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Research Article

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Comparison of cardiovascular risk between vegetarian and non-vegetarian adolescents in North Indian population

Anjali Verma*, Sangeeta Kapoor, Pallavi Kumari* and Reeta Singh Gaur*****

**Department of Physiology, Teerthanker Mahaveer Medical College & Research Centre, TMU, Moradabad, Uttar Pradesh, India*
***Department of Biochemistry, Teerthanker Mahaveer Medical College & Research Centre, TMU, Moradabad, Uttar Pradesh, India*
****College of Pharmacy, TMU, Moradabad, Uttar Pradesh, India*

ABSTRACT

It has always been a topic of debate as to which type of diet whether vegetarian or nonvegetarian be advocated for a healthier lifestyle. In this study an attempt has been made to come to a firm conclusion that which dietary pattern is favourable for a healthier lifestyle. This study has been conducted on 50 vegetarian and 50 non-vegetarian adolescents, age and sex matched recruited for the study and were analysed for various physiological and biochemical parameters. Only marginal differences were found between vegetarian and non-vegetarian groups and these differences were statistically insignificant. It implies that vegetarian and non-vegetarian diet have similar propensity for predisposing to cardiovascular (CV) risk. Other lifestyle factors might be influencing CV risk.

Key words: vegetarian, non-vegetarian, cardiovascular risk

INTRODUCTION

With the increasing risk of ischemic heart disease (IHD) in Indian population it has been a topic of constant concern as to which diet be followed, whether vegetarian or non-vegetarian for a healthier lifestyle. In various studies cardiovascular risk in adult population with respect to varied dietary patterns, have been studied. Inconsistent results have been obtained and there is no firm conclusion as to which dietary pattern be followed for the minimal risk for adverse cardiovascular effects in future. But, very few studies have been done so far in adolescent population to study the effect of dietary pattern on various physiological and biological parameters. Although in most of the previously conducted studies on adults, have revealed that the vegetarian diet appears to be low in factors resulting in CV risk when compared to non-vegetarian diet [1].Our study is thus, aimed to find out the effect of vegetarian and non-vegetarian diet on various physiological and biochemical parameters in adolescent population.

EXPERIMENTAL SECTION

The present study was conducted on 50 vegetarian and 50 non-vegetarian adolescents who were age (18-25 years) and sex matched recruited from Teerthanker Mahaveer Medical College &Research Center, Moradabad. The physiological parameters studied were BMI, pulse rate, systolic and diastolic blood pressure, Biochemical parameters studied were serum levels of fasting blood sugar(FBS)and various parameters of lipid profile e.g. total cholesterol (TC) ,total triglyceride (TG), LDLc, HDLc and VLDLc. Blood pressure was measured using aneroid sphygmomanometer, FBS was estimated by GOD-POD method[2], TC was analysed by CHOD- PAP end point method[3],Total TG was analysed by GPO-Trinder end point method [4], HDLc was determined by direct end point Trinder reaction[5] , LDLc by Friedwald's equation and VLDLc was calculated as (TG / 5). For the determination of

biochemical parameters fasting venous blood samples were obtained from antecubital vein and centrifuged at 3000 rpm for 10 minutes for obtaining the serum sample for analysis.

***Statistical analysis*:** Results of all the physiological and biochemical parameters were presented as mean ± SD. Student's t -test was performed and the level of significance was assessed at 5% level by using SPSS 20 version.

RESULTS AND DISCUSSION

Our study revealed some interesting results but mostly different as compared to the results obtained from many of the previous studies.

Physiological parameters among vegetarian and non-vegetarian groups: Almost comparable values of BMI , pulse rate , SBP and DBP were obtained for the vegetarian and non-vegetarian group[6].Although , marginally higher values for all the physiological parameters were seen for non-vegetarian group but the differences between these parameters (as shown in table 2& graph1) were non-significant. The possible reason for these findings may be that both vegetarians and non-vegetarians as long as supplemented by proper quantity of nutrients in their diet such as optimum protein content , adequate B-complex ,dietary fibre etc; acquire the same status of metabolism as evidenced by comparable findings of BMI , pulse rate , SBP and DBP in the two groups.

*Biochemical parameters among vegetarian and non-vegetarian groups :*Surprisingly , in regard to biochemical parameters also, our study yielded different results as compared with studies which have been conducted earlier by various researchers .(As indicated in table no.3 & graph 2) FBS was 84.37±11.16 mg/dl in vegetarians and a slightly higher value i.e.85.43 ±12.78 mg/dl but was obtained for non-vegetarian with no statistically significant differences between them. Lipid profile parameters ; TC, TG LDLc and VLDLc had only slightly higher values in non-vegetarians and HDLc only slightly lower values in non-vegetarians. These differences for lipid profile between vegetarians and non-vegetarians were statistically insignificant. These findings were found to be inconsistent with the results obtained with that obtained by Jagoetal [7], Hagoetal and Rajarametal[8] wherein they have obtained healthier values of lipid profile parameters in the vegetarian group. On the contrary, Texeiraetal [9]obtained similar types of results as in the present study. They had seen no significant difference in mean triglyceride levels in vegetarian and non-vegetarian prepubescent children.

Table-1 Demographic characteristics in the study group

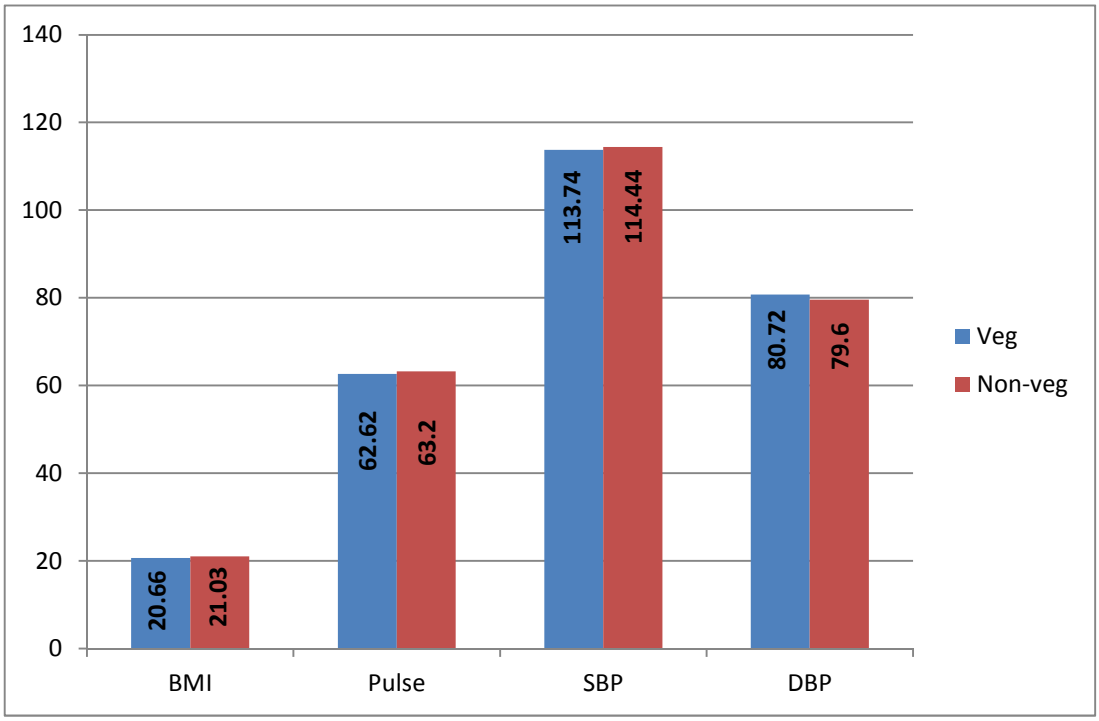
SN	Demographic characteristic	Mean +SD	
		Vegetarian group (n=50)	Non-vegetarian group (n= 50)
1	Age (years)	20.2± 2.77	19.59±2.69
2	Sex	M=31, F=19	M=35 ,F=15

Table-2 Comparison of Physiological parameters between vegetarian and non-vegetarians groups

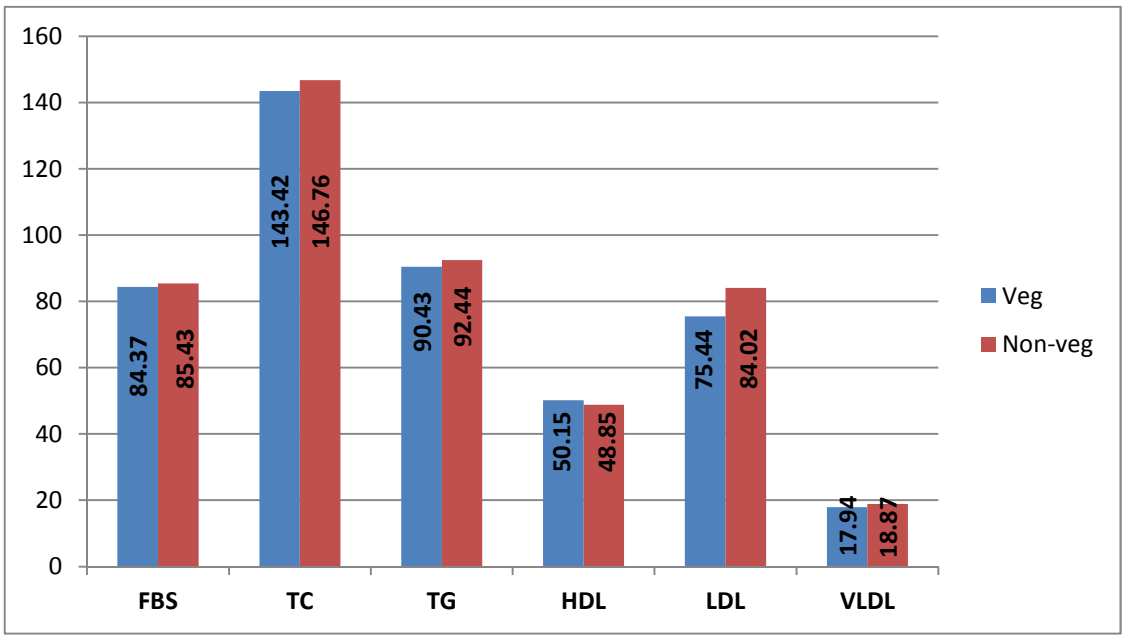
SN	Physio-logical parameters	Mean ± SD		P value	Significance
		vegetarian group	Non-vegetarian group		
1	BMI (kg/m^2)	20.66 ± 3.08	21.03±2.83	0.55	NS
2	Pulse rate (beats /min)	62.62 ± 5.53	63.20 +7.06	0.67	NS
3	Systolic blood pressure (mm/Hg)	113 .74 ± 12.91	114.44 ± 11.97	0.79	NS
4	Diastolic blood pressure (mm/Hg)	80.72 ± 13.32	79.61 + 10.87	0.66	NS

Table 3 : Comparison of biochemical parameters between vegetarian and non-vegetarian group

SN	Biochemical parameters	Mean ±SD		P value	Significance
		Vegetarian group	Non-vegetarian group		
1	FBS (mg/dl)	84.37 ± 11.16	85.43 ± 12.78	0.68	NS
2	**Lipid profile parameters**				
(a)	TC (mg/dl)	143.42 ± 25.06	146.76 ± 21.07	0.5	NS
(b)	TG (mg/dl)	90.43 ± 36.22	92.44 ± 33.07	0.79	NS
(c)	LDLc (mg/dl)	75.44 ± 26.39	84.02 ± 26.29	0.13	NS
(d)	HDLc (mg/dl)	50.15 ± 4.98	48.85 ± 6.77	0.32	NS
(e)	VLDLc (mg/dl)	17.94 ± 7.17	18.87 ± 6.81	0.54	NS



Graph 1 : Comparison of physiological parameters between vegetarian and non-vegetarian group



Graph 2 : Comparison of biochemical parameters between vegetarian and non-vegetarian groups roup

CONCLUSION

Thus, it can be concluded that during adolescence for both vegetarian or non-vegetarian group there are comparable findings in terms of various physiological and biochemical parameters i.e; they have similar CV risk unless otherwise influenced by certain modifiable life style factors such as : high BMI , lack of exercise or sedentary lifestyle smoking , alcohol consumption ,increased intake of dietary fat etc. Since , in these study groups none of the life style factors were found to be interfering and the adolescent population recruited for the study were all physically active which gives an explanation as to why there are similar chances of CV risk in both the groups irrespective of the type of the diet consumed . In conclusion, it can be said that positive health related outcomes in vegetarians and non- vegetarians can be attributed to factors other than their inclination for vegetarian or non-vegetarian diet.

Limitations :
1. The sample size was small and restricted.
2. A well formulated diet must have been given.
3. A well conducted diet analysis regarding the amount, type and consumption of nutrients consumed by the subjects should have been done.

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