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Vegetarian and Non-Vegetarian Diet and Incidence of Related Diseases or Disorders in A Sample Population of Bhiwandi City

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Abstract
The nutritional differences reflected due to differences in nutrient profile between vegetarian and non-vegetarian dietary patterns may contribute to the development of other health related diseases or disorders. The nutrient intakes were compared between dietary pattern characterized by consumption or exclusion of meat and dairy products. A survey was designed to study incidence of various non-communicable diseases related to the vegetarian and non-vegetarian diet. It was conducted on 151people, 85 males and 66 females were the part of it. Out of 151 participants, 82 were non-vegetarian and 69 were vegetarian. The body mass index was calculated. The blood pressure, cholesterol, diabetes, gastric problems, heart related diseases, thyroid issues, other nutritional deficiencies were compared of vegetarians and non-vegetarians by plotting graphs based on the incidental percentage.

Keywords: Vegetarian diet, non-vegetarian diet, BMI, blood pressure, cholesterol, diabetes, gastric problems, cardiovascular diseases, thyroid disorder, nutritional deficiency, obesity.

Introduction

Diet is the food which a person consumes, which is chiefly determined by the availability and palatability of foods. For humans, a healthy diet includes preparation of food and storage methods and preventing nutrients from oxidation, heat or leaching and that reduces the risk of food borne illness. Consuming a healthy diet throughout a person's life helps prevent malnutrition in all its forms as well as a range of diet-related non-communicable diseases and conditions [1].

The carbohydrates, proteins, fats, fiber, vitamin, minerals and water are the 7 major classes of nutrients that are essential for the body. The adequate consumption of these nutrients is highly recommended on a daily basis, which aids in nourishing and building the body and also assists in retaining the health of the body. Insufficient, excess or imbalance in the intake of these nutrient can produce negative impact on health and may lead to several deficiencies, abnormalities, diseases and disorders.

Dietary patterns—especially vegetarian versus non-vegetarian diets—play a crucial role in the prevalence of various non-communicable diseases (NCDs) such as diabetes, hypertension, cardiovascular disorders, gastric issues, thyroid abnormalities, and nutritional deficiencies. In India, where dietary preferences often align with cultural and religious values, understanding these patterns is imperative for public health planning.

Analysis of data from India's NFHS-3 showed that individuals following lacto-, lacto-ovo-, or semi-vegetarian diets had significantly lower odds of diabetes and reduced body mass index compared to non-vegetarians [2]. The Indian Migration Study (IMS) revealed that vegetarians consumed lower amounts of total fat and protein but higher carbohydrates, fiber, vitamins, and minerals. Importantly, vegetarians had significantly lower total cholesterol, LDL, triglycerides, and diastolic blood pressure**,** indicating favorable cardiovascular outcomes [3]. A systematic review and meta-analysis across 71 studies (2018) found that, compared to omnivorous diets, vegetarian diets were associated with lower systolic and diastolic blood pressure, fasting glucose, waist circumference, and HDL-C**;** however, no significant difference was observed for metabolic syndrome overall [4]. A cross-sectional study conducted in Delhi (2024) among healthy urban adults showed no significant difference in metabolic syndrome (MetS) prevalence between vegetarians (47.5%) and non-vegetarians (47.0%), suggesting that diet type alone may not confer protection against MetS [5]. A focused investigation into Indian lacto-vegetarians with sedentary lifestyles (2017) demonstrated a lower incidence of diabetes (1.7% versus 5.3%) compared to non-vegetarians, despite similar BMI and waist circumference; their fasting blood sugar levels correlated positively with LDL and VLDL and negatively with HDL only in the vegetarian group (2017 study) [6]. The CARRS study compared South Asian vegetarian and non-vegetarian adults, finding that vegetarians in South Asia were slightly less likely to be overweight or obese compared to non-vegetarians, although the difference was more pronounced in U.S. cohorts (2016) [7].

Despite the breadth of existing research highlighting diet-linked metabolic and cardiovascular outcomes, targeted investigations within specific urban Indian settings remain scarce. This study addresses that gap by evaluating the incidence of diet-related health concerns—including hypertension, diabetes, cholesterol, gastric and thyroid conditions, cardiovascular diseases, and nutritional deficiencies—among vegetarian and non-vegetarian adults in Bhiwandi city**,** Maharashtra.

Using a sample of 151 participants (85 males, 66 females; 82 non-vegetarians, 69 vegetarians; primarily aged 40–60 years), this study evaluates BMI, medication usage, physical activity, and non-communicable disease incidence across dietary groups. By providing localized evidence, this research contributes to the broader understanding of how dietary patterns influence health in urban Indian environments.

Materials and Methods

A survey was conducted, with sample population of 151 people, out of which 82 were non vegetarian and 69 were vegetarian. The data obtained is based on the self-administered questionnaire. The nature of work was stratified into 3 categories mainly – business, service (government/private) and labor. The dietary habits were defined as vegetarian and non-vegetarian. If non-vegetarian, the consumption of flesh food was categorized as fish, mutton, chicken, pork, beef and eggs. Also noting the frequency of consumption as once, twice, thrice or daily on weekly basis. The diet related diseases such as blood pressure (hyper/hypo), cholesterol, diabetes, gastric problems, cardiac diseases, thyroid issues, other nutritional deficiencies were categorized. BMI was calculated as weight (kgs) / height (mt^2). The incidence of

occurrence and prevalence of the above-mentioned non-communicable diseases were compared of the non-vegetarians and the vegetarians by plotting graphs.

Observations

Out of 151 candidates, there were 85 males and 66 females. The age group largely comprised of 40-60 years' individuals. The nature of work of the candidates was found to be 35.76% labor, 17.21% business, 7.28% service, and 39.73% of females were housewife. From the total 151, 82 (54.03%) preferred non-veg diet and 69 (45.69%) preferred veg diet. From the candidates who consumes flesh foods, 82 eat fish, 75 eat mutton, 74 eat chicken, 22 eat eggs, only a single response for pork and none of them consumes beef. 25 individuals didn't clearly specify the type of flesh food they ate. The frequency of 57 people consuming flesh food per week was obtained as 69.51% of the non-vegetarians consumed flesh foods thrice a week, 17 (20.73%) on daily basis, and 1.21% i.e., 1 consumed twice a week. 35 of 69 from the vegetarians reported history of diet related diseases, such as 9 for blood pressure, 3 for diabetes, 9 for gastric problems, 5 of CVD, 4 for thyroid, and 5 for nutritional deficiencies. 57 of 82 non-vegetarians reported history of diet related diseases, such as blood pressure-14 people, cholesterol-1, diabetes-7, gastric problems-24, CVD-5, nutritional deficiencies-6, and none for thyroid. 40.90% of the people were under medication, and 59.09% had no medications. Only 19.69% candidates were involved in exercise and 80.30% were not involved in any type exercise at all.

Figure 1. BMI (%) of Vegetarians and Non-Vegetarians

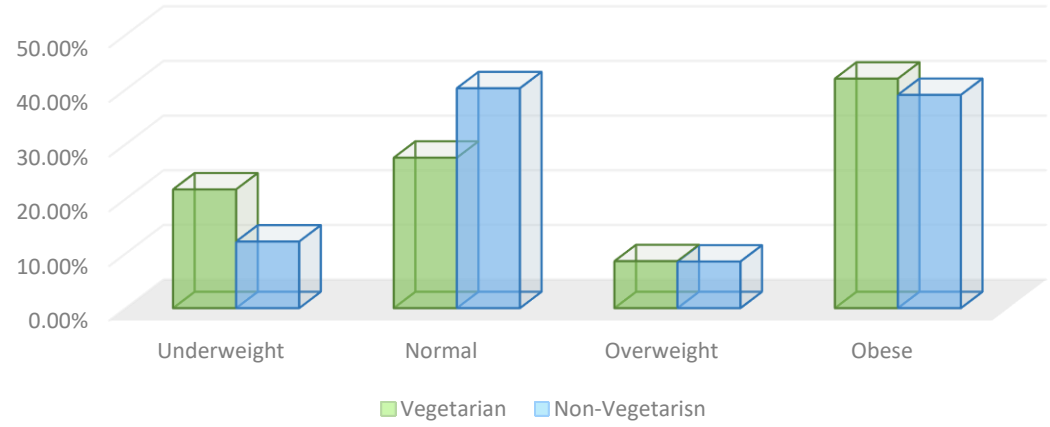
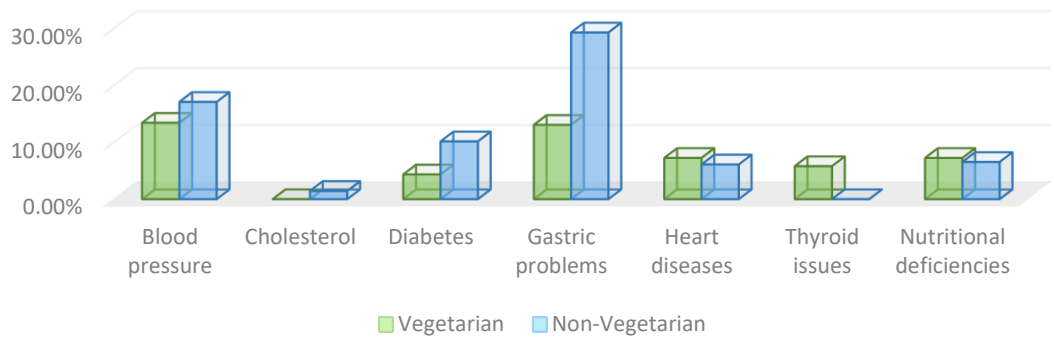


Figure 2. Non-Communicable Diseases of Vegetarians and Non-Vegetarians



Results

The BMI shows various differences. the percent of underweight and obese individuals was more of the vegetarians than that of the non-vegetarians. Comparatively the non-vegetarians under normal BMI were to a great extent. Almost 100% of the non-vegetarians consumed fish thrice a week, and approximately 90% of the non-vegetarians consumed fish, mutton and chicken thrice a week. The vegetarians had additional complains of heart diseases, thyroid issues and nutritional deficiencies, whereas non-vegetarians reported blood pressure abnormalities, high cholesterol, a greater number of diabetic individuals and individuals enduring gastric issues were over the top.

Discussion

The outcome of the survey is that the BMI of underweight and obese individuals of the vegetarians was higher than that of the non-vegetarians, and also there were more vegetarians that suffered from CVD, thyroid issues and nutritional deficiencies. Vegetarian diets, abundant in fruits, vegetables, legumes, and nuts, typically have a higher polyunsaturated to saturated fatty acid ratio (PUFA: SFA), elevated levels of potassium, magnesium, and fiber, and are generally lower in total fat content [8, 9, 10]. They assist in reducing body weight, modulate blood viscosity, additional to that they also aid in lowering BP of the individuals. The possible reasons for the above results could be usage of excess amount of fats (oils, ghee, etc.) while cooking food. Inadequate consumption of fresh fruits and vegetables that leads to nutritional deficiencies, low fiber, hinders the absorption of vitamins and minerals. Rathi *et al*. 2025, also emphasizes that inadequate consumption of fruits and vegetables—key sources of essential vitamins and minerals—contributes to the high prevalence of micronutrient deficiencies in their study population [11]. Over eating could also lead to toxicities of vitamins and minerals. Research indicates that vegetarian and vegan diets, particularly when they omit iodized salt or include produce from iodine-poor soils, are associated with significantly lower iodine intake and urinary iodine concentrations—putting individuals at risk for thyroid dysfunction [12, 13, 14].

The other reasons for a greater number of obese vegetarians may be low physical activity levels, genetic factors that is, family history of obesity, lifestyle factors, consumption of alcohol or tobacco, eating habits such as nibbling between meals, eating faster without properly chewing, eating outside from home more frequently, eating more junk, refined, processed, concentrated, high fat fried foods. Over consumption of sugar may contribute to weight gain. Certain medications can also promote weight gain such as antidepressants, steroid hormones, diabetic drugs and antihistamines, etc. Improperly applied vegetarian diets can lead to lowered levels of vitamin B12, producing an increase in blood levels of homocysteine, which is associated with increased risk of cardiovascular morbidity, a reduction in the blood levels of sex hormones and disruption of the menstrual cycle. Vegetarian diets, when not properly supplemented, can lead to vitamin B_{12} deficiency and elevated homocysteine levels, which are associated with increased cardiovascular risk. Pawlak (2015) emphasized that hyperhomocysteinemia in vegetarians may offset the heart-health benefits of plant-based eating [15]. Similarly, Jedut *et al*. (2023) observed that vegetarians had significantly higher homocysteine levels, with each 5 µmol/L increase linked to a 20% rise in ischemic heart disease risk [16]. These findings highlight the need for careful nutritional planning in vegetarian diets, especially regarding vitamin B_{12} intake.

The non-vegetarians complained of hypertension and blood pressure which may be due imbibing flesh foods which are loaded with saturated fat, trans fat, low in PUFA, lifestyle changes such as physical inactivity, eating habits, cigarette smoking, family history, alcoholic beverage consumption, improper

dietary pattern, etc. The non-vegetarians also showed increased number of individuals experiencing blood pressure abnormalities, high cholesterol levels, diabetes and also gastric problems. The people who suffer hypertension and diabetes have a higher risk of obesity, insulin resistance, glucose intolerance, blood lipid abnormalities, CHD, CVD, etc. Gastric problems perhaps can be fostered due to increased intake of sugar, fats, soft drinks, processed foods, bacterial infection, some gastric surgeries, faulty dietary habit, improper lifestyle, ingestion of drugs such as analgesics, anti-inflammatory agents, etc. The other risk factors for gastrointestinal diseases might be chewing tobacco, aerated soft drink, tea/coffee, vegetarian diet, disturbed sleep, anxiety, dyspepsia, eating chicken and eggs which are fried, open flame and high temperature cooking, etc [17]. Adapting to dietary changes such as consuming abundant of vegetables majorly green leaves, fresh fruits and an increased intake of dietary fiber may pitch in lowering the gastric problems. The non-vegetarians had low incident of heart disease, which might be the outcome of eating fish in abundance. The risk of ischemic heart disease and stroke is also low in the fish eaters than of the meat eaters [18].

Following a well-balanced diet with lots of fruits and vegetables and a moderate amount of meat is good for health. Healthy lifestyle choices may reduce the risk cardiac diseases, with nutrition playing a key role. Accumulating evidence demonstrates that plant-based diets can significantly enhance cardiovascular and metabolic health. For instance, vegetarian diets have been shown to reduce LDL cholesterol, hemoglobin A_{1c}, and body weight in individuals at high risk for cardiovascular disease [19]. Additionally, plant-based diets consistently lower blood pressure [20], while vegan diets improve insulin resistance in obese individuals [21]. Among adults with type 2 diabetes, vegetarian and vegan patterns reduce HbA_{1c} and BMI, and may enhance insulin sensitivity [22]. Non-vegetarians should avoid red meat, marbled meats, meats which are high in saturated fats, processed meat and by-products, and should include good amount of fruits and vegetables. Vegetarians can add mushrooms, lentils, soya instead of meat. Healthy eating and being physically active should be the way of life, a habit.

Conclusion

This study highlights how different dietary patterns—specifically vegetarian and non-vegetarian diets—can influence health outcomes, including variations in body mass index (BMI) and the incidence of diet-related diseases. While diet plays a significant role, it's important to recognize that other factors such as lifestyle habits, genetics, and environmental influences also contribute to these health conditions. Understanding these complex interactions can help in making more informed dietary and lifestyle choices for better long-term health.

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