

NUTRITIONAL STATUS AND DIET IN CANCER PREVENTION

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OBJECTIVES: *To discuss the relationship between weight management and diet and cancer prevention, current nutritional guidelines, and evidence-based strategies to reduce cancer risk.*

DATA SOURCES: *Current nutritional guidelines, journal articles published between 2012 and 2015, and internet resources.*

CONCLUSION: *Evidence indicates that attaining and/or maintaining a healthy weight and adopting a diet that is primarily plant-based, low in red and processed meats, simple sugars, and refined carbohydrates, limits alcohol, and relies on food for nutrients can aid in preventing cancer.*

IMPLICATIONS FOR NURSING PRACTICE: *Nurses can take the lead to educate patients and families about weight management and diet and to promote adherence to nutritional guidelines.*

KEY WORDS: *cancer prevention, nutrition, diet, interventions, obesity.*

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In the United States, the lifetime risk for developing cancer is one in two for men and one in three for women.¹ Approximately 1.7 million cancer diagnoses and a half million cancer deaths occur annually.¹ One third of cancer diagnoses and deaths can be attributed to overweight or obesity, lack of physical activity, and/or poor diet.² Although genetic predisposition influences cancer risk, the vast majority (90% to 95%) of cancers are not inherited.³

Two key modifiable risk factors in cancer prevention are body weight and diet.² This article discusses the relationship between weight management and diet and cancer prevention, current nutritional guidelines, and evidence-based strategies to reduce cancer risk. It is designed to be a practical guide for nurses who seek a basic understanding of the role of weight management and diet in cancer prevention, and provides resources to aid nurses in educating and supporting patients and families on lifestyle modifications for cancer prevention.

NUTRITIONAL GUIDELINES FOR CANCER PREVENTION

The American Cancer Society (ACS) first published nutritional guidelines for cancer prevention in 1991.⁴ These guidelines, updated most recently in 2012,³ are based on a synthesis of scientific evidence on nutrition in relation to cancer prevention and are consistent with other governmental and non-governmental cancer prevention guidelines,^{5,6} the American Heart Association for prevention of heart disease,⁷ the American Diabetes Association for the prevention of diabetes,⁸ the Dietary Guidelines for Americans for general health promotion,⁹ and Healthy People 2020.¹⁰ In addition, the ACS guidelines rely heavily on the systematic and comprehensive expert reports and updates of the World Cancer Research Fund – American Institute of Cancer Research.¹¹ The ACS recommendations can be grouped into three large categories: weight management, physical activity, and diet (Table 1). This article will focus on weight management and diet recommendations; physical activity is covered elsewhere in this issue.

WEIGHT MANAGEMENT

Maintaining a healthy weight over one's lifetime may be one of the most advantageous approaches for cancer prevention.^{3,5} A healthy weight is determined by using weight and height to calculate body mass index (BMI kg/m²). Weight categories range from underweight (BMI <18.5 kg/m²), normal or healthy body weight (BMI between 18.5 and 24.9 kg/m²), overweight (BMI between 25 and 29.9 kg/m²), and obese (BMI ≥30 kg/m²) (see Table 2).

ACS recommendations encourage US adults to strive to achieve and maintain a healthy body weight throughout life;³ however, a relatively small proportion (29%) actually adhere to this recommendation. Only 2% of US adults are underweight; however, in contrast 69% are either overweight or obese.^{2,12} Rates are even higher in some racial/ethnic groups such as non-Hispanic blacks (76.3%) and Hispanics (77.1%).^{2,12} While overweight and obesity are highest among those of lower income and education, which may be a reflection of the issues of food deserts and food security as well as lack of safe access to physical activity, the trend of increasing bodyweight is evident in all adults in

TABLE 1.
American Cancer Society guidelines on nutrition and physical activity for cancer prevention

Achieve and maintain a healthy weight throughout life

- Be as lean as possible throughout life without being underweight.
 - Avoid excess weight gain at all ages. For those who are currently overweight or obese, losing even a small amount of weight has health benefits and is a good place to start.
 - Engage in regular physical activity and limit consumption of high-calorie foods and beverages as key strategies for maintaining a healthy weight.
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Adopt a physically active lifestyle

- Adults should engage in at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity activity each week, or an equivalent combination, preferably spread throughout the week.
 - Children and adolescents should engage in at least 1 hour of moderate or vigorous intensity activity each day, with vigorous intensity activity occurring at least 3 days each week.
 - Limit sedentary behavior such as sitting, lying down, watching television, or other forms of screen-based entertainment.
 - Doing some physical activity above usual activities, no matter what one's level of activity, can have many health benefits.
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Consume a healthy diet, with an emphasis on plant foods

- Choose foods and beverages in amounts that help achieve and maintain a healthy weight.
 - Limit consumption of processed meat and red meat.
 - Eat at least 2.5 cups of vegetables and fruits each day.
 - Choose whole grains instead of refined grain products.
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If you drink alcoholic beverages, limit consumption

- Drink no more than 1 drink per day for women or 2 per day for men.
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Data from Kushi et al.³

the US.^{2,12,13} With more than 72 million adults and 13 million children categorized as obese in the US,^{2,12,13} obesity may soon overtake tobacco as the leading preventable cause of cancer.¹⁴

Pathophysiology of Obesity and Increased Risk of Developing Malignancy

Overweight and obesity are associated with an increased risk of cancers of the breast (postmenopausal), colon, endometrium, kidney, esophagus, pancreas, gallbladder, liver, and ovary.^{3,6,15} While multifactorial, the relationship between overweight/

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