



Effectiveness of community based comprehensive lifestyle promotion package on cardio-vascular risk among adult with hypertension

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ABSTRACT

Aim: To assess the effectiveness of community based comprehensive lifestyle promotion package on cardio-vascular risk (diet risk score) among adult with hypertension

Methodology: Quantitative approach, true experimental comparative design was adopted in the study. 200 samples in experimental and 200 samples in control group who fulfilled the inclusion and exclusion criteria were selected using probability sampling technique. Cardio-vascular risk (diet risk score) was assessed by using cardio-vascular risk assessment tool followed by community based comprehensive lifestyle promotion package was administered.

Results: The chi-square analysis showed that there was no statistically significant difference between the experimental and control group in the pre test. In post test 3 there was statistically significant difference in the diet risk score between the experimental and control group. (high significant at $p \leq 0.001$). In post test 3 diet risk reduction score was 15.74 among experimental group whereas in the control group risk reduction score was 0.98 only. Student independent t-test ($t=24.13$ at $p=0.001$) showed that there was significant difference between the experimental and control group in the post test 3. Results also revealed that there was a statistically significant between pretest and post test 3 ($F = 712.60$, $p < 0.001$) only in the experimental group alone.

Conclusion: The results revealed that the community based comprehensive lifestyle promotion package was effective in reducing the diet risk score and thus preventing the cardiovascular diseases hence can be utilized as a step in prevention of cardiovascular risk among adult with hypertension.

Keywords: Adult with hypertension, community based comprehensive lifestyle promotion package, cardiovascular risk and hypertension.

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INTRODUCTION

Non-Communicable Diseases (NCD) are the leading cause of mortality in the world. Mortality due to NCD, is around 40 million out of 56 million total death occurred globally in the year 2015. Among this 48% of NCD's death occurring in under- developing and developing countries before the age of 70 years. 80% of the premature death occurred due to heart diseases, 14 million deaths due to NCD'S occurred between the ages of 30 and 70 years.¹

Among non-communicable diseases cardiovascular diseases are the main cause of mortality in the world. Socioeconomic determinants have also increased the growth of risk factors, both modifiable and non-modifiable. Modifiable risk factors accounts for major causes. Modifiable risk factors are those can easily be changed to reduce the risk of the occurrence of the disease. These includes imbalanced diet, inadequate physical activity, obesity, elevated blood pressure and smoking and elevated lipids.²

Cardio-Vascular Disease (CVD) risk factors are widely distributed among south Asians. The diversity and difference in CVD risk factors in native North Asians compared to South Asians are due to difference in culture and life style various cultural factors, difference in dietary practices, tobacco use and physical in activity and also variations in economic development between and within different states of India.³

The incidence of major cardiovascular events and mortality is high among low income countries than middle and high income countries i.e. 96% from South Asia and 83% from India. India has developed a national monitoring frame work to achieve key target which includes 30% relative reduction in both salt and tobacco consumption by 2025. (Global Burden Of Cardiovascular Disease in India)⁴.

Obesity is associated with a range of co morbidities including cardiovascular disease, modest weight loss in the 5% - 10% range can significantly improve health related outcomes. Many individuals struggle to maintain weight loss, although strategies such as realistic goal setting and increased intervention can greatly improve the success of weight management programs. Nurse practitioners have key roles in establishing weight loss targets, providing motivation and support and implementing weight loss programs. Smoking is a risk factor for cardiovascular disease.⁵

The non communicable diseases threat can be nullified by utilizing proper prevailing resources and inducing awareness and information education and communication. Deaths due to cardiovascular diseases can be preventable by means of implementing simple measures to reduce the modifiable risk factors for NCD's. (World Health Organization report 2014)⁶

Considering the above stated factors the investigator perceived the need for assessing the cardiovascular risk of adults with hypertension to rule out the impact of the disease and determine the effectiveness of community based comprehensive lifestyle promotion package which focused on improving the life style of adult with hypertension.

MATERIALS AND METHODS

A true experimental research design was adopted in order to assess the effectiveness of community based comprehensive lifestyle promotion package on cardiovascular risk among adult with hypertension. The independent variable was community based comprehensive lifestyle promotion package and dependent variable was cardiovascular risk. The study was conducted in villages at Thirukalukundram block in Kancheepuram district. The study sample includes adults with hypertension who are living in selected villages. The sample size consisted of 400 adults with hypertension, (200 in experimental and 200 in control group) who fulfilled the inclusion and exclusion criteria selected by probability sampling technique – lottery method.

The tool consists of two parts i.e. data collection tool and intervention tool.

Part I: It includes two aspects.

1. Demographic variables includes age, religion, marital status, type of family, educational status, occupational status, family monthly income, size of the family, family history of hypertension, chronicity of illness, usage of tobacco and alcohol.
2. Dietary factors includes diet pattern, type of oil used, rice item consumed, use of red meat, poultry, direct sweet, junk foods, coffee and tea, dry fish, pap pads, deep fried items, green leafy vegetables, fruits

Part II: Intervention tool which includes three components such as IEC regarding management of hypertension, counseling on dietary aspect and training regarding aerobic exercises.

IEC: It includes anatomy and physiology of the cardiovascular system and heart, meaning, causes, diagnosis, management of hypertension which lasts for 30-45 minutes.

Counseling: This was given as group counseling along with family members regarding diet aspects which lasts for 30 minutes

Training: Gentle walking for advised for 30- 40 minutes for five days a week. Aerobic-exercises was demonstrated and return demonstration was done.

After the pre test intervention package was given and post test was conducted with same tool after 1st, 3rd and 5th month. The data collected was analyzed and compared to identify the effectiveness of community based comprehensive lifestyle promotion package on cardiovascular risk among adult with hypertension.

INCLUSION CRITERIA

1. Adult who are medically diagnosed to have hypertension with 2 years chronicity.
2. Adult with hypertension on anti hypertension treatment with compliance.
3. Adult who are willing to participate in the study and are permanent residence of the village.
4. Adult who speak and understand Tamil.

EXCLUSION CRITERIA

1. Adult who have already attended health life style promotion programme on cardiovascular disease risk.
2. Adult who are having complications of hypertension like CVA, CVD, RD and other problems.

RESULTS

TABLE 1: COMPARISON OF POSTTEST3 DIET RISK FACTORS N=398

Risk Factors		Group				Chi square test
		Experiment(n=200)		Control(n=198)		
		n	%	n	%	
Diet pattern	Vegetarian	33	16.5	38	19.2	$\chi^2=1.10$ p=0.57 (NS)
	Non Vegetarian	164	82.0	155	78.3	
	Lacto and ova vegetarian	3	1.5	5	2.5	
Oil consumption	Sunflower Oil	102	51.0	64	32.3	$\chi^2=15.50$ p=0.001*** (S)
	Groundnut Oil	33	16.5	36	18.2	
	Palm Oil	33	16.5	50	25.3	
	Gingerly Oil	28	14.0	42	21.2	
	Others	4	2.0	6	3.0	
Use of rice items	1-2 Days	16	8.0	10	5.1	$\chi^2=12.44$ p=0.01** (S)
	3-4 Days	14	7.0	5	2.5	
	5-6 Days	75	37.5	57	28.8	
	All Days	95	47.5	126	63.6	
Wheat and other refined cereals	Nil	9	4.5	8	4.0	$\chi^2=13.56$ p=0.01** (S)
	1-2 Days	133	66.5	157	79.3	
	3-4 Days	11	5.5	12	6.1	
	5-6 Days	11	5.5	2	1.0	
	All Days	36	18.0	19	9.6	
Use of red meat	Nil	43	21.5	38	19.2	$\chi^2=3.92$ p=0.14 (NS)
	1-2 Days	155	77.5	152	76.8	
	3-4 Days	2	1.0	8	4.0	
Use of poultry	Nil	33	16.5	38	19.2	$\chi^2=11.80$ p=0.01** (S)
	1-2 Days	160	80.0	146	73.7	
	3-4 Days	7	3.5	4	2.0	
	5-6 Days		0.00	4	2.0	
	All Days		0.00	6	3.0	
Sweets & Sweetener	Nil	56	28.0	32	16.2	$\chi^2=17.54$ p=0.001*** (S)
	1-2 Days	144	72.0	145	73.2	
	3-4 Days		0.00	19	9.6	

	All Days		000	2	1.0	
Junk Foods	Nil	75	37.5	24	12.1	$\chi^2=55.27$ $p=0.001^{***}$ (S)
	1-2 Days	67	33.5	68	34.3	
	3-4 Days	33	16.5	50	25.3	
	5-6 Days	15	7.5	9	4.5	
	All Days	10	5.0	47	23.7	

NS =not significant ** highly significant at $p \leq 0.01$ *** very high significant at $p \leq 0.001$

Table 1 reveals the comparison of the diet risk factors between experimental and control group in the post test 3. The analysis revealed that there was a significant difference in the diet risk factors with

regard to use of rice items, wheat and other refined cereals and red meat at $p < 0.01$ level and consumption of oil and sweets and sweetener at $p < 0.001$ level.

TABLE 2: COMPARISON OF POSTTEST3 DIET RISK FACTORS N=398

Risk Factors	Group	Group				Chi square test
		Experiment(n=200)		Control(n=198)		
		n	%	n	%	
Coffee & Tea	1-2 Days	13	6.5	7	3.5	$\chi^2=4.29$ $p=0.23$ (NS)
	3-4 Days	10	5.0	14	7.1	
	5-6 Days	18	9.0	11	5.6	
	All Days	159	79.5	166	83.8	
Use of dry fish	Nil	67	33.5	23	11.6	$\chi^2=44.05$ $p=0.001^{***}$ (S)
	1-2 Days	122	61.0	130	65.7	
	3-4 Days	11	5.5	36	18.2	
	5-6 Days		0.00	6	3.0	
	All Days		0.00	3	1.5	
Use of papads	Nil	60	30.0	21	10.6	$\chi^2=29.28$ $p=0.001^{***}$ (S)
	1-2 Days	115	62.5	130	65.7	
	3-4 Days	22	11.0	33	16.7	
	5-6 Days	3	1.5	12	6.1	
	All Days		0.00	2	1.0	
Use deep fried items	Nil	65	32.5	14	7.1	$\chi^2=79.72$ $p=0.001^{***}$ (S)
	1-2 Days	105	52.5	99	50.0	
	3-4 Days	21	10.5	19	9.6	
	5-6 Days	9	4.5	34	17.2	
	All Days		0.00	32	16.2	
Use of green leafy vegetables	Nil	8	4.0	29	14.6	$\chi^2=34.75$ $p=0.001^{***}$ (S)
	1-2 Days	47	23.5	72	36.4	
	3-4 Days	43	21.5	40	20.2	
	5-6 Days	69	34.5	48	24.2	
	All Days	33	16.5	9	4.5	
Use of fruits	Nil	8	4.0	32	16.9	$\chi^2=49.58$ $p=0.001^{***}$ (S)
	1-2 Days	44	22.0	74	39.2	
	3-4 Days	43	21.5	33	17.5	
	5-6 Days	62	31.0	41	21.7	
	All Days	43	21.5	9	4.8	

NS =not significant ** highly significant at $P \leq 0.01$ *** very high significant at $P \leq 0.001$

Table 2 reveals the comparison of the diet risk factors between experimental and control group in the post test 3. The analysis revealed that there was a significant difference in the diet risk factors with

regard to consumption of junk foods, dry fish, papads, dry food items, green leafy vegetables and fruits at $p < 0.001$ level.

TABLE 3: PERCENTAGE OF PRETEST AND POSTTEST DIET RISK SCORE

N= 398 (200+198)

Group		Maximum score	Mean	% of mean score	% of diet risk reduction score
	Post test 1	65	36.96	56.86	
	Post test 2	65	33.28	51.20	
	Post test 3	65	28.07	43.18	
Control	Pretest	65	38.09	58.60	0.98
	Post test 1	65	37.63	57.89	
	Post test 2	65	37.53	57.74	
	Post test 3	65	37.45	57.62	

Table 3 reveals the comparison of pre and post test level of diet risk score within experimental and control group. In experimental group the

percentage of diet risk reduction score was 15.74 whereas in the control group diet risk reduction was 0.98 only.

TABLE 4: OVERALL COMPARISON OF PRE AND POST TEST DIET RISK SCORE WITHIN EXPERIMENTAL AND CONTROL GROUP

N= 398 (200+198)

Group	Overall_ Diet score								Mean Difference	Repeated measures ANOVA F-test
	Pretest		Post test 1		Post test 2		Post test3			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Experimental	38.30	4.14	36.96	4.17	33.28	3.82	28.07	3.52	10.23	F=712.60 p=0.001*** (S)
Control	38.09	4.05	37.63	4.04	37.53	4.03	37.45	4.05	0.86	F=2.14 p=0.08(NS)

*** very high significant at $P < 0.001$ NS= not significant

Table 4 depicts the effectiveness of community based comprehensive lifestyle promotion package on diet risk score among adult with hypertension in experimental and control group. The repeated measures ANOVA F-test for the experimental group was F=712.60 at $p < 0.001$ level which

showed statistical difference when compared to F score of control group F=2.14 at $p = 0.08$ level. Hence it was evident that the community based comprehensive lifestyle promotion package had a significant impact on diet risk score reduction of adult with hypertension in experimental group.

TABLE 5: MULTIPLE COMPARISON OF PRETEST AND POST TEST DIET RISK SCORE IN THE EXPERIMENTAL GROUP

N= 200

Group	Assessment	Experimental group		ANOVA repeated test score		Bonferroni t- test		
		Mean	SD	F value	P value	Comparison	MD	P value
Experimental	Pretest	38.30	4.14	F=712.60	p=0.001***			
	Post test 1	36.96	4.17			Pretest vs. Post test 1	1.34	0.001
	Post test 2	33.28	3.82			Pretest vs. Post test 2	5.32	0.001
	Post test 3	28.07	3.52			Pretest vs. Post test 3	10.23	0.001

MD= mean difference * $P < 0.05$ significant *** $P < 0.001$ very high significant

Table 5 shows that calculated F value F=712.60 was greater than the table value. Table also shows that mean difference between pre test and post test

3 was 10.23. Hence there was statistically significant between pre-test and post test 3.

TABLE 6: COMPARISON OF PRE AND POST TEST DIET RISK SCORE BETWEEN EXPERIMENTAL AND CONTROL GROUP

N= 398 (200+198)

	Group	Mean	SD	Mean difference	Student independent t-test
Pretest	Experimental	38.30	4.14	0.21	t=0.52 p=0.60 (NS)
	Control	38.09	4.05		
Post test 1	Experimental	36.96	4.17	0.67	t=1.63 p=0.10(NS)
	Control	37.63	4.04		
Post test 2	Experimental	33.28	3.82	4.24	t=10.77 p=0.001*** (S)
	Control	37.53	4.03		
Post test 3	Experimental	28.07	3.52	9.38	t=24.13 p=0.001*** (S)
	Control	37.45	4.20		

*** very high significant at $P \leq 0.001$ & $P > 0.05$ is not significant

Table 6 shows the overall pre and post test mean diet risk score among adult with hypertension between experimental and control group. The calculated 't' value revealed that there was no statistically significant difference between

experimental and control group in pre test and post test 1 but in post test 2 and 3 there was a very high statistical significant difference between experimental and control group at $p=0.001$ level.

TABLE 7: COMPARISON OF DIET PATTERN IN PRE TEST AND POST TEST BETWEEN EXPERIMENTAL AND CONTROL GROUP

N= 398 (200+198)

Diet pattern		Group				Chi square test
		Experimental (n=200)		Control (n=198)		
		n	%	n	%	
Pretest	Healthy diet	28	14.0	25	12.6	$\chi^2=0.31$ p=0.86 (NS)
	Moderately healthy diet	168	84.0	170	85.9	
	Unhealthy diet	4	2.0	3	1.5	
Post test 1	Healthy diet	40	20.0	28	14.1	$\chi^2=2.68$ p=0.26(NS)
	Moderately healthy diet	157	78.5	168	84.8	
	Unhealthy diet	3	1.5	2	1.0	
Post test 2	Healthy diet	77	38.5	30	15.2	$\chi^2=29.03$ p=0.001*** (S)
	Moderately healthy diet	123	61.5	166	83.8	
	Unhealthy diet	0	0.0	2	1.0	
Post test 3	Healthy diet	118	59.0	31	15.7	$\chi^2=112.55$ p=0.001*** (S)
	Moderately healthy diet	82	41.0	165	83.3	
	Unhealthy diet	0	0.0	2	1.0	

*** very high significant at $p \leq 0.001$ NS= not significant

Table 7 reveals the comparison of pre and post test level of diet modification in experimental and control group. In the pre test majority of them consumed moderately healthy diet in both the groups whereas in post test 3 majority of them consumed healthy diet in experimental group and

there was no improvement seen in the control group. The chi-square test revealed that there was no significant difference in the pre and post test1. However at the level of post test 2 and 3 there was a high level statistical significance difference found between experimental and control group.

DISCUSSION

Adolescent smoking has been reported to have a higher latent risk for cardiovascular disease. The risk and vulnerability of adolescents to smoking and acute nicotine exposure effects of linalyl acetate on cardiovascular changes in adolescents.⁷ Hence “prevention is better than cure”. It requires lifestyle modifications, regular exercise, proper sleep and drug management. If the person fails to adhere to the above measures, he will soon land up in complications. The major organs that are affected by high blood pressure are the kidneys eyes and the blood vessels.

We can reduce the incidence of hypertension by implementing population – wide policies to aiming reduce behavioral risk factors including use of tobacco, physical inactivity, overweight, obesity and high salt intake, high serum lipid level. Among the known hypertension on treatment systolic blood pressure of the surveyed population showed a continuous linear increase with age, but diastolic bold pressure peaked and started reducing in early fifth decade in males. Male gender, increasing age, higher body mass index (BMI) increased body weight, family history of hypertension, death of spouse and diabetes were found to be positively correlated with hypertension risk factors use of ground nut, palm oil and family history of diabetes independent predictive ability for hypertension.⁸

Comparison of pre test level of dietary factors between experimental and control group indicates there was no significant difference between the groups it shows the homogeneity among the groups. The analysis revealed that after implementation of community based comprehensive lifestyle promotion package in experimental group majority 164 (82.0%) of them were non-vegetarian, 102(51.0%) were consuming sun flower oil, 95(47.5%) were consuming rice items all days, 133(66.5%) consuming wheat and other refined cereals 1-2 days, 155(77.5%) using red meat 1-2 days, 160(80.0%) using poultry 1-2 days and 144(72.0%) using sweet and sweetener 1-2 days.

With regard to consumption of junk foods majority 75(37.5%) of them not consuming junk foods, 159(79.5%) having coffee and tea all days, 122(61.0%) use dry fish 1-2 days, 115(62.5%) use papads 1-2 days, 65(32.5%) not consuming deep fried items, 69(34.5%) consuming green leafy vegetables 5-6 days, and 62(31.05) using fruits 5-6 days.

In control group majority 155 (78.3%) of them were non-vegetarian, 64(32.3%) were consuming sun flower oil, 126(63.6%) were consuming rice items all days, 157(79.3%) consuming wheat and other refined cereals 1-2 days, 152(76.8%) using red meat 1-2 days, 146(73.7%) using poultry 1-2 days and 145(73.2%) using sweet and sweetener 1-2 days.

With regard to consumption of junk foods majority 68(34.3%) of them consuming junk foods 1-2 days, 166(83.8%) having coffee and tea all days, 130(65.7%) use dry fish 1-2 days, 130(65.7%) use papads 1-2 days, 99(50.0%) use deep fried items 1-2 days, 9(4.5%) consuming green leafy vegetables 5-6 days, and 9(4.8) using fruits 5-6 days.

The analysis also revealed that there was a significant change in the consumption of food items with regard to oil consumption, use of rice items, wheat and other refined cereals, poultry, sweets and sweetener, junk foods, dry fish , papads, deep fried items, green leafy vegetables and use of fruits in experimental group after implementation of community based comprehensive lifestyle promotion package but no change was identified in the control group. (Table No: 1 and 2)

Comparison of pre and post test diet risk score in experimental group showed that the reduction score was 15.74%. In control group the diet risk score reduction was only 0.98 only. (Table:3) This shows after receiving the community based comprehensive package the diet risk score was reduced in experimental among adult with hypertension.

Leila and Nafiseh conducted study to determine the effects of the Dietary Approaches to Stop Hypertension (DASH) eating pattern on cardio-metabolic risks in type 2 diabetic patients. A randomized crossover clinical trial was undertaken in 31 type 2 diabetic patients. For 8 weeks, participants were randomly assigned to a control diet or the DASH eating pattern. The study results revealed that after following the DASH eating pattern, body weight ($P = 0.007$) and waist circumference ($P = 0.002$) reduced significantly. After the DASH diet, the mean change for LDL cholesterol levels was higher (4.3 ± 0.9 mg/dl; $P = 0.001$) and HDL cholesterol was reduced (-17.2 ± 3.5 mg/dl; $P = 0.02$). Additionally, DASH had beneficial effects on systolic (-13.6 ± 3.5 vs.. -3.1 ± 2.7 mmHg; $P = 0.02$) and diastolic blood pressure (-9.5 ± 2.6 vs.. -0.7 ± 3.3 mmHg; $P = 0.04$). Among diabetic patients, the DASH diet had beneficial effects on cardio-metabolic risks.⁹

The comparison of the pre and post test mean scores in experimental group using repeated measures ANOVA F-test revealed that $F=712.60$ at $p=0.001$ level which indicated that there was a very high statistically significant difference in the pre and post test. But in control group there was no significant difference in the pre and post test. This showed that community based comprehensive lifestyle promotion package was effective in promoting lifestyle of adult with hypertension by reducing diet risk score in experimental group. (Table: 4).

Repeated measures ANOVA F- test shows that mean diet risk score difference was statistically significant between pre-test and post test 3 ($F = 712.60, P < 0.001$). Post hoc multiple comparison of Bonferroni t- test shows the diet risk reduction score from pre-test to 1st month (38.30 ± 4.14 vs. 36.96 ± 4.17), respectively mean difference 1.34 was statistically significant ($p < .001$). After 3rd month they further reduced (38.30 ± 4.14 vs. 33.28 ± 3.82), respectively mean difference is 5.32) was statistically significant ($p < .001$). After 5th month they further reduced (38.30 ± 4.14 vs. 28.07 ± 3.52), respectively mean difference is 5.32) was statistically significant ($p < .001$). Therefore, we can conclude that a community based comprehensive lifestyle promotion package was having effective on reduction of diet risk score among adult with hypertension. (Table: 5)

Table: 6 depicted the comparison of pre and post test mean scores of diet risk between experimental and control group using student independent ‘t’ test. The results revealed that the post test 2 and 3 ‘t’ value was $t=10.77, 24.13$ respectively at $p=0.001$ revealed that there was high significant difference in the pos test 2 and 3 scores between experimental and control group. Therefore it was noted that there had been a significant reduction on diet risk of adult with hypertension after community based comprehensive lifestyle promotion package.

In pretest 14% of the adults are having healthy diet score, 84% of them are having moderately healthy diet score and 2% of them are having unhealthy diet score. Among control group, 12.6% of the adults are having healthy diet score, 85.9% of them are having moderately healthy diet score and 1.5% of them are having unhealthy diet score. Diet wise there was no significant difference between experiment and control group.

In post test 1, among experimental group, 20% of the adults are having healthy diet score, 78.5% of

them are having moderately healthy diet score and 1.5% of them are having unhealthy diet score. Among control group, 14.1% of the adults are having healthy diet score, 84.8% of them are having moderately healthy diet score and 1.0% of them are having unhealthy diet score. Diet wise there was no significant difference between experiment and control group .

In post test 2, among experimental group, 38.5% of the adults are having healthy diet score, 61.5% of them are having moderately healthy diet score and none of them are having unhealthy diet score. Among control group, 15.2% of the adults are having healthy diet score. 83.8% of them are having moderately healthy diet score and 1.0% of them are having unhealthy diet score. Diet wise there was significant difference between experiment and control group.

In post test 3, among experiment group, 59.0% of the adults are having healthy diet score. 41.0% of them are having Moderately healthy diet score and none of them are having unhealthy diet score. Among control group, 15.7% of the adults are having healthy diet score. 83.3% of them are having moderately healthy diet score and 1.0% of them are having unhealthy diet score. Diet wise there was significant difference between experiment and control group. It was confirmed using non parametric chi square test. (Table: 7)

CONCLUSION

The study was aimed to assess the effectiveness of community based comprehensive lifestyle promotion package among adult living with hypertension. The findings revealed that there was reduction in the cardiovascular risk (diet risk score) among experimental group after administration of community based comprehensive lifestyle promotion package and there was no difference was found in the control group.

Community based comprehensive lifestyle promotion package has made modification in the diet pattern hence can reduce diet risk factors which in turn decreases the cardio-vascular risk among adult with hypertension.

Thus the study findings state and enriched evidence that community based comprehensive lifestyle promotion package is an effective intervention tool in promoting lifestyle of the adult with hypertension and reducing the cardiovascular risk.

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