Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.6495

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (2):** 987-994 (2018)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

A Study on Vegetarian Diet – Dealing With the Efficiency and Deficiency of It

Rafia Sultana[1*] and Tanveer Fatima[2]

[1]Student of M.Sc Nutrition and Dietetics, [2]Assistant Professor,

Department of Nutrition and Dietetics, Anwar Ul Uloom, PG College,

Affiliated to Osmania University, Hyderabad, India

*Corresponding Author E-mail: rafiasultana056@gmail.com

Received: 18.03.2018 | Revised: 12.04.2018 | Accepted: 17.04.2018

ABSTRACT

The vegetarian diet is one that is chosen by individuals for various reasons, including health and/or ethical reasons. The aim of the present study is to compare the quality and the contributing components of vegan, Lacto vegetarian, semi-vegetarian, pesco-vegetarian and ovo vegetarian diets. Cross sectional community based survey was performed among the vegetarians to know the health benefits and associated risk factors; the study was conducted with sample size of 200 among males and females in Maheshwaram, Tugguda, and Ravirala city of Ranga Reddy district. Of all the participants the range of lacto vegetarian was high, males were 30% and females were 36%. Hemoglobin test was done to analyze the hemoglobin values through hemoglobin test (sahil's method). Of the entire total sample 54%were non anemic and 46% were anemic.

The data was collected using questionnaire including general information, anthropometric data, and awareness was created using flyer among vegetarians that they should obtain balanced diet and protein from a variety of plant sources, including legumes, soy products, grains, nuts and seeds. Although a well planned vegetarian diet can meet all the nutritional needs of an individual, it may be necessary to pay particular attention to some nutrients such as vitamin B-12, zinc, iron, calcium to ensure an adequate intake, particularly if the person is on a vegan diet. Data was represented graphically & Chi square test was applied; data was statistically significant associated with consumption of protein foods, suffering from disease, intake of supplements. Descriptive statistics, such as frequencies and percentages were calculated for characterization of the participants. The study concludes that some of the vegetarians are at lesser risk for obesity, atonic constipation, chronic degenerative disease, gallstones are lower.

Key words: *Vegetarian, Vegan, Vitamin B-12, Zinc, Iron, Calcium, Obesity, Chronic degenerative diseases.*

INTRODUCTION

Vegetarian dietary pattern can be quite diverse because of the variety of food choices available and the different factors that motivate people to adopt such patterns.

Cite this article: Sultana, R. and Fatima, T., A Study on Vegetarian Diet – Dealing with the Efficiency and Deficiency of It, *Int. J. Pure App. Biosci.* **6(2):** 987-994 (2018). doi: http://dx.doi.org/10.18782/2320-7051.6495

People choose to adopt a vegetarian diet for many reasons such as compassion towards animals, a desire to protect the environment, to lower the risk of chronic diseases or to therapeutically manage those diseases.

Classification of diet	Description of dietary pattern
• Semi – vegetarian	• Occasionally eats meat/poultry/fish.
• Pesco vegetarian	• Excludes meat and poultry, but includes fish (possibly other sea food).
• Lacto ovo vegetarian	• Excludes all flesh foods and dairy products, include eggs.
• Ovo vegetarian	• Excludes all flesh foods and dairy products, include eggs.
• Lacto vegetarian	• Excludes all flesh foods and eggs, include dairy products.
• Vegan	• Avoids all foods of animal origin.
• Macrobiotic	• Usually vegetarian but may eat meat or fish if wild/hunted in the lowest (least restricted) dietary regimens.
• Fruitarian	• Diet is usually based on fresh and dried fruits, nuts and, seeds and few vegetables. The diet generally consists only of foods that do not kill the plant of origin.

Vegetarian Diet: What are the Benefits?

1. May Improve Mood
2. May Improve Symptoms of Psoriasis
3. May Reduce Incidence of Diabetes
4. Reduces Risk of Cataract Development
5. Reduces Risk of Cardiovascular Disease
6. Vegetarians Usually Have Low Cholesterol
7. Less Risk of Stroke and Obesity
8. Less Chance of Developing Kidney Stones
9. It Can Satisfy All Your Nutritional Requirements

Nutrients You May Be Missing If You are Vegetarian

1. Vitamin B12
2. Zinc
3. Iron
4. Omega-3 fatty acids
5. Vitamin D
6. Calcium
7. Protein
8. Riboflavin

OBJECTIVES

1. To study a fuller picture encompassing both the nutrition and health of the vegetarian diet.
2. To assess the dietary intake of vegetarians and determine whether they meet the dietary reference intake.
3. To examine consumers perceived benefits and barriers to the consumption of a vegetarian diet.
4. To create an awareness of efficiency and deficiency of vegan diet through (pamphlet) flyer.
5. To create an awareness and improve nutrition by incorporating vegetarian sources of nutrients in to daily life.
6. To analyze the haemoglobin values through haemoglobin test (sahil's method).
7. To statistically compiled data through chi square test.

MATERIAL AND METHODS

Methodology of the present study were discussed under the following headings:

1. Research design
2. Selection of the area
3. Selection of the sample
4. Size of the sample
5. Data collection

Research design: Non experimental research design

Selection of the area: The area was Maheshwaram, Tugguda, Ravirala – Ranga Reddy District, Telangana.

Selection of the sample: For the study 200 samples of all age group were selected

Sampling: Random sampling procedure was adopted to collect data. An attempt was made to cover 200 people. The samples were drawn from various cities from Telangana.

Duration of the study: The study has been carried for a period of 3 months i.e; during the months of January 2018 – March 2018

Instruments used: Weighing scale, stadiometer, Sahil's Hemoglobin meter.

Tools and techniques used for the collection of data:

QUESTIONNAIRE: A well designed questionnaire was used to elicit the information from the subjects, which include both open ended and closed ended questions.

It includes:-

- General information
- Food habits of the subject
- Dietary practice
- Awareness questions
- History of diseases
- Hemoglobin test (sahil's method)

Data analysis:

Data was collected, consolidated and subjected to statistical analysis using statistical measures such as chi- square test,mean, graphical representation.

Chi square was applied, whose formula is given below:

$$X^2 = \sum_{i=1}^{r}\sum_{j=1}^{c}\frac{(O_{i,j} - E_{i,j})^2}{E_{i,j}}.$$

Where,

O = observed value

E = expected value

Eij = R × C ÷ N

RESULT AND DISCUSSION

Table 1: Types of Diet

Types of diet	Males frequency(n)	Males (%)	Females frequency(n)	Females (%)
Vegetarian	24	24	30	30
Lacto vegetarian	30	30	36	36
Pesco vegetarian	20	20	18	18
Ovo vegetarian	26	26	16	16
Total	100	100	100	100

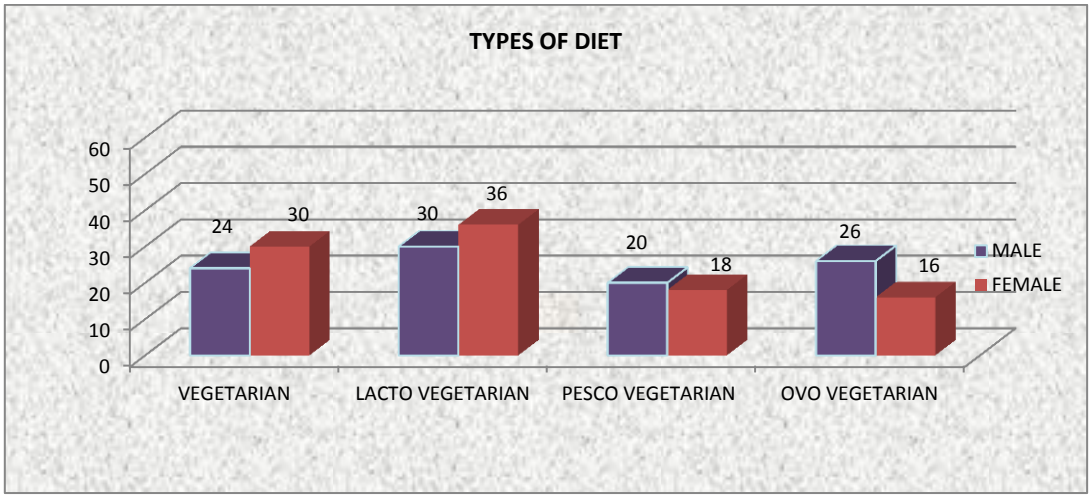

Fig. 1: Types of diet

DISCUSSION: The above table and figure no. (5.2) represents the sample size 200 which shows the different type of diets consumed by both males and females. Vegetarian males were 24% and females were 30%, lacto vegetarian males were 30% and females were 36%, pesco vegetarian males were 20% and females were 18%, ovo vegetarian males were 26% and females were 16%. This shows that the range of lacto vegetarian were high respectively.

Table 2: Consumption of Protein Foods

Portion	Males frequency(n)	Males (%)	Females frequency(n)	Females (%)
1 or less	56	56	36	36
2-3	44	44	64	64
Total	100	100	100	100

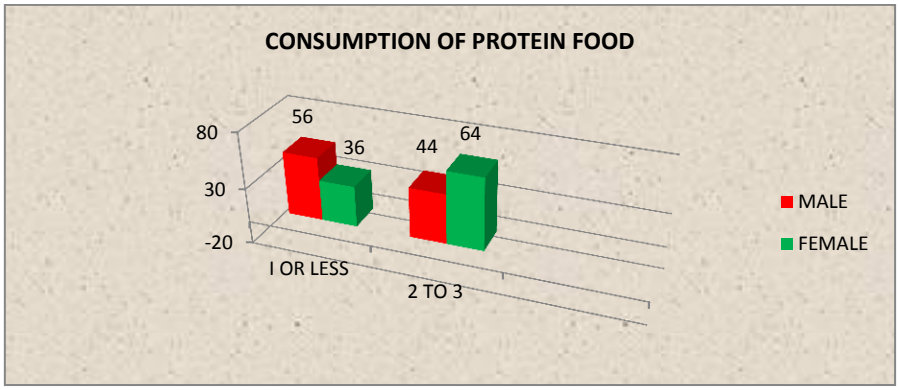

Fig. 2: consumption of protein foods

DISCUSSION: The above table and figure no. (5.6) represents the sample size 200 out of which 56% of males consume 1 or less portion and 44% consumes 2 to 3 portion whereas 36% of females consume 1or less portion and 64% consumes 2 to 3 portion**.**

Chi square test:

	Category 1	Category 2	Marginal Row Totals
Males	56 (46) [2.17]	44 (54) [1.85]	100
Females	36 (46) [2.17]	64 (54) [1.85]	100
Marginal Column Totals	92	108	200 (Grand Total)

NOTE: - The chi-square statistic is 8.0515. The *p*-value is .004547. This result is significant at $p < .05$.

Table 3: Suffering from Disease

Category	Males frequency	Females frequency	Percentage %
Yes	34	62	48
No	66	38	52
Total	100	100	100

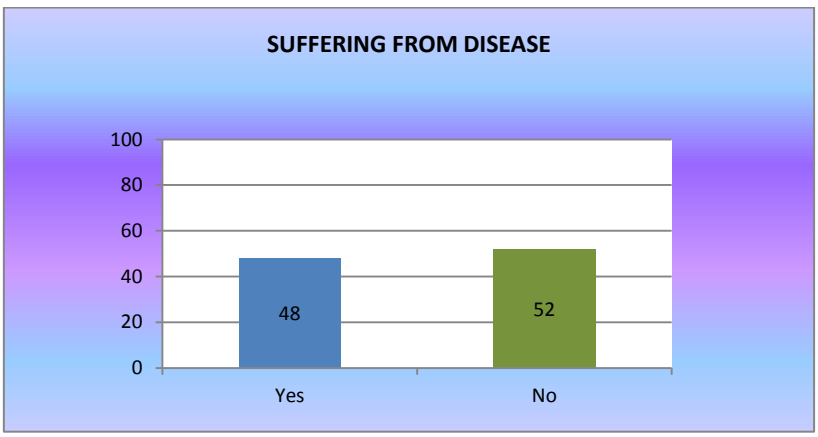

Fig. 3:

DISCUSSION: The above table and figure no. (5.10) represents the sample size 200 out of which 48% of subjects are suffering from diseases and 52% of subjects are not suffering from specific disease.

Chi square test:

	Category 1	Category 2	Marginal Row Totals
Males	34 (48) [4.08]	66 (52) [3.77]	100
Females	62 (48) [4.08]	38 (52) [3.77]	100
Marginal Column Totals	96	104	200 (Grand Total)

Note: - The chi-square statistic is 15.7051. The *p*-value is .000074. This result is significant at $p < .05$.

Table 4: Intakes of Iron or Calcium Supplements

Category	Males frequency	Females frequency	Percentage %
Yes	30	46	38
No	70	54	62
Total	100	100	100

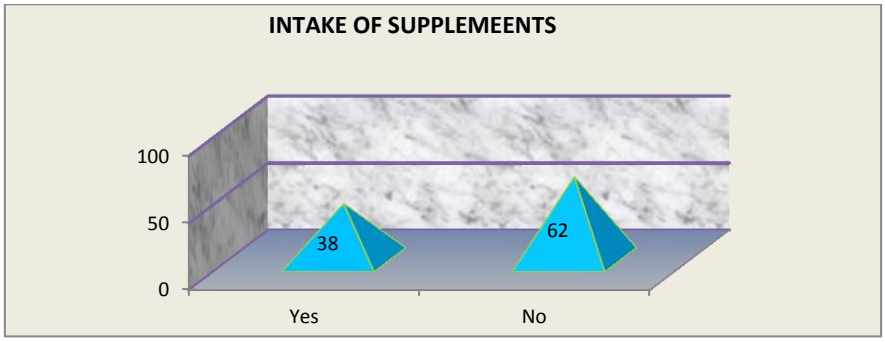

Fig. 4:

DISCUSSION: The above table and figure no. (5.12) represents the sample size 200 out of which 38% takes supplements and 62% does not take any supplements.

Chi square test:

	Category 1	Category 2	Marginal Row Totals
Males	30 (38) [1.68]	70 (62) [1.03]	100
Females	46 (38) [1.68]	54 (62) [1.03]	100
Marginal Column Totals	76	124	200 (Grand Total)

NOTE: -The chi-square statistic is 5.4329. The *p*-value is .01976.This result is significant at $p < .05$

Table 5: Consumption of Fortified Foods

Category	Males frequency	Females frequency	Percentage %
Yes	88	58	73
No	12	42	27
Total	100	100	100

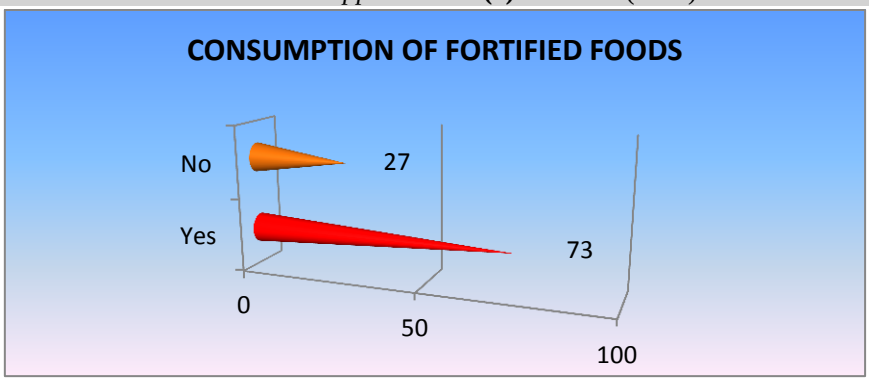

Fig. 5:

DISCUSSION: The above table and figure no. (5.13) represents the sample size 200 out of which 73% of the total sample consumes fortified foods and 27% does not consumes fortified foods.

Chi square test:

	Category 1	Category 2	Marginal Row Totals
Males	88 (73) [3.08]	12 (27) [8.33]	100
Females	58 (73) [3.08]	42 (27) [8.33]	100
Marginal Column Totals	146	54	200 (Grand Total)

Note: - The chi-square statistic is 22.8311. The *p*-value is .000002. This result is significant at $p < .05$.

Table 6: Percentage of Hemoglobin

Category	Mean
Males	12.28
Females	11.02

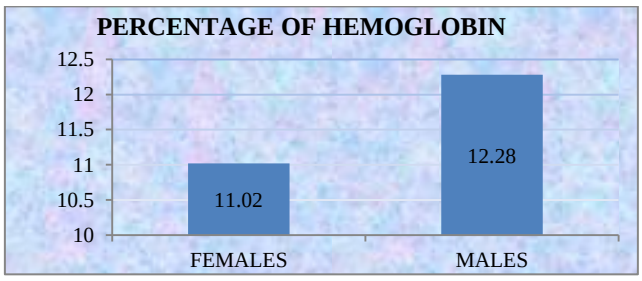

Fig. 6:

SUMMARY AND CONCLUSION

The present study was undertaken to know the efficiency and deficiency of vegetarian diet.

The results were summarized on whole along with statistical analysis. Among 200 samples the number of males and females were same. The present study mainly focused on the analysis of the type of diet, consumption on dairy foods, protein foods, fruits and vegetables, junk food, fortified foods, etc because this plays a role in vegetarians.

The present study shows that subjects who are Vegetarian males were 24% and females were 30%, lacto vegetarian males were 30% and females were 36%, pesco vegetarian males were 20% and females were 18%, ovo

vegetarian males were 26% and females were 16%. This shows that the range of lacto vegetarian were high respectively.

The present study shows that the consumption of homemade meals among males: 3 times were 54%, 2 times 46% where as among females: 3 times were 52%, 2 times 38%, 1 time 10%. The study shows that the daily consumption of fruits and vegetables 58% of males consumes two servings, 42% of males consumes three servings, whereas 68% of females consumes two servings, 26% three servings and the least was 6% of females consumes four servings. People should increase the consumption of fruits and vegetables. Consumption of fortified foods shows that 73% of the total sample consumes fortified foods and 27% does not consume fortified foods. The chi-square statistic is 22.8311. The *p*-value is .000002. This result is significant at $p < .05$.

The present study shows that 48% of samples are with medical issues such as diabetes, thyroid, hypertension and 52% of samples are not suffering from specific disease. The chi-square statistic is 15.7051. The *p*-value is .000074. This result is significant at $p < .05$.

Of the total sample 38% takes supplements such as iron and calcium and 62% does not take any supplements. The chi-square statistic is 5.4329. The *p*-value is .01976. This result is significant at $p < .05$

Chi square test was applied; data was statistically significant associated with consumption of protein foods, suffering from disease, intake of supplements.

Descriptive statistics, such as frequencies and percentages were calculated for characterization of the participants (*i.e.*, gender; age, BMI)

CONCLUSION

Thus the present study concluded that Vegetarians are at lower risk of CVD and the risk of bone fracture may be a concern when there is an inadequate intake of calcium and vitamin D where available, calcium- and vitamin D–fortified foods should be regularly consumed. Vitamin B-12 deficiency is a potential problem for vegetarians, so that the use of vitamin B-12 fortified foods or supplements are essential. To optimize the n-3 fatty acid status of vegans, foods rich in ALA, DHA-fortified foods, or DHA supplements should be regularly consumed. Vegetarians generally have an adequate iron intake and do not experience anemia more frequently than others. Typically, vegetarians can avoid nutritional problems if appropriate food choices are made. The bulk of the diet should be complex carbohydrates, starchy foods – potatoes, bread, pasta, rice, yams etc. They should account for between 55 and 75 per cent of all calories. Sugar contributes no nutrients and can be omitted. Protein should provide between 10-15 per cent but can readily be met by a varied diet based predominantly on cereals (whole meal bread, wholegrain rice and pasta etc) and pulses (peas, beans and lentils).The key component of a healthy diet is, therefore, starchy carbohydrates – with as wide a range of fresh fruit, vegetables, whole grains, pulses, seeds and nuts as possible – in other words, a sensible vegetarian diet.

Awareness was created and cleared doubts regarding hemoglobin levels and foods rich in iron, calcium and B-complex vitamins using flyer among vegetarians that they should obtain balanced diet and protein from a variety of plant sources, including legumes, soy products, grains, nuts and seeds. Although a well planned vegetarian diet can meet all the nutritional needs of an individual, they were asked to pay particular attention to some nutrients such as vitamin B-12, zinc, iron, calcium to ensure an adequate intake, particularly if they are on a vegandiet.

Acknowledgement

Gratitude cannot be seen or expressed: it can be felt deep in heart and is beyond description. Although thanks are poor expression of debt of gratitude one feel, yet there is no way to express it. A formal statement of acknowledgement will hardly meet the ends of justice in the matter of expression of my deeply felt sincere and heartiest gratitude to

my research guide **Ms. Tanveer Fatima** assistant professor, Department Of Food and Nutrition **Anwarul Uloom College** for constant encouragement, painstaking efforts in suggesting designing and improving the quality of study throughout the entire research work and consummating this manuscript.

I express my heartfelt thanks to the teaching staff and non-teaching staff from the Department of Food and Nutrition, for providing me their valuable advises and constant encouragement. Not to be forgotten is my family and friends who were supportive all the way. To them I can only offer my deep appreciation for their willingness and patience.

I am sincerely thankful to my parents for their constant support in all my endeavors besides being a source of inspiration and encouragement to me.

REFERENCES

1. Appleby, P. N., Key, T. J., The long-term health of vegetarians and vegans. *Proc Nutr Soc*. 2016; **75(3):** 287-93. *Doi: 10.1017/s0029665115004334*. Epub 2015 Dec 28 (2015).
2. Craig, W. J., Mangels, A. R., American Dietetic Association. *Position of the American Dietetic Association*: vegetarian diets. *J Am Diet Assoc*. 2009 Jul;109 **(7):** 1266-82 (2014).
3. Dwyer, J. T., Health aspects of vegetarian diets, *The American Journal of Clinical Nutrition*, **48(3):** Pages 712–738. Am J Clin Nutr. 1988 Sep;48(3 Suppl): 712-38. *doi: 10.1093/ ajcn/48.3.712* (1988).
4. Sabate, J., the contribution of vegetarian diets to health and disease: a paradigm shift? *The American Journal of Clinical Nutrition*, **78(3):** Pages 502S–507S, *https://doi.org/10.1093/ajcn/78.3.5025 published*: 01 september 2003 (2003).
5. Pawlak, R., Vegetarian Diets in the Prevention and Management of Diabetes and Its Complications, **30(2):** 82-88. *http://doi.org/10.2337/ds16-0057* (2017).
6. Sanders, T. A. B., Reddy, S., Vegetarian diets and children *The American Journal of Clinical Nutrition*, **59(5):** Pages 1176S–1181S (1994).
7. Mehta, V., Vegetarian Diet: A Boon or Bane for Health? *Journal of Medical Research and Innovation*, **2(1):** (2018).
8. Whorton, J. C., Historical development of vegetarianism *The American Journal of Clinical Nutrition*, **59(5):** Pages 1103S–1109S. Am J Clin Nutr. 1994 May; 59(5 Suppl):1103S-1109S. *doi: 10.1093/ajcn/ 59.5.1103S* (1994).
9. Craig, J. W., Health effects of vegan diets, *The American Journal of Clinical Nutrition*, **89(5):** andPages1627S–1633S. published 11 march 2009 *https://doi.org/10.3945/ajcn.2009.26736N* (2009).