Making the case for vegetarian diets

Joan Sabaté, MD, DrPH
Vegetarian diets are lifelong ways of eating.
The roots of vegetarian diets can be traced back to the beginnings of recorded history.
The book of Genesis

Pronounces that the seeds of plants and the fruits of trees are the nourishment of human kind.
Gautama Buddha

“The eating of meat extinguishes the seed of great compassion.”
Plato

The Republic asserted that the ideal city was a vegetarian city because it was more rational to choose a diet less harmful to the environment and to the spirit.
Vegetarian diets are not a modern invention or fad from a recent book.
A vegetarian diet is defined by the **exclusion** of flesh foods.
How are the dietary patterns defined?

- **Non-vegetarian**
  - Meat (allowed)
  - Poultry/Fish (allowed)
  - Dairy/Eggs (allowed)

- **Pesco**
  - Meat (allowed)
  - Poultry/Fish (allowed)
  - Dairy/Eggs (not allowed)

- **Lacto-ovo**
  - Meat (allowed)
  - Poultry/Fish (allowed)
  - Dairy/Eggs (allowed)

- **Vegan**
  - Meat (not allowed)
  - Poultry/Fish (not allowed)
  - Dairy/Eggs (not allowed)
Most studies of vegetarians come from either the: North-American Seventh-day Adventists Cohorts (AHS-1 & 2) or the EPIC-Oxford study in the UK.
Health effects of vegetarian diets
CVD risk factors

Adventist Health Study
Vegetarians weigh less

**Adventist Health Study**

- **Female 5’ 6” tall**
  - Vegan: 160 lbs
  - Lacto-ovo: 180 lbs

- **Male 5’ 10” tall**
  - Vegan: 190 lbs
  - Lacto-ovo: 200 lbs
Vegetarians have lower BMI

![Graph showing BMI over age for different dietary groups: Meat-eaters, Fish eaters, Vegetarians, Vegans. The graph indicates that vegetarians consistently have the lowest BMI across all age groups.](image)
Vegetarians have lower risk of diabetes

% Reporting Type 2 Diabetes

- Vegan: 2.1%
- Lacto-ovo: 3.2%
- Pesco-veg: 4.7%
- Non-veg: 7.5%

Adventist Health Study
Vegetarians compared to non-vegetarians have:

- 2–5 points lower BMI
- 25% - 50% lower risk of hypertension
- 25% to 50% lower risk of diabetes
- 50% lower risk of metabolic syndrome
IHD mortality of vegetarians

Adventist Health Study
Vegetarians have a slightly lower risk of overall-cancers.

A Vegetarian diet seems to reduce the risk of some cancer sites (colorectal, prostate, GI tract) while it has no effect on other cancers.
All-Cause mortality for vegetarians

<table>
<thead>
<tr>
<th>Category</th>
<th>Adjusted Hazard Ratio (HR)</th>
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<tbody>
<tr>
<td>Meat eater</td>
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<tr>
<td>Vegetarian</td>
<td>0.88</td>
</tr>
<tr>
<td>Veg Women</td>
<td>0.93</td>
</tr>
<tr>
<td>Veg Men</td>
<td>0.82</td>
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</table>

Adventist Health Study
Longevity

In general, vegetarians live 2 – 3 years longer than non-vegetarians.
What do vegetarians eat?
Relative food intake of vegetarians compared to non-vegetarians

Adventist Health Study

* Means, adjusted for age, sex & race and standardized to 2000kcal
Animal protein foods

Relative mean quantity eaten compared to non-vegetarians (adjusted for age, sex & race and standardized to 2000 kcal)

Vegan vs. Nonveg
Lacto vs. Nonveg
Pesco vs. Nonveg

Adventist Health Study
Plant protein foods

Relative mean quantity eaten compared to non vegetarians (adjusted for age, sex & race and standardized to 2000kcal)

Vegan vs. Nonveg
Lacto vs. Nonveg
Pesco vs. Nonveg

Adventist Health Study
Fruits and vegetables

Relative mean quantity eaten compared to non-vegetarians (adjusted for age, sex & race and standardized to 2000 kcal)

- avocados
- tomatoes
- leafy greens
- cruciferous vegetables
- onions
- other vegetables
- citrus
- berries
- other fruits
- dried fruits

Vegan vs. Nonveg
Lacto vs. Nonveg
Pesco vs. Nonveg

Adventist Health Study
**Starchy foods**

- **whole grains**
- **refined grains**
- **mixed grains**
- **sweet potatoes**
- **white potatoes**
- **fried potatoes**

**Relative mean quantity eaten compared to non-vegetarians**

(adjusted for age, sex & race and standardized to 2000kcal)

- **Vegan vs. Nonveg**
- **Lacto vs. Nonveg**
- **Pesco vs. Nonveg**

Adventist Health Study
Fats, Sweets & Snacks

Relative mean quantity eaten compared to non vegetarians (adjusted for age, sex & race and standardized to 2000kcal)

- solid fat
- liquid fat
- salad dressing
- butter
- dairy dessert
- other dessert

Vegan vs. Nonveg
Lacto vs. Nonveg
Pesco vs. Nonveg

Adventist Health Study
A healthy vegetarian diet includes:

- More plant foods
- Less dairy and eggs
- Less refined foods
- Less beverages
- And more water
Sustainability of Vegetarian diets
Not all foods are produced equally

The production of Plant foods is more sustainable because:

- they require fewer natural resources
- are less taxing on the environment compared to production of animal foods.
Greenhouse Gas emissions in the production of different foods

Post-production emissions

Production emissions
Relative environmental impacts of protein production from plants vs. animal sources

Relative environmental impacts:
- Beans
- Almonds
- Eggs
- Chicken
- Beef

**Relative Environmental Impact**

Sabate et al., 2014
The production of foods within a vegetarian diet requires less resources.

Adventist Health Study

Marlow et al., 2015
The production of all foods within vegetarian diets emits less GHGe.

- Vegans
- Vegetarians
- Fish-eaters
- Low meat-eaters (<50 g/day)
- Medium meat-eaters (50–99 g/day)
- High meat-eaters (≥100 g/day)

kg CO$_2$e/2000 kcals

Scarborough et al., 2014.
The production of foods within a vegetarian diet emits less GHGe.

- Vegetarian: 68% Plant Foods, 15% Meat, 13% Dairy/Eggs, 29% decrease
- Low Meat: 59% Plant Foods, 6% Meat, 17% Dairy/Eggs, 22% decrease
- Moderate Meat: 40% Plant Foods, 20% Meat, 19% Dairy/Eggs, 17% Beverages

Adventist Health Study

Soret et al., 2014
“The adoption of vegetarian diets at the global level has the potential to, all at once, optimize the food supply, improve human health, increase environmental sustainability, and advance social justice outcomes.”
Making the case for vegetarian diets

Simple – easy to understand and practice.
Adaptable – many cultures and cuisines.
Healthy - lower risk for chronic disease.
Sustainable – requires less natural resources.
It is not “all or nothing”