therapeutic lifestyle changes have an enormous potential in preventing and controlling the risk of coronary heart disease. Because of their high prevalence of certain cardiovascular risk factors namely obesity, diabetes mellitus and greater salt sensitivity, therapeutic lifestyle changes have particular importance among the population (Watson and Jamerson, 2003).

Weight reduction and maintenance of a healthy body weight is a major effort for many persons, especially women. Yoga is a natural way of exercising and relaxing the body. In the present day scenario, the life style diseases can be effectively controlled only by turning towards more and more natural practices and hence this study was an attempt to adopt diet management, yoga and relaxation therapy in young women with high risk for cardiovascular disease.

Materials and methods

A total of 240 women from the age group of 20 to 50 years comprising students,

* Assistant Professor in Food Service Management and Dietetics, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore – 641 043.

** Post graduate student.

home makers and the employed women from teaching profession and textile company in Coimbatore were set as the target group for the study by purposive sampling.

In order to identify the high cardiac risk women, a Health Risk Assessment (HRA) formulated was used for the conduct of the study. The components of the HRA for cardiovascular disease were categorised as non-modifiable factors and modifiable factors. Non-modifiable factors namely age and familial tendency for cardiovascular disease, modifiable factors namely Body Mass Index, Waist to hip ratio, value of blood pressure, quantity of fat and oil used, consumption of coffee and use of salt were elicited. Lifestyle pattern related to the type of personality, pattern of physical activity such as exercise, yoga and meditation and type of stress was studied. After assessment, the data was analysed and the women were categorized as low, medium and high risk based on the scores obtained for the Health Risk Assessment. The intervention strategies such as diet management, yoga and relaxation therapy were undertaken for a period of three months by selecting 24 women belonging to high risk category. The post surgical women and subjects with diabetes, joint pain and severe menopausal problems or excessive bleeding were excluded from the study.

The diet education and counseling was regarded as the primary strategy,

during which the guidelines and the preventive measures for cardiovascular diseases were provided in the form of booklet and the power point presentation with the components including narrowing of blood vessel, stages of hypertension, multi-organ damage due to hypertension, modifiable and non-modifiable risk factors, symptoms, dietary guidelines and life style remedies to prevent cardiovascular disease were depicted in the pictorial forms with explanation in the local language for better understanding and to ensure easy reach of the information to the selected women. In addition, the dietary guidelines for the weight reduction in the form of pamphlets was issued to the high risk women. Healthy food choices by inclusion of foods high in fibre with whole grams, grains, raw vegetables and fruits, use of combination of oils and foods low in sodium were discussed.

The lifestyle interventions in the form of yoga and relaxation therapy were given in conjugation to the dietary intervention and managing stress was executed with the guidance of yoga expert. By considering the age restrictions and other health disorders of the subjects, only 'the easy to follow warm-up exercises' and stress reducing breathing exercises and asanas formed the elements of stress management. Relaxation therapy was one of the methods of positive therapy. According to Natesan (2004) relaxation therapy helps people to have a

relaxed state, which promotes a positive attitude towards life. The therapy involves three steps 'deep breathing practice', 'relaxation training', and 'auto suggestion' and this session was conducted by the psychology expert. This session was considered to play a vital part of the intervention programme as its ultimate way was to manage stress through complete relaxation for the whole body and the mind.

Results and discussion

I. Health risk assessment for cardiovascular diseases among healthy women

The health risk assessment for cardiovascular diseases among healthy women aged 20 to 50 years are given below

Age wise distribution of the women

Age wise distribution of the women identified for the study is given in Table 1.

Table 1. Age wise distribution of the women

Risk category	Age (years)							
	20 – 30		31 – 40		41 – 50		Total	
	N	%	N	%	N	%	N	%
Low risk	7	87.5	-	-	1	12.5	8	3.3
Medium risk	101	59.1	26	15.2	44	25.7	171	71.3
High risk	16	26.2	20	32.8	25	41.0	61	25.4

Chi square value : 24.651 Degrees of freedom : 4 P Value : < 0.001

Table 1 reveals that out of 240 women, 25.4 per cent subjects were at high risk for the cardio vascular diseases. Forty one per cent, 32.8 per cent and 26.2 per cent of women belonged to 41 to 50 years, 31 to 40 years and young adult age respectively. It is noted that only 3.3 per cent women were in the low risk group. The statistical

analysis of chi-square test showed a significant association at one per cent level signifying the increased risk for cardiovascular disease in par with increase in age.

Body Mass Index (BMI) of the women

Table 2 gives the Body Mass Index of the women.

Table 2. Body Mass Index of the women

Body Mass Index	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
Under weight (< 18.5)	3	37.5	12	7.0	5	8.2	20	8.3
Normal (18.5 – 22.9)	5	62.5	78	45.6	11	18	94	39.2
At risk of obesity (23.0 – 25.0)	-	-	27	15.8	17	27.9	44	18.3
Grade – I obesity (25.1 – 29.9)	-	-	36	21.1	18	29.5	54	22.5
Grade – II obesity (> 30)	-	-	18	10.5	10	16.4	28	11.7

Chi square value : 22.736

Degrees of freedom : 8

P value : 0.0037

Out of 240 women, 39.2 per cent subjects had normal body mass index and 8.3 per cent women were underweight. About 18.3 per cent women were at risk of obesity, whereas 22.5 per cent and 11.5 per cent subjects were grade -I and grade-II obese. The data showed that the grade II obesity was more among high risk group women followed by medium risk category which was not a healthy sign and might

lead to health effects. The results of body mass index of the subjects when statistically interpreted through chi-square test showed a significant association at one per cent level with different degrees of risk for cardiovascular disease.

Waist to hip ratio of the women

Table 3 gives the waist to hip ratio of the women

Table 3. Waist to hip ratio of the women

Waist to hip ratio	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
> 0.8	-	-	83	48.5	39	63.9	122	50.8
< 0.8	8	100	88	51.5	22	36.1	118	49.2

Chi square value : 1.821 Degrees of freedom : 2 P value : 0.0016

Table 3 depicts that 50.8 per cent subjects had high waist to hip ratio above the normal value of 0.8 indicating abdominal obesity and 49.2 per cent subjects had less than 0.8. The study revealed that there is a higher degree of concurrence to waist to hip ratio with high

risk for cardiovascular disease which is statistically significant at one per cent level.

Blood pressure values of the women

The details of blood pressure values observed among women are given in Table 4.

Table 4. Blood pressure of the women

Stages of blood pressure	Systolic (mm/Hg)	Diastolic (mm/Hg)	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
			N	%	N	%	N	%	N	%
Normal	< 120	< 80	5	62.5	137	80.1	12	19.7	154	64.2
Pre-hypertension	120 - 139	80 - 90	3	37.5	29	16.9	30	49.2	62	25.8
Stage -I Hypertension	140 - 159	91 - 99	-	-	3	1.8	12	19.7	15	6.3
Stage-II Hypertension	160+	100+	-	-	2	1.2	7	11.5	9	3.7

Chi square value : 101.55 Degrees of freedom : 6 P value : < 0.0001

There were 64.2 per cent subjects who had normal blood pressure below 120/80 mm of Hg. It is noted that only 19.7 per cent women of high risk group had normal blood pressure and the other subjects had elevated blood pressure of various stages. Among 25.8 per cent pre-hypertensive

women, 49.2 per cent belonged to high risk group, followed by 16.9 per cent from medium risk category.

Amount of fat and oil used per day

The amount of fat and oil used per day is given in table 5

Table 5. Amount of fat and oil used per day

Amount of fat and oil g/day	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
< 20	8	100	77	45	12	19.67	97	40.4
20 – 25	-	-	62	36.3	35	57.38	97	40.4
> 25	-	-	32	18.7	14	22.95	46	19.2

Chi square value: 24.736 Degrees of freedom: 4

P value : < 0.0001

It can be inferred from the Table that 40.4 per cent subjects consumed less than 20 grams of oil per day which was a healthy sign for the heart. On the contrary, the other 40.4 per cent women used four to five teaspoons oil and 19.2 per cent subjects used more than five teaspoons oil per day.

Women were not aware of the use of combination of oils for better health and most of the women used refined sunflower oil for cooking.

Consumption of coffee

Consumption of coffee by the selected women is given in Table 6.

Table 6. Consumption of coffee

Consumption of coffee per day cups	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
< 3	8	100	162	94.7	42	68.9	212	88.3
> 3	-	-	9	5.3	19	31.1	28	11.7

The data revealed that 88.3 per cent women consumed less than three cups of coffee per day. However 11.7 per cent subjects consumed more than three cups

per day among whom 31.1 per cent subjects belonged to high risk group and 5.3 per cent from medium risk category. Women in the high risk category consumed more amount

of hot beverages especially coffee compared to medium risk category which contribute to a higher level of risks.

Use of salt in cooking

Table 7 projects the amount of salt used in cooking per day.

Table 7. Use of salt in cooking

Amount of salt used per day (tsp)	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
> 1	3	37.5	132	77.2	56	91.8	191	79.6
< 1	5	62.5	39	22.8	5	8.2	49	20.4

Chi square value : 14.927 Degrees of freedom : 2 P value : < 0.0005

It is noted that 79.6 per cent subjects used more than one teaspoon salt per day among which 77.2 per cent subjects were at medium risk group, 91.8 per cent women at high risk group and 37.5 per cent subjects with low risk group. But only 20.4 per cent

women used less than one teaspoon per day in cooking.

Type of personality

The type of personality of the women is presented in Table 8.

Table 8. Type of personality of the respondents

Type of personality	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
Type – A	2	25	79	46.2	39	63.9	120	50
Type – B	6	75	92	53.8	22	36.1	120	50

Chi square value : 7.726 Degrees of freedom : 2 P value : 0.0210

Table 8 depicts that 50 per cent subjects possessed type A personality with 63.9 per cent women of high risk group, 46.2 per cent women of medium risk group and 25 per cent from low risk category.

The remaining 50 per cent of the women were with type B personality

Pattern of physical activity

The physical activity followed by the women is given in Table 9.

Table 9. Physical activity of the women

Exercise minutes / day	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
Nil	4	50	143	83.6	48	78.7	195	81.3
30	3	37.5	23	13.5	10	16.4	36	15.0
60	1	12.5	51	2.9	3	4.9	9	3.7

There were 81.3 per cent women who were physically inactive of whom 83.6 per cent fell under medium risk group, 78.7 per cent women with high risk and 50 per cent were from low risk category. About 15 per cent and 3.8 per cent of them actively involved themselves in physical activity

for 30 and 60 minutes respectively. They involved in regular walking and house hold chores. None of the women performed yoga and meditation.

Stress pattern of the women

The stress pattern of the women is shown in Table 10.

Table 10. Stress pattern of the women

Stress pattern	Low risk (N = 8)		Medium risk (N = 171)		High risk (N = 61)		Total (N = 240)	
	N	%	N	%	N	%	N	%
Familial stress	-	-	41	21.1	34	34	75	24.8
Occupational stress	-	-	25	12.9	31	31	56	18.5
Neighbourhood stress	-	-	11	5.7	14	14	25	8.3
Environmental stress	-	-	25	12.9	12	12	37	12.3
Relaxed and calm	8	100	92	47.4	9	9	109	36.1

* Multiple response.

Stress pattern of the women showed that 36.1 per cent women were relaxed and calm and there were 24.8 per cent women with familial stress, 18.5 per cent had occupational stress, 8.3 per cent had neighbourhood stress and 12.3 per cent

were with environmental stress. The data positively correlated with the view of Cohen et al (2007) whose study concluded that cardiac events were directly proportional to perceived life stress, job overload, marital distress and social isolation.

Effect of intervention on high cardiac risk women

The effect of intervention on high cardiac risk women were studied with the changes observed at pre and post intervention and is discussed below.

Body Mass Index of the selected women

Body mass index of the selected women is depicted in Table 11.

Table 11. Variations in Body Mass Index of the selected women

Body Mass Index	Pre – intervention		Post – intervention	
	N = 24	%	N = 24	%
Normal (18.5 – 22.9)	2	8.3	11	46
At risk of obesity (23.0 – 25.0)	6	25	8	33
Grade – I obesity (25.1 – 29.9)	8	33	5	21
Grade – II obesity (> 30)	8	3.4	-	-

Body Mass Index	Mean ± SD	't' value
Pre-intervention	27.85 ± 4.52	1.5958 ^{NS}
Post-intervention	27.14 ± 4.94	

NS. Not significant

Table 11 reveals that the subjects showed improvement in their body mass index in which women with normal body mass index category were 45.9 per cent, 33.3 per cent at risk of obesity, and

20.8 per cent with grade I obesity at post intervention.

Waist to hip ratio

The variations in the waist to hip ratio of the selected women is given in Table 12.

Table 12. Variations in waist to hip ratio of the selected women

Category	Pre – intervention		Post – intervention	
	N = 24	%	N = 24	%
≤ 0.8	6	25	17	70.8
> 0.8	18	75	7	29.2

Waist to hip ratio	Mean ± SD	't' value
Pre-intervention	0.85 ± 0.066	6.4391**
Post-intervention	0.81 ± 0.062	

** significant at P< 0.01 level

The data showed that 25 per cent of women were with normal waist to hip ratio and 75 per cent with high waist to hip ratio at pre intervention. But after intervention 70.8 per cent women were found with

normal waist to hip ratio which was found to be significant at one per cent level.

Blood pressure levels of the selected women

Table 13 illustrates the blood pressure levels of the selected women at pre and post intervention.

Table 13. Variations in blood pressure levels of the selected women

Blood pressure levels	Systolic (mm/Hg)	Diastolic (mm/ Hg)	Pre-intervention		Post-intervention	
			N=24	%	N=24	%
Normal	< 120	< 80	3	12.5	8	33.3
Pre-hypertension	120 - 139	80 - 90	2	8.3	12	50.0
Stage-I hypertension	140 - 159	91 - 99	10	41.7	4	16.7
Stage-II hypertension	160+	100+	9	37.5	-	-

Blood pressure	Pre-intervention	Post-intervention	't' value
Systolic	148.92 ± 21.22	125.67 ± 14.43	8.0484**
Diastolic	88.83 ± 9.94	81.58 ± 7.8	6.5393**

** Significant at P< 0.01 level

Blood pressure of the women showed that the levels reduced gradually towards the normal levels of less than 120/80 mm of Hg and was seen among 33.3 per cent women at post intervention from 12.5 per cent women at pre intervention. Pre hypertensive stage

was observed among 50 per cent women. Women with stage II hypertension at pre intervention were 37.5 per cent.

Risk category of the selected women

Risk category of the selected women is portrayed in Table 14.

Table 14. Risk category of the selected women

Risk category	Pre - intervention		Post - intervention	
	N = 24	%	N = 24	%
Low risk	-	-	7	29.2
Medium risk	8	33.3	17	70.8
High risk	16	66.7	-	-