

Women, Cancer and Diet

Neal Barnard, MD

In 1960 one in twenty women in North America developed breast cancer. In 1980 the rate went up to one in eleven. In 2000 it reached one in eight women. Yet the disease is virtually absent in countries which eat differently from Westerners. Is there something we can do differently?



Neal Barnard, MD

Breast Cancer

Ask any doctor what women can do to prevent breast cancer and the response will probably be to get an annual mammogram after age 40. Mammograms certainly are important but they do not *prevent* cancer. They *find* cancer. Biopsy, surgery or chemotherapy then follow.

What's largely unknown to the American public—and sadly underemphasized in medical schools—is that breast cancer is often a preventable illness. When I was a medical student I was not taught that breast cancer had any relationship to dietary factors. At that time, breast cancer attacked one in every eleven women. When I was a resident in the early 1980s, most doctors remained ignorant of any risk factors that could be controlled, and the rate went up to one in ten. The failure to prevent cancer has exacted an increasing toll; as of 2000 the disease now attacks one woman in eight.

Western Diet

It is not that scientists do not have the information. In 1982 the National Research Council published a report called *Diet, Nutrition, and Cancer*, co-authored by T. Colin Campbell, showing the mountain of evidence already available then linking specific dietary factors to cancer of the breast and other organs. But brochures with watered-down recommendations have sat collecting dust at cancer research centers. No organized effort has been made to give women the information they need to make decisions about cancer prevention.

High Fat Diet

Dietary factors emerged by comparing different countries. In Japan, for example, breast cancer was very rare. But Japanese women who move to the United States soon had the same risk of cancer as American women—at least 500% higher than in Japan. The difference in cancer risk between the U.S. and Japan is not simply due to genetics. Nor is it something in the air or water. The critical factor is the amount of fat, particularly the amount of animal fat, in the diet. In Japan, some 50 years ago, less than 10% of the calories in the diet came from fat. In the United States, the fat content of the diet is almost four times more, almost 40%. The more fat women consume, the greater their cancer risk. Similar

findings have been made within other countries. Vegetarians, for example, have much lower cancer rates than meat-eaters.

Estrogen

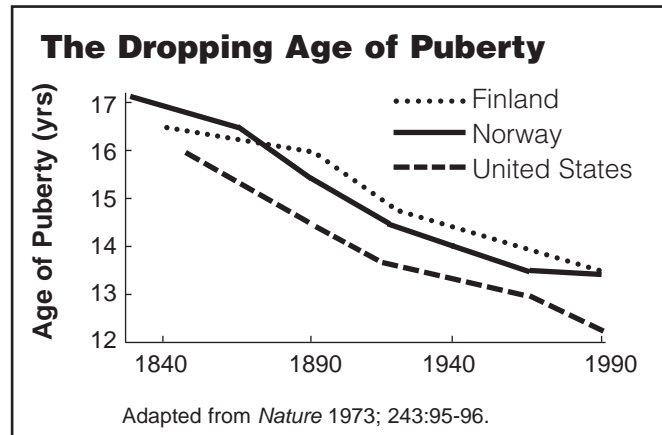
When the link between fat and cancer was found, researchers did not have to look far for reasons to explain it. Several possibilities presented themselves. First of all, it is known that many breast tumors are “fueled” by estrogens, the female sex hormones. Estrogens are normal and essential hormones for both women and men. But the higher the estrogen level, the greater the driving force behind some kinds of breast cancer. The principal estrogen is estradiol, and the amount of estradiol produced by the body is linked to the amount of fat in the diet. On high-fat diets, estradiol production increases. On low-fat diets, it decreases. When women begin low-fat diets, their estradiol levels drop noticeably in a very short time. People who consume no animal products and thus presumably consume less fat have significantly lower estrogen levels than meat eaters.

In addition, estradiol is carried in the blood on special carrier molecules. On high-fat diets, more estradiol breaks free from its carrier molecules and becomes biologically active, like soldiers jumping off a jeep and starting their attack. High-fat diets, then, may promote cancer by increasing the amount and the biological activity of estradiol in the body.

Another problem with high-fat diets is that the meat, poultry, fish, and dairy products that usually make up such diets are all devoid of fiber. Fiber is the part of plant foods that resists digestion in the intestinal tract. Evidence suggests that fiber helps reduce estrogen levels by trapping it in the digestive tract. In addition, soybeans, which are a mainstay of Asian diets, contain phytoestrogens. These are very weak estrogens, which can compete with and blunt the effect of normal estrogens. In the process, soybean products have been shown to reduce cancer risk.

While high-fat, low-fiber diets promote cancer by increasing the amount and

“The higher the estrogen level, the greater the driving force behind some kinds of breast cancers.”



Cause	Action	Risk/Outcome
Western Diet	→ Increases Estrogen	→ Increases Breast Cancer
High-Fat	→ Increases Estrogen → Earlier Puberty	→ Increases Breast Cancer
Low-Fiber	→ Increases Bile Salts and Estrogen → Co-carcinogens	→ Increases Colon Cancer

biological activity of estradiol, low-fat diets high in fiber lower that risk of cancer.

Puberty

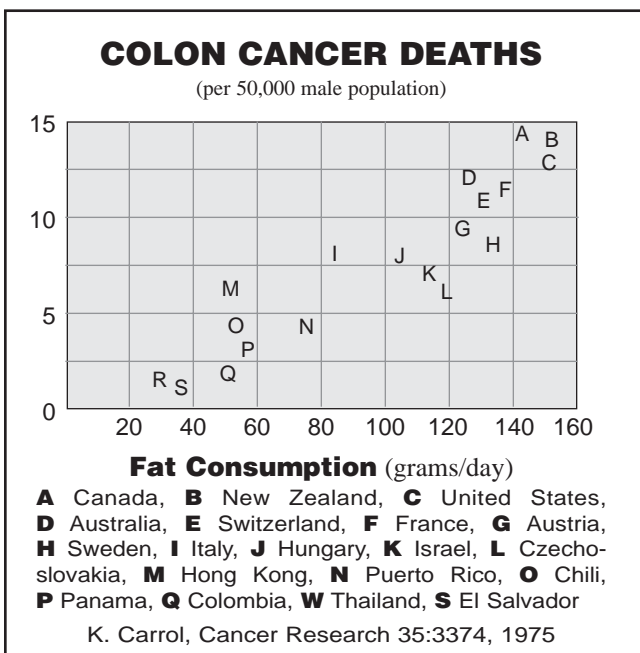
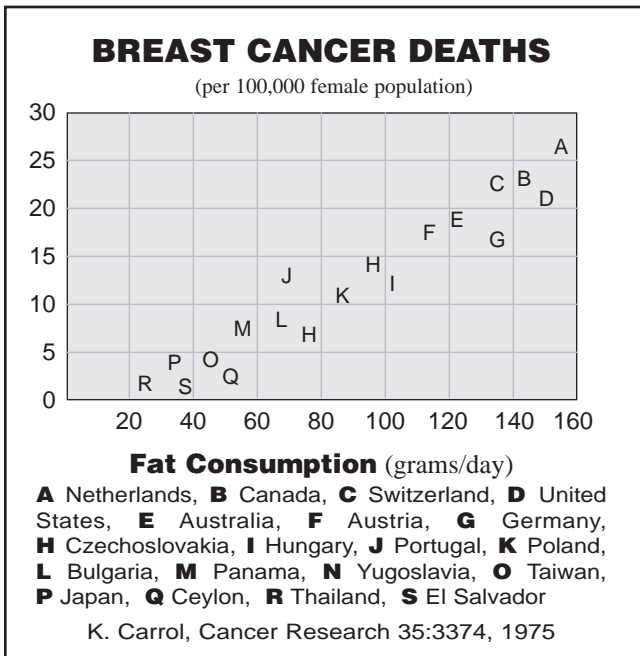
Aside from the elevated breast cancer risk, do elevated estrogen levels have other effects? The answer is almost certainly yes. During my medical education, I worked for a time at an inner-city clinic in Washington, D.C. There, girls of 12 and 13 years would come in asking for birth control pills. Many had already had their first child and did not want to become pregnant again. I wondered why nature designed the human body to become sexually mature at an age when girls are not old enough to care for a child or even to sustain a long-term relationship. It

appears that nature is not to blame. In fact, evidence suggests that the body is designed to reach puberty quite a bit later.

According to the World Health Organization, the average age of puberty in girls in Western countries in 1840 was about 17 years. Today we take it as a matter of course that girls will reach 11, 12, or 13 years. Some 150 years ago, high-fat diets were limited to a small, wealthy portion of the population. Today, high-fat diets have spread to the entire population, and puberty has occurred earlier and earlier, possibly due to the estrogen increase caused by high-fat diets. With earlier puberty comes higher breast cancer risks.

A comparison of different countries supports this theory: In rural China where low fat diets are still the rule, the age of puberty ranges from 15 to 19 years. Dr. T. Colin Campbell of Cornell University, the mastermind of the China-Diet-Study, discovered not only a much higher age of puberty, but he also found a virtual absence of coronary disease, osteoporosis, obesity and very low rates of Western adult cancers.

High-fat diets may also encourage the absorption of carcinogens into the body. When the carcinogens in cigarette smoke, for example, are absorbed through the lung tissue, they tend to travel along with fats in the blood. It may be that on a low-fat diet, the body is less able to absorb and transport these carcinogens. Evidence suggests other factors that may also play important roles. The mineral selenium, found in grains, helps prevent can-



cer as does physical exercise and the avoidance of alcohol.

Colon Cancer

Aside from breast cancer, the risk of other cancers could also be greatly reduced. Dr. Denis Burkitt observed that the type and number of bacteria in the colon was influenced by the type of food eaten, which, in turn, influenced stool volume. He found that high-fat diets increased the amount of certain bile salts and bacteria, which, in turn, converted these bile salts into co-carcinogenic substances in the colon. The less fat eaten, the fewer bile salts were converted into carcinogens. In addition, he noticed that diets low in fat yet high in fiber not only created larger stool volumes which diluted the concentration of the carcinogens but they also drastically reduced the transit times of the stool and thus the contact time of the carcinogens with the bowel membrane.

In 1971 Dr Denis Burkitt proposed that the enormous difference in colon cancer rates in different geographic areas could largely be explained by critical differences in dietary fat and fiber consumption. A diet high in fat and low in fiber promoted cancer of the colon, while a diet low in fat and high in fiber protected from it.

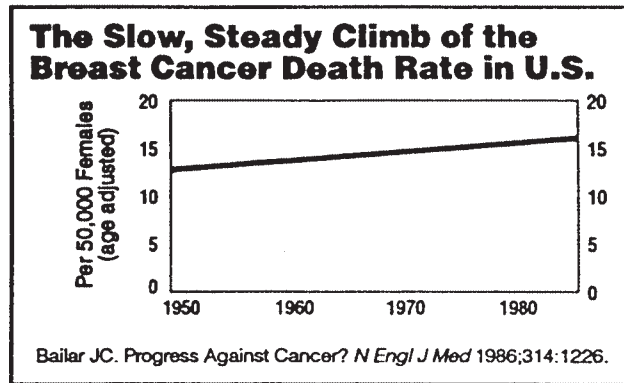
Ovarian Cancer

But there is more. We now have clues of how to prevent cancer of the ovaries. A complex and fascinating study by Dr. Daniel Cramer of Harvard University elucidated the relationship between cancer and diet. Cramer studied hundreds of women with ovarian cancer. He had them record in detail what they normally ate. He compared them to a group of women who were similar in age and other demographic variables, but who did not develop cancer. One food item emerged that stood out clearly: dairy products. Women with cancer had eaten much more frequently of dairy products than women without cancer. This held especially true for supposedly "healthy" products, such as yogurt.

The culprit may be a normal breakdown product of the milk sugar, lactose. Lactose is broken down in the body to another sugar called galactose. In turn, galactose is broken down further by enzymes in the body. According to Dr Cramer, when dairy product consumption exceeds the enzymes' capacity to break down galactose, there is a build-up of galactose in the blood, which may damage a woman's ovaries. Some women have particularly low levels of these enzymes, and when they consume dairy products on a regular basis, their risk of ovarian cancer can be three times higher than that of other women. Since the problem is not the milk fat but the milk sugar, it cannot be solved by using non-fat products. In fact, yogurt and cottage cheese seem to be of most concern because the bacteria used in their production increase the production of galactose from lactose.

Cancer Survival

Much evidence suggests that dietary factors can help prevent cancer. But what about improving survival for those who already have cancer?



Although the evidence is still sketchy, there is reason to believe that foods can play a favorable role in the outcome. The immune system is our line of defense against both the initiation and the spreading of cancer. Substantial evidence shows that certain foods can bolster immune function, while others impair it. For example, natural killer cells are specialized white blood cells that seek out and destroy cancer cells. A recent German study showed that vegetarians have more than twice the natural killer cell activity than is found in meat eaters. It is not yet known whether the immune strength of vegetarians comes from their having twice the number of natural killer cells or from each cell having

twice the killing power. Regardless, vegetarians have a defense against cancer cells that is far beyond that of their meat-eating friends. The immune strength of a vegetarian diet probably comes from its low-fat content and from vitamin-rich vegetables and fruits.

“Animal fats and oils from animal and vegetable sources can impair the immune system.”

Immune Boosters

Low-fat diets strengthen the immune defenses against cancer cells. Researchers in New York tested the effect of low-fat diets on immunity. They put healthy volunteers on a diet with their usual fat intake cut in half.. Three months later, the researchers took blood samples from the volunteers and examined their natural killer cells. As in the German study, the natural killer cell activity was greatly increased, although not as much as on the vegetarian diet used by the German researchers. It appears that all fats and oils—animal or vegetable—can impair the immune system. Even fish oils interfere with natural killer cells.

Certain vitamins can be immune boosters. Beta-carotene is found naturally in yellow and dark green vegetables. Several research studies at the National Cancer Institute have shown that those who consume generous amounts of vegetables rich in beta-carotene cut their cancer risks substantially. However, in subsequent studies, those taking isolated beta-carotene in pill form did not fare so well. As a matter of fact, they had many more deaths than the controls not taking these vitamin pills. The power of naturally occurring beta- carotene apparently comes partly from its ability to neutralize free radicals and molecules which tend to form in the body and attack the cells and cause cancer. Vitamins C and E also have some of this ability. But beta-carotene also

increases the number of natural killer cells and increases the number of another kind of white blood cell, the T-helper cell, which helps direct the immune response. The minerals selenium, zinc and iron are also important



to immune function, although for zinc and iron, both too much and too little can spell problems.

30% Fat: Too High

A cancer-prevention diet would have to contain less than the 40% fat that is the hallmark of Western society. It would have to be very different also from the diet recommended by the National Cancer Institute. NCI still recommends a 30% fat diet in spite of strong evidence that a 30% fat limit is far too high.

15% Is Right

Rural Chinese and traditional Japanese diets are low in fat. Their diets have half the fat of the NCI-recommended diet. A study by Willett and his colleagues at Harvard showed that a diet drawing 30% of its calories from fat had no measurable effect on cancer incidence. Willett's study was brief—only four years—but it supports what most have suspected: To prevent cancer, fat intake must be reduced to the low levels found in China, Japan, and other countries which enjoy low cancer rates. An effective cancer prevention diet should contain no more than 15% fat, and it should be vegetarian.

Summary

The new knowledge on prevention is powerful artillery in the war on cancer. The war on cancer, which was initiated in 1970 by then President Nixon, has been lost. High technology does not affect the incidence rates of cancer. What we need is not more and better treatment, what we need is less cancer. And that relates largely to our lifestyle.

According to the National Cancer Institute, as much as 80% of cancers can potentially be stopped before they ever start. Tobacco alone accounts for 30% of cancer cases. Dietary factors account for even more, from 35 to 50%. The late Dr. Ernst Wynder, then president of the American Health Foundation and a prominent epidemiologist, has said that 60% of all female cancers in Western societies are related to over nutrition, particularly to the high intake of fat. As the frequent consumption of meat, dairy products and fried foods has become a daily routine, the female body has been assaulted by altered hormonal function, an unnatural age of puberty and a much greater risk of cancer. By drastically cutting back on our high fat intake and by increasing our fiber through the adoption of a more plant-food-centered diet, there is much evidence that the epidemic of female cancers

Breast Cancer Prevention

Vital information showing that low-fat diets could help prevent breast cancer is not reaching American women. A survey commissioned by PCRM asked 500 women, "What steps, if any, are you aware of that women can take to lower their chances of developing breast cancer?"

Only 20% indicated that they were aware that low-fat diets might be helpful. Even with a second prompting question asking specifically, "What particular eating habits, if any, are you aware of that might reduce the chances of developing breast cancer? Only 37% of women indicated that low-fat, high fiber diets might be helpful.

The breast cancer incidence is skyrocketing. It increased from one in 20 women in 1960 to one in eight in 2000. This disease is strongly linked to high-fat, low-fiber diets, particularly diets high in animal products. Countries, such as China, whose diets are much lower in animal products and in total fat content, have a breast cancer incidence that is five to ten times lower than that found in the United States.

The National Cancer Institute has developed dietary guidelines for breast cancer prevention. Although the NCI diet needs further leaning out, it is not reaching American women. "We are asking the media to be lifesavers," said PCRM President Neal D. Barnard, MD. "If the information gets out widely enough, women can make decisions to save their own lives."

PCRM is a non-profit organization, which promotes preventive medicine, as well