



Unveiling the Nutritional Landscape: Exploring Potential Deficiencies in Vegetarian Diets

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SUMMARY

A particularly organized vegetarian diet can be refreshingly adequate, yet it requires mindful respect for explicit key enhancements that are found in lower levels of plant-based food assortments. Vegetarian lovers need to zero in on the usage of protein-rich vegetables, beans, and lentils, vitamin B12-fortified food sources or upgrades, iron-rich faint blended greens, calcium-reinforced plant-based milk, and vitamin D-rich light transparency or improvements. Besides, vegetarian darlings should consider omega-3 unsaturated fat upgrades and zinc-rich nuts and seeds to ensure adequate confirmation. A typical health assessment and meeting with a selected dietitian or clinical benefits provider can help prevent and address potential deficiencies, ensuring a sound and changed vegetable eating routine. Vegetarian lovers include calories that are at risk for needs both full scale and little enhancements, including full scale supplements that is Protein, vegetables, beans, and lentils are essential sources. For calcium, plant-based milk and a faint serving of mixed greens are critical. Small scale supplements like vitamin B12 are found fundamentally in animal things, to overcome this deficiency supplements or fortified food sources are significant. Dull blended greens, beans, and lentils are rich sources are the source of iron yet bioavailability may be low. Alpha-linolenic destructive (ALA) in plant-based sources may not give satisfactory EPA and DHA to overcome sufficient quantity of Omega-3 unsaturated fats. Zinc is found in restricted amounts in many plant-based food sources, phytates may obstruct maintenance. Typical use of a variety of whole, plant-based food assortments and considered improvements or reinforced food assortments can help with directing these needs and assurance a refreshingly palatable vegetarian diet which will ultimately improve health.

INTRODUCTION

Restrictive diets can be followed by adults and kids for a variety of reasons, such as medical need, the desire to lose weight, trendiness, purported health benefits, animal rights, or environmental impact. About 40% of teenagers and over half of American adults say they have tried weight loss on a yearly basis (Andrewski et al., 2022). Diets high in vegetables are often safe under the watchful eye of knowledgeable healthcare organizations. Individuals following these diets, regardless of the reason, may be unintentionally putting themselves at risk for nutritional deficiencies if they are not properly monitored and supplemented (Wallace et al., 2020).

Unlike vegetarian and gluten-free diets, the KD is linked to serious side effects that can be fatal, including cardiac arrhythmia, renal failure, and nephrolithiasis. As such, it must be closely monitored by a qualified healthcare practitioner. A lack of nutrients, such as those in thiamine, vitamin D,

magnesium, phosphorous, copper, zinc, selenium, and carnitine, can be linked to KD since there are fewer food options available to them. Children on a 4:1 ratio meet only 3 of 28 daily dietary reference intakes, while those on a 1:1 ratio meet 12 of the 28 dietary references. The higher the lipid-to-non lipid ratio is greater the chance of nutritional deficiencies. Solid foods commercial may be included along with a vegetarian diet to overcome such deficiencies and to improve overall health (Di Nardo et al., 2019).

Malnutrition is a lack of harmony between the vitamins your body desires characteristics and the nutrients it receives. It can recommend undernutrition or overnutrition. One may be undernourished from a usual loss of calories, or one would possibly have a protein, nutrition or mineral deficiency. Usually body desires loads of vitamins and in reliable amounts, to grip its tissues and its many characteristics. Malnutrition takes place when the vitamins it receives don't meet those needs. One can be malnourished from a general lack of nutrients or could have plenty of a few varieties of

nutrients but lack different types. Even the lack of a single nutrient or mineral will have severe health outcomes on the body. On the other hand, having an excess of nutrients also can pose difficulty. Nutritional deficiencies are circumstances in which there are insufficient meals to satisfy energy needs. Its main traits consist of weight reduction, failure to thrive, and loss of frame fats and muscle groups (Silva et al., 2022). That is why it is important to select a vegetarian diet to supply these nutrients to the body for optimal health.

VEGETARIAN DIET

Vegetarian or the complete avoidance of animal products is becoming more and more popular in America. Of the population between the ages of 8 and 18, 1% are thought to be vegetarian. There is a range of eating habits which come under the label “vegetarian,” some of which are more demanding than others. As a result, depending on the meal picked, nutritional intake can differ greatly. Even among particular subgroups, like lacto-vegetarians, dietary differences can still be visible (Asher & Peters, 2020).

All animal merchandise is averted by means of vegetarians, even as a few subtypes may eat dairy, eggs, fish, or honey. The majority of human beings following a macrobiotic weight loss plan abstain from beef, poultry, butter, lard, eggs, and dairy products, however they're no longer absolutely vegetarians (Fig. 1). Some can also once in a while eat fish. They additionally stress the want to live far from GMOs and to shop for food that is sourced locally. Any regular removal of any group of foods from diet, for any reason be it a sincere desire to keep away from meat or a reaction to an allergy to a specific food, like cow’s milk puts nutritional health risk. In spite of explanation below avoiding the food group. It’s important to keep the diet nutritionally complete and balanced to prevent deficiencies and maintain suitable nutrient levels. It is projected that the overall number will rise as animal’s rights problems as more Americans cut out on some of or all of their animal products used due to claimed nutritional benefits, animal rights concerns, and climate change. As long as the diets are “well-balanced,” they have said to be safe for all life stages, including pregnancy, infancy, childhood, and adolescence.

Latest survey of adult UK diets, meat and meat products significantly supply a variety of nutrients. On the other hand, studies on plan-based diets show that they are higher in antioxidants, phytochemicals, carotenoids, fibers and folate and lower in animal proteins, cholesterol and saturated fats when compared to omnivorous diet. Vegetarians could still consume insufficient amounts of calcium, vitamin B12 and vitamin D (Kiely, 2021).

MICRONUTRIENT

Most people are aware that trace elements and nutrients—also referred to as “micro-vitamins” globally—are essential parts of diet for both health and illness (Table 1). However, physicians continue to have limited expertise in this area; hint elements are even less well-known than nutrients. There are two categories of issues: 1) personal health and 2) public

fitness. International recommendations are available to the public as RDAs (recommended dietary allowances), or more commonly these days as DRIs (Dietary Reference Intakes). The micronutrient (MN) deficits that are a global health concern are addressed by these recommendations (Cakmak et al., 2023).

The majority of the most significant health risk factors in the world include deficiencies in iodine, iron, zinc, and diet A. The World Health Organization (WHO) and Food and Agriculture Organization (FAO) have established a sizable global MN database to address public health issues and the common endemic deficiencies of certain MNs that may necessitate assistance through fortification (Ritchie& Roser 2024).

As mentioned before, food starting from animals; including meat and meat derivatives, are good source of specific vitamins and minerals. For instance, milk and dairy products are rich in calcium that is bioavailable and give useful levels of a wide range of other minerals and vitamins; red meat is a good source of iron, zinc performed vitamin A and Vitamin B12; and fatty fish is rich in vitamins D. In addition, some plant-based diet contains ingredients that change how certain micronutrients are absorbed and utilized. For example, excessive amounts of wheat fibers are linked to the formation of phytates, which could prevent the absorption of minerals like iron and zinc. Considering these characteristics, it makes sense to consider if vegetarian diets offer sufficient levels of micronutrients(Berger et al., 2022).

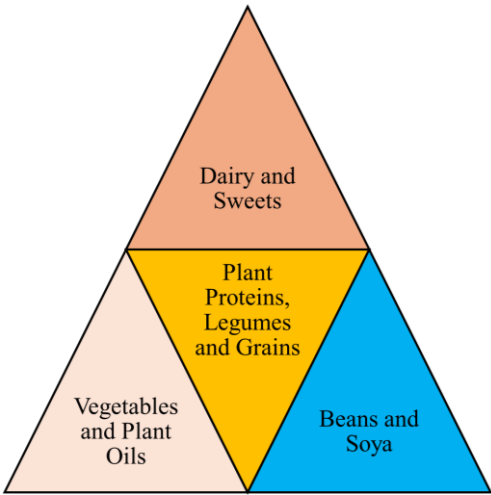


Fig 1. Traditional healthy vegetarian diet pyramid

Table 1. Micronutrients and their sources

Elements	Sources
VITAMIN B12	Egg, Beef, Milk, Nutritional yeast.
VITAMIN D	Mushrooms, Egg yolks, orange juice
IRON	Lentils, Nuts and Seeds, Dried fruits
ZINC	Oysters, Pumpkin seed, Cashew nut
VITAMIN A	Egg, Liver, Sweet Potatoes
Calcium	Milk, Yogurt, Cheese, Green vegetables
Biotin	Legumes, egg yolks, organ meats, nuts
Vitamin C	Citrus fruit, peppers, blackcurrants
Vitamin B1	Fortified cereal, bread, brown rice, peas
Vitamin B2	Milk, bread, eggs, almonds, beef, cheese

MACRONUTRIENT

There are three major kinds of macronutrients, carbohydrates, which are the body number once applied electricity. They consist of sugars starches and fibers that determine ingredients like culmination green and legumes (Hawkesford et al., 2023).

Proteins: are vital for building and repairing within the frame, such as, muscles group organ, and skin. Foods rich in proteins consist of meat, fish fowl, eggs, dairy products beans and nuts,

Fats: Macronutrients are the critical vitamin nutrients that our bodies need in relatively large amounts to function properly. Fats function a focused a source of electricity and health take in short nutrients. They also play a position in keeping cell shape and helping brain characteristics. Healthy source of fat present in avocados, nuts, seeds, olive oil and fatty fish. These macronutrients are important for health nicely being and a balanced food plan and meat to include ok quantities to each to fulfill the frame wishes (Denton-Thompson & Sayer, 2022).

Micronutrient Deficiency in Diet

Micronutrient deficiencies impact more than a billion people worldwide, and also limit crop output in many regions of the world. By inoculating arable soils with microorganisms that mobilize micronutrients and increase their availability to agricultural plant life in a way that is both environmentally sustainable and highly effective, microbial bio fertilizers should be able to combat these issue (McKay et al., 2020).

However, complicated interactions between micronutrients, microbes, and plants limit the broad applications of bio fertilizers and augment our standard understanding of the use of bio fertilizers in food crop development. We reduce their efficacy in controlled environments. Here, we provide an overview of the seven-micronutrient kingdom as it exists today in food production. We examine the mechanisms underlying the mobilization of micronutrients by microbes in natural environments and summarize current knowledge to show that while soil conditions have a major impact on soil micronutrient concentrations, land control techniques can also have a major impact on micronutrient availability and flora uptake (Kumar et al., 2021).

While there are differences in the efficacy of biofertilizers, there are clear benefits to using them in conjunction with conventional inorganic or natural fertilizers, as indicated by a number of lines of evidence. Examples of microbial taxa that may mobilize multiple micronutrients while enduring harsh environmental circumstances are provided by studies on micronutrient cycling in herbal habitats. Studies on the processes behind the microbial utilization of nutrients in natural process (Peddie et al.,2023).

Iron Deficiency in Vegetarian Diet

Iron deficiency is a common and difficult issue in young people. It is essential to consider suggested daily intake of iron in connection to an adolescent's physical activity, dietary

choices and initial iron losses in order to prevent, find and treat iron deficiency in this age range. The most frequent nutritional problem in the UK population is iron deficiency, with low serum blood iron concentrations and a high frequency of anemia in babies. Children who take in meat and those who are vegetarians may both be at risk for iron deficiency. Due to possible connections to mental and motor development, the level of iron in all newborns is significant (Pasricha et al., 2021).

The iron level in amounts indicates that iron stores have been reduced in normal newborns by six months of age. Nutritional requirements indicates that newborns between ages of six and twelve months are given a range of meals in order to ensure that they are getting dietary sources of minerals. Specifically, for vegetarian children that are dietary iron supplies are less well absorbed than the harem-iron found in meat and meat are products used by omnivorous infants, it is Important to make sure that get enough vitamin C avoid foods that inhibit iron absorption such as tea and higher fiber foods and use foods that have been enhanced with iron. On the basis of day 4 day dietary data and hematological and biochemical nutrition indicates, nutritional intakes and nutritional status were usually accepted in a sub example of 51 preschooler's from the NDNS of children aged 1.5-1.4 years who did not report using meat (Than an & Bates 2000), however, when compared to omnivores , vegetarians children serum ferritin levels were much lower, particularly in younger children in addition to having greater antioxidant vitamin intakes and status indices, the vegetarian children also had decreased intakes of fat cholesterol, and sodium. Indicates hemoglobin levels were lower in vegetarian children than in meat eating children (11.9g/dl vs 12.4g/dl in a study of 50 matched "pairs" of children (mean age at recruitment: 9 years) (Nathan et al.,1996), which indicates lower availability of iron from the vegetarian's diet or, alternatively the value of including meat in the diets of the meat-eaters (Bora et al., 2021).

People who have low iron intake and consume small amount of red meat can get about half of their iron absorption from heme iron. However, since iron absorption is poor in people with low body stores, contribution of iron to total iron does not exceed that of heme iron. Therefore, non-heme iron is generally poorly absorbed in a vegetarian diet and like heme iron is due to many of changes in body iron. People with high iron stores may limit their absorption of non-heme iron more, while people with low iron stores can absorb non-heme iron almost as well as heme iron. However, the absorption deficiency of non-heme iron from iron stores is low. Although a vegetarian diet includes different components such as non-vegetarian foods, many vegetarians can consume fruits and vegetables, beans and pulses by replacing main foods with whole grains. Dietary factors that influence intestinal solubility and non-heme iron absorption may be modified by such dietary choices. Halberd and Heathen examines these dietary interactions and proposed a method to determine enhancing or inhibiting effects of dietary iron with foods. It is unclear whether the effects of ascorbic acid and pigments on non-heme iron absorption extend to effects of vegetarians in general. Choosing a vegetarian diet with a variety of foods, while reducing iron intake may provide health benefits without the risk of iron deficiency anemia. Another similar study did

not confirm previous association between high serum iron and cardiovascular disease. However genetic “carriers” of mutations associated with iron-storing hemochromatosis have been shown to have an increased risk of cardiovascular insulin levels than lactovegetarians because they have higher serum ferritin (Chouraqi, 2022).

Zinc Deficiency in Vegetarian Diet

Zinc deficiency reduces immunity to infection and affects both human and cell-mediated immunity. Taking zinc supplements has been shown to reduce the risk of infection and cell damage caused by oxidative stress. Liver diseases both acute and chronic is associated with zinc deficiency. Zinc supplementation protects against toxin-induced liver damage and is a treatment for hepatic encephalopathy in patients unresponsive to conventional care. Diarrheal illnesses have been associated with zinc deficiency and zinc supplements have been shown to be helpful in preventing and managing a Ute diarrhea. Most of the zinc in US diet comes from beef, and more than half of zinc comes from animal products (Khan et al., 2022).

While it is possible to follow zinc-containing foods similar to non-vegetarian foods, this preparation may require special use of legumes, whole grains, fruits and seeds. In addition, zinc may not be bioavailable in non-vegetarian food, legumes, whole grain, nuts and seeds are rich in zinc, but they also contain phytic acids which removes zinc from body. Although a high protein diet increases zinc bioavailability; however, protein foods are rich in phytic acid. These foods contain more zinc than zinc-deficient foods, but their high phytate content may reduce the amount of zinc absorbed from unprocessed foods. For example, a serving of whole grain bread contains almost 50% more zinc than a serving of white bread (0.22 mg instead of 0.15 mg respectively), because whole bread is more likely to be lower in zinc. Ingredients of white bread, zinc absorption rate (16.6%, not 38.2% respectively) (Schoofs et al., 2024).

According to the World Health Organization (WHO) a lacto-vegetarian or vegan diet with a molar ratio of phytate to zinc of 5-15 is classified as having intermediate zinc bioavailability (30-35% absorption). On the other hand, a diet with high zinc bioavailability (50-50% absorption) is characterized by good processing, small amounts of cereal fibers, a zinc phytate molar ratio of less than 5 and sufficient protein from animals. Research has shown that foods with low zinc bioavailability (absorption rate of 15%) include high amounts of raw rice and zinc phytate rate of more than 15. High-phytate foods provide energy and general, most soy products provide protein, less phytates, contain zinc content. Increased calcium levels may also reduce zinc bioavailability. On a controlled diet, zinc absorption in postmenopausal women was significantly reduced (from 3.6 mg/day to 2.0 mg/day) when simple carbohydrates were substituted for meat. Zinc supplements reduce zinc absorption, avoiding a low-fat diet with meat-derived foods will not increase zinc absorption. Vegetarians especially those with a phytate to zinc molar ratio greater than 15 may require 50% more zinc than vegetarians due to decreased zinc absorption. This is based on

measurement of zinc absorption from a controlled diet: Zinc absorption is reduced by approximately 35% compared with non-vegetarian foods and non-heme iron absorption is reduced with the same lacto-vegetarian foods. A 70% estimate increases total iron absorption by approximately 85%. Zinc phytate molar ratios for lacto-vegetarian and non-vegetarian foods are 5 and 14 respectively, due to the replacement of meat with legumes, whole grains, seeds and nuts. After four weeks of fasting women received less zinc from vegetarian diet (Grüngreiff et al., 2022).

Calcium Deficiency in Vegetarian Diet

You can get calcium from calcium-rich foods, fortified foods and beverages, supplements or a combination of these sources. It is important to consider calcium content and bioavailability when evaluating calcium products. The amount of calcium that can be absorbed per serving from many oxalate free plant resources as well as some oxalate rich plant foods such as beans and spinach. Since then we have examined many dairy products as well as other oxalate-rich foods and vegetables popular in China. Dairy products contain more than 75% of the calcium consumed in the American diet. Foods derived from plants contain oxalates and phytates, which inhibit calcium absorption and can affect calcium bioavailability. This may be why between bone mass and milk calcium was higher than that of non-milk calcium in 835 Chinese women. The oxalic acid content in foods is generally inversely proportional to amount of calcium absorbed (Chuang et al., 2021).

Therefore, the bioavailability of calcium is low in sweet potatoes such as spinach and rhubarb in United States and China, and high in low-oxalate plants such as Broccoli, and cabbage. Soybeans are high in oxalates and phytates, commercial products are better sources of calcium. Conversely, regular dried beans also contain phytic acid. The bioavailability of calcium is higher in oxalate-free vegetables than in milk, which means two things. First, fiber in vegetables does not prevent the body from absorbing calcium. This has been shown for pure fibers. Second, vegetables that do not contain oxalates may have unabsorbed calcium. Because many plants (such as vegetables, fruits and grains) are low in calcium, most Americans get their needs from these foods. For this reason, it may be good for those who decide not to drink milk to include calcium-enriched foods and supplements in their diet (Falsetto et al 2022).

MICRONUTRIENT DEFICIENCY IN DIET

Protein-Power Malnutrition (PEM)

Protein-power malnutrition (PEM) is a disorder in which people absorb very little in the way of proteins, energy, or both. As a result, it is frequently seen in developing nations as a result of inadequate dietary consumption. The two main illnesses associated with this condition are kwashiorkor, which is characterized by an extreme protein deficit, and marasmus, which is entire meal deprivation with exceptionally low amounts of protein and strength. The Global Database on Child Growth and Malnutrition (from 1980-1993) maintained by the World Health Organization (WHO) has demonstrated

that approximately one in three children worldwide suffer from PEM, with eighty percent of these children residing in Asian countries (Fig. 2).

Babies suffering from marasmus are abnormally underweight due to the loss of nearly all of their subcutaneous fat. Their body is extremely weak and more susceptible diseases because it seems like it is made up entirely of bones and skin. Extremely low calorie intake from all sources, including protein, is the main cause of this illness. Malnutrition could cause marasmus to die if it is not handled properly (Ahmad et al., 2020).

Carbohydrates Deficiencies

Certain human body cells, such as neurons, require an excessive amount of glucose. Since dietary carbohydrates are insufficient, gluconeogenesis is dependent on the breakdown of amino acids, which can be supplied from body proteins, nutritional proteins, or lipids' glycerol. The liver is the primary site of glucose synthesis. An extended duration of insufficient carbohydrate consumption should result in ketosis (expanded ketones seasoned-duction), which is typified by an unusually sweet-smelling patient's breath. Consuming 50 to 100 g of carbohydrates per day will help prevent ketosis and other headaches associated with low carbohydrate intake; but, for a balanced and healthful diet, at least half of the daily calorie need must be met by carbohydrates (Tondt et al., 2020).

NUTRITIONAL DEFICIENCIES AND ADVERSE EFFECTS

lack in vitamins, minerals, and macronutrients have been reported in patients limiting their intake of animal products.

Vitamin B12 Deficiency

Animal derived products supply a large amount of vitamin B 12, which is only generated by microbes. Vitamin B 12 deficiency is a well-known problem that can also effect non-vegan's eggs, dairy, fish or meat. In the absence of sufficient

supplements, deficiencies arise and can lead to macrocytic anemia and neurologic deficiencies of the dorsal column. One study looked at strict macrobiotic vegan infants via infancy; even after animal byproducts were reintroduced as adolescents multiple 0.33 continued to have a low amount cobalamin, displaying that changing one's diet only is inadequate to replenish serum vitamin B12, displaying that changing one's diet only is inadequate to replenish serum Vitamin B12 (Ankara & Kumar, 2022).

Vitamin A Deficiency

One of the most common nutritional deficiencies in underdeveloped nations is a lack of vitamin A, which is generally linked to ophthalmologic disorders. Diet A represents necessary to preserve the integrity of the epithelial tissues in the respiratory, gastrointestinal, and urinary systems as well as in the eye. The first signs of a vitamin A deficit include night blindness, xerophthalmia, and improvement of Bigot spots. As the vitamin A shortage worsens, permanent impairment and keratomalacia may occur. The World Health Organization (WHO) indicates that between 70 and 80 million children global experience subclinical vitamin A deficiency, a condition that does not appear to exhibit any symptoms or indicators. Children with mild diet A insufficiency have slower body growth and a higher risk to infections (Xu et al., 2021).

Vitamin B6 Deficiency

However, it is not very frequently, vitamin B6 insufficiency can be brought on by some medications, malabsorption, and inadequate food consumption. Individuals who are malnourished, aged, or anorexic are more likely to experience a deficit in vitamin B6. Alcoholics are also a greater likelihood to experience deficiencies because alcohol increases the body's catabolism of vitamin B6, a vitamin they consume in horrible amounts. A shortage in vitamin B6 causes peripheral neuropathy, anemia, cheilosis, glossitis, seborrheic dermatitis, depression, Crohn's disease, and seizures. Drugs have the ability to bind vitamin B6, increasing its excretion or decreasing its enzymatic activity (Sarwar et al 2021).

Folate Deficiency

A shortage folate Folic acid, or vitamin B9, and vitamin B12 have a number of closely related roles. Folate is necessary for the production of purines and thymidylate and additionally plays a role in the synthesis, stability, and repair of DNA. Moreover, folate affects alterations in DNA methylation patterns and carbon metabolism. Because alcohol slows down the absorption of vitamins, heavy alcohol use might result in folic acid deficiency. People who are deficient in folate experience fatigue as well as weakness due to megaloblastic anemia. Deficiency in folate during pregnancy is associated with neural tube deficiencies low birth weight, preterm delivery, and retardation of fetal growth. Meanwhile, folic acid supplementation lowers the risk of neural tube abnormalities throughout the periconceptional period (Shulpekova et al., 2021).

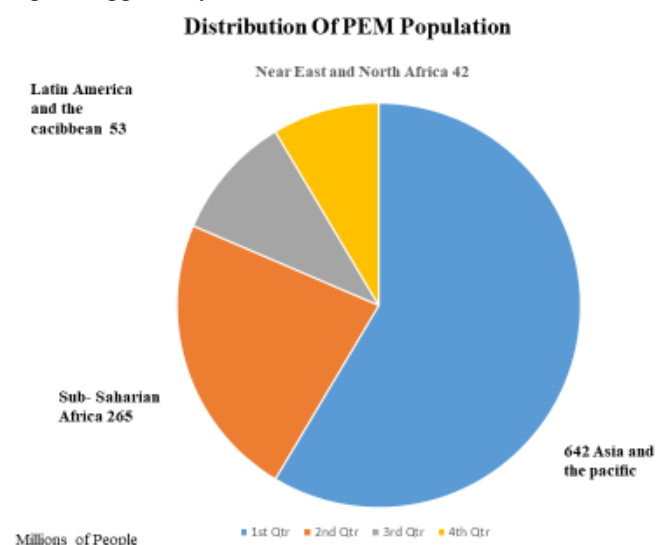


Fig 2. Distribution of power energy malnutrition population

Vitamin C Deficiency

Ascorbic acid, or vitamin C, is regarded as an essential nutrient that is particularly obtained from weight-loss plans; a lack of it can lead to scurvy and alter behavior and mood. The symptoms of ascorbic acid deficiency include petechiae, ecchymoses, coiled hairs, hyperkeratosis, arthralgia's, and bleeding gums within the first three months of the condition. In addition, vitamin C has a major role in the production of carnitine, catecholamine's, osteoblasts, and osteodentin, as well as in the reduction of folic acid excretion in the urine and improved absorption of iron from food. Because humans cannot synthesize vitamin C, they have to depend only on vitamin C-rich vegetables and fruits for adequate consumption and storage. Citrus fruits, tomatoes, strawberries, potatoes, and young green vegetables are good sources of vitamin C for your diet. Moreover, growing toddlers who are exclusively given cow milk or formula, as well as kids with neurodevelopmental disorders, have deficiencies in vitamin C. It is known that pharmacological dosages of vitamin C alleviate the symptoms and indicators(Kiani et al., 2022).

Special Consideration in Infants and Toddlers

Vegetarian mothers who breastfeed babies or use just soybeans formula can start a vegan diet from birth. The amount of vitamins and minerals in human milk differ based on becoming mothers. Human milk has amounts of Vitamin A, C, D and B group that are specifically effected by the food of mother. While vegans regularly take supplements, nursing mothers may have partially higher level of vitamin. Case studies have been shown that both breastfeeding babies of vegan mothers and those who are starting to get show symptoms of Vitamin B12 insufficiency. Extended Vitamin B12 deficiency can result in permanent brain impairment due to reduced formation in its most severe form. To make sure sufficient mothers should take an appropriate supplement containing Vitamin B12, or babies should receive direct supplementation. Moreover, low mother low levels of iron vegetarian and vegan mother could lead deficiencies in infants who are breastfed. Presented a case of severe iron and vitamin B12 insufficiency normally anemia, hepatosplenomegaly, and development delay in a strong vegan who was not taking any supplements(Mieliech et al., 2021).

Additionally, to receiving a higher chance of becoming deficient may have first sign of deficiency as previous six months of age, or three months previously than babies born to mothers who have sufficient supplies of iron. Studies have shown that concentration of docosahexaenoic acid (DHA) in human milk is lower in vegans than in their no vegan different forms, increasing worries regarding a possible lack of DHA in milk of vegan mothers. DHA is essential for young infants developing cells and brains, but its advantages for term infants are less recognized. Higher early usage has been associated with improving long term developmental results based on certain studies. Considering being known that omnivorous mothers had higher DHA than vegan human milk until recently DHA was not added. Lastly, providing normal soy milk and a vegan diet to newborns increases their risk of taking in not enough calories. Several vitamins and minerals found in soy

milk are like full milk, but the fat level is closer to that. of 2% milk. The nutritional properties of other milk replacements different whole grains, fruits, and vegetables are high-fiber foods that are base of vegan diets are abundant but lack substance in term of energy (Kostecka et al., 2023).

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