… just the FACTS

Study summaries examining the latest science on beef's place in a healthy diet

TEENAGE GIRLS WHO DON'T EAT MEAT ARE AT INCREASED RISK OF IRON DEFICIENCY

OBJECTIVE:

To examine the relationship between dietary patterns and iron status among teenage girls.

PARTICIPANTS:

The Iron Insight Study included 475 female teenage high school students with an average age of 16.6 years, in 2 cities in Sweden.

STUDY DESIGN:

This observational study classified participants into groups based on their self-reported dietary patterns: omnivores, non-consumers of red meat, pescatarians, vegetarians and vegans. Blood samples were used to assess participants' iron status and the prevalence of iron deficiency and anemia across these groups.

METHODS:

Information on dietary habits, iron supplementation, and demographic factors was collected using questionnaires. Blood samples were analysed to determine iron status based on the following definitions:

- Iron deficiency: ferritin < 15 µg/L
- Anaemia: haemoglobin < 110 g/L if < 19 years and < 117 g/L if ≥ 19 years.

Iron status and the prevalence of iron deficiency and anemia were compared across diet groups.

RESULTS:

Diet groups: In this study of teenage girls, 347 (73.1%) self-identified as omnivores, 27 (5.7%) as non-consumers of red meat, 38 (8%) as pescatarians, 60 (12.6%) as vegetarians and 3 (0.6%) as vegans.

Iron status:

- The prevalence of iron deficiency (after adjusting for BMI, menstruation, and iron supplements) was:
  - 31% in omnivores
  - 69% in vegetarians/vegans

- Ferritin levels decreased along with increasing dietary restriction, and compared to omnivores were:
  - 16% lower in non-consumers of red meat
  - 25% lower in pescatarians
  - 45% lower in vegetarians/vegans

Dietary choices:

- Girls eating less red meat were at higher risk of iron deficiency, compared to those eating more:

Prevalence of iron deficiency in teen girls based on weekly red meat consumption

Iron Deficiency in Girls Eating More Red Meat		Iron Deficiency in Girls Eating Less Red Meat	
Red meat ≥ 500 g/week	31%	Red meat < 500 g/week	40%
Red meat ≥ 350 g/week	31%	Red meat < 350 g/week	43%

- Girls eating more vegetarian patties and legumes were also at higher risk of iron deficiency.

CONCLUSION:

This study highlights a higher prevalence of iron deficiency among teenage girls adhering to diets that limit meat. Teen girls eating more red meat were less likely to be iron deficient. In the context of plant-based dietary guidance, the authors note the need for balanced diets that ensure adequate iron intakes.

Stubbendorff A et al. Iron insight: exploring dietary patterns and iron deficiency among teenage girls in Sweden. European Journal of Nutrition 2025;64:107.