

A Cross-sectional Study on the Healthy and Nutritionally Balanced Vegetarian Mid-Day Meal for Universal Acceptance: An Overview

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Abstract

Food is the basic necessity of all living beings. We humans are evolved from Homo habilis and Homo erectus. Early humans totally depended on locally available seeds, grains, nuts, fruits, vegetables and flesh of other animals for their survival. To be forthright, humans as Homo sapiens are actually omnivores and not herbivores or carnivores purely. But, over a long period of time, people have chosen for their longevity through several healthy living practices such as going for a walk every-day, doing exercise, practicing yoga most importantly the preferences for "Vegetarian Meals".

Keywords: Nutritionally; Balanced; Vegetarian

Introduction

Vegetarians are people who don't eat meat and meat products. People may be vegetarians or vegans for ethical, environmental, health or cultural reasons. If parents are vegetarians, they may want their children to eat the same way that they do. The earliest record of vegetarianism comes from Indus Valley Civilization as early as the 7th century BCE, inculcating tolerance towards all living beings. Vegetarianism was also practiced in ancient Greece and the earliest reliable evidence for vegetarian theory and practice in Greece dates from the 6th century BC. The Orphics, a religious movement spreading in Greece at that time, and Pythagoras, a philosopher and religious leader in the area of Southern Italy colonized by Greek settlers, abstained from the flesh of animals. Vegetarianism was also practiced about six centuries later in another instance (between 30 BCE – 50 CE) in northern Thracian region, the Moesi tribe who inhabited present day Serbia and Bulgaria, feeding themselves on honey, milk and cheese [1].

In the Indian culture, the diet was closely connected with the attitude of non-violence towards animals (called ahimsa in India) and was promoted by religious groups and philosophers. The ancient Indian work of Tirukkural explicitly and unambiguously emphasizes vegetarianism and non-killing. Chapter 26 of the Tirukkural, through couplets 251 to 260, deals exclusively on vegetarianism or veganism. Among the Hellenes, Egyptians and others, it had medical or ritual purification purposes [2].

School Lunches are going vegetarian

As for the younger generation, country like India started with new methodologies of teaching-learning processes, physical fitness awareness campaigns, practicing of yoga, mid-day meals etc,. Hence, it is high time to introduce at least one complete vegetarian meal per day during school age. That is why, now a days even private schools insist on cooked vegetarian food to be packed and sent by parents for their children during lunch hours. Supplementation and Fortification of food items are also possible in a vegetarian meal positively. Vegetarian meal supports in healthier cholesterol level, balanced BMI, control of blood sugar level and lowers the risk of developing cancer among children. Many developing countries, nowadays in order to incorporate the knowledge of Vegan Diet and its advantages of healthy living try to conform Vegetarian Meals as their preference of choice to the school going children through Mid-Day Meals / Lunches.

Eating habits are set in early childhood. Food eaten during school days is unforgettable. Home-made food eaten in the morning with hurry and packed lunches in lunch boxes to school are memorable. Indians give much preference to home cooked carefully packed lunch boxes for their kids with lots of love, care and affection. Always other friends' lunch boxes are tastier than ours during school days. Choosing a vegetarian diet can give a child and the whole family the opportunity to learn to enjoy a variety of wonderful, nutritious food. Children rose on fruits, vegetables, whole grains, and legumes grow up to be slimmer and healthier and even live longer than their meat-eating friends. It is much easier to build a nutritious diet from plant foods than from animal products, which contain saturated fat, cholesterol, and other substances, that growing children can do without. As for essential nutrients, plant foods are the preferred source because they provide sufficient energy and protein packaged with other health-promoting nutrients such as fiber, antioxidant vitamins, minerals and phytochemicals [3].

Children Scenario in India

Children are considered as the biggest assets of any nation. India stands first in the world's youngest population. To strengthen a country's manpower, one needs to concentrate on the health and education of its younger generation especially the school going population. A more serious issue then comes of

child malnutrition. Malnutrition in early childhood has serious, long-term consequences because it impedes motor, sensory, cognitive, social and emotional development. Malnourished children are less likely to perform well in school and more likely to grow into malnourished adults, at greater risk of disease and early death. The latest World Bank Report on India, "Undernourished Children – A Call for Reform and Action," finds a number of underweight children in India is among the highest in the world. The report says approximately 60 million children are underweight in India. India being one of the countries where poverty and illiteracy are the root cause of underdevelopment, it is not surprising to see that more than 50% of the children do not get adequate meals per day. In India, around 46 per cent of all children below the age of three are too small for their age, 47 per cent are underweight and at least 16 per cent are wasted. Many of these children are seriously malnourished [4].

As envisaged under the broader interpretation of Article 21, every Indian has a right to be free from hunger and malnutrition. Almost around 500 million Indians are tossed between hunger, malnutrition, food scarcity and migration, taking from the poor, especially children, their basic right to live. It is no more a surprise to say that more than 100 children die in India because of malnutrition. Also, every day forty thousand children on this planet needlessly starve to death. According to the Department of Agriculture Statistics, one acre of land can grow 20,000 pounds of potatoes. That same acre of land, when used to grow cattle-feed, can produce less than 165 pounds of edible cow flesh. To help end world hunger, it's high time for humans to turn 'Vegetarian' (Table 1).

Types of Vegetarians	Meat	Eggs	Milk
Ovo-lacto vegetarianism	No	Yes	Yes
Ovo vegetarianism	No	Yes	No
Lacto vegetarianism	No	No	Yes
Veganism	No	No	No

Table 1: Comparison of the main vegetarian diets

Types of Vegetarians

There are different types of vegetarians, determined by the types of food a person does not eat. Vegetarians can be classified into the following groups:

Ovo-lacto vegetarians – exclude red meat, offal, fish and poultry. Obtain protein from dairy products, eggs, beans, legumes, pulses and nuts.

Ovo-vegetarians – exclude red meat, offal, fish and dairy products. Obtain protein from eggs, beans, legumes, pulses and nuts.

Lacto-vegetarians – exclude red meat, offal, fish, poultry and eggs. Obtain protein from dairy products, beans, legumes, pulses and nuts.

Vegans – exclude red meat, offal, poultry, fish, eggs and dairy products. Obtain protein from beans, legumes, pulses, nuts and soy products. Also, there are a number of vegetarian diets that exclude or include various foods:

Buddhist vegetarianism – Different Buddhist traditions have differing teachings on diet, which may also vary from ordained monks and nuns compared to others. Many interpret the precept 'not to kill' to require abstinence from meat, but not all. In Taiwan, vegetarianism excludes not only all animal products but also vegetables in the allium family which have the characteristic aroma of onion, garlic, scallions, leeks, chives or shallots.

Fruitarianism – permits only fruits, nuts, seeds and other plant matter that can be gathered without harming the plant.

Jain vegetarianism – includes dairy but excludes eggs and honey, as well as root vegetables.

Macrobiotic diets – consist mostly of whole grains and beans.

Sattvic diet (also known as yogic diet), a plant based diet which may also include dairy (not eggs) and honey, but excludes anything from the onion or leek family, red lentils, durian fruit, mushrooms, blue cheeses, fermented foods or sauces, alcoholic drinks and often also excludes coffee, black or green tea, chocolate, nutmeg or any other type of stimulant such as excess sharp spices.

Raw Veganism – includes only fresh and uncooked fruit, nuts, seeds and vegetables. Vegetables can only be cooked up to a certain temperature, for instance using a dehydrator.

Positivity towards the Efficacy of a Vegetarian Meal in developed countries– Establishing the fact by references around the world

In 2010, the United Nations released a report urging the world to adopt a predominantly plant-based diet, for its environmental and health implications. Since the turn of the century, interest in vegan and vegetarian diets has dramatically increased. In fact, a number of nations are making headlines with their sustainable commitments. According to an article in the New Zealand Herald, the increase is fueled by the motivation to help prevent disease, environmental degradation, and animal suffering on factory farms. "A decade ago, the vegan diet was considered whacky, if not plain risky. Vegans were seen as un-fun characters that lived on dandelion tea and brown rice. Now, eating vegan is seriously cool". Some of the most notable ones are listed below:

Spain: As shared in The Guardian, 'there is a growing population of vegetarians and vegans in the country of Spain. Spanish people have a reputation as diehard meat eaters. But in recent years, as the number of vegan or vegetarian restaurants in Spain had doubled and there are signs of change. Now, the idea among the Spanish is at the very least, eat less meat is increasingly common as in many other parts of Europe'.

United Kingdom: The UK is quickly following in the footsteps of the United States health-wise, which is why news of one in eight British adults now following a vegetarian or vegan diet is

positive news. Interestingly, 12% of the population now identifies as 'vegetarian' or 'vegan', but that percentage jumps to 20% for people between the ages of 16 and 24. That's not all: millions more in the UK are 'flexitarians', meaning they have cut back on their meat consumption dramatically, but still consume it now and again. Glasgow has been heralded as the best city in the world for vegans and is the most vegetarian / vegan-friendly place in the UK.

Sweden: The government is contemplating a 'meat tax' with no surprise, then, that nearly 10% of the country now identifies as vegetarian or vegan – and the millennial generation is leading the way. Animal Rights Sweden conducted a poll and learned that in the past five years, the number of vegetarians in the country has increased by 4%.

Israel: An article published by JSpaceNews showcases the growing vegan population in Israel. It is estimated that there were nearly 300,000 vegans in the country – making up 4% of its total population. This makes Israel, the vegan capital of the world, with more people per capita eschewing all animal products in their diet than any other nation.

India: The largely vegetarian country became even more veg-friendly where the Indian city named Palitana became the first all-vegetarian city in the world. On most of the festive days by many religions, it is a custom of Indians including the non-vegetarians to practice or consume pure vegetarian diet. Between 20% to 40% of India's population is vegetarian – the figure is muddled by the fact that most Indian Hindus do not consider people who eat eggs to be vegetarian. Most of the food served at Sikh gurdwaras is vegetarian, not because Sikhs are required to be vegetarian but because they aim to offer food that is acceptable to as many people as possible.

Germany: It might be shocking but true, Germany is a now a home of over 7 million vegetarians, but the demand for plant-based products is only increasing. Even the nation's 200 year old Oktoberfest, a meat-laden annual German beer festival has started serving delicious vegan versions of traditional favorites to satiate attendees' appetites. In addition, the owner of Veganz, an all-vegan supermarket chain based in Germany has ambitious plans of opening 60 more vegan stores by the year of 2020, due to popular demand [5].

Canada: According to the results from a survey of Canadian Food Consumption for 2013, citizens in this nation have decreased their meat consumption by almost 10% since the year 2011. A general decrease was noted across all meat categories, but the most noteworthy decline was seen in pork consumption, with a decrease of 4.5%. Not only that, last year The Huffington Post Canada highlighted Canada's growing trend away from the consumption of milk. It seems consumption of dairy products has dropped 25% as more nutritious, humane and dairy-free alternative (like soy and almond milk) have become available.

The United States: The country is doing something right in its quest to curb skyrocketing diseases of affluence (like diabetes, cancer and heart disease) by reducing its consumption of animal products. Google even recently tried to buy-out a vegan 'Cheeseburger' company in the States. Other private investors too are putting millions into vegan food start-ups.

Children's High Energy Needs

A balanced vegetarian diet includes cereals, vegetables, fruits, dairy products and oils. The complex carbohydrates found in whole grains, beans and vegetables provide the ideal energy to fuel a child's busy life. Cultivating a taste for brown rice, whole wheat breads and pastas, rolled oats, and corn, as well as the less common grains barley, millet and others, will boost the fiber and nutrient content of a child's diet. In addition, steering children away from sweets, sugary drinks, highly processed baked products, and overly sweet cereals will help them avoid overeating and gaining unwanted weight. Naturally children need protein to grow, but they do not need high-protein, animal-based foods. Many people are unaware that a varied menu of grains, beans, vegetables, and fruits supplies plenty of protein. The "protein deficiencies" that the parents worried about in impoverished countries were the result of starvation or diets restricted to very few food items. Protein deficiency is extremely unlikely on a diet drawn from a variety of plant foods (**Table 2**).

Very young children may need a slightly higher fat intake than adults do. Healthier fat sources include soybean products, avocados and nut butters. Soy, peanut butter and jelly sandwiches, seasoned veggie burgers, and avocado chunks in salads, for example are very well accepted. Child's diet must include a regular source of vitamin B12, which is needed for healthy blood and nerve function. Deficiencies are rare, but when they happen, they can be a bit hard to detect. Vitamin B12 is plentiful in many commercial cereals, fortified soy and rice milks and nutritional yeast. The body requires vitamin D, which children can be obtained by simply playing outdoors in the sun. Fifteen to twenty minutes of daily sunlight on the hands and face is enough sun exposure for the body's skin cells to produce the necessary Vitamin D. For calcium, beans, dried figs, sweet potatoes and green vegetables, including kale broccoli and mustard greens are excellent sources. Fortified soymilk and rice milk and calcium fortified juices provide a great deal of calcium as well. In addition, eating lots of fruits and vegetables excluding animal proteins and limiting salt intake all help the body retain calcium. Growing children also need iron found in a variety of beans and green, leafy vegetables. The vitamin C in vegetable and fruits enhances iron absorption, especially when eaten together with an iron-rich food (**Table3**).

Energy Requirement as per Age		
Age	Energy Requirement Males (Kcal)	Energy Requirement Females (Kcal)
4-6 years	1715	1545
7-10 years	1970	1740
11-14 years	2220	1845
15-18 years	2755	2110
Protein Requirement as per Age		
Age	Protein Requirement	RDA
4-8 years	0.76gm/kg/day	0.95 gm/kg/day

Table2: Daily nutrition requirement in children

Vitamins and Requirement	Minerals	Age	RDA
Vitamin A		0-8 years	4-8mcg/d
		9-18 years	600-700mcg/d (Boys 14-18 years: 900mcg/d)
Vitamin C		0-8 / 9-18years	40-70 mcg/d
Vitamin D		0-8 / 9-18years	5 mcg/d
Vitamin E		0-8 years	4-8mg/d
		9-18 years	11-15mg/d
Vitamin K		Upto 1 year	2-2.5mcg/d
		1-18 years	50-75mcg/d
Thiamin		0-8 years	0.2-0.6mg/d
		9-18 years	0.9-1.2mg/d
Riboflavin		0-8 years	0.3-0.6mg/d
		9-18 years	0.9-1.2mg/d
Niacin		0-8 years	2-8mg/d
		9-18 years	12-14mg/d
Vitamin B6		0-8 years	0.2-0.6mg/d
		9-18 years	1.0-1.2mg/d
Folate		0-8 years	65-200mcg/d
		9-18 years	300-400mcg/d
Vitamin B12		0-8 years	0.4-0.9mcg/d
		9-18 years	1.2-2.4mcg/d
Pantothenic Acid		0-8 years	1.7-2mg/d
		9-18 years	4-5mg/d
Biotin		0-8 years	5-8mcg/d
		9-18 years	20-25mcg/d
Choline		0-8 years	125-250mg/d
		9-18 years	375-550mg/d
Calcium		0-8 years	210-800mg/d
		9-18 years	1300mg/d
Chromium		0-3 years	0.2-11mcg/d
		4-18 years	25-35mcg/d
Copper		0-8 years	200-440mcg/d
		9-18 years	700-890mcg/d
Fluoride		0-4 years	0.01-0.7mg/d
		5-18 years	1-3mg/d
Iodine		0-8 / 9-18years	90-150mcg/d
Iron		0-8 / 9-18years	7-15mg/d

Magnesium	0-4 years	30-80mg/d
	5-18 years	130-410mg/d
Manganese	0-1 years	0.003-0.6mg/d
	1-18 years	1.5-2.2mg/d
Molybdenum	0-1 years	2-3mcg/d
	1-18 years	17-43mcg/d
Phosphorus	0-8 years	100-500mg/d
	9-18 years	1,250mg/d
Selenium	0-8 / 9-18years	15-55mcg/d
Zinc	0-8 years	2-5mg/d
	9-18 years	8-11mg/d
Potassium	0-8 years	0.4-3.8g/d
	9-18 years	4.5-4.7g/d
Sodium	0-1 years	0.12-0.37g/d
	1-18 years	1-1.5g/d
Chloride	0-1 years	0.18-0.57g/d
	1-18 years	1.5-2.3g/d

Table 3: Vitamins and Minerals Requirement as per Age

International Studies on the importance of Vegetarianism

The consumption of meat is hazardous to your health. According to the American Dietetic Association, meat-eaters have an increased risk of heart disease, colon cancer, obesity, adult-onset diabetes, gout, osteoporosis, kidney stones, gallstones, diverticular disease, lung cancer and breast cancer. Animal products, such as meat and eggs, are the only dietary sources of cholesterol and the chief source of saturated fat, the main causes of heart disease. Not eating these foods reduces the risk of heart attack by 90%. The fiber in vegetarian diets not only removes unneeded cholesterol and other cancer-causing agents, but helps in reversing atherosclerosis - hardening of the arteries.

When the American Journal of Clinical Nutrition put diabetics on a vegetarian diet, 45% of the patients were able to discontinue their use of insulin injections. In a 21-year study of over 27,000 Seventh Day Adventists (followers of a vegetarian diet), their death rate due to diabetes was found to be only 45% that of the general population. A vegan diet (no animal products whatsoever) can actually reverse mature-onset diabetes.

When the diet recommended by the American Diabetes Association (ADA) and a vegan diet were compared over a 12 week period: The vegan group lost an average of 16 pounds, the ADA group 8 pounds; the ADA group needed as much medication as before, while the vegan group needed considerably less. Diets high in protein, especially animal protein, can cause the body to excrete more calcium, oxalate and uric acids which form kidney and gallbladder stones. Vegetarian diets have been shown to reduce the chance of

forming these stones. An ultrasound study found that 18% of meat-eating women had symptomless gallstones, compared to only 10% in vegetarians. Because a vegetarian diet does not force calcium out of the body, as meat does, vegetarians are at a lower risk for osteoporosis - the weakening of the bones, a major health concern for women. Vegetarianism can also benefit asthmatics and victims of multiple sclerosis (MS).

According to a 1985 year-long study conducted by the University Hospital in Linköping, Sweden, over 90% of bronchial asthma patients had less severe and less frequent attacks while eating a vegetarian diet, and reduced their need for medication. According to Dr. William Castelli, a switch to a vegetarian diet could help more than 90% of all MS victims arrest the disease process and improve their condition. Over two decades of research at the Loma Linda University in California reveals that men who eat meat are three times more likely to suffer from prostate cancer than vegetarians.

In a 1980 Study in Boston, researchers measured the IQs of vegetarian children. Some of the children were following a macrobiotic diet, a few were Seventh-day Adventists (many of whom a plant based diet), and the rest were from families that had simply decided to go vegetarian. On intelligence testing, the kids were considerably above average, with a mean IQ of 116. Now, the diet may have had nothing to do with their intelligence. Rather, these vegetarian families were better educated than the average meat-eating family, and it is probably the parental education, rather than a dietary effect, that was reflected in their children's measured intelligence. However, this study should reassure vegetarian parents who wonder whether animal products contain something necessary for brain development. Clearly, they do not.

According to a study done by Dr. Takeshi Hirayama of the National Cancer Research Institute of Tokyo, vegetarianism reduces the risk of breast cancer in women by 25%. Japanese women who followed a western style meat-based diet were eight times more likely to develop breast cancer than the women who followed a more traditional plant-based diet. One other cancer where diet has recently been shown to play a role is Non-Hodgkin Lymphoma (NHL). In a study of over 35,000 American women, those who developed NHL had higher intakes of animal fat, especially from red meat. Fiber intake is a critical factor in the prevention of cancer, especially of the colon.

The Journal of the National Cancer Institute reported back in the 1970's that there is not a single population in the world with a high meat intake which does not have a high rate of colon cancer. Animal products are usually high in fat and always devoid of fiber. Vegetarians avoid animal fat, the consumption of which is linked to cancer, and get abundant fiber and vitamins that help prevent cancer.

In a University of Hawaii study, vegetarians, on average, ate almost twice as much fiber as the meat eaters, especially cereal fiber. Vegetarians are therefore much less likely to suffer from constipation than meat-eaters. Blood analysis of vegetarians also reveals that they have higher levels of specialized white cells which attack and kill cancer cells. A UK study of over 6000 vegetarians found them 40% less likely to die of cancer than

meat-eaters. How much enhanced longevity can you expect as a vegetarian? The study of vegetarian Seventh Day Adventists found them to have significantly lower death rates than the general population. Men had lower death rates from coronary heart disease, stroke, diabetes, all cancers combined, and cancer of the colon, rectum and prostate in particular. Women had lower death rates from stroke, diabetes, all cancers combined, and cancer of the colon, rectum, breast and ovaries in particular. (Rebecca Saltzburg)

A comparative study on various Substantiating Nutritionally Sound 'Vegetarian' Mid-Day Meal / School Lunches (programmes) around the world on par with International Standards - Best practices

In India, Government wants to introduce milk and egg in the MDM Programme. But, most of the NGOs run by various institutions do not conform to this move by the Government. These NGOs are of the opinion that they will continue providing the regular mid-day meal and the government can rope in third parties the supplements as a part of the MDM scheme, whether or not the NGOs agree to provide as a part of their mid-day meal menu. But, the whole issue is that the mid-day meal then will not allow the meal to remain universally consumed by children of all communities. Ultimately, the MDM scheme's objective fails. Hence, alternative to egg and other animal food needs to be supplemented with vegetarian alternatives. The main objectives of the Mid-Day Meal Scheme are: Eliminating classroom hunger, increasing school enrolment, increasing school attendance, improving socialization among castes, addressing malnutrition and women empowerment. The major objectives of the study is to provide nutritiously balanced healthy diet to the Government School children as per RDA and to Universal Acceptance of vegetarian Mid-Day Meal by all sections of the society. In India, with a view of improving nutritional levels among children, the National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a Centrally Sponsored Scheme on 15th August, 1995. In 2001, MDMS became a cooked Mid-Day Meal Scheme under which every child in every Government and Government aided primary school was to be served a prepared Mid-Day Meal with a minimum content of 300 calories of energy and 8-12 gram protein per day for the minimum of 200 days. The scheme was further extended in 2002 to cover not only children studying in Government, Government aided and local body schools, but also children studying in Education Guarantee Scheme (EGS) and Alternative & Innovative Education (AIE) centres.

In October 2007, the scheme was extended to cover children of upper primary classes (ie. Class VI to VIII) studying in 3,479 Educationally Backwards Blocks (EBBs) and the name of the scheme was changed from 'National Programme of Nutritional Support to Primary Education' to 'National Programme of Mid-Day Meal in Schools'. The nutritional norm for upper primary stage was fixed at 700 calories and 20 grams of protein. The scheme was extended to all areas across the country from 1st April, 2008. The scheme was further revised in April 2008 to extend the scheme to recognized as well as unrecognized Madarasas / Maqtabs supported under SSA. The component-

wise break up of above nutrition value of food items constituting Mid Day Meal (MDM), both for primary and upper primary, are as under:

India: There are several advantages of a mid day vegetarian meal. To mention them in order – they are wholesome diet, nutritious – a combination of macronutrients and micronutrients, healthy, tasty, universal societal acceptance, made with locally available vegetables, usage of fibre-rich vegetables, preparation done as per Recommended Dietary Allowances, assurance of meal every school working day, systematic procedure of preparation, ensuring stomach full meal, constant supervision, food delivery on-time every time every meal, avoidance of wastages, scientific approach, variety of meals, cumbersome malnutrition seriously attended among children, quality raw materials, ensured controlled environment, cooks and attenders are well trained, and regionally available ingredients. (Mumtaj)

Scotland: Hungry for Success are Scotland's two year old £63.5m healthy eating initiative. The plan says that schools have to improve the atmosphere and ambience in dining halls to stop pupils being put off their food. Officials also try to find ways to protect the anonymity of pupils who get free school meals, to stop the stigma they suffer. Options include introducing a swipe card for the all pupils to use. Glasgow, the biggest local authority in Scotland, has its own in-house catering team. Parents contribute towards the cost on a means – tested basis. (Polly Curtis)

France: School meals in France – taken by half of all French school children are well-balanced three or even four-course affairs. Government school meal guidelines in France date from 1971 and state that at least 45 minutes must be allowed for each meal. With more and more local councils around France contracting school meals out to provide caterers, more appropriate – but still voluntary – guidelines have been drawn up by a number of health and nutrition institutes. Menus for the week are posted on school notice boards so that parents can plan appropriate evening meals; many town councils also put them in their websites. (Jon Henley)

Columbia: The Education Secretariat for Bogota provides food for 60-70% of the city's school children. The rest – better off – go to private schools. State schools provide either one hot meal a day or a series of light snacks. A hot meal costs the state the equivalent of about 22p a day – as a proportion of per capita income, significantly more than is spent in the UK – and the snacks costs about 20p. there is no cost to parents of children in the state system. In both cases, standards in terms of calorific value, vitamins and other nutritional content are set nationally by the health ministry, and each meal/set of snacks has to provide children with 33% of their recommended daily intake. The provision of school food is the responsibility of the state, which most often subcontracts the work to provide companies whose menus and facilities have been certified as acceptable. (Jeremy Lennard)

Japan: Japanese school children had to depend on UN handouts during the poverty stricken postwar years, but the traditional school lunch or *kyushoku*, has been a fixture of life

for young children since the turn of the century. Menus at state schools vary depending on the region. Lunch is prepared on the premises and eaten in the classroom during the lunch break, with children expected to clean up afterwards. Japanese students learn discipline and cooperation by serving lunch to one another. The local board of education says that each meal for primary school children, or those aged six to twelve, contain about 650 calories. Pupils take home a menu for the coming month containing notes on nutrition, fat and salt content, and calorific value. Twice a year, parents are invited to taste-test the food. The class with the fewest leftovers at the end of the month receives a certificate. Even at state schools, school meals are not free, though help is available for low-income families and the city government contributes for kitchen staff, utensils, gas, electricity etc. (Justin McCurry)

United States: The standards for nutrition are based on the federal government's dietary guidelines for Americans, which recommend that no more than 30% of an individual's calories come from fat and less than 10% from saturated fat. School lunches must also provide at least one-third of the recommended dietary allowances of protein, vitamin A, vitamin C, iron, calcium and calories. The federal government lays down the dietary guidelines, but decisions about what specific foods to serve and how they are prepared are made by local school food authorities. The government runs and funds a national school lunch programme, administered by the US department of agriculture, which operates in over one lakh schools. The programme provides inexpensive or free lunches to millions of children. Most of the support that the department of agriculture provides to schools in the national school lunch programme comes in the form of a cash reimbursement for each meal served. (Mark Tran)

Australia: Australian school tuck shops are uniquely run on the goodwill of the Parents and Citizens' Association, whereby volunteers devise school menus and prepare lunches. Since, the nation battles childhood obesity, healthier alternatives have forced their way onto school menus. Many schools have adopted a traffic light system where the government's voluntary programme limits the sale of red-labelled foods that are high in fat, sugar or salt – including pastries, chocolate and soft drinks – to only twice a term. Healthier green-labelled foods such as sushi, sandwiches, corn on the cob and watermelon slices are available every day. Many schools receive joint funding from the Department of Education and the Parents and Citizens' Association. But, Catholic and independent school canteens survive almost exclusively on the fund-raising efforts of parents through school fees and other activities. (Bernard O'Riordan)

South Africa: The vast majority of South Africa's schools do not serve meals at all. Classes end at about 1:30 PM and students are then left to get their own lunches. Many students bring their own lunches from home, which usually consist of sandwiches. At many township schools, there are local vendors who sell snacks to student leaving school. Bags of corn curls and crisps are the best selling items. Apples and bananas are also sold. Poor nutrition is blamed for a dramatic rise in obesity in township school children because their diets consist largely of fast foods, fried and highly processed foods. But some township

schools have led the way towards better nutrition, where the school garden provides food for school lunches. Schools provide lunches of pap, a stiff maize porridge that is South Africa's staple food. This is supplemented with a vegetable stew, usually made from cabbage, onions, beans, carrots, and tomatoes. Some other township schools have similar feeding schemes. Some provide sandwiches of peanut butter. (Andrew Meldrum)

Russia: Free school meals were a rapid casualty of the end of communism, but all children aged six to ten are fed a free "breakfast" at about 11:00 AM. Older children usually have to pay for it. Usually the breakfast consist of tea or juice, a small salad, some fruit and cheese, or may be porridge, a sausage and some yoghurt. Many children go home for lunch. School canteens provide lunch for those whose parents are at work and who do not bring a packed lunch. This is free to low-income families, but most have to pay. Parents' groups are rare, but where they are organized, they often raise money to improve school food. (David Crouch)

Spain: Way back in 1990s, education officials launched a programme to develop healthy eating habits among youngsters and improve school canteen services. Provisional laws state that food should be of acceptable quality and prepared in hygienic conditions. There must be a variety of products which meet pupils' dietary needs. Private companies are contracted to provide school catering. Parents generally pay the full cost of school meals. Some, but not many, children are entitled to free meals. Family participation is seen as crucial with parents expected to provide adequate nutritious food at home and contribute to the development of their children's food habits. (James Sturcke)

Sweden: Guidelines from the Swedish National Food Administration encourage institutions to serve at least one cooked main dish with vegetables, bread with low fat margarine, a mixed salad, skimmed milk and water. The amount of vitamins and minerals should be about 25% and 30% of the recommended daily intake. A typical school lunch is at 11:00 AM. Some institutions have their own kitchen staff, while others receive meals from a private caterer contracted by the local authority or from a neighboring school with cooking facilities. Primary and secondary schools are forbidden to charge for meals. (Gwladys Fouche')

Other countries: Singaporean students enjoy breakfast, lunch and dinner since some parents work late.

Various health benefits of a vegetarian meal over a non-vegetarian meal

Your Health: Prevent disease. Meat-eating has been linked with cancer, heart disease, strokes, diabetes, hypertension, osteoporosis, kidney stones and many other devastating diseases. By eliminating meat the diet, one can take a crucial step towards a long life of health and happiness.

Increased energy and endurance: A vegetarian diet improves stamina, concentration and sense of well-being. Study shows that athletes who switched to a vegetarian diet improved their

endurance to almost 3 times as much as those who remained carnivorous.

Avoid toxic food contaminants: Flesh foods are loaded with dangerous poisons and contaminants such as hormones, herbicides, pesticides and antibiotics. As these toxins are all fat-soluble, they concentrate in the fatty flesh of the animals. Not to mention the viruses, bacteria and parasites such as salmonella, trichinella and other worms and toxoplasmosis parasites.

Human are by design vegetarian: Now, by evolution, out flat teeth are perfect for grinding grains and vegetables, not for tearing apart animal flesh. Similarly, our hands are designed for gathering, not for flesh-ripping. Our saliva contains the enzyme alpha-amylase, the sole purpose to digest the complex carbohydrates in plant foods.

Care for the environment: By improperly using animals for food, we are eating ourselves off the planet. The raising of animals specifically to kill them and eat them has resulted in incredible waste and devastation of our precious resources.

Become a more peaceful person: When we consume animal flesh products, we are necessarily at odds with nature and our fellow living beings. Consumption of flesh foods has been scientifically linked with violent and aggressive behavior.

Have compassion for animals: Animals who are raised for slaughter needlessly experience incredible suffering throughout their life and death. We are meant to act as caretakers and protectors of animals and the planet, not exploiters and killers. Many world religions, including Buddhism, Hinduism, Seventh Day Adventists, Mormons and Jainists all teach that eating animal flesh is wrong.

Vegetarianism is moral and ethical: Give the devastating consequences of meat eating on an individual, social and ecological level, as thinking, caring beings, we should choose vegetarianism. Many great philosophers such as Plato, Socrates, Leo Tolstoy, George Bernard Shaw, Mahatma Gandhi etc. have taught the morality of Vegetarianism.

Conclusion

Discipline comes from childhood. Civilization has evolved over the eyes in the consumption of food. A vegetarian diet is always advisable for all ages irrespective of the case, creed or religion. Many developed countries nowadays in order to incorporate the knowledge of Vegan Diet and its advantages of healthy living try to conform Vegetarian Meals as their preference of choice to the school going children through Mid-Day Meals/Lunches. Though non-vegetarian meals have several benefits, government and schools tries to avoid Potentially Hazardous Foods(PHF) through cross contamination and adulteration in the diet and to ensure safety and for that Vegetarian Meals are the "Best Choice".

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