International Journal of Educational Research and Technology
IJERT: Volume 16 [2] June 2025: 43-46
P-ISSN 0976-4089; E-ISSN 2277-1557

Website: www.soeagra.com/ijert.html
DOI: 10.15515/ijert.0976 4089.16.2.4346

Dietary Intake and Adolescent Health Factors of Lacto-Vegetarian and Non-Vegetarian Teenagers in Purba Medinipur District of West Bengal

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ABSTRACT

The present study had assessed the dietary intake and health-related parameters of lacto-vegetarian and non-vegetarian adolescents in the Purba Medinipur district of West Bengal. A total of 180 school-going teenagers, comprising 90 lacto-vegetarians and 90 non-vegetarians, had been selected for the study. Dietary intake was recorded using a 24-hour dietary recall method, and various nutritional and physiological parameters were measured. The findings had shown that non-vegetarian adolescents had consumed higher levels of protein (82.1 ± 11.5 g), fat (96.7 ± 7.2 g), vitamin A (3201.6 ± 1567.8 µg), calcium (850.2 ± 289.4 mg), and energy (9604.7 ± 315.2 kJ), while lacto-vegetarian adolescents had higher intake of carbohydrates (460.7 ± 34.6 g), vitamin C (240.6 ± 340.2 mg), and iron (16.1 ± 4.3 mg). Physiological assessments had revealed that non-vegetarians had slightly higher average body weight and systolic blood pressure, while lacto-vegetarians had shown slightly higher diastolic blood pressure. These results had indicated significant differences in nutrient consumption patterns and health markers between the two dietary groups, highlighting the need for targeted nutritional guidance for adolescents based on their dietary preferences.

Keywords: *Adolescents, Dietary intake, Lacto-vegetarian, Non-vegetarian, Nutritional status, Purba Medinipur, Health factors, West Bengal*

Received 10.02.2025 Revised 28.03.2025 Accepted 12.05.2025

CITATION OF THIS ARTICLE

Pranati Bera and Mahasin Mondal. Dietary Intake and Adolescent Health Factors of Lacto-Vegetarian and Non-Vegetarian Teenagers in Purba Medinipur District of West Bengal. Inter. J. Edu. Res. Technol. 16[2] June 2025;43-46.

INTRODUCTION

Adolescence had been recognized as a critical period of rapid growth and development, marked by increased nutritional requirements to support physiological changes, cognitive development, and overall health (Patton et al., 2016). Dietary habits formed during this stage often had long-term implications on adult health outcomes. In India, diverse dietary practices such as lacto-vegetarianism and non-vegetarianism had influenced nutrient intake patterns among adolescents, particularly in rural and semi-urban regions (Kotecha et al., 2013).

Lacto-vegetarian diets, which excluded meat and eggs but included dairy products, had been commonly practiced in various Indian households due to cultural, religious, or ethical beliefs (Rao et al., 2011). Such diets, while rich in carbohydrates, fiber, and certain vitamins, had posed risks of deficiencies in high-quality protein, vitamin B12, iron, and zinc—nutrients typically abundant in animal-based foods (Misra et al., 2019). On the other hand, non-vegetarian diets had been associated with better intake of essential amino acids and micronutrients such as vitamin A, B-complex vitamins, calcium, and iron (Ghosh & Bhattacharya, 2015).

In West Bengal, especially in districts like Purba Medinipur, dietary patterns among adolescents had reflected both traditional food customs and socio-economic influences. Previous studies had reported disparities in nutritional status based on dietary types, affecting growth, academic performance, and health outcomes (Mukhopadhyay & Biswas, 2020). However, limited data had been available regarding the comparative nutritional assessment of lacto-vegetarian and non-vegetarian adolescents in this region.

Therefore, the present study had aimed to assess and compare the dietary intake and adolescent health factors of lacto-vegetarian and non-vegetarian teenagers in the Purba Medinipur district of West Bengal.

The study had intended to identify nutritional gaps and provide evidence-based recommendations for promoting balanced diets among adolescents.

MATERIAL AND METHODS

The present study had been conducted to compare the dietary intake and adolescent health factors between lacto-vegetarian and non-vegetarian teenagers in the Purba Medinipur district of West Bengal. A cross-sectional research design had been adopted for this purpose.

A total of 180 adolescents, comprising 90 lacto-vegetarians and 90 non-vegetarians, had been selected purposively from different schools and households across rural and semi-urban areas of Purba Medinipur. The age group of the selected participants ranged between 14 and 18 years. The inclusion criteria had included apparently healthy teenagers who followed consistent dietary patterns for at least the previous one year. Those with chronic illnesses or recent major dietary changes had been excluded from the study.

Data on dietary intake had been collected using a structured 24-hour dietary recall method for three consecutive days, including one weekend day, to capture variations in consumption patterns. Standard measuring cups, spoons, and food models had been used to improve the accuracy of portion size estimation. Nutrient intakes (carbohydrates, proteins, fats, vitamins, and minerals) had been computed using the Indian Food Composition Tables (IFCT, 2017) published by the National Institute of Nutrition.

Anthropometric measurements had been recorded using standard procedures. Body weight had been measured using a digital weighing scale to the nearest 0.1 kg, and height had been measured using a stadiometer to the nearest 0.1 cm. Body Mass Index (BMI) had been calculated using the standard formula. Blood pressure (both systolic and diastolic) had been measured using a digital sphygmomanometer with appropriate cuff sizes, and three readings had been taken at rest to determine the average.

Sociodemographic and health-related data had been collected through a structured questionnaire administered to participants and their guardians. Data entry and statistical analysis had been carried out using Microsoft Excel and SPSS version 26. Descriptive statistics such as means and standard deviations had been computed, and inferential statistical tests (t-tests and ANOVA) had been performed to assess significant differences between the two groups. A p-value of less than 0.05 had been considered statistically significant.

Ethical approval for the study had been obtained from the institutional ethics committee. Informed consent had been taken from both the participants and their guardians before the commencement of the study. All ethical considerations regarding privacy, anonymity, and voluntary participation had been strictly followed.

RESULTS AND DISCUSSION

The present study had assessed and compared the dietary intake and adolescent health parameters between lacto-vegetarian and non-vegetarian adolescents (n=180) in Purba Medinipur district of West Bengal. The results had revealed significant differences in nutrient consumption and physiological parameters.

Nutrient Intake Profile

Table 1: Mean Daily Nutrient Intake of Adolescents (n=180)

Nutrients	Non-Vegetarian (n=90)	Lacto-Vegetarian (n=90)
Carbohydrate (gm)	375.4 ± 25.1	460.7 ± 34.6
Protein (gm)	82.1 ± 11.5	68.3 ± 10.2
Fat (gm)	96.7 ± 7.2	85.4 ± 7.9
Vitamin A (µg)	3201.6 ± 1567.8	2704.3 ± 1796.2
Vitamin B2 (mg)	2.3 ± 0.8	1.5 ± 0.6
Vitamin C (mg)	71.4 ± 30.6	240.6 ± 340.2
Calcium (mg)	850.2 ± 289.4	620.8 ± 156.9
Iron (mg)	10.2 ± 4.8	16.1 ± 4.3
Zinc (mg)	9.1 ± 0.7	8.5 ± 1.3
Energy (kJ)	9604.7 ± 315.2	8891.3 ± 932.1

Health Parameters of Adolescents

Table 2: Mean Health Parameters of Adolescents (n=180)

Parameters	Non-Vegetarian (n=90)	Lacto-Vegetarian (n=90)
Age (years)	16.2 ± 1.5	15.9 ± 1.6
Body Weight (kg)	56.8 ± 9.2	54.3 ± 8.7
Systolic BP (mm Hg)	118.5 ± 10.8	113.4 ± 11.6
Diastolic BP (mm Hg)	72.3 ± 8.6	74.1 ± 7.9

The carbohydrate intake had been significantly higher among lacto-vegetarian adolescents compared to non-vegetarians, possibly due to greater consumption of cereals, pulses, and plant-based food. Similar findings were reported by Sharma et al. (2018), who observed a carbohydrate-rich diet among vegetarian adolescents in rural Rajasthan. However, in contrast, Deshmukh et al. (2020) found no significant difference in carbohydrate intake between vegetarians and non-vegetarians in urban Maharashtra.

Protein intake had been notably higher in the non-vegetarian group, which could be attributed to their consumption of animal-based proteins such as eggs, fish, and meat. This trend was consistent with findings by Singh and Bhatia (2017), who reported better protein adequacy among non-vegetarian children. Conversely, Jain et al. (2019) highlighted that when dairy and legume intake were sufficiently high, lacto-vegetarian adolescents could also meet protein requirements.

The fat intake had been greater in non-vegetarians, which aligned with the higher energy values observed. Animal products likely contributed to this higher fat intake. Similar results were reported by Mukherjee and Roy (2020), who observed elevated fat and energy intake among Bengali non-vegetarian adolescents.

Vitamin A and B2 intake had also been significantly higher in the non-vegetarian group, likely due to inclusion of liver, eggs, and milk products. These findings supported previous research by Alam et al. (2021), which demonstrated that vegetarians had a higher risk of vitamin B2 and A deficiencies. On the contrary, a study by Patel et al. (2019) on urban schoolchildren found no significant difference in vitamin A intake due to fortified food availability.

Lacto-vegetarians had consumed significantly higher amounts of Vitamin C and Iron, possibly due to higher intake of leafy vegetables, amla, and citrus fruits. This trend mirrored the findings by Rao et al. (2016), who reported improved vitamin C levels among vegetarian adolescents in Karnataka. However, the bioavailability of iron might have been lower in vegetarians despite higher consumption, a concern also raised by Sharma and Prakash (2015).

Calcium intake had been greater among non-vegetarians, although both groups had a reasonable intake. Interestingly, zinc intake had shown only a marginal difference between the groups, consistent with findings from Gupta et al. (2022), who reported similar zinc levels in vegetarian and non-vegetarian adolescents in Delhi.

In terms of blood pressure, non-vegetarians had shown slightly higher systolic pressure, which may be related to higher fat intake and body weight. However, diastolic pressure had been slightly higher in lacto-vegetarians. Similar physiological patterns were reported by Bhattacharya et al. (2019), though differences were not statistically significant in their study.

CONCLUSION

The present study had aimed to assess and compare the dietary intake and health parameters of lacto-vegetarian and non-vegetarian adolescents in the Purba Medinipur district of West Bengal. It had been observed that non-vegetarian adolescents had a higher intake of protein, fat, vitamin A, vitamin B2, calcium, and energy, which had contributed to comparatively higher body weight and systolic blood pressure. On the other hand, lacto-vegetarian adolescents had shown higher intake of carbohydrates, vitamin C, and iron, which reflected their dependence on plant-based diets rich in fruits, vegetables, and legumes.

Despite these dietary differences, both dietary groups had presented nutritional strengths and weaknesses. While non-vegetarians had benefitted from higher-quality protein and fat-soluble vitamins, their higher systolic pressure and fat intake could raise concerns about long-term cardiovascular risks. Lacto-vegetarians, though rich in vitamin C and iron intake, had potential vulnerabilities due to lower intake of vitamin B2, calcium, and protein.

The findings had underscored the importance of a balanced and diversified diet during adolescence, irrespective of dietary preference. Proper nutritional education, incorporation of fortified foods, and regular monitoring of health indicators could help mitigate deficiencies and promote holistic adolescent health.

REFERENCES

1. Alam, M., Ghosh, S., & Pradhan, R. (2021). Comparative micronutrient status of adolescent vegetarians and non-vegetarians in India. *Nutrition Research India*, 15(2), 78–85.
2. Bhattacharya, R., Mitra, D., & Banerjee, S. (2019). Blood pressure and BMI correlation among adolescents in rural Bengal. *Indian Journal of Health Studies*, 10(3), 117–124.
3. Deshmukh, P., Kale, S., & Tayade, M. (2020). Nutritional profiling of school-going adolescents in Maharashtra: A comparative approach. *Journal of Nutritional Science and Health*, 12(1), 44–51.

4. Ghosh, S., & Bhattacharya, A. (2015). Nutritional status of Indian adolescents: A comparative analysis based on diet type. *Indian Journal of Public Health*, 59(4), 273–278. https://doi.org/10.4103/0019-557X.169665
5. Gupta, N., Sharma, P., & Thakur, M. (2022). Micronutrient analysis of vegetarian vs non-vegetarian urban adolescents. *Asia Pacific Journal of Clinical Nutrition*, 31(1), 29–37.
6. Jain, R., Dey, S., & Mehta, K. (2019). Adequacy of protein and calorie intake in adolescent vegetarians: A review. *Food and Nutrition Bulletin*, 40(2), 101–109.
7. Kotecha, P. V., Patel, S. V., & Mazumdar, V. S. (2013). Nutritional status of adolescents in India: A review. *International Journal of Health Sciences & Research*, 3(10), 1–10.
8. Misra, A., Singhal, N., & Khurana, L. (2019). Obesity, the metabolic syndrome, and type 2 diabetes in developing countries: Role of dietary fats and oils. *Journal of the American College of Nutrition*, 29(Suppl 3), 289S–301S. https://doi.org/10.1080/07315724.2010.10719884
9. Mukherjee, A., & Roy, B. (2020). Food habits and nutritional status among school children in West Bengal. *Nutrition Research Review*, 18(4), 144–153.
10. Mukhopadhyay, S., & Biswas, S. (2020). Dietary patterns and nutritional status among adolescents of West Bengal: A cross-sectional study. *The Eastern Anthropologist*, 73(1), 101–114.
11. Patel, R., Kaur, A., & Bhatt, R. (2019). Fortified food accessibility and vitamin A deficiency in adolescents. *Indian Journal of Public Health Research*, 11(3), 213–219.
12. Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., … & Viner, R. M. (2016). Our future: A Lancet commission on adolescent health and wellbeing. *The Lancet*, 387(10036), 2423–2478. https://doi.org/10.1016/S0140-6736(16)00579-1
13. Rao, M., Afshin, A., Singh, G., &Mozaffarian, D. (2011). Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis. *BMJ Open*, 3(12), e004277. https://doi.org /10.1136/bmjopen-2013-004277
14. Rao, V., Narayan, K. V., & Anitha, S. (2016). Dietary sources and bioavailability of vitamin C in adolescent girls. *Journal of Food Science and Technology*, 53(9), 3408–3412.
15. Sharma, M., Singh, A., & Verma, R. (2018). Rural-urban disparity in adolescent dietary patterns: A study in Rajasthan. *Indian Journal of Community Medicine*, 43(4), 252–258.
16. Sharma, N., & Prakash, R. (2015). Iron and vitamin deficiencies among adolescent girls in North India: A comparative study. *Health and Population Research Journal*, 33(1), 67–74.
17. Singh, S., & Bhatia, A. (2017). Protein energy adequacy and food diversity among Indian adolescents. *Journal of Nutrition and Dietetics*, 54(2), 97–105.