

Comparative Study of Prevalence of Anaemia in Vegetarian and Non Vegetarian Women of Udaipur City, Rajasthan

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Abstract

The study was undertaken in Udaipur city, Rajasthan to compare the severity and prevalence of anaemia between 30 vegetarian and 30 non vegetarian women aged 20-40 years. Anthropometric measurements, dietary survey and haemoglobin estimation was done by the standard techniques. Results show that there was a highly significant difference ($p < 0.01$) in the BMI of vegetarian and non-vegetarian group. Mean haemoglobin level of non-vegetarian was higher (12.07 ± 1.08 g/dl) than the vegetarian group (10.09 ± 0.95 g/dl). Forty percent vegetarians were having moderate anaemia, 60 percent were mild anaemic whereas 46.66 percent non vegetarian respondents were in normal category. A significant difference ($p < 0.01$) was found in intake of green leafy vegetable, fats and oil and sugar. No significance was noted in the intake of pulses, other vegetable and milk and milk products. Intake of energy, protein, fat and iron was higher in non-vegetarian group.

Keywords: Adult women; Anaemia; Dietary intake; Haemoglobin; BMI

Introduction

Anaemia is an important health issue throughout the world with the highest prevalence rate being seen in developing countries. It is the most prevalent nutritional deficiency disease worldwide and is often most commonly found in children and women of child-bearing age [1].

According to World Health Organization (WHO), the global prevalence of anaemia is 24.8%, which means about 1.62 billion people worldwide. It is noted that the highest prevalence is in preschool age children (47.4%), while the lowest prevalence is in men (12.7%). The prevalence rates for pregnant women and non-pregnant women are 41.8% and 30.2%, respectively; however, among different population groups, the greatest number of individuals affected by anemia belongs to non-pregnant women, 468.4 million [2].

Anaemia in women-especially among non-pregnant women in central, northern and western Africa, central Asia and the Middle East and among pregnant women in southern Africa and southern Asia-is a particularly persistent problem [3].

The prevalence of anemia in Indian has been reported among females was 70.1%, which included 48.7% mild, 19.9% moderate and 1.5% severe anemia cases [4].

Overall health status of a person is judged on level of haemoglobin of a person. The high prevalence of anemia among women in India is a serious health hazards for them, for their families, and for the economic development and productivity of the country [5].

Dietary factors play an important role in the development of iron deficiency. The dietary factors of greatest influence over one's iron status include the form of iron consumed and any factors affecting its bioavailability.

Vegetarianism has become increasingly popular among people including adolescents in current years perhaps because this diet is believed to offer health benefits. Nevertheless, there are still justified concerns about some critical nutrients whose lack may cause serious nutritional deficiencies, especially as diverse groups of women may have very different motivation to follow a vegetarian diet, [6]. Therefore, the objective of this study was to determine the prevalence

of anemia among vegetarian and non-vegetarian women in Udaipur city, Rajasthan, India.

Material and Methods

The study was carried out in the municipal limits of Udaipur city, district Udaipur, Rajasthan. Sixty women aged 25-40 years were purposively selected. Among the respondents, 30 were self-reported vegetarians and 30 were self-reported non-vegetarians.

Excluded from the study were women who smoked, were pregnant, took vitamin or mineral supplements, or took any medications (including oral contraceptives). An Interview schedule was developed and administered to collect the information regarding personal particulars. Data pertaining to the anthropometric measurements and blood haemoglobin levels of respondents were assessed using standardized techniques. Twenty four hours recall method was used to assess the dietary adequacy of the respondents and daily intake of various nutrients was calculated using food composition tables [7] and was compared with respective RDA suggested by ICMR, 2010.

Results and Discussion

Background information

The information gathered from individual respondents on their personal particulars including age, educational level, religion, caste and family type have been suitably classified to depict a clear picture of the respondents in the study.

Age: Age of each respondent was recorded and it was ranging between 20-40 years. Table 1 show that 60 percent vegetarian

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respondents were in the age group of 31-40 years while 40 percent were in the age group of 20-30 years. In the non-vegetarian group also 31-40 year respondents were highest (76.66%) while 23.24 percent were in the age of 20-30 years.

Education: Education at the time of the study as evident from Table 1 indicated that in vegetarian group 33.33 percent and 30 percent respondents were graduate and post graduate respectively, whereas more than 13 percent respondents were illiterate. While in the non-vegetarian group only 26.66 percent respondents were graduated. Majority 36.66 percent of illiteracy was found in non-vegetarian group.

Type of family: Type of family was assessed in the term of joint and nuclear family. Seventy percent vegetarian respondents belonged to nuclear family. Among the non-vegetarian respondents 63.34 percent were belonged to joint and 36.66 percent respondent were nuclear.

Religion: Perusal of Table 1 depicts that in each group 100 percent respondents were Hindu and 100 percent were Muslim.

Caste: Information of caste system revealed that all respondent belonged to the other backward caste in the non-vegetarian group. While majority 76.66 percent respondent in vegetarian group were in general caste. Further 10 percent and 13.34 percent were from other backward class and schedule caste respectively.

Anthropometric profile

The field of anthropometry encompasses a variety of human body measurements, such as weight, height and BMI. Anthropometry is a key component of nutritional status assessment in children and adults. Anthropometric measurement serves as a good indicator of past and present nutritional status of an individual. Table 2 depicts the mean \pm SD height of vegetarian respondent was 159.66 \pm 3.09 cm and weight was 66.4 \pm 6.84 kg while mean height of non-vegetarian respondents was 161.06 \pm 3.16 cm and weight 72.4 \pm 8.11 kg.

Statically analysis of data revealed a significant difference ($P < 0.05$) between the weight of vegetarian and non-vegetarian respondents. Mean \pm SD of BMI of non-vegetarian respondents was high (28.28 \pm 2.97 kg/m²) compared to mean BMI (25.66 \pm 3.67 kg/m²) of vegetarian group.

Investigation found that BMI was highest in meat eaters, lowest in vegans, and intermediate in fish eaters [8]. Similar finding was reported by Khanna, et al. [9] who conducted a study among women (20-30 years) from India. Results shows that body fat was significantly higher among lacto vegetarians (27.2 \pm 4.2%) than non- vegetarians (24.3 \pm 4.0%) and ovolacto vegetarians (23.1 \pm 1.92%) (Figure 1).

Statistical analysis of data depicts that there is highly significant difference ($p \leq 0.01$) in BMI of vegetarian group and non-vegetarian group. Figure 1 shows present distribution of respondents in view of BMI. Majority (60%) of non-vegetarian respondents were in obese I category. Thirty percent were in obese II category and 30 percent were in normal range. Higher risk of obesity was found in non-vegetarian group as compared to the vegetarian group.

The results of present study are in line with the observations by Newby who reported that the prevalence of overweight in women or obesity (BMI \geq 25) was 40 percent among omnivores 29 percent among both semi vegetarian and vegan, and 25 percent among lacto vegetarian. Brathwaite et al, [10] reported from those vegetarians have lower BMI and/or a lower rate of obesity.

Haemoglobin status

Haemoglobin determination is regarded as a screening index useful in defining various degrees of iron deficiency anaemia. It has been recommended that anaemia may be diagnosed carefully and confidently when the haemoglobin concentration is lower than the level considered normal for the person's age and sex therefore, the measure of haemoglobin in circulating blood is one of the best laboratory tests for screening of anaemia.

Results of haemoglobin status in Table 3 revealed that mean \pm SD of non-vegetarian group was higher (12.07 \pm 1.08 g/dl) than vegetarian group (10.09 \pm 0.95 g/dl). Statically higher ($p \leq 0.01$) difference was found. This could be consumption of iron rich foods such as meat, poultry, pulses, and dried fruits etc. Non-heme iron absorption may be improved by vitamin-C or an acid diet but not by and alkaline diet or high fibre diet, both of which exist in vegetarian diets [11].

It is evident from Figure 2 that out of 60 respondents majority (60%) vegetarian respondents were mild anaemic while 40 percent moderate anaemic. Whereas in the non-vegetarian group the 46.66 in normal and mild anaemic category.

According to NFHS III data the prevalence of anaemia among married women aged 15-40 year in Orissa was 62.8 percent.

Similar study conducted by Sharma [12] reported that haemoglobin level is non-vegetarian obese women was high (12.35 \pm 1.083 g/dl) than vegetarian (9.036 \pm 1.002 g/dl) obese women.

Similar finding were reported by Sharma and Nagar [13] where prevalence of anaemia was found to be 61 percent out of 100 subject, 22 percent were mild anaemic.

S.No.	Particulars	Vegetarian (n=30)	Non vegetarians (n=30)
1	Age (years)		
	20-30	40(12)	23.34(7)
	31-40	60(18)	76.66(23)
2	Education		
	Illiterate	13.33 (4)	36.66(11)
	Secondary	10 (3)	13.34(4)
	Senior Secondary	13.34(4)	23.34(7)
	Graduate	33.33(10)	26.66(8)
	Post Graduate	30 (9)	
3	Type of Family		
	Nuclear	70 (21)	36.66 (11)
	Joint	30 (9)	63.34(19)
4	Religion		
	Hindu	100 (30)	
	Muslim		100 (30)
5	Caste		
	General	76.66(23)	
	OBC	10 (3)	100(30)
	SC	13.34 (4)	

Values in parenthesis represent number of respondents

Table 1: Percentage distribution of respondents in view of background information.

Anthropometric measurements	Non vegetarian (n=30)		Vegetarians (n=30)		P value
	Mean	SD	Mean	SD	
Height (cm)	161.1	3.2	159.7	3.1	0.79 ^{NS}
Weight(kg)	72.4	8.1	64.87	6.9	0.045*
BMI(kg/m ²)	28.28	3	25.66	3.7	0.000**

** Significant at 1% ($p < 0.01$).

* Significant at 5% ($p < 0.05$). NS: Non Significant

Table 2: Mean \pm SD value of anthropometric measurements.

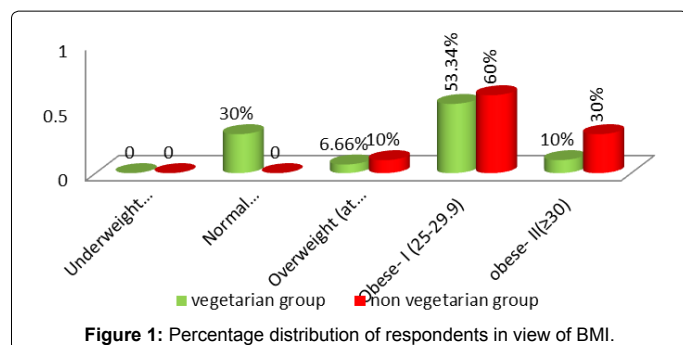


Figure 1: Percentage distribution of respondents in view of BMI.

Haemoglobin level (g/dl)	Vegetarian group (n=30)	Non vegetarian group (n=30)	Normal Hb level (g/dl)	P value
Mean ± SD	10.09 ± 0.95	12.07 ± 1.08	≥12	0.001**
Range	11-Aug	9-13.6		

** Significant at 1% (p<0.01).

Table 3: Mean ± SD values of blood Haemoglobin levels of the respondents.

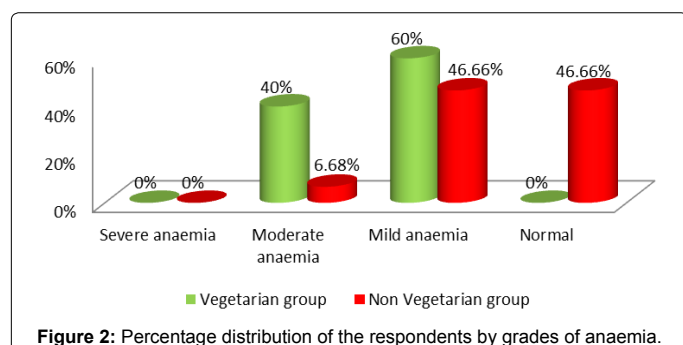


Figure 2: Percentage distribution of the respondents by grades of anaemia.

Food frequency method

The frequency of intake was recorded in terms of their frequency like twice a day, alternate day, weekly etc. and food stuffs have been categorized like cereals, pluses, vegetables, milk and milk products etc.

Cereals: The major cereals in India are rice, wheat, maize, bajra etc. These grains are main source of energy. Table 4 depicts that 100 percent of respondents in both groups were consuming cereals in a day.

Pluses: Pulses are consumed both in whole and splitted form in vegetarians diet. These are important source of energy. Results indicated that majority (70 percent) of respondents of vegetarian group was consuming alternate day whereas only 36.66 percent were consuming alternate day of non-vegetarian group. Weekly consumption of pluses was 63.34 percent in non-vegetarian group.

Green leafy vegetable: Many types of greens are consumed all over the country. Commonly consumed greens are spinach, fenugreek leaves, cabbage, and coriander leaves in the study area. The green leafy vegetables are rich source of the calcium, iron to carotene and vitamin-c approx 76 percent vegetarians respondents were consuming alternate day whereas non vegetarian group were consuming 53.33 percent and 46.66 percent seasonal and once a month respectively.

Other vegetable: Other vegetable refers to the vegetables which are not included in the group of leafy vegetable and root and tubers. These vegetables are good source of dietary fibres in the diet. Some vegetable like pumpkin are rich source of vitamin-A while other like bitter melon, cauliflower and tomatoes are good source of vitamin-C. Table

4 depicts that 2 percent vegetarians and non-vegetarians respondents were consuming other vegetable seasonally, because less availability of these vegetable in local market. But it was consumed alternate day in a season.

Roots and tubers: Among roots and tubers garlic, onion, carrot, radish etc. are the one which are consumed all over the world. In study group it was found that 100 percent non-vegetarians respondents were consuming onion and garlic daily. Whereas vegetarian respondent comparatively consuming less 76.66 percent every day.

Milk and products: This group covers liquid, milk, powder, curd, butter milk; milk is not only a source of good quality protein but also of calcium and riboflavin beside some other nutrients. Results reveal that more than 83 percent vegetarian respondents were consuming butter milk and curd every day. While 16.66 percent were consuming it weekly. Consumption of milk and product every day highest was 93.34 percent non-vegetarian group.

Fats and oils: The fats are concentrated source of energy providing 9 kcal/g. The visible fats commonly consumed in India are butter ghee, hydrogenated oil and various oils. Result revealed that 100 percent respondents of both group were consuming oil every day.

Bedford and Barr [8] conducted a study in British Columbia (BC) on women aged 19-84 years, results showed that vegetarians consumed more total grain, fruit, total dairy and milk, and less discretionary fat than non-vegetarians. In addition, they consumed twice as much whole grain and legumes as non-vegetarians. There was no difference in total vegetable intake between the vegetarians and non-vegetarians; however, there was a difference in distribution of vegetable type between the groups. The vegetarians ate more dark green vegetables, while the non-vegetarians ate more potatoes.

Food intake: The nutritional status of any individual is directly affected by food intake. Man needs a wide range of nutrients to lead a healthy and active life and these are derived through the diet that he consumes daily. The components of diet should be chosen judiciously so that it provides all the nutrients in adequate amount and in proper proportion (ICMR). The daily intake of various food stuffs are presented below:

Table 5 depicts that all respondents were consuming cereal. Mean intake of cereals by the respondents of vegetarian group was 201.01 ± 5.6 g/day and 170.2 ± 4.6 g/d in non-vegetarian group. The intake was low in both groups as compared to balanced diet.

Results regarding consumption of pulses shows that respondents of both vegetarian and non-vegetarian group were consuming equal amount of pulses (28.30 ± 1.8 g/d) it was the 47.17 percent of the balanced diet (Figure 3).

The mean intake of green leafy vegetable was observed comparatively higher (60.53 ± 5.3 g/d) in vegetarian group than non-vegetarian (36.2 ± 5.6 g/d). It was 60.53 percent and 32.2 percent of balanced diet in vegetarian and non-vegetarian group respectively (Figure 3).

The mean consumption of roots and tubers was noted as 100 ± 3.9 g/day in vegetarian and 125 ± 6.9 g/d in non-vegetarian, providing 50 percent and 62.5 percent of balanced diet respectively. Consumption of onion and garlic was found more and frequently in non-vegetarian group. The mean amount of other vegetables consumed by respondents was approx. same (90.01 ± 5.3 g/d) and (89.7 ± 8.5 g/d) in vegetarian and non-vegetarian group respectively. The intake was low compared to balanced diet it was 36 percent in both groups.

Food stuff	V/NV	Frequency of consumption							
		Twice	Everyday	Alternate	Weekly	Once a month	Rarely	Never	Seasonal
Cereal	V	100							
		-30							
	NV	100							
		-30							
Pulses	V			70(21)	30(9)				
	NV			36.66	63.34				
Green leafy vegetables	V			76.66			23.34		
				-23			-9		
	NV					46.66			53.66
						-14			-14
Other vegetables	V								100
									-15
	NV								100
									-15
Roots and tubers	V		76.66		23.34(9)				
			-23						
	NV		100						
			-30						
Fats and oils	V	100							
		-30							
	NV	100							
		-30							
Milk and milk products	V		83.33	16.66					
			-25	-5					
	NV		93.34	6.66					
			-28	-2					
Meat and meat products	V							100	
								-30	
	NV				76.53	10	13.34		
					-23	-3	-4		

Values in parenthesis represent number of respondents

V: Vegetarian; NV: Non vegetarian

Table 4: Percentage distribution of respondents by consumption of various food items.

S.No	Food groups(g)	Balance Diet#	Vegetarian group (n=30)	Non vegetarian group (n=30)	P Value
1	Cereal(g/d)	270	201.01 ± 5.6	170.2 ± 4.6	0.025*
2	Pulses(g/d)	60	28.30 ± 1.8	28.39 ± 1.7	0.785 ^{NS}
3	Green leafy vegetable (g/d)	100	60.53 ± 5.3	36.2 ± 5.6	0.001**
4	Root and tubers(g/d)	200	100 ± 3.9	125 ± 6.9	0.024*
5	Other vegetables(g/d)	250	90.01 ± 5.3	89.7 ± 8.5	0.967 ^{NS}
6	Fruits(g/d)	100	50.3 ± 1.1	72.5 ± 9.9	0.045*
7	Milk and milk products (g/d)	300	151.32 ± 6.7	151.2 ± 6.8	0.167 ^{NS}
8	Fat and oils(g/d)	20	30 ± 3.2	50.23 ± 1.53	0.000**
9	Sugar(g/d)	20	40 ± 3.2	51.2 ± 0.7	0.000**
10	Meat and meat products (g/d)	50	0	29.53 ± 5.3	0.000**

(ICMR, 2010)** Significant at 1% (p<0.01).

*Significant at 5% (p<0.05). NS: Non Significant

Table 5: Mean ± SD values of food intake of respondents.

Mean intake of fruits was noted less (50.3 ± 1.1 g/d) in vegetarian group and higher (72.5 ± 9.9 g/d) in non-vegetarian group. fruits were consuming only seasonally by the vegetarian group. Figure 3 shows

that vegetarian group was consuming the fruits just half percent of the balance diet.

Mean consumption of milk and milk product was observed equal.

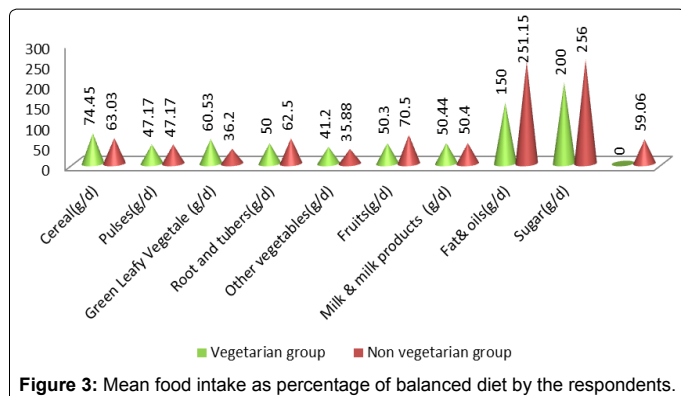


Figure 3: Mean food intake as percentage of balanced diet by the respondents.

When compared to balance diet intake was noted only 50 percent in both vegetarian and non-vegetarian groups.

Mean intake of fats and oils was observed comparatively higher (50.23 ± 1.53 g/day) in non-vegetarian group (30 ± 3.2 g/day) further Figure 3 unveiled that intake was higher (150% and 251.53%) in vegetarian and non-vegetarian group when compared to balance diet.

Mean intake of sugar was observed was highest (51.2 ± 1.7 g/d) in non-vegetarian and lowest (40 ± 3.2 g/d) in vegetarian respondents. But it was 200 percent and 256 percent of balance diet in vegetarian and non-vegetarian group respectively.

Only non-vegetarian group was consuming the meat and meat products that was 58 percent of balance diet (Figure 3) and the mean intake of meat and meat products was 29.53 ± 5.3 g/d.

Statistical analysis of data shows that there was highly significant difference (P ≤ 0.01) was observed in intake green leafy vegetables, fats & oils, and sugars where as a less significant difference (P ≤ 0.05) was found in the consumptions in the roots & tubers, fruits and cereals but intake of pulses other vegetables and milk and milk products there was no significant difference was observed in vegetarian and non-vegetarian respondents.

McGrath [14] reported that majority of students from Virginia Girls College (20-35 years) did not meet recommendations for daily servings of fruit, vegetable, dairy, whole grains, and dietary fibre.

Sharma [15] assessed dietary pattern and biophysical profile of 200 female students aged between 17- 25 years in Ludhiana. The finding of the study reported that 56.5 percent of the subjects were consuming three meals regularly. On the contrarily 43.5 percent of subjects skipped their meals, due to the untasty food (38%), shortage of time (4%) and consumption of junk food (66.5%) and snacks (20 %).

Nutrient intake: Nutritional composition of the diets consumed by the respondents was calculated in terms of raw weight and results were then compared with Recommended Dietary Allowances [16] as presented in Figure 4.

Energy: Our body needs energy for maintaining body temperature, for metabolic activities supporting growth and for physical activities. Wheat, bajra, rice, sugar and jaggery and fats and oils were the major source of energy in the diet of all the respondents.

After perusal of Table 6 it was found that the mean intake of energy by the non-vegetarian respondents was higher (2335 ± 8.9 Kcal/d) than the vegetarian respondents (2012 ± 3.9 Kcal/d) similarly percent RDA was higher (104.71%) in non-vegetarian group and lower (94.71%) in vegetarian group.

Similarly a Study showed that vegetarians, especially vegans, have lower energy intakes and more difficulty meeting energy requirements than non-vegetarians due to the low caloric density of their diets [17].

Protein: Dietary Proteins provide amino acids for the synthesis of body protein and other biological important nitrogenous components in the body. Adequate protein is essential during growth, when new tissue proteins are being synthesized. The mean intake was also found higher (40.53 ± 5.3 g/d) in non-vegetarian group (25.3 ± 3.9 g/d) it was 73.69 percent and 46.10 percent of the RDA in non-vegetarian and vegetarian group respectively. A statistical significant (P<0.01) difference was observed in vegetarian and non-vegetarian group.

Similar finding shows that the level of protein intake was significantly lower in vegetarians at 58.73 grams per day compared to non-vegetarians at 76.99 grams per day; however the amount of protein consumed was above the Recommended Dietary Intake of 46 grams per day [18].

Fat: After the perusal of Table 6, the mean fat content present in the diet of respondents from vegetarian group was 30.30 ± 5.3 g/day and non-vegetarian group was 45.30 ± 3.0 g/d. The percent of nutrient adequacy when intake was compared with RDA. Statically a highly significant difference (P<0.01) was found in both groups.

In a cross sectional study of women aged 40 years in Mirzapur, Bangladesh conducted by Farzana [19] shows that dietary history, mean calorie intake (1671.9 ± 788.5 kcal vs. 1908.9 ± 574.5 kcal, p=0.013) and macronutrient (median value; per day) consumption was found lower [carbohydrate (334.5 gm vs. 385.1 gm, p=0.048); protein (34.9 gm vs. 53.9 gm, p<0.001), fat (7.7 gm vs. 12.7 gm, p=0.020) in vegetarian group compared to non-vegetarian individuals.

Calcium: Data in the Table 6 showed that calcium was found 300 ± 16.5 mg/day in non-vegetarian group and 280.30 ± 3.9 mg/day in

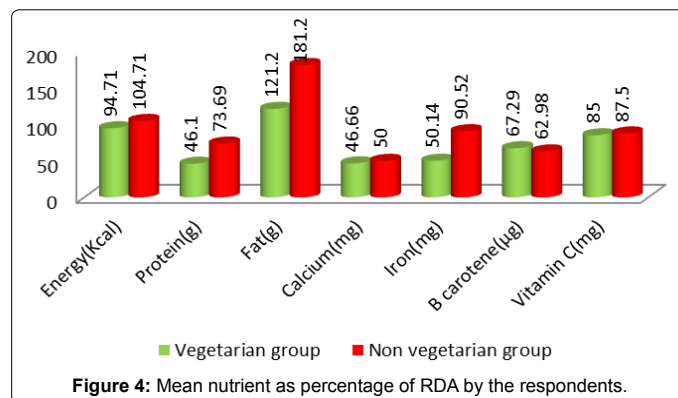


Figure 4: Mean nutrient as percentage of RDA by the respondents.

Nutrient	RDA#	Vegetarian group (n=30)	Non vegetarian group (n=30)	P Value
Energy(Kcal)	2230	2012 ± 3.9	2335 ± 8.5	.056 ^(NS)
Protein(g)	55	25.35 ± 3.9	40.53 ± 5.3	.000 ^(*)
Fat(g)	25	40.30 ± 5.3	45.30 ± 3.0	.000 ^(*)
Calcium(mg)	600	280 ± 3.9	300 ± 16.5	.003 ^(**)
Iron(mg)	21	10.53 ± 3.9	19.53 ± 5.3	.008 ^(*)
B carotene(µg)	4800	3230 ± 9.3	3023 ± 5.3	.166 ^(NS)
Vitamin C(mg)	40	34 ± 5.8	35 ± 5.3	.098 ^(NS)

** Significant at 1% (p<0.01).

* Significant at 5% (p<0.05). NS: Non Significant

(ICMR, 2010)

Table 6: Mean ± SD values of nutrient intake of respondents.

vegetarian group. Figure 4 depicts that intake of calcium in vegetarian and non-vegetarian group was less than the RDA there is no significant difference was found in both groups.

It has been estimated that only 17% of vegetarian's women reached the recommended allowance for protein and 83% ate less than two thirds of the recommended allowance of calcium [20].

Iron: The mean intake of iron in diet of respondents was noted (22.53 ± 1.3 g/d) and 10.53 ± 3.9 mg/day in non-vegetarian and vegetarian respondents respectively. Intake was 90.52 percent in non-vegetarian and 50.14 percent in vegetarian than the RDA (Figure 4). Statistically results revealed that a significance difference ($P \leq 0.05$) was found in vegetarian and non-vegetarian group.

β -carotene: Mean intake of β -carotene shows that respondents from vegetarian group was consuming β -carotene 3230 ± 5.3 μ g/d and 3023 μ g/d in non-vegetarian group. There was significant difference was found in vegetarian and non-vegetarian group.

Vitamin-C: The mean intake of vitamin C by respondents of non-vegetarian group and vegetarian group was almost similar i.e. (35.10 ± 5.3) (34.05 ± 5.8) respectively. It was the 87.5 percent and 85 percent of RDA in vegetarian and non-vegetarian respectively.

A lactovegetarian and ovovegetarian diet may have shortage of iron, calcium, iodine, selenium, zinc, riboflavin, vitamin D and vitamin B12 [9,21-23].

Ball and Bartlett [7] examined dietary intake and iron status of Australian vegetarian women. Data indicated that vegetarians had significantly lower intakes of protein ($P < 0.01$), saturated fat ($P < 0.01$), and cholesterol ($P < 0.001$), and significantly higher intakes of dietary fibre ($P < 0.001$) and vitamin C ($P < 0.05$).

Khanna [24] reported that no significant difference was found for energy and carbohydrate intake between the three groups. Protein intake was significantly higher in non-vegetarians as compared to ovo-lacto vegetarian and lacto vegetarian group ($p < 0.01$) and fat intake was higher in lacto vegetarians as compared to ovo-lacto vegetarian and non-vegetarian group ($p < 0.01$) [25-27].

Conclusion

On the basis of above results it can be concluded that prevalence of anaemia was higher observed in vegetarian group. A highly significant difference of BMI existed between vegetarian and non-vegetarian. Food intake and nutrient intake was higher in non-vegetarian group. As a large proportion of Indians subsist on iron-poor vegetarian diets for religious, economic, and cultural reasons, large-scale iron supplementation and fortification of commonly consumed vegetarian foodstuffs constitute a feasible, culturally appropriate, and cost-effective strategy for addressing this major public health problem.

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