

Position of the American Dietetic Association: Vegetarian Diets

Pediatric recommendations

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Infants

Growth of young vegetarian infants receiving adequate amounts of breast milk or commercial infant formula is normal. When solid foods are introduced, provision of good sources of energy and nutrients can ensure normal growth. The safety of extremely restrictive diets such as fruitarian and raw foods diets has not been studied in children. These diets can be very low in energy, protein, some vitamins, and some minerals and cannot be recommended for infants and children.

Breastfeeding is common in vegetarian women, and this practice should be supported. The breast milk of vegetarian women is similar in composition to that of nonvegetarians and is nutritionally adequate. Commercial infant formulas should be used if infants are not breastfed or are weaned before 1 year of age. Soy formula is the only option for nonbreastfed vegan infants. Other preparations including soymilk, rice milk, and homemade formulas should not be used to replace breast milk or commercial infant formula.

Solid foods should be introduced in the same progression as for nonvegetarian infants, replacing strained meat with mashed or pureed tofu, legumes (pureed and strained if necessary), soy or dairy yogurt, cooked egg yolk, and cottage cheese. Later, around 7 to 10 months, foods such as cubed tofu, cheese, or soy cheese and bite-size pieces of veggie burgers can be started. Commercial, full-fat, fortified soy milk or pasteurized cow's milk can be used as a primary beverage starting at age 1 year or older for a child who is growing normally and eating a variety of foods (51). Foods that are rich in energy and nutrients such as legume spreads, tofu, and mashed avocado should be used when the infant is being weaned. Dietary fat should not be restricted in children younger than 2 years.

Guidelines for dietary supplements generally follow those for nonvegetarian infants. Breastfed infants whose mothers do not have an adequate intake of vitamin B-12 should receive a vitamin B-12 supplement (51). Zinc intake should be assessed and zinc supplements or zinc-fortified foods used when complementary foods are introduced if the diet is low in zinc or mainly consists of foods with low zinc bioavailability (76).

Children

Growth of lacto-ovo-vegetarian children is similar to that of their nonvegetarian peers (50). Little information about the growth of nonmacrobiotic vegan children has been published. Some studies suggest that vegan children tend to be slightly smaller but within the normal ranges of the standards for weight and height (58). Poor growth in children has primarily been seen in those on very restricted diets (77).

Frequent meals and snacks and the use of some refined foods (such as fortified breakfast cereals, breads, and pasta) and foods higher in unsaturated fats can help vegetarian children meet energy and nutrient needs. Average protein intakes of vegetarian children (lacto-ovo, vegan, and macrobiotic) generally meet or exceed recommendations (12). Vegan children may have slightly higher protein needs because of differences in protein digestibility and amino acid composition ([49] , [78]) but these protein needs are generally met when diets contain adequate energy and a variety of

plant foods. Food guides for vegetarian children have been published elsewhere (12).

Adolescents

Growth of lacto-ovo-vegetarian and nonvegetarian adolescents is similar (50). Earlier studies suggest that vegetarian girls reach menarche slightly later than nonvegetarians (79); more recent studies find no difference in age at menarche ([53] , [80]).

Vegetarian diets appear to offer some nutritional advantages for adolescents. Vegetarian adolescents are reported to consume more fiber, iron, folate, vitamin A, and vitamin C than nonvegetarians ([54] , [81]). Vegetarian adolescents also consume more fruits and vegetables, and fewer sweets, fast foods, and salty snacks compared to nonvegetarian adolescents ([54] , [55]). Key nutrients of concern for adolescent vegetarians include calcium, vitamin D, iron, zinc, and vitamin B-12.

Being vegetarian does not cause disordered eating as some have suggested although a vegetarian diet may be selected to camouflage an existing eating disorder (82). Because of this, vegetarian diets are somewhat more common among adolescents with eating disorders than in the general adolescent population (83). Food and nutrition professionals should be aware of young clients who greatly limit food choices and who exhibit symptoms of eating disorders.

With guidance in meal planning, vegetarian diets can be appropriate and healthful choices for adolescents.

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