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## Key Studies of Cancer, Nutrition & Fitness



## Cancer Prevention and Risk Factors

### Body Weight

BMI is an indicator of colon cancer risk

In a six-year study of men and women from nine European countries in 2006, BMI was found to be a statistically significant indicator of colon cancer risk in men.<sup>1</sup>

In both genders, it was determined that waist circumference and waist-to-hip ratio were strongly related to the development of colon cancer except in post-menopausal women using hormone replacement therapy.

Obesity, especially abdominal obesity puts one at a greater risk of developing colon cancer.



In a Nurses' Health Study lasting 20 years, women were surveyed on their medical, health, and fitness status for every 2 years. Leisure-time, physical activity, body mass index, and body fat distribution were assessed as they correlated to risk of developing colon cancer.<sup>2</sup>

Women weighing at least 169 pounds had a relative risk 1.45 times greater to women who weighed 122 pounds or less.

Higher incidence of colon cancer was reported as waist circumference increased.

**Bottom line:** Maintaining a healthy weight and increasing physical activity is thus, important for women for reducing the risk of colon cancer.

According to the *Cancer Research society*, 20 percent of all cancers diagnosed in the US are related to body fatness, physical inactivity, excess alcohol consumption and poor nutrition.<sup>3</sup> Body weight seems to have the strongest link to cancer risk as 1

out of 5 cancer related death is caused by an excess body weight.

Having an excess body weight might impair the following bodily functions:

- Immune system function and inflammation
- Levels of certain hormones (insulin and estrogen)
- Factors regulating cell growth (insulin like growth factor)



## Diet & Cancer Risk

### Diet plays an important role in your risk of developing cancer <sup>4</sup>

A 2010 European study of cancer and nutrition explored the relationship between diet and cancer risk. It was found that:

- The Mediterranean Diet was associated with a lower risk of gastric cancer.
- A diet rich in fiber, fish, calcium and Vitamin D was associated with a lower risk of colon cancer. The risk of lung cancer might be reduced in smokers who eat more fruits and vegetables.
- Foods associated with increased risk of cancer included red meats and processed meats (linked to gastric and colon cancers), alcohol (colon cancer and postmenopausal breast cancer), saturated fat (postmenopausal breast cancer), and protein and calcium from dairy (prostate cancer).

- Other risk factors include abdominal obesity (colon cancer), BMI (BMI >30 in postmenopausal breast cancer, >29 in colon cancer), and high serum IGF-I (prostate cancer).

Bottom line: In addition to body weight and exercise habits, diet plays an important role in decreasing or increasing the risk of cancer.

### Plant protein intake is associated with longevity<sup>5</sup>

A 2014 study in Cell Metabolism examining 6,381 men and women showed that high animal protein intake was associated with a higher risk of cancer and of dying from any cause (known as mortality risk) for people 50-65 years old.

Unlike animal protein, eating high amounts of plant proteins (nuts, tempeh, tofu, edamame and beans), did not increase cancer or mortality risk, and thus plant-based protein was found to be better.

Interestingly, for people over 65, high protein intake was protective against cancer and mortality risk.

**Bottom line:** It is important to make sure you get enough protein when you are over the age of 65.

For all ages, high animal protein intake was associated with a 5-fold increased risk of developing diabetes.



Thus, the study suggested that replacing animal protein with plant-based proteins might have a protective effect against cancer and all-cause death in those under 65, and was protective against diabetes for those 50 and older.

### Eating a lot of red meat in early adulthood increases the risk of breast cancer in women <sup>6</sup>



A 2014 study published by the *British Medical Journal* revealed that higher intakes of red meat in early adulthood

increased the risk for breast cancer in women.

283 cases were followed over a period of 20 years. Researchers found that red meat was associated with a higher risk for breast cancer while other protein sources (fish, poultry, legumes and nuts) were not associated with increased breast cancer risk.

Researchers also examined the association between the different types of proteins with breast cancer risk based on menopausal status. Higher intake of poultry was associated with a lower risk of breast cancer in postmenopausal women but not in premenopausal women.

Practices such as Meatless Mondays (eating meat-free meals on Mondays) have become more and more common. This following study showed that substituting one serving of legumes per day for one serving of red meat per day was associated with a 15 percentage lower risk of breast cancer among all women and a 19 percent lower risk among premenopausal women.



If you cannot cut out the meat in total, there is more good news: substituting one serving of poultry per day for one serving of red meat per day was associated with a 17 percent lower risk of breast cancer overall and a 24 percent lower risk of postmenopausal breast cancer.



### High levels of cholesterol have been shown to increase the risk of breast cancer <sup>7</sup>

In recent years, scientists have begun to shed light on the link between obesity and cancer.

Researchers have now proposed that high levels of cholesterol increase the risk for breast cancer. Over 600,000 women were observed in the United Kingdom and those with high cholesterol were 64 percent more at likely to develop breast cancer. This is just one more crucial link in connecting diet and cancer.

### Omega-3 Fatty Acids have been shown to reduce the risk of breast cancer <sup>8</sup>

Women with high intake ratios of omega-3 fatty acids, EPA and DHA, relative to the omega-6 arachidonic acid have been found to have a reduced risk of breast cancer compared with those with low ratios. However, this was found in only some

case-control and cohort studies. EPA and DHA supplementations are being explored to help prevent or alleviate common problems after a breast cancer diagnosis.

### Vegetarian diets reduce the risk of colorectal cancer <sup>9</sup>



In a 2015 large observational 2015 cohort study of Seventh-Day Adventists, it was found that those who consumed a vegetarian diet had a 22 percent lower risk for all colorectal cancers than those who ate meat. The study also showed that the risk of developing colorectal cancer was the lowest in pesco-

vegetarians (those who ate no meat, but ate fish more than once a month). The relative reduction in risk was 43 percent.

Vegetarian diets were associated with an overall lower risk for colorectal cancer, a 19 percent lower risk for colon cancer and a 29 percent lower risk for rectal cancer.

## Eating 10 fruits and vegetables per day has been found to provide the greatest health benefits <sup>10</sup>



The USDA recommends 5 to 9 portions of fruits and vegetables consumption per day. However, new research has shown that eating more fruits and

vegetables is in fact better for your health.

In a 2017 study, scientists from Imperial College London analyzed 95 studies from fruits and vegetable intakes.

Eating at least 10 portions of fruits and vegetables per day has been shown to:

- Decrease risk of heart disease by 24 percentage
- Decrease risk of stroke by 33 percentage
- Decrease risk of cardiovascular disease by 28 percentage
- Decrease risk of cancer by 13 percentage
- Lastly, the risk of premature death is reduced by 31 percentage

In addition, it was found that green vegetables (spinach and green beans), cruciferous vegetables (cauliflower and broccoli), and yellow vegetables might lower cancer risk while citrus fruits, apples, pears, and green leafy vegetables might prevent cardiovascular diseases and early death. Researchers also showed that

the compound glucosinolates in broccoli activates an enzyme for cancer prevention.

Consuming 10 portions of fruits and vegetables per day is hard, even for people who like fruits and vegetables.



As a result, the article suggested including one to two portions of fruits or veggies during breakfast and three to four during both lunch and dinner. A way of accomplishing the above would be to “hide” the vegetables in meals (that is add in veggies in pasta) or flavor meals with fruits and vegetables rather than dips and dressings.

People should also be advised to choose more veggies over fruits or choose fruits with less sugar content. In the end, the study concluded that even a small amount of fruits and vegetables was beneficial to the body and that increasing their consumption would only increase their benefits.

### Food has been shown to have a stronger link to cancer<sup>11</sup>

According to a 2017 study published in *Scientific Reports*, environmental factors such as dietary choices contribute to colorectal cancer risk more than genes. The study analyzed 1,336 colorectal cancer cases and 2,744 control cases from Spain, as well

as environmental factors like alcohol consumption, obesity, physical activity, red meat, and vegetable consumption. It was found that modifiable risk factors (environment factors) had more weight on cancer risk than genetic factors.

### Food and its relation to Cardiovascular Diseases<sup>12</sup>



According to a 2017 review in the *Journal of the American College of Cardiology*, a diet high in fruits, vegetables, whole grains is better for reducing the risk of cardiovascular diseases and Type 2 diabetes.





## Mediterranean Diet

Following a Mediterranean Diet reduces your risk of developing or dying from cancer <sup>13</sup>

Twelve studies following more than one and a half million people for 3 to 18 years showed that a Mediterranean Diet – rich in fish, fruits, and vegetables – reduces the risk of cancer, as well as heart disease and the incidence of Alzheimer’s disease.

Parts of the Mediterranean Diet have been found to protect against lung cancer. <sup>14</sup> Carrots, tomatoes, white meat, olive oil (as the only oil consumed), and sage were studied. The protective effects of olive oil and sage were especially significant.

A 2010 study of consisting of more than 85,000 women and more than 45,000 men has also shown that a Mediterranean Diet rich in fruits, vegetables, and whole grains and low in red meats, processed meats, and sweets could reduce the risk of colon cancer and rectal cancer. <sup>15</sup>



The Mediterranean Diet may reduce breast cancer risk <sup>16</sup>

According to American Heart Association, the Mediterranean Diet consists of:

- Consuming primarily plant based foods (fruits and vegetables, whole grains, legumes and nuts)
- Replacing butter with olive oil and canola oil
- Reducing the consumption of red meat
- Consuming dairy products, and poultry in low to moderate amounts

- Consuming wine in low to moderate amount
- Consuming eggs only 4 times a week.

Researchers assigned more than 4,200 women, ages 60 to 80, to eat a Mediterranean diet supplemented with Extra Virgin olive oil or with nuts, or a low-fat control diet. They found that compared to the control diet group, the Mediterranean plus olive oil group had a 68 percent lower risk of developing breast cancer over a follow-up of about 5 years.

## The Mediterranean Diet reduces your risk of developing diseases associated with cancer



A Mediterranean Diet, rich in fish, vegetables, and wine and low in meat, dairy, and industrial baked goods has long been associated with heart health benefits such as decreased blood pressure, insulin resistance, and improved lipids.<sup>17</sup>

The Mediterranean Diet, supplemented with Extra Virgin olive oil or nuts, was shown to reduce the risk of heart disease. The benefits were shown in older people at high risk of heart disease, suggesting that it is never too late to adopt the diet.

A 2009 study found that women following the Mediterranean Diet, had up to 39 percent reduced risk of heart disease and 18 percent reduced risk of stroke compared to women not following the Mediterranean Diet.<sup>18</sup>

A four-year study of three diets:

- The Mediterranean Diet with supplemental Extra Virgin olive oil
- The Mediterranean diet with supplemental nuts
- A low fat diet

found that the Mediterranean diet with supplemental Extra Virgin olive oil was associated with a lower incidence of diabetes versus the low fat diet.

Diabetes incidence was reduced by 52 percent among people consuming the Mediterranean Diet.<sup>19</sup>

Another study of 5,801 participants in 2014 compared two Mediterranean Diets (one supplemented with Extra-Virgin olive oil and one with nuts) to a low-fat control diet and found that the two Mediterranean diets appeared to cause reversion of metabolic syndrome in patients who already had the disease.<sup>20</sup> The Mediterranean Diet might be helpful in reducing central obesity and hyperglycemia in patients with high risk of cardiovascular disease.<sup>20</sup>



## Supplements

Studies on antioxidant supplements have not been found to prevent cancer <sup>21</sup>



A recent, large-scale study found no evidence that antioxidant supplements (sold in various forms including pills and powders), can prevent cancers.

The study concluded that people should view the health benefit claims of antioxidant supplements with caution because some supplements may even be harmful to people with cancer.

The authors noted that there might be a difference between the biological activities of antioxidant supplements versus antioxidants occurring naturally in fruits and vegetables. The authors suggested that these naturally occurring antioxidants might offer cancer prevention benefits.

The study further suggested that a healthy, balanced diet of fruits and vegetables is a safe, sensible way to consume antioxidants. For your health and safety, it is important to talk with your doctor before changing your diet or taking any supplements.

### Some supplements may increase cancer risk

About half of all American adults use dietary supplements. More and more people are adding supplements to their diet in the belief that they may prevent or cure disease. However, there is little evidence that supplements are useful for the prevention and treatment of common cancers.

Numerous studies published over the last decade have found that some supplements – including vitamins E, C, D, A, and B as well as selenium – offer no health benefit to cancer patients. In fact, there is some evidence that supplements might actually increase cancer risk and enable cancer cells to survive even in people undergoing treatment.

A 1996 study found that men who took the supplement beta carotene, had a higher rate of lung cancer than men who did not take the supplement.<sup>22</sup>



Another study in 2011 looking at the ability of vitamin E and selenium to lower the risk of prostate cancer was halted after it was reported that people taking the supplements had an increased rate of prostate cancer.<sup>23</sup>

Health and nutrition scientists note that variety, moderation and balance are the pillars of nutrient intake and that vitamin and mineral supplements can complement a regular diet but are not meant to be a substitute for food because they cannot replicate all the nutrients in whole foods.

**Bottom line:** Supplement use should not replace a healthy, well- balanced diet and should always be used under the supervision of a physician.

A 2011 SELECT Trial examined whether selenium and vitamin E, either alone or in combination, could lower a man's risk for prostate cancer. The trial was stopped early in 2008 after a review of the data showed no benefit, and the potential for a slightly



increased risk of prostate cancer and diabetes.

Data published in 2011, based on longer-term follow-up of men in the SELECT Trial, found that users of Vitamin E had a 17 percentage higher risk of prostate cancer compared with men who did not take vitamin E.<sup>24</sup>

## Treatment

### Enteral formulas may improve surgery outcome<sup>25</sup>

A study was performed to determine the benefit of “immune modulating” enteral nutrition on the outcome of patients undergoing elective surgery. Immune modulating refers to the process in which the immune system is altered to a desired level. In this case, the use of immune modulators were designed to make the immune system more resistant to disease.

Enteral nutrition is defined as a method of feeding through the gastrointestinal track (stomach and intestines).

Certain enteral formulas (such as the brand Impact®) contain arginine, an amino acid that can promote wound healing and immune response, and fish oil as a source of anti-inflammatory omega-3 fatty acids.

Generally, people with an infection or traumatic injury are advised not to

take arginine; however, after surgical procedures, arginine levels can drop. Therefore, taking a formula, such as Impact with arginine, before surgery may help.

Omega-3 fatty acids also can be beneficial as they reduce the inflammatory response that occurs after surgery.

The results of this study suggested that immune-modulating enteral formulas might be helpful for people having surgery, as there was a reduction in the incidence of new infections, wound complications and length of hospital stay.



## Living with Cancer



Maintaining a healthy weight, getting regular exercise, and eating healthy may improve your survival rate <sup>26</sup>

Scientific evidence shows that healthy nutrition and physical activity behavior after a diagnosis can lower the chances of the cancer recurrence, and can improve the chances of disease-free survival.

Specific recommendations include:

- **Achieve and maintain a healthy weight** — Avoid weight gain during cancer treatment, whether you are at a healthy weight or not. Weight loss after recovery from treatment may benefit survivors who are obese or overweight.

- **Be physically active** — Studies show that exercise is safe during cancer treatment and can improve many aspects of health including muscle strength, balance, fatigue and depression. Physical activity after diagnosis is linked to living longer and a reduced risk of the cancer recurrence (breast, colorectal, prostate and ovarian cancer).
- **Eat a healthy diet, with an emphasis on fruits, vegetables, and whole grains** — The most benefits are associated with a diet high in fruits, vegetables, whole grains, poultry, and fish and low in refined grains, red meat and processed meat, desserts, and high-fat dairy products. Studies show that taking vitamins, herbs and other nutritional supplements often does not help cancer patients live longer, and may even shorten life.

Before taking any supplements, discuss it with your health care provider.



The recommendations also include specific guidance for people diagnosed with breast, colon, endometrial, ovarian, lung, prostate, head and neck, and blood cancers. Most of the studies about cancer and diet have focused on breast cancer.

### Breast Cancer and Diet

A 2014 study from the *World Cancer Research Fund* reviewed diet, nutrition, body composition, and physical activity.<sup>27</sup> The study also examined three specific outcomes in people diagnosed with breast cancer

and their risk of dying from any cause (also known as all-cause mortality), risk of dying from breast cancer (also known as breast cancer mortality) and risk of developing a second primary breast cancer.<sup>27</sup>

The research showed the correlation between better survival after breast cancer diagnosis and maintaining a healthy body weight, being physically active, eating foods containing fiber, eating foods containing iso-flavones like soy, and eating a diet lower in total fat, especially saturated fat. Due to lack of convincing evidence, specific recommendations for breast cancer survivors could not be made.

The study recommended that women who have been diagnosed with breast cancer strive to follow their recommendations for cancer prevention as soon as possible after treatment.



## Diet and exercise have been shown to reduce the rate of physical function decline among older, overweight, long-term cancer survivors<sup>28</sup>



641 long-term (over 5 years) cancer survivors (65-91 years old) with a BMI between 25 and 40 kg/m<sup>2</sup>, followed a home-based program consisting of an improved diet, modest weight loss, telephone counseling, and mailed health-promoting materials.

A control group was on a “waitlist” for 12 months without any kind of

intervention of change in their lifestyles. Compared to the control group, the intervention group reported a much lower decline in physical function (less than half the rate of the control group).

**Bottom line:** Diet and exercise intervention can therefore, reduce the rate of physical function decline among older, overweight, long-term cancer survivors.

**It has been found that cancer survivors have worse diets than people who have never had cancer, even though they are more vulnerable<sup>29</sup>**

A 2015 study examined the diets of 1,533 adult cancer survivors and 3,075 adults without a history of cancer and compared them to the 2010 Dietary Guidelines for Americans. Researchers rated the diets 0-100 based on the Healthy Eating Index. Individuals who never had cancer averaged 48.3 on the index, while cancer survivors averaged at 47.2.

In the study, it was found that cancer survivors consumed more empty calories like solid fats and added sugars, while eating fewer green vegetables and whole grains. Their diets were also low in fiber, vitamin D, vitamin E, potassium, and calcium, and too high in sodium.

Since cancer survivors are more vulnerable to adverse health outcomes like recurrence of cancer, cardiovascular disease, diabetes, and osteoporosis, it is important they eat a high quality, nutrient-dense diet to help prevent these diseases.





## Alcohol

### Alcohol increases breast cancer risk<sup>30</sup>

A 2007 Women's Health Study found that moderate alcohol consumption increases breast cancer risk in estrogen receptor- and progesterone receptor positive tumors.

According to the Dietary Guidelines for Americans, moderate alcohol consumption is defined as having up to 1 drink per day for women and up to 2 drinks per day for men.<sup>31</sup>

### Alcohol has been shown to increase high-grade prostate cancer risk<sup>32</sup>

A 2009 study found that heavy drinking on a daily basis increased the risk of high-grade prostate cancer. The study also found that heavy drinking has a negative impact on the effectiveness of a prostate cancer drug.

The *Substance Abuse and Mental Health Services Administration* defines

heavy drinking as consuming up 5 or more alcoholic drinks for males and 4 or more alcoholic drinks for females on the same occasion (same time or within a couple of hours), on at least 1 day in the past month.<sup>33</sup>

### Drinking alcohol increases the risk of breast cancer recurrence<sup>34</sup>

Consuming three to four alcoholic drinks per week after a breast cancer diagnosis may increase the risk of breast cancer recurrence, particularly among postmenopausal and overweight/ obese women.



## Diet and Exercise

Exercise helps with treatment and reduces the risk of recurrence or death<sup>35</sup>



Cancer patients can reduce the risks of side effects and cancer recurrence by performing a moderate intensity physical activity for a minimum of 150 minutes per week.

- **Breast cancer** patients' risk of recurrence and of dying from the disease can be reduced by up to 40 percent
- **Prostate cancer patients'** risk of dying from the disease can be reduced by up to 30 percent
- **Bowel cancer patients'** risk of recurrence and dying from the disease can be reduced by up to 50 percent with 6 hours of moderate intensity physical activity per week.
- After treatment, **all cancer patients** can reduce their risk of side effects from cancer and its treatment, including fatigue, depression, osteoporosis and heart disease with exercise.

Women, who ate a minimum of five servings of fruit and vegetables per day and performed an equivalent of 30 minutes of walking at a moderate pace 6 days a week, had a higher 10-year survival rate than those who did not follow these lifestyle practices.<sup>36</sup> The improved survival rate was observed in

women who were obese as well as those who were not obese.

The recommended diet and exercise reduced the probability of death in the follow-up period by 50 percent.

**Physical inactivity has been associated with higher mortality risk among survivors of colorectal cancer<sup>37</sup>**

A study in the *Journal of Clinical Oncology* compared survivors of colorectal cancer who reported 7 or more hours per week of physical activity before diagnosis to survivors of colorectal cancer who had no physical activity before diagnosis and found a 20 percent lower risk of mortality among those who exercised.



Colorectal cancer survivors who engaged in 7 or more hours per week of physical activity post diagnosis were also compared to those who did not have any physical activity post diagnosis. It was found that those that engaged in 7 or more hours of physical activity per week after diagnosis had a 31 percent lower mortality risk.

This study also looked at TV watching and mortality risk. It was found that those that watched 5 or more hours of TV per day before diagnosis compared to those who watched 0 to 2 hours per day, had a 22 percent increased mortality risk. More TV watching post diagnosis was associated with a 25 percent increase in mortality risk.

Bottom line: Physical activity is inversely associated with all-cause mortality, while more TV watching is associated with an increased mortality risk in colorectal cancer survivors.

### Physical activity may stem the effects of cancer cachexia<sup>38</sup>

Regular exercise and physical activity may attenuate, and possibly reverse, the adverse effects of cancer cachexia (loss of weight and muscle atrophy) through suppression of inflammatory burden that appears to drive the wasting process and enhancement of insulin sensitivity, protein synthesis and antioxidant enzymes.

The literature surrounding the aforementioned mechanisms in cancer cachexia is scarce, so further research on the effects of exercise at attenuating wasting associated with cachexia and the molecular mechanisms involved, should be performed.

### Exercising may reduce fatigue in cancer patients<sup>39</sup>

A 2017 study among 80 percent women suffering from breast cancer and 20 percent of men suffering from some sort of cancer showed that

exercise was the better solution for combatting fatigue caused by cancer.



The study looked at four different approaches and their impacts on cancer related fatigue triggered by the onset of cancer.



The four different interventions were the following:

- Exercise (swimming and aerobic exercise)
- Mental health interventions-counseling provided to deal with the effects of cancer
- A combination of both exercise and psychological therapy
- Prescription drugs (stimulant medications such as Provigil).

It was found that a combination of both physical exercise and physiological treatment was the best method of treating cancer related fatigue and that exercise alone was the second best option.

The scientists also advised cancer survivors to avoid inactivity at all cost and to start with, a low to moderate exercise regimen such as gentle stretching and 5-minute walks.

## Exercise can also help cancer survivors with fatigue <sup>40</sup>

A 2017 study analyzed the effect of exercise on fatigue among cancer survivors both during and after treatment. The study evaluated 4 different interventions which included exercise, psychological, combined exercise and psychological and medication. It was found that exercise alone showed the largest effect on cancer related fatigue while medication showed relatively small improvements. Psychological intervention and a combination of exercise and psychological exercise showed the same amount of improvement as that of exercise alone. Researchers also pointed out that the exercise intervention was most effective when prescribe to patients receiving primary care and that the type of exercise did not matter.

## Mental Health

### A healthy diet is important for your emotional wellbeing <sup>41</sup>

A 2012 study conducted by doctors in Canada examined the relationship between the foods you eat and your mental health. The study showed that the amounts of calories, carbohydrates, fiber, fat, and vitamins and minerals in people's diets relate closely to their mood and mental function. Researchers found that eating higher levels of fiber, linoleic acid, B Vitamins, calcium, phosphorus, and iron correlated with better mental health.

This is important evidence of just how important good nutrition is for not only your physical health but also your mental health.

The doctors proposed more research to understand how exactly food affects mood. Further studies might show if the relationship varies depending on age, gender, or even factors such as an individual's income level.

The doctors concluded that most people, especially those who experience mood disorders, might need to improve their diet and eat more nutritious, unprocessed, natural foods. People should also consider meeting with a nutrition professional, if dietary counseling would help.

Bottom line: You truly are what you eat. Eat healthy for a healthy body and a healthy mind!



## Obesity

Being overweight or obese increases your risk of dying from cancer.



Studies have shown that being overweight or obese is responsible for one in six cancer deaths.<sup>42</sup> For men, being overweight increases the chance of dying from prostate cancer by 34 percent. For women, being overweight more than doubles the risk of dying from breast cancer.

Several nutritional factors change the progression of disease and prognosis after a diagnosis of breast cancer, and being overweight or obese is associated with a poorer prognosis.<sup>43</sup> Treatment-related weight gain also may influence disease-free survival, reduce quality of life, and increase the risk of related illnesses. The study concluded by recommending:

- Healthy weight control with an emphasis on exercise to preserve or increase lean muscle mass
- A diet that includes nutrient-rich vegetables



## Finances

Cancer survivors may face long-term negative career and financial impact <sup>44</sup>

Significant work and financial disparities exist among American cancer survivors, particularly among women, younger survivors, racial and ethnic minorities, and those without insurance.

The study showed that 37 percent of participants reported having to modify work plans, and 27 percent reported at least one financial problem. Those in active treatment reported 120 percent more financial difficulties than survivors who were less than 5 years post-treatment.

This study is the first to explore financial burden disparities in a large, nationally representative group of cancer survivors. The findings, while still preliminary, emphasize the need for screening and support for work and financial challenges across the cancer survivorship trajectory.

Little is known about how cancer patients cope with treatment related financial distress. At-risk populations need to be targeted and screened to ensure they get the assistance and support they need.<sup>45</sup>

- 89 percent of participants used at least one lifestyle-altering strategy—spending less on leisure activities, spending less on basics, borrowing money, or

spending savings—to cope with costs.

- 39 percent of participants used a care altering strategy—not filling a prescription or taking less medication than prescribed—to cope with costs.
- Younger patients and those with lower incomes were more likely to alter their care.



## Recurrence

The Western Diet has been shown to have a higher risk of colon cancer recurrence <sup>46</sup>

A study of Stage III colon cancer patients looking at recurrence and survival rates, found that a higher intake of a Western dietary pattern might be associated with a higher risk of cancer recurrence and cancer-related death among patients treated with surgery and chemotherapy.

High intakes of meat, fat, refined grains, and dessert characterized the Western diet used in the study; this was compared to a diet characterized by high intakes of fruits, vegetables, poultry, and fish.

Breast cancer patients following a reduced fat diet had a reduced risk of relapse <sup>47</sup>

A 7-year study of relapse in breast cancer patients found that reducing dietary fat intake might improve relapse-free survival. After 5 years of follow-up, women in the lower fat dietary group had a 24 percent lower risk of relapse than those in the control group. The impact of a reduction in dietary fat was even greater in patients with hormone receptor negative breast cancer; these patients had a 42 percent reduced risk. The study concluded that an intervention reducing dietary fat intake might improve relapse-free survival rates.





## Palliative Care



Nutrition-rehabilitation improves quality of life for patients with advanced cancer <sup>48</sup>

*McGill Cancer Nutrition Rehabilitation Program* found interdisciplinary nutrition rehabilitation to be beneficial

for patients with advanced cancer receiving palliative care.

Patients were treated by a team consisting of a physician, nurse, dietitian, physical therapist, occupational therapist, psychologist and a social worker and given dietary

advice specific to the patients' needs as part of their program

Patients showed improvements in well-being, quality of life, and fatigue.

Bottom line: Take advantage of the support system available to you or your loved ones.



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