

**PATIENT-CENTERED CARE**  
Denise Spitzer, M.D., M.P.H., M.Sc.

**Food as Medicine: Healthy Eating and Cancer** February 12

**Sound Check**  
11:55

**Start Time**  
12:00

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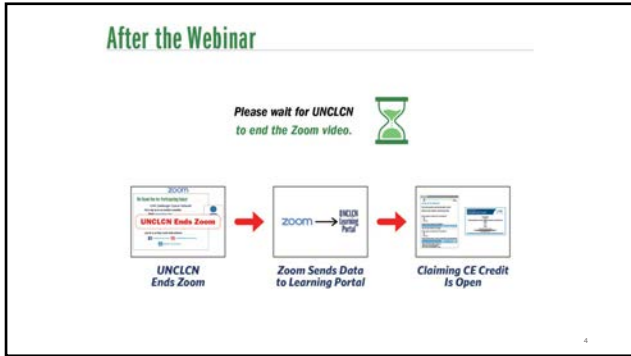
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### Our Presenter



**Denise Spector, PhD, MPH, MSN, AND FAHM**

Denise Spector, MD, MSc, is an oncology nurse practitioner and integrative health care provider. She has been an oncology nurse since 1988 and specialized in cancer pain and symptom management early in her career. During much of her academic studies in both public health and nursing, she focused on cancer prevention for individuals at high risk, such as those with a strong family history of cancer and among cancer survivors through lifestyle modifications (e.g., increasing physical activity, improving diet, tobacco cessation, stress management, etc.), which has been her long-held passion.

In May 2022, Denise completed the Integrative Oncology Scholar's Program at the University of Michigan and in 2018 she completed a 2-year clinical interdisciplinary fellowship through the Academy of Integrative Health & Medicine with the goal to incorporate more evidence-based integrative strategies into clinical oncology practice. Her primary interests relate to the prevention of cancer and other chronic illnesses and the promotion of optimal outcomes for cancer survivors through lifestyle behavior modifications (e.g., physical activity, nutrition, weight management, etc.) and mind/body medicine. In her free time, she seeks solace through long hikes in the woods (forest bathing), walks on the beach, yoga and meditation/relaxation breathing practices.

Currently Denise has a clinical faculty appointment with the Department of Family Medicine at the University of North Carolina at Chapel Hill and provides integrative medicine consultations to oncology patients through the Comprehensive Cancer Support Program (CCSP) at UNC Lineberger Comprehensive Cancer Center.

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### Our Presenter

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**Our Presenter**

- Integrative health and medicine training has been one of the most enriching learning experiences in her professional career for Denise Spector, PhD, MPH, MSN, ANP, FAHMM

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**Our Presenter**

- Integrative health and medicine training has been one of the most enriching learning experiences in her professional career for Denise Spector, PhD, MPH, MSN, ANP, FAHMM
- She loves teaching gentle yoga to cancer survivors and would like to do more of it in the future

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- Integrative health and medicine training has been one of the most enriching learning experiences in her professional career for Denise Spector, PhD, MPH, MSN, ANP, FAHMM
- She loves teaching gentle yoga to cancer survivors and would like to do more of it in the future
- She had fun working through a foundations course on aromatherapy last year

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- Integrative health and medicine training has been one of the most enriching learning experiences in her professional career for Denise Spector, PhD, MPH, MSN, ANP, FAHIM
- She loves teaching gentle yoga to cancer survivors and would like to do more of it in the future
- She had fun working through a foundations course on aromatherapy last year
- Dr. Spector is currently thoroughly enjoying an herbal medicine certification course

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**Our Presenter**

- Integrative health and medicine training has been one of the most enriching learning experiences in her professional career for Denise Spector, PhD, MPH, MSN, ANP, FAHIM
- She loves teaching gentle yoga to cancer survivors and would like to do more of it in the future
- She had fun working through a foundations course on aromatherapy last year
- Dr. Spector is currently thoroughly enjoying an herbal medicine certification course
- She recently had an opportunity to write a book chapter on aromatherapy in cancer care for a new integrative oncology text to be published late 2025

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**Sample Poll Everywhere Question**

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<b>ODS/CTR</b>	<b>ASRT</b>

**Disclosures**

**ACCME:**  
 This activity has been planned and implemented under the sole supervision of the Course Director, Stephanie Whelan, PhD, MPH, in accordance with the UNC Office of Continuing Professional Development (CPD). The course director received research support from AstraZeneca through June 2023 and Pfizer Medical Foundation through December 2023. These financial relationships have been mitigated. CPD staff have no relevant financial relationships with ineligible companies as defined by the ACCME.

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Many individuals with cancer try dietary supplements to help treat their cancer and/or to reduce symptoms, but some dietary supplements including herbs may be harmful and interact negatively with conventional cancer treatments.

(A) True  0%

(B) False  0%

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**FOOD AS MEDICINE**

DENISE SPECTOR, PHD, MPH, ANP, FAIHM  
 INTEGRATIVE AND LIFESTYLE MEDICINE CLINICIAN  
 COMPREHENSIVE CANCER SUPPORT PROGRAM

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LEARNING OBJECTIVES

- 1) DISCUSS THE SCIENCE BEHIND THE CONCEPT OF FOOD AS MEDICINE
- 2) DESCRIBE NUTRITION RECOMMENDATIONS FROM TWO LEADING NATIONAL CANCER ORGANIZATIONS
- 3) DISCUSS THE EVIDENCE FOR A PREDOMINANTLY PLANT-BASED, WHOLE FOODS DIET IN CANCER CARE
- 4) EXPLAIN THE ROLE OF DIETARY SUPPLEMENTS IN CANCER CARE

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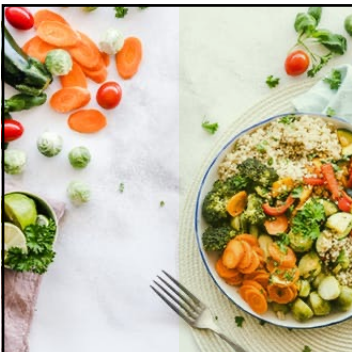
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POLLING QUESTION

Dietary patterns should be assessed as soon as possible following a cancer diagnosis?

A) True  
B) False

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Dietary patterns should be assessed as soon as possible following a cancer diagnosis?

True 0%

False 0%

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**THE PROBLEM**  
IN THE US THERE IS  
A HEALTH CRISIS  
WITH THE  
CONTINUED RISE IN  
DIET-RELATED  
CHRONIC ILLNESSES



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**THE IMPACT OF INDUSTRIALIZED FARMING IN THE US**



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Let food be thy  
medicine, and  
medicine be thy  
food.

-Hippocrates

HIPPOCRATES IS KNOWN AS  
THE FOUNDER OF MODERN  
MEDICINE AND WAS A  
VISIONARY WHEN IT CAME  
TO HEALTH AND WELLNESS

THROUGH OBSERVATION HE  
RECOGNIZED THAT WHEN  
INDIVIDUALS ATE MAINLY A FRESH,  
PLANT-BASED DIET, THEY HAD  
FEWER DISEASES.

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WHAT IS MEANT BY FOOD IS MEDICINE?



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NUTRITION AND CANCER RISK



A predominantly plant-based diet has been associated with lower incidence rates of some cancers, such as breast, colorectal, and endometrial cancers.

- One study of a Mediterranean-style diet, high in fruits, vegetables, and whole grains, found a 40% reduction in the risk of postmenopausal ER negative breast cancer among women who adhered to a Med diet compared to those who did not (Van den Brandt, et al. 2017).
- A recent review on diet and cancer prevention highlighted the protective role of a Med diet/peccatorian diet with an abundance of fruits and vegetables for breast, lung and colorectal cancers (Torres et al., 2024).

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**nutrients** MDPI

Review  
**Cancer and Mediterranean Diet: A Review**

Maria Chiara Menzella <sup>1,\*</sup>, Franco Scalfarini <sup>2</sup>, Caterina Ricci <sup>3</sup>, Antonia Gasbarri <sup>1</sup> and Giacinto Abello Donato Miggiano <sup>1</sup>

<sup>1</sup> UOCC di Nutrizione Clinica, Area Medicina Interna, Gastroenterologia e Oncologia Medica, Dipartimento di Scienze Gastroenterologiche, Endocrinologiche e Nutrizionali, Fondazione Policlinica Universitaria A. Gemelli (IRCCS), Università Cattolica del Sacro Cuore, 00168 Rome, Italy  
<sup>2</sup> UOCC di Medicina Interna e Gastroenterologia, Area Medicina Interna, Gastroenterologia e Oncologia Medica, Dipartimento di Scienze Gastroenterologiche, Endocrinologiche e Nutrizionali, Fondazione Policlinica Universitaria A. Gemelli (IRCCS), Università Cattolica del Sacro Cuore, 00168 Rome, Italy  
<sup>3</sup> UOCC di Oncologia Oncologica, Area Salute della Donna, Dipartimento di Scienze della Salute della Donna, del Bambino e di Servizi Pubblici, Fondazione Policlinica Universitaria A. Gemelli (IRCCS), Università Cattolica del Sacro Cuore, 00168 Rome, Italy

\* Correspondence: maria.chiara.menzella@policlinicogemelli.it; Tel.: +39-06-30154804

Received: 24 July 2019; Accepted: 29 August 2019; Published: 2 September 2019

**Abstract:** The Mediterranean diet is considered one of the most worldwide healthy dietary patterns thanks to a combination of foods rich mainly in antioxidants and anti-inflammatory nutrients. Many studies have demonstrated a strong and inverse relationship between a high level of Mediterranean diet adherence and some chronic diseases (such as cardiovascular diseases, diabetes, etc.) and cancer. Given its protective effects in reducing oxidative and inflammatory processes of cells and avoiding DNA damages, cell proliferation, and their survival, angiogenesis, inflammation and metastasis, the Mediterranean diet is considered a powerful and manageable method to fight cancer incidence. The aim of this narrative review was to determine the magnitude of interaction between the Mediterranean diet and more widespread types of cancer so as to give a final and useful overview on this relationship identifying, with a multidisciplinary approach, those nutrients of Mediterranean diet able to reduce cancer incidence.

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GENERAL WORLD  
CANCER RESEARCH  
FUND/AICR CANCER  
PREVENTION  
RECOMMENDATIONS

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**ACS CANCER PREVENTION  
RECOMMENDATIONS FOR  
NUTRITION - 2020**

Follow a healthy eating pattern at all ages

A healthy eating pattern includes:

- Foods that are high in nutrients in amounts that help you get to and stay at a healthy body weight
- Eating a variety of vegetables – dark green, red and orange, fiber-rich legumes (beans and peas) and others
- Fruits, especially whole fruits in a variety of colors
- Eating whole grains
- Limiting or avoiding red and processed meats, sugar-sweetened beverages and highly processed foods and refined grain products
- It is best not to drink alcohol, but for those who choose to drink it should be no more than 1 drink/day for women or 2 drinks/day for men

[American Cancer Society Guidelines for Diet and Physical Activity | American Cancer Society](#)

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**AICR/WCRF Dietary Recommendations**

Focus of the New American Plate is on portion and proportion

Emphasis on plant-based foods:

- Covering at least 2/3 of your plate with plant foods such as whole grains, vegetables, fruit, beans/legumes, 1/3 of the plate can be filled with an animal-based protein (lean red meat, seafood, poultry and/or dairy)

Limit consumption of fast foods and other processed foods high in fat, starches and sugar

Limit consumption of red and processed meats (no more than 12-18 oz/week)

Limit consumption of sugar-sweetened drinks. Drink mostly water and unsweetened drinks

Avoid or limit alcohol, as even one small glass a day can increase the risk of some cancers

Maintain a healthy weight

Avoid supplements for cancer prevention

American Institute for Cancer Research. "AICR Cancer Prevention Recommendations as a Path to Diet Quality." Last modified March 03, 2025. <https://www.aicr.org/resources/nap/aicr-recommendations-as-a-path-to-diet-quality/>

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**POLLING QUESTION:**

THE ACS AND AICR HAVE SIMILAR NUTRITION GUIDELINES FOR CANCER PREVENTION AND INCLUDE ALL BUT THE FOLLOWING:

- 1) EMPHASIS IS ON A PREDOMINANTLY PLANT-BASED DIET
- 2) FRUIT JUICES ARE A HEALTHY SUBSTITUTE FOR WHOLE FRUITS
- 3) LIMIT OR AVOID RED MEAT AND PROCESSED MEATS
- 4) FOCUS ON MAINTAINING A HEALTHY WEIGHT



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the ACS and AICR have similar nutrition guidelines for cancer prevention and include all but the following:

Emphasis is on a Predominantly plant-based diet	0%
Fruit juices are a healthy substitute for whole fruits	0%
Limit or avoid red meat and processed meats	0%
Focus on maintaining a healthy weight	0%

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**American Cancer Society Nutrition and Physical Activity Guideline for Cancer Survivors (2022)**

General recommendations for cancer survivors:

- Nutritional assessment and counseling should begin as soon as possible after diagnosis, with the goal of preventing or resolving nutrient deficiencies, preserving muscle mass, and managing side effects of treatments that may adversely affect nutritional status.
- Physical activity assessment and counseling should begin as soon as possible after diagnosis, with the goal of helping patients prepare for treatments, tolerate and respond to treatments, and manage some cancer-related symptoms and treatment-related side effects.

Recommendations to improve long-term health and increase the likelihood of survival:

- Avoid obesity and maintain or increase muscle mass through diet and physical activity.
- Engage in regular physical activity, with consideration of type of cancer, patient health, treatment modalities, and symptoms and side effects.
- Follow a healthy eating pattern that meets nutrient needs and is consistent with recommendations to prevent chronic disease.
- Follow the general advice of the American Cancer Society *Guideline for Diet and Physical Activity for Cancer Prevention* to reduce risk of a new cancer.

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**Summary of the National Comprehensive Cancer Network (NCCN®) Guideline for Survivorship: Nutrition and Weight Management**

- Assess dietary patterns for daily intake of fruits/vegetables, whole grains, red meats, processed foods, added sugars, including beverages, and dietary supplements.
- Encourage all survivors to eat a predominantly plant-based diet.
- Limit red meat to ≤ 18 ounces a week.
- Limit processed meats and other processed foods high in fats and sugars.
- Limit refined sugars to < 6 tsp for a 2000-calorie daily diet.
- Moderate soy food consumption (up to 3 servings/day) may be beneficial for promoting overall health.
- Avoid alcohol or drink sparingly.

For patients interested in further dietary recommendations consider the following:

- A referral to a registered dietitian
- Refer to the USDA MyPlate (<https://www.myplate.gov>) for approximate food plate volumes (fruits & vegetables 50%; whole grains 30%; protein 20%)

Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Guideline Survivorship V.2.2024. © National Comprehensive Cancer Network, Inc. 2024. All rights reserved. Accessed January 22, 2025. To view the most recent and complete version of the guideline, go online to NCCN.org. \*NCCN makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way.\*

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**Polling Question**

While the ACS and NCCN nutrition guidelines for cancer survivors are similar, the NCCN guidelines include specific information on refined sugar consumption. Which of the following is the true statement in the guideline:

- Refined sugars should be avoided except for on special occasions
- Consumption of refined sugars should be less than 4 tsp for a 2000-calorie daily diet
- Refined sugars should be limited to < 8 tsp for a 2000-calorie daily diet
- Limit refined sugars to < 6 tsp for a 2000-calorie daily diet

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While the ACS and NCCN nutrition guidelines for cancer survivors are similar, the NCCN guidelines include specific information on refined sugar consumption. Which of the following is the true statement in the guideline:

- Refined sugars should be avoided except for on special occasions 0%
- Consumption of refined sugars should be less than 4 tsp for a 2000-calorie daily diet 0%
- Refined sugars should be limited to < 8 tsp for a 2000-calorie daily diet 0%
- Limit refined sugars to < 6 tsp for a 2000-calorie daily diet 0%

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A COLLABORATIVE EFFORT - THE WORLD CANCER RESEARCH NETWORK IS COMPRISED OF THE AMERICAN INSTITUTE FOR CANCER RESEARCH AND THE WORLD CANCER RESEARCH FUND IN THE UK AND NETHERLANDS

**Diet, nutrition, physical activity and body weight for people living with and beyond breast cancer and colorectal cancer**

The latest evidence, our guidance for patients, carers and health professionals, and recommendations for future research

World Cancer Research Fund International CUP GLOBAL

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### REVIEW OF THE EVIDENCE AND GUIDANCE FOR BREAST CANCER SURVIVORS

**Evidence**

- Individuals who eat more fiber have better outcomes.
- Limited evidence suggesting that those with increased soy food intake have better outcomes. No consistent evidence showing a link between soy food intake and increased risk.
- Limited evidence suggests that those with higher Vitamin D levels have better outcomes. No evidence indicating benefit of supplemental Vitamin D.

**Guidance**

- Suggest increasing daily fiber intake.
- No need to stop intake of soy foods following a diagnosis. If not already consuming them, there is no guidance around adding them to the diet.
- No specific guidance about vitamin D intake.
- Aim to maintain body weight in a "healthy range".

Reference: World Cancer Research Fund International (2024a)

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LIVING WITH AND BEYOND BREAST CANCER (HEALTH AND HEALTH-RELATED QUALITY OF LIFE OUTCOMES)			
2022 Post diagnosis diet, nutrition and physical activity for breast cancer survivors			
	Recommended Diet	Recommended Physical Activity	Recommended Body Weight
<b>STRONG EVIDENCE</b>	<b>CONSENSUS</b>	Physical activity: 150-300 minutes/week	Body balance*
	<b>POSSIBLE</b>	High quality of diet†	Body balance*
<b>LIMITED EVIDENCE</b>	<b>LIMITED POSITIVE</b>	Healthy dietary patterns‡	Recurrence: Non-BC mortality; CV mortality
	Soy foods	All mortality; BC mortality; Recurrence	Recurrence: Non-BC mortality; CV mortality
	Dietary fibre	All mortality	
	Vitamin D intake‡	All mortality; BC mortality	
	Recreational physical activity	All mortality; BC mortality	
<b>LIMITED NEGATIVE</b>	Post diagnosis BMI change or weight change		
<b>STRONG EVIDENCE</b>	SUPPORTIVE EVIDENCE ON BMI OBJECTIVE		

WCRF Summary for Diet, Weight and Physical Activity for Breast Cancer

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REVIEW OF THE EVIDENCE AND GUIDANCE FOR COLORECTAL CANCER SURVIVORS

**Evidence**

- Individuals who eat more wholegrains have better outcomes.
- Those consuming more coffee (caffeinated and decaffeinated) have better outcomes.
- Higher intake of sugary drinks, both carbonated and non-carbonated were associated with higher risk for mortality.

**Guidance**

- Suggest increasing daily wholegrain intake.
- Consider increasing coffee intake.
- Decrease sugary beverage intake.
- Follow as many of the WCRF/AICR cancer prevention guidelines as possible.

Reference: World Cancer Research Fund International (2024b)

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**LIVING WITH AND BEYOND COLORECTAL CANCER (HEALTH OUTCOMES)**

**2024**

Diet, nutrition and physical activity for colorectal cancer survivors

EVIDENCE	CONCLUSION	DECREASED RISK		INCREASED RISK	
		Strong	Weak	Strong	Weak
LIMITED EVIDENCE	HEALTHY DIETARY PATTERNS	Healthy dietary pattern*	All mortality	Unhealthy dietary pattern*	All mortality
	WHOLEGRAINS	All mortality			
	COFFEE	All mortality		Sugary drinks	All mortality
LIMITED EVIDENCE	RECREATIONAL PHYSICAL ACTIVITY	All mortality	Recurrence		
	LIMITED NO CONCLUSION	Fats and proteins, red and processed meat, dairy products, artificially sweetened beverages, alcohol, dietary glycaemic index, dietary glycaemic load, dietary sodium load, dietary sodium intake, marine omega-3 polyunsaturated fatty acids, circulating 25-hydroxyvitamin D, supplemental calcium, circulating haemoglobin and haemoglobin A1c, acid concentrations, dietary calcium			
STRONG EVIDENCE	DIETARY FIBRE	Nonalcoholic physical activity for colorectal cancer mortality, total physical activity, level of recreational physical activity by frequency, duration, intensity, volume, pre- to post-diagnosis and post-diagnosis physical activity change, sedentary behaviour†			
STRONG EVIDENCE	POST-DIAGNOSIS BODY WEIGHT	Post-diagnosis body weight†, weight change and BMI change (pre- to post-diagnosis or post-diagnosis (any period) or during)‡ After cancer treatment§			

WCRF Summary for Diet, Weight and Physical Activity for Colorectal Cancer

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**Polling Question**

A review of the evidence for diet, weight and physical activity for breast cancer survivors, indicates limited, yet suggestive evidence that the following are associated with a decreased risk of breast cancer specific mortality:

- a) Higher intake of soy foods, regular physical activity, and vitamin D status.
- b) Lower intake of soy foods, healthy dietary patterns, and higher fibre intake.
- c) Higher intake of soy foods, healthy dietary patterns, and weight change after diagnosis.
- d) Healthy dietary patterns, regular physical activity, and vitamin D status.

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A review of the evidence for diet, weight and physical activity for breast cancer survivors, indicates limited, yet suggestive evidence that the following are associated with a decreased risk of breast cancer specific mortality:

- Higher intake of soy foods, regular physical activity, and vitamin D status 0%
- Lower intake of soy foods, healthy dietary patterns, and higher fibre intake 0%
- Higher intake of soy foods, healthy dietary patterns, and weight change after diagnosis 0%
- Healthy dietary patterns, regular physical activity, and vitamin D status 0%

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**MEDITERRANEAN DIET – SEEN MORE AS A PATTERN OF EATING**

EMPHASIZES PLANT-BASED FOODS WITH PLENTY OF FRUITS, VEGETABLES, WHOLE GRAINS, BEANS, NUTS AND SEEDS, AS WELL AS HEALTHY FATS (MOSTLY EXTRA VIRGIN OLIVE OIL) AND LOW TO MODERATE CONSUMPTION OF DAIRY, EGGS, FISH AND POULTRY.

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**RESEARCH ON THE MEDITERRANEAN DIET AND CANCER SURVIVORS**

Bonaccio et al. (2024) found that a Med diet was associated with lower all-cause and cardiovascular mortality among long-term cancer survivors.

In a study of breast cancer survivors by Castro-Espin, et al. (2023), low adherence to a med dietary pattern before breast cancer was associated with a 13% higher risk for all-cause mortality compared to those who followed medium adherence of a med diet. However, there was no clear association for BC-specific mortality.

Chen et al. (2023) conducted a systematic review and meta-analysis (n=11) addressing the role of the Med diet in breast cancer survivorship and found a 22% reduction in all-cause mortality with strong evidence for adherence to this diet. No associations were found for QOL.

A study by Di Maso et al. (2021) found that prostate cancer survivors with a higher adherence to a Med diet pre-diagnosis compared to those with low adherence, had a 26% improved overall survival rate. There was no association with PC specific survival.

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**FRUITS & VEGETABLES**

- HIGHER INTAKE OF FRUITS AND VEGETABLES IS RELATED TO LOWER INFLAMMATION AS MEASURED BY C-REACTIVE PROTEIN (HELM ET AL., 2024).
- FRUITS & VEGETABLES ARE HIGH IN PHYTOCHEMICALS, SUCH AS POLYPHENOLS, ANTIOXIDANTS, FIBER, AND MANY MINERALS SUCH AS MAGNESIUM.
- IN PARTICULAR, BERRIES ARE RICH IN ANTIOXIDANTS SUCH AS VITAMIN C AND QUERCETIN, AS WELL AS BEING A GOOD SOURCE OF FIBER. THEY ALSO HAVE A LOW GLYCEMIC INDEX.
- GREEN LEAFY VEGETABLES ARE HIGH IN BETA-CAROTENE, VITAMIN C, B-VITAMINS, AND MINERALS SUCH AS CALCIUM, IRON AND ARE A GOOD FIBER SOURCE.
- CRUCIFEROUS VEGETABLES ARE RICH IN CAROTENOIDS, LUTEIN, ZEAXANTHIN, VITAMINS C, E, AND K; AS WELL AS FIBER AND MINERALS. GLUCOSINOLATES IN THESE VEGGIES HAVE DEMONSTRATED ANTI-CANCER EFFECTS (LI ET AL., 2022).

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**CULINARY MUSHROOMS**  
"ELIXIR OF LIFE" AND "FOOD OF THE GODS"

- ❖ LOW IN CALORIES, CARBOHYDRATES, FAT AND SODIUM AND ARE A GOOD SOURCE OF PROTEIN AND FIBER.
- ❖ IMPORTANT NUTRIENTS INCLUDE SELENIUM, POTASSIUM, RIBOFLAVIN, NIACIN, AND VITAMIN D.
- ❖ THEY HAVE ANTIMICROBIAL, ANTIOXIDANT, ANTI-DIABETIC, ANTICHOLESTEROLEMIC, ANTI-ALLERGIC, HEPATOPROTECTIVE, CARDIOPROTECTIVE, NEUROPROTECTIVE, IMMUNOMODULATING AND ANTICANCER ACTIVITIES (MWANGI ET AL., 2022).
- ❖ POLYSACCHARIDES, SUCH AS BETA-GLUCAN, HAVE ANTITUMOR AND IMMUNOSTIMULATING PROPERTIES AND HAVE BEEN USED IN CANCER HUMAN STUDIES MOSTLY IN ASIAN COUNTRIES.
- ❖ AGARICUS BISPORUS (BUTTON OR WHITE MUSHROOMS) ARE THE MOST CULTIVATED MUSHROOMS IN THE WORLD. INCLUDED ARE BABY BELLAS, PORTOBELLO, CRIMINI AND CHAMPIGNON.

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**CULINARY HERBS AND SPICES – SPICE IT UP!**

- Many herbs and spices not only have anti-inflammatory and antioxidant properties, they also have demonstrated direct anticancer effects in lab studies (Kaefer & Milner, 2012).
- Onions, garlic, rosemary, basil, parsley, and saffron have been found to have chemoprotective properties in preclinical studies.
- In addition to antioxidant and anti-inflammatory properties, turmeric and ginger both have been found to inhibit cancer cell growth in cancer cell lines. Ginger is also known for its digestive support, such as reducing nausea.
- Even spices like allspice, cinnamon, cloves and cumin have demonstrated anticarcinogenic activity.



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**Food Myths and Cancer**

**Food Myth #1 – “Sugar Feeds Cancer”**

There is no research indicating that sugar is directly linked to cancer. Every cell in our body utilizes glucose, including cancer cells, however that does not mean it causes cancer to spread. Excess sugar intake is known to lead to excess body weight & obesity which cause other health issues, such as hypertension, diabetes and metabolic syndrome and indirectly raises risk for some cancers. Simple carbohydrates or refined sugars, such as table sugar and syrups found in many processed foods and baked goods can raise glucose levels quickly, whereas complex carbs found in fruits and whole grains take longer to digest and absorb, which helps increase satiety and less overeating.

**Food myth #2 – “Soy acts like estrogen in the body, raising the risk of cancer”**  
Studies have not found a link between eating soy foods and an increased risk for cancer, particularly breast cancer and prostate cancer. While isoflavones in soy foods have a similar chemical structure to estrogen, they function very differently in the body and may be protective by turning on genes that slow the growth of cancer cells.

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**Fad Diets and Cancer**

**Ketogenic Diet (KD)** – the classic KD originated in 1923 for the treatment of epilepsy and is comprised of one part carbohydrate and protein to four parts of dietary fats. Various modified versions have been used to treat other illnesses, but all versions typically are low in carbohydrates (5-10% of calories), moderate in proteins (20-25%) and high in fats (65-80% of calories). It often includes fasting, proper hydration, and intake of electrolytes and other nutritional supplements. Carbohydrate deprivation leads to a metabolic shift from gluconeogenesis to ketogenesis, with ketone bodies becoming the main source of energy.

**What does the research say?**  
A 2021 systematic review found that while patients lost weight, there was no conclusive evidence for anti-tumor activity or improvements in overall survival among cancer patients. Also, adherence to the diet was low and the side effect profile included nausea/vomiting, fatigue, constipation, diarrhea, hypoglycemia, hyperlipidemia, etc. (Romer et al., 2021).

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**Intermittent Fasting (IF)** – there are three common types which are 1) alternate day fasting; 2) time-restricted fasting; and 3) 5:2 fasting [eating normally for 5 days, then fasting for 2 days]

- Some fasts only include water or other non-calorie beverages, while other protocols allow broth or up to 500 kcal/day
- Fasting induces ketogenesis and can aid in weight loss
- Results from studies in rodent models have been inconsistent
- While short-term RCTs in human studies (2-6 months) led to decreased fasting glucose, insulin, and leptin levels and increased adiponectin, longer studies (12 months) failed to show improvement of insulin sensitivity or on C-reactive protein levels
- Very small studies have been conducted in cancer populations, most in relation to chemotherapy.
- Some found reduced toxicity with fasting (96 hours) around the time of chemotherapy administration. However, adherence was low
- A fasting mimicking diet (FMD) study among 131 breast cancer patients receiving chemo found reduced DNA damage in T lymphocytes, but only 33% of women continued through all chemo cycles. No differences in grade 3 and 4 toxicities were found

Clifton et al. (2021)

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### Supplements

Most national cancer organizations do not support the use of dietary supplements. Exceptions such as in cases of known deficiencies.

In cases of nutritional deficiencies, can consider the use of high-quality vitamins and/or minerals (such as calcium) or a multi-vitamin.

Many herbs/supplements have potential drug/herb interactions with certain cancer treatments, it is safest to avoid them unless advised by a medical professional on their safe use.

Recommend patients look for products with the USP or NSF label, which are third party testing agencies for quality. Another good resource is Consumerlab.com

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### Dietary Supplement Considerations

- In patients with GI alterations and/or those using medications that may interfere with the absorption of vitamins and minerals (e.g., proton pump inhibitors, H2 blockers, beta blocker, diuretics, metformin, SSRIs, bisphosphonates, etc.)
- In older adults, the body's ability to absorb **Vitamin B12** can decrease. Also, those on a vegan diet may not get sufficient B12 since it mostly comes from animal products.
- Many older adults, particularly post-menopausal women do not absorb and retain enough **calcium**.
- Many individuals are at risk for **vitamin D** deficiency, which like calcium is important for bone health. It also have an important role in immunity and in brain health.
- Some individuals do not like fatty fish and therefore are likely to be deficient in **Omega-3 fatty acids**, which are important for healthy brain function, etc.

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#### CASE STUDY

**LH – AGE 76 WITH LOCALIZED HIGH-RISK PROSTATE CANCER**

- Dx date: 8/2023; received radiation therapy and ADT started, which he continues for a total of 3 years.
- Additional medical history includes, overweight, HTN, hyperlipidemia, prediabetes, and MASH with liver fibrosis. Weight was 207 pounds on 4/2024 when we met.
- Goals included improving energy, weight loss (195 pounds) through healthy eating and increased physical activity.
- Over 8 months he lost 20 pounds, increased exercise and stopped eating ice cream!

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**RESOURCES**

AMERICAN CANCER SOCIETY – DIET, PHYSICAL ACTIVITY, AND HEALTHY LIVING  
<https://www.aicr.org/resources/about/aicr-recommendations-as-a-path-to-diet-quality/>

AMERICAN INSTITUTE FOR CANCER RESEARCH (AICR)  
<https://www.aicr.org/>

MEMORIAL SLOAN-KETTERING CANCER CENTER: HERBS & BOTANICALS  
<https://www.mskcc.org/health-beat/2022/05/11/10-herbs-that-are-good-for-you-but-also-need-to-be-used-carefully/>

NATIONAL CENTER FOR COMPLEMENTARY AND INTEGRATIVE HEALTH  
<https://www.nccih.nih.gov/>

NATIONAL COMPREHENSIVE CANCER NETWORK – SURVIVORSHIP GUIDELINES ON NUTRITION AND WEIGHT MANAGEMENT  
[https://www.nccn.org/clinical\\_guidelines/pdf/1.2019-2020/1.2019-2020.pdf](https://www.nccn.org/clinical_guidelines/pdf/1.2019-2020/1.2019-2020.pdf)

NATURAL MEDICINES DATABASE  
<https://databases.naturalmedicines.org/>

OLDWAYS  
<https://oldwayspb.org/10-herbs-against-cancer/>

WORLD CANCER RESEARCH FUND  
<https://www.wcrf.org/>

MEDLINEPLUS HERBS AND SUPPLEMENTS  
<https://pubmed.ncbi.nlm.nih.gov/2019/03/20/medlineplus-herbs-and-supplements/>

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**References**

American Institute for Cancer Research. "AICR Cancer Prevention Recommendations as a Path to Diet Quality." Last modified March 10, 2023. <https://www.aicr.org/resources/about/aicr-recommendations-as-a-path-to-diet-quality/>

Bonaccio, et al. (2024). Mediterranean diet is associated with lower all-cause and cardiovascular mortality among long-term cancer survivors. *JACC: CardioOncology*, 6, 602-604. <https://doi.org/10.1016/j.jcoo.2024.05.012>

Castro-Espín, et al. (2023). Association of mediterranean diet with survival after breast cancer diagnosis in women from nine European countries: Results from the EPIC cohort study. *BCM Medicine*, 21. doi: 10.1186/s12916-023-02934

Chen, et al. (2023). The role of the Mediterranean Diet in breast cancer survivorship: A systematic review and meta-analysis of observational studies and randomized clinical trials. *Nutrients*, 15, 2099. <https://doi.org/10.3390/nu15092099>

Clifton, et al. (2021). Intermittent fasting in the prevention and treatment of cancer. *CA: A Cancer Journal for Clinicians*, 71, 527-546. doi: 10.3322/caoc.21694

Di Maso, et al. (2021). Adherence to Mediterranean diet, physical activity and survival after prostate cancer diagnosis. *Nutrients*, 13, 243. <https://doi.org/10.3390/nu13010243>

Helm, et al. (2024). Longitudinal three-year associations of dietary fruit and vegetable intake with serum hs-C-reactive protein in adults with and without type 1 diabetes. *Nutrients*, 16, 2058. <https://doi.org/10.3390/nu16132058>

Kaefor & Milner. (2011). Herbs and spices in cancer prevention and treatment. In IFF Benzie & S. Wachtel-Galor (Eds.), *Herbal medicine: Biomolecular and clinical aspects* (2nd ed). CRC Press. <https://www.ncbi.nlm.nih.gov/books/NBK92774/>

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**References continued**

Li, et al. (2022). Cruciferous vegetable consumption and multiple health outcomes. An umbrella review of 41 systematic reviews and meta-analyses of 303 observational studies. *Food & Function*, 13, 4247. doi: 10.1039/d1fo03094a

Mwangi, et al. (2022). The antioxidant potential of different edible and medicinal mushrooms. *Biomedicine & Pharmacotherapy*, 147, 112621. <https://doi.org/10.1016/j.biopha.2022.112621>

Romer, et al. (2021). The use of ketogenic diets in cancer patients: A systematic review. *Clinical and Experimental Medicine*, 21, 501-536. <https://doi.org/10.1007/s10238-021-00710-z>

Torres, et al. (2024). Dietary guidelines for cancer prevention: An update to ACS international guidelines. *Nutrients*, 16, 2897. <https://doi.org/10.3390/nu16172897>

Van den Brandt, et al. (2017). Mediterranean diet adherence and risk of post menopausal breast cancer: results of a cohort study and meta-analysis. *International Journal of Cancer*, 140, 2220-2231.

World Cancer Research Fund International. (2024a). Diet, nutrition, physical activity and body weight for people living with and beyond breast cancer: The latest evidence, our guidance for patients, carers and health professionals, and recommendations for future research. <https://www.wcrf.org/diet-activity-and-cancer/global-cancer-update-programme/cancer-survivors/>

World Cancer Research Fund International. (2024b). Diet, nutrition, physical activity and body weight for people living with and colorectal cancer: The latest evidence, our guidance for patients, carers and health professionals, and recommendations for future research. <https://www.wcrf.org/diet-activity-and-cancer/global-cancer-update-programme/cancer-survivors/>

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**THANK YOU!**

"CAME FROM A PLANT, EAT IT, WAS  
MADE IN A PLANT, DON'T." –  
MICHAEL POLLAN

Denise Spector  
[denise.spector@unchealth.unc.edu](mailto:denise.spector@unchealth.unc.edu)  
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The song Back Roads written and performed by Don Pea

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**Upcoming Live Webinars** [learn.unclcn.org](http://learn.unclcn.org)

	<b>RESEARCH TO PRACTICE</b>	February 26 12:00 PM
<b>Waldenström Macroglobulinemia: Diagnosis and Treatment</b> Christopher Dittus, DO, MPH		
	<b>ANNOUNCED PRACTICE PROVIDER</b>	March 5 12:00 PM
<b>Undiagnosed Cancer Clinic</b> Jonathan Sorah, MD		
	<b>PATIENT-CENTERED CARE</b>	March 12 12:00 PM
<b>Cancer Prevention: How Do We Make a Difference?</b> Melissa Gilkey, PhD		

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**Self-Paced, Online Courses** [learn.unclcn.org/spoc](http://learn.unclcn.org/spoc)

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<b>The Expanding World of Cellular Therapy</b> Brianna Buchanan, PA-C		
	<b>RESEARCH TO PRACTICE</b>	
<b>Head and Neck Cancer Management in North Carolina</b> Blake Sullivan, MD		
	<b>PATIENT-CENTERED CARE</b>	
<b>Workplace Safety: Creating a Culture of Care and Respect</b> Paul Perryman, MSN, MS, RN, NE-BC Catherine Capp, MSN, RN, NE-BC		

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