

**A LOOK AT A BREAKTHROUGH BREAST CANCER THEORY
AND THE REMARKABLE EVIDENCE TO SUPPORT IT**

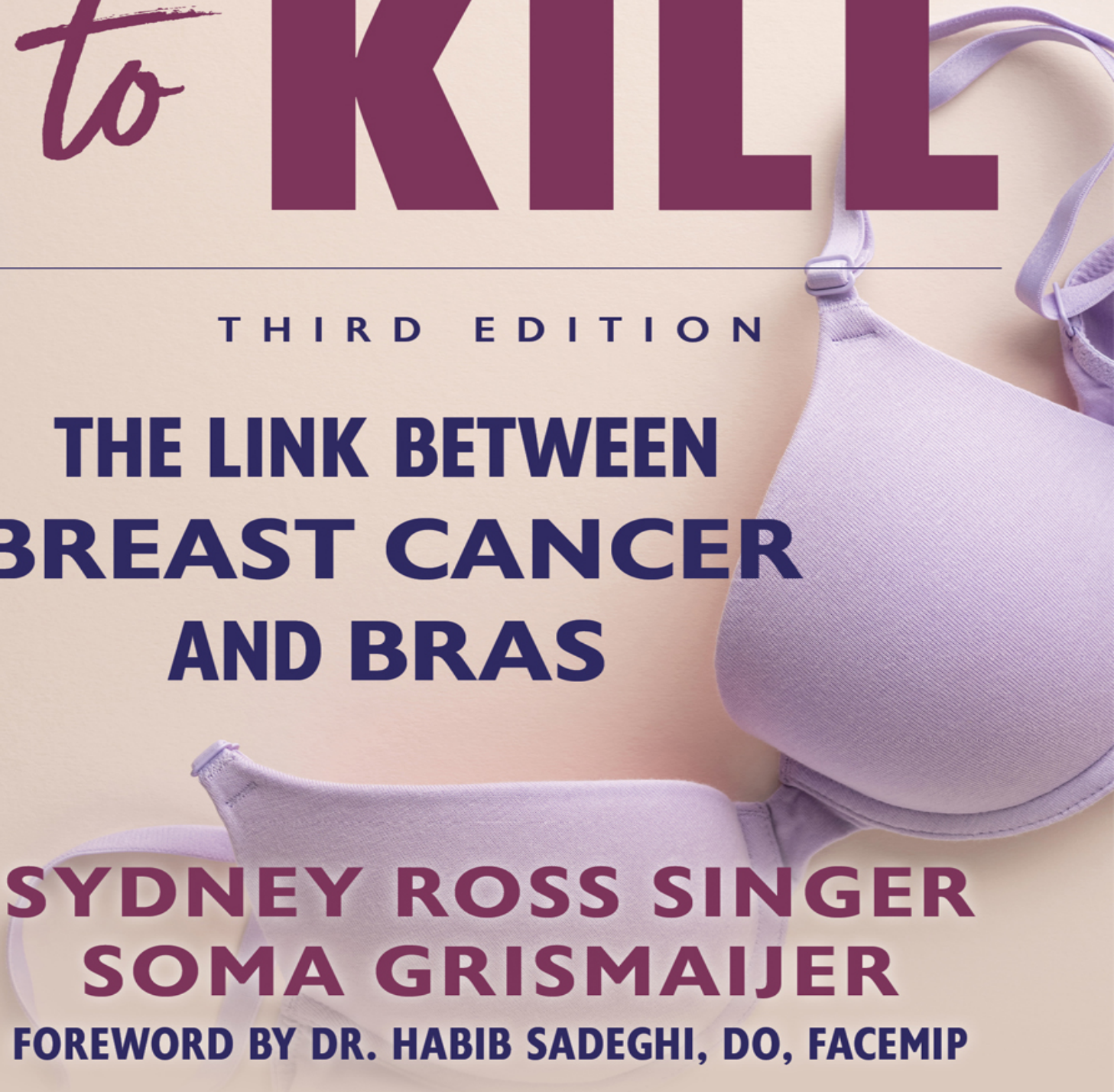
DRESSED *to* **KILL**

T H I R D E D I T I O N

**THE LINK BETWEEN
BREAST CANCER
AND BRAS**

**SYDNEY ROSS SINGER
SOMA GRISMAIJER**

FOREWORD BY DR. HABIB SADEGHI, DO, FACEMIP



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**THE LINK BETWEEN BREAST
CANCER AND BRAS**
THIRD EDITION

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Finally, if these pages prove to be the boon to humankind that we hope they will be, we wish to acknowledge the courage and integrity of those who find themselves inspired to seek new, healthier ways of living.

FROM THE PUBLISHER

A PUBLISHER'S PLACE IS TO STAY QUIETLY IN THE BACKGROUND AND ALLOW a book's author to be the spokesperson for his or her title. Of course, as publishers, we also work with our writers to edit and craft each manuscript to be the best it can be, seeing it through to its final forms as a physical book, ebook, and/or audiobook. We also do everything we can to promote the title; but truly, a good book needs to be able to stand on its own with a knowledgeable author behind it. So why have I written this section?

For over forty years, I have published a great number of mainstream and alternative health titles—many of which have become best sellers. Over time, I have learned that choosing to publish a book is not always easy. You have to make sure the information it contains is solid and that the author has done his or her homework in putting together the facts. You must also consider the market. Will the book make money or at least break even? Sometimes, however, the most important consideration is about the material it contains—information that deserves an opportunity to reach a wider audience.

A number of years ago, I received a manuscript proposal by Sydney Singer and Soma Grismaijer. The premise of that proposal was that tight, ill-fitting bras had the potential to cause breast cancer. While it certainly got my attention (at first blush), it didn't seem like a project I would ever take on. However, after reading the authors' bios, I decided to at least take a look at the manuscript before rejecting it. Surprisingly, although I knew it needed some work, I also knew I wanted to publish it. While the premise of the work was certainly not definitive, the science behind it was there, and the unique study undertaken by the authors was original and important. The information they had gathered pointed to the iconic bra—the very symbol of womanhood—as a potential cause of breast cancer.

Eight months after signing the authors and editing the manuscript, we were two months away from the publication of *Dressed to Kill*. It was then that I received a phone call from a woman who represented a major trade association. She had read some of our prepublication releases about the book and wanted to enlighten me about Sydney Singer. She claimed he had deceived us about his educational degree, and—to save ourselves from embarrassment—we should consider canceling the book. She claimed that her association had already been aware of Singer’s work and had investigated him. She then said that Syd had not received a master’s degree from Duke University as we had stated in the press release. She asked me if I wanted to publish a book by someone who had lied about his credentials. She also mentioned that her trade association would sue me if I went ahead with the project. I said I would follow up, and that pretty much ended the conversation.

As a publisher, I rely on as many sources as possible to verify the legitimacy of my authors. At that time, however—without the availability of the internet—I relied on the normal criteria available. For the most part, our authors were medical professionals. They held meaningful positions, they had been recommended by professional colleagues, and many had seen their work published in scientific journals. But the phone call I got that day was a solid kick in the stomach for a publishing company on the brink of releasing such a controversial book.

I took a deep breath, picked up the phone, and dialed Duke University. I was directed and redirected from one office to another until I finally reached someone who was able to help me. After explaining who I was and why I was calling, the woman on the other end of the line checked the school’s records. Within minutes, she confirmed that Mr. Singer had, indeed, graduated from the university with a master’s degree in biochemistry and anthropology. After breathing a sigh of relief, I realized that the phone call I had received from the trade association had provided me with an important lesson: Always verify my authors’ credentials. It also made me realize just how defensive an organization can become when its economic interests are threatened.

After the book’s publication, the reviews for that first edition of *Dressed to Kill* were good, although its sales were relatively slow. The book had received a reasonable amount of newspaper coverage, but the authors were unable to get any significant exposure on radio, television, or any other

mainstream media outlets. Bookstores also seemed to shy away from the book. But who could blame them? How could anyone conceive of the idea that the bra—a symbol of femininity—could cause cancer? Then again, how much influence could the undergarment industry possibly exert? All I knew was that I had received one misleading phone call.

Still, if the information in this book is correct, how many women could be spared the pain and hardship associated with surgery, chemotherapy, or other life-altering treatments? How many women could avoid getting cancer in the first place? While the first edition did not make the major waves we had hoped it would, it had indeed planted seeds in the minds of other researchers, who would begin to undertake their own studies based on the premise put forth by Singer and Grismaier.

Almost four decades later, I am once again fortunate to be the publisher of this groundbreaking title, now in its third edition. This updated version includes current information gathered from the further studies of researchers throughout the world. And while it may remain an uphill battle for this book to get the attention it warrants, its intention is still simple: to change how we look at bra usage. If the way in which bras are constructed can lead to breast cancer, how many women could be saved by redesigning this item of clothing? There is no question in my mind that this book has many barriers to overcome; however, with the increasing rate of breast cancer in this country, the information it contains is too important to ignore.

Rudy Shur
Square One Publishers

FOREWORD

AS THE WORLD BECOMES MORE POLITICALLY AND SOCIALLY POLARIZED into an ever-increasing number of interest groups, it seems everyone has something to say. The problem is that, except for the members of one's own group, no one wants to hear it. In a world where tolerance is supposed to be the order of the day, we're becoming increasingly intolerant of anyone who happens to hold a view that challenges our own, so much so that laws are being enacted the world over to limit and even criminalize the free expression of thoughts and ideas. It's no longer enough to refuse to hear viewpoints that oppose our own; we must make public examples of heretics who dare to challenge the status quo. The offender must understand that expressing ideas outside the socially correct box is unacceptable. With repeated punishment, the individual will eventually stop thinking such thoughts and simply conform. In turn, the public humiliation serves as the perfect warning sign to prevent anyone else from stepping out of line.

In no other sector is resistance to new ideas and pressure to conform to the status quo greater than in medicine. There is simply one way of doing things, one philosophy of patient care, and it will not be challenged without great consequences. Even so, any physician who takes the vocation of healing seriously cannot remain silent when the health and well-being of patients are at stake. Free speech is crucial to any civilized society and particularly in medicine, which hasn't cured or eradicated a single disease in over sixty years. If we intend to keep our children and grandchildren from suffering the same chronic diseases that plagued five or six generations before them, then we must allow the free exchange of ideas, especially when it comes to medical research, treatment, and prevention strategies. This means sharing ideas that many might find unacceptable today but that in a generation could easily be viewed as self-evident. How else do discoveries happen if not from the challenging of ideas? As George Orwell said, "If freedom has any meaning at all, it's the right to tell people what they don't want to hear."

Many don't want to hear alternative health care theories. Countless careers, professional reputations, medical journals, and educational institutions—together with billions of dollars in research, pharmaceuticals, and surgical interventions—are wholly dependent on doing things the way they've been done for the last hundred years. It's been said, however, that if you keep doing what you've always done, you'll get what you've always gotten. While modern medicine has improved greatly with regard to diagnostics over the years, it still holds a dismal record when it comes to curing the diseases it diagnoses. This is because the philosophy of and approach to medicine itself has not changed, and those who are the gatekeepers of information exchange within the medical community seem highly resistant to, and perhaps even threatened by, any idea that's remotely nontraditional in nature. They have too much invested in the old ways.

I've come to understand through firsthand experience that you can't be a true healer today and not be a nonconformist. As diseases like cancer and neurodegenerative disorders continue to ravage the present generation, just as they have in the past, doing things the way they've always been done is not only irresponsible but also negligent. It is incumbent upon physicians to say it is time to find another way. Of course, this requires stepping away from the crowd and forging a new path. It requires igniting the next evolution in health care. To be a healer means to be a leader, whether one likes it or not.

When I first came across *Dressed to Kill*, its message resonated deeply with me. I felt that authors Sydney Ross Singer and Soma Grismaijer had presented a substantial case that, while not conclusively proving bra usage causes breast cancer, certainly put forth a credible argument that bras might well play a significant contributing role in breast cancer development, warranting further research. Because I contribute regularly to several online media news and health information outlets, I decided to write an article on the findings *Dressed to Kill* put forward. I felt Singer and Grismaijer's research deserved to be heard by a larger audience, and I still feel that the conversation about a possible link between bras and breast cancer is one women need to be having. I wholly believe in patients taking charge of their health through dietary and other kinds of lifestyle choices, which include everything we choose to put on or in our bodies. We have far more control over our health than we think we do, and I believe in empowering my patients as much as possible. Nearly thirty years in medicine has taught me

that almost no disease just happens and that there is far more we can do from a preventative standpoint to secure good health later in life—presuming we have the proper information to help us make the right choices, of course.

Within hours of my article being posted online, a backlash began. I was called a kook and a guru who was “sparking outrage” by pushing a “debunked breast cancer myth” that had long been “scientifically discredited.” Not only that, but I had had the audacity to release such “pseudoscience” during National Breast Cancer Month. How foolish I was. I thought the research, medical, and media communities would be as intrigued by Singer and Gris-maijer’s data as I was and conduct further investigations into the subject in the hope of empowering women. Instead, I discovered how high a price one can pay for stepping outside the lines of what’s socially accepted. My article was met with snarky ridicule and self-righteous outrage. What these critics neglected to offer, however, was any solid evidence that convincingly contradicted the ideas in *Dressed to Kill*.

By using the word *discredited*, some naysayers sought to imply that the bra-breast cancer connection was illegitimate from the start or, worse, an intended fraud that had been exposed in much the same way a false witness has his phony credibility stripped away in court. Nothing could be further from the truth. To suggest that this theory is pseudoscience or that the medical professionals who spent years researching it are quacks does a great disservice to women who would otherwise read the findings with an open mind and choose for themselves whether to make some minor lifestyle changes that could increase their protection against breast cancer. My fear was that women would simply never look any further into the matter after seeing the reactionary and dismissive reviews of my article.

In attempting to censure my article, one reporter stated that I offered “as evidence” only one source for my ideas: *Dressed to Kill*. The book, however, was just one of twelve sources in my original piece. Because Singer and Gris-maijer are medical anthropologists and not medical doctors, by stating that their book was my sole supporting evidence the reporter was implying that the theory wasn’t backed by qualified individuals. What the reporter didn’t share with her readers was that *Dressed to Kill* had been inspired by research performed by Harvard University doctors showing that women who did not wear bras had half the breast cancer risk of those who did. The reporter also failed to mention the

other evidence for my article, which included studies from the United States, China, Venezuela, Scotland, and Africa, as well as research published in three medical journals and a publication from a national department of public health.

In support of the claim that the bra-breast cancer connection is bogus, the reporter offered as her sources one quote from the American Cancer Society linking to a “fact page” on its website. This page provided no real research, data, or scientific citations to support its statements. It merely had a link to a short article in *The New York Times* that also had no research citations, a link to a private ob-gyn blogger in San Francisco who, in the reporter’s words, had “eviscerated” my article, and a link to a *USA Today* piece. The reporter went on to quote her independent blogger source, who said, “This stuff scares women.” On the contrary, I don’t believe I, Singer, or Grismaijer are scaring women at all. We’re providing them with more information, which may, in conjunction with other choices, give them the best chance they have against being diagnosed with breast cancer. More choices empower women; they don’t frighten them.

Ultimately, I believe the media’s anger, frustration, and immediate dismissal of my article was more telling than the message it sought to convey. As I say to all my patients, how you react to an issue is the real issue, and it was clear to me that the media was protesting this issue far too much.

Because the fight against cancer has been going on for generations with limited success at best, it’s time to welcome other voices into the conversation regardless of how unconventional they may seem, particularly when what they have to say is supported by research. In 1847, Hungarian physician Ignaz Semmelweis had the audacity to suggest that something as simple as doctors washing their hands between patients while delivering babies could prevent thousands of mothers from dying of infection and puerperal fever. The idea was met with outrage from the medical establishment. Semmelweis eventually lost his position, only to receive credit for saving millions of lives years after his death once Louis Pasteur had finally confirmed germ theory. Today, the largest university in Hungary is named after him.

The impulse to fall in line with those around us and “do as the Romans do” is deeply engrained in humans. Our prehistoric ancestors knew that to survive they had to work and stay together. Even today we have a strong

instinctual yet unconscious desire to avoid being separated from the group. Unfortunately, medical breakthroughs often come from shirking convention and looking at a problem in a new way. This is why I'm so grateful to see *Dressed to Kill* making its way back into the national conversation on cancer.

Dr. Habib Sadeghi
Los Angeles, California

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PREFACE

CANCER IS PERHAPS THE MOST FEARED OF HUMAN DISEASES. FOR A WOMAN, one of the most feared cancers is cancer of the breast. The root cause of fear is a feeling of helplessness and a lack of knowledge. If the cause of breast cancer were better understood, a woman might know how to lower her risk of contracting the disease. There might be actions she could take to keep herself healthy. It is through knowledge of the cause of a disease that we lose our fear.

Despite the heavy toll breast cancer has taken on our society, little has been done to stem the tide of this menace. Virtually every American woman now has some sort of familiarity with this disease. Perhaps a friend or relative has it, has gone through treatment for it, or has died from it. Perhaps this woman herself has experienced the horror of finding a breast lump. Current estimates suggest that 90 percent of all women in the United States will experience at least a breast cancer scare by finding a breast lump at some time in their lives. Thankfully, most of these lumps will not be cancerous. Is there anything women can do to be spared from this poorly understood illness?

To answer this question, we must first understand the cause of breast cancer, which is, as yet, elusive. Why has the cause been so difficult to pin down? Have researchers been searching for clues in the right places? Might a new direction and new research approach prove fruitful in uncovering aspects of this disease that have been previously ignored, overlooked, or misunderstood?

Several risk factors have been identified in association with breast cancer, but their connections to the disease are not clear. Mechanisms through which cells become cancerous have been discovered, including the role of hormones, DNA, and other cellular molecules and structures. Radiation, certain chemicals, and some genetic factors have been identified

with the development of cancer. Certain lifestyle practices have been associated with breast cancer as well. But no approach has come up with a deep enough answer regarding the cause of breast cancer. The difference between breast cancer risk factors and a cause of breast cancer is that risk factors do not explain why women get the disease, only that certain factors are associated with women who develop the disease. Causal explanations have more asked of them. They must make sense, not just show a statistical association. Causal explanations must tell how something happens. They must provide a reason.

The key to solving the problem of breast cancer, and of other cancers, remains elusive due to the limitations of current approaches being used to find it. As such, we have decided to follow a new path toward understanding breast cancer: *applied medical anthropology*. Let me explain this term. Fundamentally, applied medical anthropology is a form of anthropology, which is the study of mankind. It is probably the broadest of all fields, since all activities of mankind are within its scope. This includes aspects of life that we all take for granted, such as our customs of dress and eating. It also includes economic systems; political structures; ideologies; thought processes; religions; sex roles; forms of interpersonal relationships; forms of self-expression, such as language, art, music, and dance; and every other facet of the activities that make us human beings. Of relevance to diseases such as breast cancer is anthropology's study of lifestyle—and lifestyle, as we are learning, is responsible for most of our illnesses and deaths.

To understand how lifestyle affects human health, one needs a good understanding of how the human body works. Medical anthropology is a branch of anthropology that studies the medical and health issues of different cultures. When it comes to breast cancer, for example, medical anthropologists may study how different cultures treat the disease. The focus would be on a cultural comparison concerning breast cancer diagnosis, treatment, and perhaps the outcome of this treatment.

What we are practicing, however, is more than medical anthropology, which, like anthropology in general, is a basic science. What we are doing is an *applied* science. The difference is that basic science is a general search for information. It is a curiosity about the world and a desire to gain information without any concern for its practicality. In other words, basic

scientists do research that has no currently known application. Applied science, on the other hand, is focused on a particular problem.

As applied medical anthropologists, then, we do more than study the cultural aspects of a disease. We study diseases and how they may be caused by cultural factors. Put differently, we try to find the biological consequences of certain cultural practices. We refer to the diseases caused by culture as *culturogenic diseases*. Heart disease, for example, is predominantly a culturogenic disease because it is produced by certain lifestyle factors, particularly high stress, poor diet, and minimal exercise.

How have we developed this concept of applied medical anthropology? As my own graduate training and experience in anthropology, biochemistry, and medicine took me through these various specialties, I had the opportunity to experience their strengths and weaknesses.

Biochemistry has the research strength of a precise and highly analytical method, although it suffers from considering all life processes, even human behavior, as biochemical processes. Humanity gets lost in the shuffle of beakers and test tubes.

Cultural anthropology has the advantage of studying humanity from a broad viewpoint and seeing the world from many perspectives, but it lacks the rigorousness of the “harder” sciences. As a basic science, it also lacks practical application for its research.

Medicine has the strength of understanding the body from a very technical, physical, and chemical perspective, but it has the weakness of seeing people as mere machines that function according to certain chemical reactions. The flaws found in biochemistry also plague medicine, since much of medicine is defined by biochemists. Nowhere in modern medicine, as far as I have been able to determine, is there a serious appreciation of human beings as cultural entities.

While each of these fields has its limitations, much can be gained by combining their strengths. This is exactly what we have done with applied medical anthropology.

I am not alone in this approach to research. Soma Grismaijer is my coauthor, coresearcher, and spouse—and the inspiration for this breast cancer research. Through her training and experience in behavioral science, ecology, environmental health, and anthropology, Soma has brought an environmental perspective to our approach. You cannot truly understand

people and their lifestyles without understanding the natural and man-made worlds in which those lifestyles are practiced.

Soma has also provided this breast cancer project with something a man could not have achieved on his own: a woman's point of view. Breast cancer is primarily a woman's disease. The entire success of this project rested with Soma's ability to question women objectively about their lifestyles and illness.

Taking this applied medical anthropology approach, we have put the pieces of the breast cancer puzzle together in a new way, constructing a picture so obvious that we wonder why others have not already seen it. We have developed a new theory about breast cancer and have tested this theory by conducting original research on thousands of women. And we feel confident that we have discovered something tremendously important.

We believe we have found a trigger for breast cancer. It is a trigger that is pulled by women themselves—but the gun is loaded by society. The cause of breast cancer is complex, as you shall see. It involves biological, environmental, and cultural factors. Some of these are difficult to change. Others are easy to address. We understand that, at first blush, linking the wearing of bras to cancer is an easy target for humor. We understand that laughter can be an excellent defense mechanism. All we ask is that you judge the facts in this book fairly.

We hope this book provides the right amount of light in the darkness that surrounds breast cancer. By actually seeing what goes on, we can better understand the root cause of the disease. And by understanding how it begins, we can put ourselves in a position to prevent it.

INTRODUCTION

“BRAS CAN CAUSE BREAST CANCER? YOU’RE JOKING, RIGHT?” THIS, OF COURSE, would be the usual response. As apparel designed to enhance a woman’s bustline, bras seem the least likely candidate for a cause of breast cancer that you could imagine. They make you think about sexy models, not about mastectomy. They create cleavage, not cancer. Right? As you shall learn, bras are more than objects of fashion. They transform more than appearance.

For women, breasts rate as one of the most important features of their bodies. This bias is no doubt emphasized by our society’s preoccupation with breasts. Styles of women’s clothing, from underwear to nightgowns to bathing suits to business suits, focus on breasts and the bustline. Breasts are truly an American obsession. Ironically, this obsession with breasts may be a root cause of cancer.

The search for a breast cancer cause is a frantic one. Thousands of people spend their entire professional lives working on this one problem, and typically on one small aspect of this problem. Thousands of pages of research results on breast cancer are generated annually; yet little information has provided any hope for the prevention or cure of this dread disease. Are all these great scientific minds barking up the wrong tree?

Breast cancer incidence is higher now than ever before in history. This disease is now spreading worldwide, with no end in sight. And despite the discovery of certain risk factors for the disease, the research community admits it is just as much in the dark regarding a cause as it was fifty years ago. Many researchers, such as breast cancer epidemiologists Dr. Jennifer Kelsey and Dr. Marilie Gammon of the Columbia University School of Public Health, are calling for a new approach to the problem, a fresh perspective.

But bras? How can they be the cause of breast cancer?

Few things are what they seem on the surface. By the time you finish this book, we hope to have changed the way you look at the use of bras and at other lifestyle choices. This book is based on hard evidence that comes from medical research performed by others in the breast cancer field. It also comes from what we have termed the Bra and Breast Cancer Study, which we conducted to discover the attitudes, values, and behaviors of American women regarding their breasts and bras. As you will see, the way in which women feel and act toward their breasts and bras has a great deal to do with their development of breast cancer.

Of course, at the beginning of any good study there must be a theory. We arrived at our theory—that breast cancer may be triggered by the wearing of bras—by connecting previously disconnected facts. The field of cancer research is so overloaded with details and information that connecting the pieces seemed impossible at first. But, as you shall see, all the pieces have been connected, and the theory has obvious merit. When we tested it, our findings were astounding. The connection between bras and breast cancer proved greater than our original expectations. And the implications of our research go far beyond breast cancer.

Perhaps the greatest challenge facing any researcher is the need to keep an open mind. We cannot hope to unravel the mysteries of our time when confronted with the biases of our time. Indeed, mysteries exist because we have been taught ways of seeing the world that are necessarily limited by our cultural perspective. It is our own ignorance and lack of vision that create mysteries—and epidemics like breast cancer.

To put this in perspective, we will use an example from medical history. During the eighteenth century and part of the nineteenth, countless women and their newborn children died from childbed fever throughout parts of Europe. This epidemic, which claimed the lives of nearly 50 percent of women who delivered their babies in certain hospitals, was a mystery to the great medical minds of the time. In attempts to explain the cause of these deaths, theories multiplied for over a century, many reflecting deep, complex thought and elaborate medical reasoning. However, the solution, as history has shown, was simple, not complex: Physicians were not washing their hands between patients or after handling dead, diseased bodies. As unwitting transmitters, doctors spread disease throughout the maternity wards of the newest hospitals of the time.

Like most other people of that era, physicians were ignorant of the connection between cleanliness and health. It would seem that even the experts of the day are often limited by the biases of their culture. Simple solutions sometimes underlie seemingly complex problems and are usually related to the implicit habits and customs of the time. The challenge of any era in addressing an illness that plagues society is to examine the problem from an objective perspective. But impartiality is as elusive as truth itself.

We are all subjects—and victims—of our time and our perspective in history. Truth, or our perception of it, is a function of our limited, culture-bound understanding and is often as fluid as a change in custom. The problems this poses for medical research are, as you shall see, ongoing but occasionally surmountable. The best we can hope to do is rise above our culture as much as possible to see our biases, challenge them, and willingly allow our view of the world to shatter as these biases knuckle under the blows of scrutiny.

What is it about the lifestyles or cultures of certain nations today that makes breast cancer a major disease for their women? As we attempt to answer this question, we will be challenging the reader to look at the assumptions and basic behaviors that mold and define everyday life for most Americans and other citizens of developed countries. As the pillars of culture are shaken, there may be a tendency to reject the question as irrelevant or too simple. This is to be expected. Who wants to see the very fabric of his or her culture subjected to such a degree of examination? Yet we must all get past this denial if there is to be any meaningful advance made in the understanding of culture-caused, or culturogenic, disease. Like a skilled surgeon, we must dissect those aspects of culture that work against our health and can shed light on this mystery of breast cancer.

You will learn that the cultural assumption we must question pertains to fashion—specifically, to the idea that wearing bras has no effect on health. Bras are so accepted by modern Western societies that questioning their impact on the health of breast tissue sounds ludicrous. But, as will be evident, this question makes good sense medically and is borne out by the results of a study we conducted on women in the United States and by other studies that have followed up on our research.

We have done our best to make the contents of this book understandable to everyone interested in the topic. We have avoided medical jargon as much as possible so that the reader need not have a medical education to

understand the information presented. All that is required is an open mind and a willingness to examine the evidence.

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ONE

Looking for the Enemy

SOMA AND I UNEXPECTEDLY ENTERED THE FIELD OF BREAST CANCER research the day Soma discovered a lump in her breast. Even worse, she was two months pregnant. At the time, we were engaged in fieldwork on one of the Fiji Islands, studying the effect of the introduction of Western medicine, including the use of pharmaceutical drugs, on the health and lifestyles of these people. We had chosen Fiji largely because villages on different islands had varying degrees of exposure to Western medicine and drugs, allowing for a comparison. Also, most Fijians speak English, making interviews of villagers much easier.

This type of research had been a dream of mine ever since my college days. I had always understood that the way people live affects their health. (According to the World Health Organization and the US Centers for Disease Control, 60 to 70 percent of people worldwide die from preventable chronic diseases that are linked to lifestyle.) Healthful living habits, a clean environment, nourishing food, a positive attitude, and a good constitution all seemed essential for good health. It was my goal to examine disease as it relates to all of these factors.

This approach to understanding disease essentially asks the what, where, and who of what it means to be human. *What are people?* addresses the biological issues tackled by biomedical research and medicine. *Where are people?* considers the importance of studying the environment, which defines the external conditions people live in, including the quality of their food, air, and water. *Who are people?* defines behaviors, attitudes, and values—in short, lifestyles. The way people live will largely determine whether they get their biological needs met in their given environment.

Hopefully, we could discover the cause of a disease by examining the environment, human biology, and culture. After all, you really cannot understand people or their diseases without understanding where people live, how they are built and function biologically, and how they live. Viewing anything less than this full picture of people and their diseases would be seeing only part of what it means to be human and would provide only a partial solution to the problem of disease.

THE PROBLEM OF SPECIALIZATION

Unfortunately, we live at a time when specialization has fragmented our understanding of ourselves and the world in which we live. Both the educational system in the United States and most professions promote specialization. In college, you have to pick a “major” field of study. In graduate school, you are expected to learn how to become an expert in your specialized field. And in practice, professionals must protect their turf from other alleged experts. All this translates into a system in which virtually everyone is a specialist. Hard lines are drawn between professions. You are either an anthropologist or a medical doctor or a biochemist or a philosopher. It is considered unprofessional to step out of one’s field of expertise and journey into areas within another profession’s scope.

The benefit of specialization, of course, is that specialists focus on a small area and thus become extremely familiar with their field of study. You would expect a specialist to be a master of every known facet of his field, from obscure facts to hands-on experience. People suffering from a specific health problem rely on this when they go to a physician specialist, as when cancer patients seek the help of an oncologist.

In medicine, however, as in other professions, the benefits of becoming highly focused and specialized are diminished by the inability to see the broader picture. As a specialist becomes an expert on his own particular tree, so to speak, his view of the forest can be lost. Cancer is one of those forests.

Many specialists apply themselves to the field of cancer. Biochemists study the molecular processes that are involved in the transformation of a normal cell into a cancerous one. Geneticists examine the DNA code that may lead cancer cells to divide without limit. Oncologists specialize in the treatment of cancers using drugs, radiation, and surgery. There are specialists for each type of cancer, and as the cancer field grows, each

specialist gets progressively adapted to his own research or treatment niche, and his focus gets narrower and narrower.

It has always seemed to us that the larger the perspective, the greater will be the truth that is discovered. If your goal is to understand how the forest works, then studying one tree in immense detail, including its microscopic structure, genetic makeup, and so forth, will obviously tell you something—but clearly not enough to understand the forest. You must also study the trees in relation to one another, to other plant and animal life, and to the sun, wind, rain, and soil, to name a few factors. Studying the details of each of these factors in isolation from the other factors will not give you the complete picture of the forest. The whole is greater than the sum of the parts. As we study each part, we must not remove it from the context of the whole. It is only by studying a complete system as a whole that we can understand how it operates and see its parts in the proper perspective. But there has been a progressive loss of the big picture through specialization—and our educational system reflects this, since the professors are themselves specialists in their respective fields.

Yet it was the big picture that interested us most, which is why we were attracted to medical anthropology—one of the few specialties that provides a broad view of the human condition by bringing together various scientific disciplines. As a medical anthropologist, I rely on the fields of biochemistry, medicine, and anthropology to study human disease. Anthropology is the study of people and cultures, addressing the complex web of social systems, beliefs, practices, ideologies, and behaviors that define who people are. It considers economic realities, political structures within society, power relationships between different groups within society and between the sexes, customs, values, attitudes, and everything else that makes us human.

Prior to my entering the field of anthropology, I was a biochemist. Biochemistry examines the miniature world inside cells. To the biochemist, the cell is an amazing machine, manufacturing and processing fats, carbohydrates, proteins, nucleic acids, enzymes, and other biomolecules. The application of biochemistry to human health has led to a deep appreciation of the complexities of cellular processes. Understanding people from this subcellular perspective is like looking at people from the inside out. Anthropology, on the other hand, looks at people from the outside in. Can these two fields be combined into one scientific pursuit?

A BRIDGE LINKING SPECIALTIES

Medicine is a bridge between biochemistry and anthropology and forms a pillar of the field of medical anthropology. Modern medicine is rooted in biochemistry and studies the larger systems that employ biochemical reactions, but it examines the body as a whole and deals with whole people. I attended medical school to expand my understanding of the human body. People are more than a product of their internal chemical reactions.

Medical anthropologists examine cultural factors that influence access to health care, the relationship between the health care provider and patient as a cultural phenomenon, and the ways in which different cultures deal with certain health crises. The field of medical anthropology is relatively young. The term itself first came into use in the 1950s, although medical anthropology has been practiced for over one hundred years. For example, renowned anthropologist Margaret Mead's famous *Coming of Age in Samoa*, which examines how young female Samoans experienced the stages of development, was published in 1928. Mead wanted to know whether the uncomfortable emotional and physical signs that accompany this life event for women in the United States were also experienced by Samoan women.

One of my first projects as a medical anthropologist was an exploration of the relationship between physicians and patients with regard to prescription drugs. From my medical school and biochemistry training, I was well aware of the power of drugs and their ability to create unwanted side effects. As a medical anthropologist, I was concerned about the power structure of the physician-patient relationship and the effect it has on the quality of information shared by both parties.

This is when I began to work with Soma professionally. Her training and experience in environmental studies and planning made clear to her the effect of chemical toxins on human health. Of special interest to Soma, who also has a background in anthropology and behavioral science, are the cultural factors that lead people to accept toxic conditions in their home and work environments. A licensed optician, Soma participated in patient care and observed over the years that people taking certain medications had poorer eyesight than would be predicted by their health condition alone. Could this poor eyesight be due to the medication itself, she wondered, since visual disturbances are frequently reported as a side effect of certain drugs? Discussing this possibility with patients, she discovered that few, if any, were told by the prescribing physician or pharmacist of this possible

drug reaction. Naturally, when I told her of my planned study on drug side effects and doctor-patient communication, she was quite interested in participating.

In the course of interviewing patients and doctors, we discovered that patients were indeed not getting necessary information from doctors about drug side effects, leading to a health crisis we termed *prescription side effect syndrome*. We brought this problem to public attention through seminars and radio shows across the country, as well as through a toll-free medication side effects hotline.

As anthropologists we were, of course, interested in seeing whether this pharmaceutical problem existed in other cultures as well, and to what extent. This is what prompted us to visit Fiji as one of our first cross-cultural research projects.

But it is hard to work on someone else's problems when you suddenly have your own. Soma's discovery of a lump in her breast while in Fiji was a bombshell in our lives. We turned all our attention to her and committed ourselves to approaching the problem reasonably. I am speaking in the plural because breast cancer strikes a woman's family and all her loved ones as well as herself. Compounding the problem was the fact that Soma was forty-one and pregnant. This might be our only chance to have a child together. How would this affect the baby?

We discussed how we would handle the problem. We agreed to demand certain things of her health care and to consider all options accordingly. A key demand was that the risks of health care not exceed the benefits. With this in mind, I opened my medical books, and we read everything we could find about breast cancer. We searched medical libraries for important articles. And we discovered that nobody knows what causes breast cancer. Some risk factors have been identified, but a cause has not.

Knowing what causes a disease is central—and critical—to both preventing and curing it. If the cause of a problem is unknown, all you can do is treat the symptoms and hope they do not reappear, but you cannot make certain that the treatment is not making things worse. In other words, you may treat the symptom, but that treatment may cause further problems.

Naturally, it's important to treat symptoms that are immediately life threatening. We may not know the cause of breast cancer, but avoiding treatment because of this lack of knowledge may lead to death. On the other

hand, how do you select among treatment alternatives without knowing the cause of the problem?

If the treatments were free of hazards, this would not be critical. Some health practitioners, for example, suggest that vitamin C can stave off a cold when taken at the first sign of a sniffle. Popping a vitamin C pill cannot hurt, even if the sniffle turns out to be an allergy, not a cold. It's better to be safe than sorry if the treatment will not hurt you. But is this the nature of cancer therapy?

The primary treatments for breast cancer are chemotherapy, radiation therapy, and surgery. But chemotherapeutic agents are toxic chemicals, and many can themselves cause cancer. They often bring additional misery and debility to people already damaged by cancer. For Soma, who was pregnant, this type of treatment was out of the question. Radiation therapy, a known cause of cancer itself and a highly debilitating procedure, was also unacceptable. And while surgery can remove affected breast tissue and lymph nodes, the potential side effect of a swollen arm and a changed body and personal appearance were not a comfortable alternative either. And even with new surgical techniques that promise to be less damaging to the body, the thought of losing a breast is a nightmare for any woman.

When we realized that these treatments are offered without any knowledge of the cause of the breast cancer, we decided to search for other alternatives.

SEARCHING FOR A CURE

We turned to alternative medicine to find some possible solutions. Today, numerous cancer treatments have been suggested. Claims have been made for vitamin A, beta-carotene, vitamin C, shark cartilage, laetrile, garlic, clay, various herbs and medicinal plants such as pau d'arco, chaparral, clover, bur-dock, and other products. Some practitioners of repute claim great results with these alternative therapies. Others sound absurd in their claims. All engage in a political battle with the medical establishment over validity and the freedom of patients to choose these alternatives.

While most of these forms of alternative cancer therapy seem less hazardous than chemotherapy, radiation, and surgery, they are all treatments. A cure is more than a treatment. You can treat a tumor with something that can kill it, but if the initial cause of the tumor is not eliminated, the illness may not be technically eliminated. In fact, many

cancers return following treatment and the apparent removal of all tumor masses—which means the patient was not *cured* of cancer. Even if the treatment strengthens the immune system, as some alternative therapies claim to do, the initial cause of the weakened immune system must still be addressed.

We researched breast cancer, trying to find the real enemy that had caused Soma's breast tumor. If we could find the true cause of this disease, we could better assess treatment choices—and we could prevent it from recurring. We discovered that medical research has been looking for the enemy in the wrong places. In fact, the symptoms have been mistaken for the problem.

When you examine the basic viewpoint of medicine, it is clear that the primary focus is on the biochemistry of the body. Yes, there are researchers, such as radiologists, surgeons, and anatomists, who focus on the anatomical features of disease. And others, such as pathologists, examine the shape of diseased cells and organs. But for the majority of practitioners of modern medicine, diseases and therapies are defined in terms of subcellular molecules and functions. Proteins, fats, carbohydrates, vitamins, minerals, enzymes, nucleic acids, and other biomolecules are considered the essential units of the human body.

According to these practitioners and researchers, disease is best addressed by examining the interaction between these biomolecules. Geneticists, biochemists, pharmacologists, microbiologists, physiologists, and health care providers who prescribes drugs, vitamins, minerals, or other chemical substances are focusing on this microscopic world within our cells. Cancer is approached in these biochemical terms as well. Hence, the bulk of biomedical cancer research studies hormones, DNA, mechanisms of cellular division, and other microscopic molecules and functions.

Since the focus of such research is on the inside of cells, little concern has been paid to the types of cells studied. As a result, much of this research does not even take place on people. Tissue culture and animal studies constitute the vast majority of cancer research. Are there problems in studying tissue cultures and animals to discover the cause of human cancer?

THE HUMAN ENVIRONMENT

Scientists refer to tissue culture research as *in vitro*, meaning “in glass” (in other words, in a specialized glass dish used to culture cells, also known as

a petri dish), as opposed to *in vivo*, meaning “in a living body.” The limitation of *in vitro* research, as recognized by scientists, is that the results are of unknown relevance to living, whole organisms in which a complex interaction of various organs and systems occurs. Sometimes cells that are cultured take on different characteristics and behaviors in a petri dish than they would have assumed in a human body. This means that the environment in which a cell lives is important in determining how it functions. A controlled environment inside a glass or plastic lab dish is different from that inside a living body.

In short, we come back to the fact that the whole is greater than the sum of its parts. You cannot understand the part, a cell, in isolation from the whole, the body in which it normally lives. And you cannot understand the body by examining a culture of one of its cells. Yet this is exactly what *in vitro* research tries to do. You can see how limited, if not outright misleading, such an approach can be.

In vivo studies have the advantage of examining whole organisms. The liver, kidneys, hormones, nerves, and other bodily systems interact in living organisms in ways that cannot be simulated *in vitro*. However, it is important to know which species of organism you are studying and which one you want to learn about. They should be the same—but usually are not. Cancer research that is intended to find a cure for human cancers is frequently performed on rats, dogs, mice, or other nonhuman animals. Naturally, all species of animals are different, as are their forms of cancer. Breast cancer in a twelve-month-old mouse that has been genetically designed to develop cancer (which is the type of animal used in some breast cancer research) is not the same as breast cancer in a sixty-year-old woman. Even animal researchers admit that results from such cross-species studies are of unknown relevance to humans.

Given the obvious pitfalls of tissue culture and animal studies, why are they the mainstay of human cancer research? Well, because the scientists conducting them are specialists in regard to the interior of cells. They are biochemistry focused. Connections between the cells and the whole of the body are lost when the mind is focused on the inside of cells, just as one loses sight of the forest when focusing on the trees. And sometimes, as with animal studies, the trees studied may not even be in the right forest!

Since their battlefield for fighting cancer is the cell, researchers try to attack cancer by acting on the internal functions and contents of the cell.

This is why chemotherapeutic drugs are used. They are designed to attack cells, hopefully those that are cancerous more than those that are healthy. But when you look only at cells, and not at their connections to one another within the whole body, you may kill the cancer but lose the patient.

IDENTIFYING THE ENEMY

Why do women get cancer of the breast? What is the real enemy? Though certain breast cancer risk factors have been identified, their connection to the disease is not clear. Some of the mechanisms through which cells become cancerous have been discovered. Toxicity and some genetic factors have been linked with the development of cancer. And certain behaviors have been associated with breast cancer. But the root cause of breast cancer remains unknown. And it deserves repeating that you cannot cure breast cancer without addressing its cause. You can treat it each time a tumor appears. But you cannot cure it.

Just as we personally turned to alternative medicine in our search for the optimal solution, so are more and more people today looking for alternatives to so-called orthodox cancer therapy. To the practitioner of holistic, or alternative, medicine, the battlefield for fighting cancer is the entire human body. Such holistic practitioners include homeopaths, naturopaths, chiropractors, acupuncturists, massage therapists, and herbalists. In this medical camp, cancer is not defined as a cellular phenomenon whereby cells divide without limit, taking over the body and killing the host. Instead, cancer is seen as a product of a weakened immune system and an overburden of toxins. To these health practitioners, then, cancer is a different enemy than it is to orthodox practitioners. Instead of simply destroying the tumor, the goal is to enhance the body's own immune system to rid itself of the tumor. As a result, nutrition has become a main focus of holistic medical advice, since it is through proper nourishment of the body that optimal health and immune function can be achieved.

Along with nutrition, holistic health advisors recognize the role of stress in health and emphasize the importance of exercise, relaxation, and other lifestyle practices that are associated with good health. Here we see an appreciation of lifestyle as the cause of disease. However, these lifestyle practices are usually regarded as isolated behaviors, disconnected from the culture that generates and sustains them. Examining lifestyle factors in isolation from their cultural context is as limited as studying biological

symptoms of disease, such as a fever, without appreciating how the entire body works. For example, when a heart disease patient is advised to do more exercise, an examination should be made of the patient's overall lifestyle to determine why he has found it difficult to fit this activity into his day. Increased exercise may not be possible for the patient, given his present lifestyle.

Why do people choose certain lifestyles? How and why can certain dangerous lifestyles, such as cigarette smoking, continue despite the known health hazards? How are lifestyles developed and sustained? How do people learn their lifestyles? How can lifestyles be altered, given their connection to other cultural factors? Are people aware of their lifestyles? These questions are outside the field of holistic medicine, despite its realization that lifestyles are important.

The distinction, then, is that whereas orthodox medicine regards cancer itself as the enemy to be attacked, holistic medicine regards damaging health practices—poor diet, high-stress lifestyles, lack of exercise, and environmental hazards like toxic exposure—as the enemy. Of course, holistic medicine believes that the tumor needs to be attacked, too, but the attack is likely to be launched through the patient's natural immune system rather than being a direct blitz against the tumor.

Despite the different approaches of orthodox and holistic medicine, neither is certain of the cause of breast cancer. And like its alternative counterpart, orthodox medicine is beginning to regard people as more than a collection of cell functions. Greater attention is being paid by many orthodox health care providers to diet, stress, and other lifestyle factors. It is becoming clearer to the open-minded physician that there is more to breast cancer than biochemical processes on a cellular level—that breast cancer is a symptom of a deeper problem. And without identifying this problem, treating the tumor is merely treating the symptom, not the real disease.

Clearly, the ultimate cause of cancer cannot be found solely within the cell and its biochemistry. Cells do not live in a vacuum—except, perhaps, in some laboratory dish. Real cells are parts of real people. And real people live in an environment, with all sorts of challenges and benefits. It is impossible to truly appreciate the nature of human beings, biologically or otherwise, without understanding how people live—without comprehending their lifestyles and their cultures. How people live defines what they do to

themselves and how they interact with their environment. It makes people what they are.

STUDYING THE ENEMY

Some medical research does examine people and how they live. Epidemiology, which studies epidemics and epidemic diseases, explores how an infectious disease starts in a population, how a disease is distributed, and how it is possibly controlled. While breast cancer is not an infectious disease, it is an epidemic. And much epidemiological research has tried to find clues to what causes the disease. Research of this type surveys a population for specific factors such as diet, age at first menstrual period (menarche), age at menopause, and so on, and tries to find a connection with breast cancer. Through this research, several risk factors have been discovered that are associated with the incidence of breast cancer, although none explains why women get breast cancer. These factors have predictive but not explanatory value.

Although epidemiology studies populations of people, it is a branch of medicine, not anthropology. The variables studied by epidemiology are those associated with medical measurements: height, weight, age of first pregnancy, diet, number of relatives with the same disease, and other components of that ilk. This approach has the hazard of treating all cultures as equivalent, with their citizens regarded as statistical entities. Anthropology, on the other hand, allows for a greater appreciation of the differences between people of various cultures. Nevertheless, epidemiologists have arrived at a most important conclusion: Breast cancer is predominantly a lifestyle-caused disease.

LIFE OVER LIFESTYLE

The word *lifestyle* can be defined as a way of life that results from the values and attitudes of either an individual or a group. The key words here are *attitudes* and *values*. These are not biochemical words. They are not even alternative medicine words. They are not discussed by any of the health care specialists. Yet they determine how we live and how we die.

It is to fill this void in the breast cancer research field that we have employed ourselves as medical anthropologists. Fundamental to our approach is a view of people as cultural entities. Culture determines how we

behave. It defines our attitudes and values. We each have a biological makeup and an environment in which we live. How we manifest our biology in that environment—what lifestyle we choose—is determined by our culture.

As we apply medical anthropology to the examination of lifestyle-caused disease, we extend the field in a new direction. Typically, medical anthropology is the examination of the cultural aspects of medical issues. Instead, we are examining the medical aspects of cultural issues. Some medical anthropologists focus on how a particular culture manages certain health problems. We want to know how certain cultural practices lead to particular health problems.

To describe this extension of medical anthropology into the study of lifestyle-caused diseases, we suggest using the term *applied medical anthropology*, as it highlights the distinction between applied and basic sciences. As previously noted, basic science collects pure data with no regard for the ultimate application of this information to any specific problem. This type of research opens doors of understanding without any preconceived notion of what might be found behind those doors. Typical medical anthropology is a basic science, as it tries to understand various relationships between culture and health, with no regard for changing a specific cultural practice or solving a given health problem. Of course, there are some practical problems regarding health care delivery that rely on the expertise of medical anthropologists for insights and solutions. However, medical anthropologists have not, for the most part, applied themselves to the task of identifying specific lifestyles associated with specific diseases. Such a research agenda would be considered applied research because of its application to a particular illness.

Yet the practice of identifying health-threatening lifestyles and the specific problems they create is what medical research needs, particularly with a lifestyle-caused disease such as breast cancer. That is why we have extended medical anthropology into an applied science.

In a sense, orthodox medicine has focused on the “what” of breast cancer, defining it on a cellular, biochemical, and physiological level. Holistic medicine broadens that focus to the “where” of breast cancer, adding an appreciation for environmental factors such as food quality and toxins. What we have added is a “how” of breast cancer: How do women treat their breasts in their daily lives, given their environmental and

biological differences, and how might the answer to this question point to the development of breast cancer?

This is the enemy we set out to find. The enemy is not the cell or the diet or a weakened immune system. All these are symptoms of a deeper problem. The real enemy is ourselves. It is the way we live. Three out of four people are dying from their way of life—a way of life that is the result of their attitudes and values. They have learned these attitudes and values from their culture. Cultures define who we are.

This is where the cause of breast cancer lies. And this is where our search for a cure for breast cancer really begins.

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Two

Making the Connection

SOMA AND I RETURNED TO THE UNITED STATES WITHIN A WEEK OF DISCOVERING her breast lump. Coming from almost the other side of the planet, we arrived home both emotionally and physically exhausted. When Soma removed her clothes to take a much-needed shower, we both looked at her breast—the one that had come between us and happiness. How different it is to see a breast as your enemy! How alienating to see part of your body become a threat to your own life!

I noticed that Soma's breasts were outlined by dark red lines, marking the areas around her breasts and over her shoulders. The lines had been left by her bra. Before I could say anything, Soma began to rub her reddened skin. She did this unconsciously, and I realized that she had always done this after removing her bra. I felt her affected skin. There were distinct grooves. I suddenly recalled a conversation that had taken place between Soma and one of the Fijian women we had met during our stay on the island. Soma had been washing a couple of the bras she had brought along on the trip. Two of them were hanging on a line to dry when a local woman ambled over and asked what the bras were. We were in a remote country where Western fashions were rarely seen, so her question was sincere.

"It's called a brassiere," Soma explained.

"What is it for?" the woman asked.

Soma had to think before responding. How would you respond to such a question? Would you say, "It holds breasts up," to a woman who had no idea that breast shape was even an issue? Soma had never before thought of her bra as anything other than normal, appropriate clothing. The question of why women wear bras was something we later had to research for

ourselves. At this time, however, Soma answered, “I never thought about it before. I guess it’s just the custom.”

The woman had been perplexed. Taking the bra and feeling it, she asked, “Doesn’t it feel tight?”

“Sometimes,” Soma answered. “But I suppose you get used to it.”

Soma had shared this conversation with me afterward. Now it echoed in my mind as something important. I flashed on something I had learned in animal science, back in college. I was in a barn with a veterinarian who had demonstrated how a young bull can be castrated by tying off the testicles. You need simply wrap a band around the base of the scrotum between the testicles and the body. The band constricts the blood flow and starves the constricted tissue, which eventually shrivels up and withers away.

I started to construct a theory from these puzzle pieces. Red, grooved marks from a bra indicate constriction. Could the bra somehow be constricting breast tissue, reducing circulation and causing degeneration? Could this somehow be a trigger for cancer? I shared my ideas with Soma. She thought for a moment, and then her face lit with excitement.

“I have a friend who got breast cancer at the age of thirty-six,” she said. “She’s a little overweight, and I remember seeing indentations that her bra made even through her clothing. She’s always been really uncomfortable with her breasts, and likes to keep them snug inside a bra. She confided in me that she slept with her bra on, wearing it virtually twenty-four hours a day!”

Could this possibly be a lead? Could the wearing of bras have something to do with breast cancer?

VICTIMS OF FASHION

Clothing is something that none of us are born with, yet all of us learn to consider an extension of ourselves. This extension has both substantive psychological and physical implications. Clothing imparts a distinctive appearance to its wearer, indicating gender, social status, occupation, fashion consciousness, and sexuality. However, clothing does more than transform appearance. A snug-fitting garment becomes a type of shell, forcing the soft tissue inside to conform to certain shapes and dimensions.

But a human being is not a snail, which can live inside its shell, adjusting its anatomy to the contours of its covering. When we change our physical

features with clothing, we change more than our appearance. We change the way our bodies work, resulting in many health problems.

For example, shoes are notorious for causing a host of health problems. Feet were not designed for enclosure in an airless, snug, stiff case. For one thing, this lack of air circulation and accumulation of perspiration leads to fungal infections, a common problem. Further, the foot is forced to conform to the shape of the shoe, which it sometimes does not wish to do, leading to corns, distorted feet, and poor circulation. Women who wear shoes with narrow toes and high heels throw their entire bodies off balance, resulting in back problems and hip troubles—not to mention stunted hamstrings, bunions, hammertoes, and potential falls.

Underwear is another garment with known health risks. In men, fertility can be affected. The use of briefs has been implicated in male infertility because this type of underwear holds the testicles close to the body, not allowing them to cool properly. Testicles do not like to be overheated. Sperm need to be kept below body temperature to stay fully functional. In women, panties with nylon, rather than cotton, crotches have been associated with yeast infections. Nylon does not absorb perspiration and other secretions and does not circulate air as well as cotton, creating a warm, moist environment in which yeast can thrive.

Going back in time, corsets, popular from the seventeenth century until the early twentieth century, squeezed women to the point of serious internal damage and deformity. The corset did to the female body what tight shoes do to the feet. But the body cavity is filled with soft organs, not just muscles, tendons, and bone, as are feet. Consequently, the pressure on the body caused circulatory problems, breathing difficulty, and lower back distortion, as well as other health problems.

In 1986, the medical journal *Annals of the Rheumatic Diseases* presented M. De Silva's article "The Costoclavicular Syndrome: A 'New Cause.'" Researchers discovered that obese, heavy-breasted, middle-aged or elderly women were experiencing neck, shoulder, and arm pain as a direct result of compression on their shoulders by narrow brassiere straps. Some women developed permanent grooves in their shoulders from bra straps, with the compression leading to impairment of the nerves going down the arms to the hands. These women also developed rounded shoulders due to the strain from their bra straps. This same syndrome was first described in soldiers

with knapsacks who developed pain, numbness, and fatigability of the arms as they stood at attention.

In another study performed in Germany, shoulder straps of bras were shown to produce lesions on the shoulders of obese women with large breasts. Yet another study identified the bra straps worn by large-breasted women as the cause of tingling and nerve trouble in the little fingers. Written by G. Letterman and M. Schurter, the article about this study, which appeared in the *Annals of Plastic Surgery* in 1980, pointed out that large-breasted women resort to tight bras for support, leading to the above-mentioned problems. In fact, tight bras are known to do more than produce shoulder lesions and nerve problems. According to a 1980 article by N. K. Kochenour printed in *Clinical Obstetrics and Gynecology*, tight bras have been shown to interfere with the new mother's ability to produce milk.

In 2000, a study titled "Pectoral Girdle Myalgia in Women: A 5-Year Study in a Clinical Setting" was published in *The Clinical Journal of Pain*. It examined shoulder pain treatment in women with large breasts and discovered that the pain was due to bra wearing. The researcher had the subjects avoid wearing their bras for two weeks to see if taking the weight of their breasts off their shoulders would alleviate their pain. The long-term outcome was the reduction or absence of muscle pain and tenderness. Of the patients in the study, 79 percent of them decided to stop wearing bras completely, as doing so for two weeks had eliminated their shoulder pain.

There is clearly a history of clothing—specifically tight or intimately fitting clothing—negatively affecting health. Could there be a clothing connection with breast cancer? Could the wearing of a bra be linked to this dreadful disease?

Bras have been associated with cancer in the past. In the early twentieth century, women began to wear brassieres to compress and minimize their breasts, trying to conform to the fashionable "boyish" look of the flapper era. Physicians at the time saw this as a possible contributing factor to breast cancer, and doctors in the 1940s cheered the creation of uplifting bras as a way to improve breast circulation relative to the compressed flapper look. In 1942, a patent for a new bra design reflected the then-current concern about bras, explaining, "Another object is to permit easy breathing and to avoid cutting or chafing, which might give rise to cancer or other serious trouble." A 1950 patent for a brassiere notes, "Even in the proper breast size, most brassieres envelop or bind the breast in such a fashion that

normal circulation and freedom of movement is constricted. Many cases of breast cancer have been attributed to such breast constriction as caused by improperly fitted brassieres.”

Meanwhile, a study published in a 1939 issue of the *Canadian Medical Association Journal*, titled “Carcinoma of the Breast in Ukrainian Women,” found,

It may be of value to note that so far as dress is concerned the Ukrainian women seldom make use of corsets, brassieres or any type of breast support. The breast enjoys the maximum of exposure as a result of frequent nursing and loose clothing. Further, these women do a great deal of out-door work in the garden, fields and farmyard. Dr. William J. Mayo, one of the founders of the Mayo Clinic, has called attention on several occasions to the fact that cancer of the breast is comparatively rare among women who leave the breast exposed or wear very little in the way of restricting clothing. Insofar as can be ascertained by inquiry and observation there is nothing in the habits of these women, apart from lactation and dress, which might be of any significance.

Indeed, Dr. Mayo, in a 1931 *Annals of Surgery* article called “Susceptibility to Cancer,” reasoned, “Cancer of the breast occurs largely among civilized women. In those countries where breasts are allowed to be exposed, that is, are not compressed or irritated by clothing, it is rare.”

In a 1978 issue of *The Lancet*, authors of an article posited bras as a cause of breast cancer, basing their idea on a study that showed women who wore heavy bra material had hotter breasts, while women who went braless had cooler breasts. Breast heat, it suggested, is associated with disease and cancer.

There was also a study that came out in 1991, done by Harvard researchers and published in the *European Journal of Cancer*, titled, “Breast Size, Handedness and Breast Cancer Risk.” This study found that premenopausal women who did not wear bras had half the incidence of breast cancer of those who wore them. Put differently, wearing a bra increased breast cancer risk by 100 percent.

Despite these results, bras have come to be considered a normal part of female fashion in the Western world. In the West, a young woman’s coming

of age is associated with her first bra. It is a ritual of our time. Given this ritualistic passage in a woman's life, it is no wonder that bras are not viewed as an unnatural cultural phenomenon that might have a negative impact on a woman's breasts. Human breasts have developed over hundreds of thousands, if not millions, of years without constraint. It has been biologically impossible to adapt to bras in the short time since their invention. Women's breasts were clearly not designed by nature to be shaped the way bras try to shape them. If breasts were so designed, women would not need bras to achieve that shape.

A PERSONAL DECISION

Before long Soma stopped wearing her bra, just to be on the safe side. At first she felt strange and self-conscious without one, but within a couple of weeks she began to feel more comfortable than ever—despite the fact that one of her breasts had a lump. Removing her bra allowed Soma to experience her breasts in a way that bras did not permit. Without a bra artificially constraining them, her breasts felt freer and more natural. They felt the way your feet feel when you take off tight shoes.

Despite our initial terror at the discovery of the lump in Soma's breast and our determination to get it diagnosed quickly, we now opted to postpone the diagnosis. The fear of breast cancer has been so emphasized by the media and the medical community that our first reaction to the lump had been the panic that brought us back from Fiji. But we discovered through our research that most breast lumps are not cancerous but are, instead, benign cysts. Many go away by themselves. Of course, the lump could be a cancerous tumor, but we had also learned that finding out for sure—getting a diagnosis—is not without risk, particularly for a pregnant woman.

As explained by Ralph Moss in *The Cancer Industry*, in a biopsy, which is the standard means of obtaining a diagnosis, a sample of the lump is removed for microscopic examination to determine whether the tissue is cancerous or normal. However, as the lump is sampled via needle aspiration, which sucks up the cells in the lump, there can be a spread of the cells to the surrounding breast tissue. If these lump cells are cancerous, the cancer may no longer be limited to the lump but may be disseminated throughout the breast tissue and lymph nodes. In addition to possibly spreading the cancer, a biopsy can cause tissue trauma, pain, damage to

blood vessels, infection, and side effects from the anesthesia—all just for a diagnosis. The next step, of course, is treatment, none of which is safe for a fetus, not to mention the mother.

For us, then, diagnosing the lump was no longer the urgent necessity we had first thought it to be. Instead, finding a cause of the lump seemed essential, since knowledge of the cause could lead to a solution.

We decided to maintain a positive outlook. Chances were the lump was not life threatening. On the other hand, our research had taught us that benign breast lumps may be associated with increased breast cancer incidence. This means that the problem or problems that lead to benign lumps may also lead to cancer.

For example, a 1999 study published in *The Lancet* called “Risk of Breast Cancer in Women with Palpable Breast Cysts: A Prospective Study. Edinburgh Breast Group,” demonstrated that premenopausal women with fibrocystic breast disease had an almost sixfold higher risk of future breast cancer, firmly refuting doctors who had said that fibrocystic breast disease carried no increased risk. In fact, there are now over thirty published medical and scientific research articles that show a connection between fibrocystic breast disease and increased breast cancer risk.

If this theory about bras and breast cancer is correct, then why haven’t we all heard about this? Researchers and bra manufacturers clearly thought about this in the past. Has this been forgotten by modern breast cancer researchers? Was there other research that supported this role of bras in breast cancer?

It is a rule of life that the simplest answers frequently provide the most profound solutions to our problems. We hoped that this applied to our newly developing theory. We pored over the literature on breast cancer, bras, fashion, and every possible related topic. What we began to discover was amazing. Our fledgling research on breast cancer had a clear direction to follow. If we were right, our discovery could prove explosive.

THREE

Dressed to Kill

IF YOU TRIED TO READ EVERYTHING EVER WRITTEN ABOUT BREAST CANCER, you would probably not finish the task in your lifetime. New studies and books come out almost as quickly as you can read them. The public concern over cancer, which is justified by the rising number of new cases diagnosed each year, has created a major research industry.

Breast cancer clearly plagues the hearts, minds, and bodies of women and their families throughout the industrialized world. According to the American Cancer Society, the death rate from this disease has not changed much since the 1930s, although it has declined somewhat since its peak in 1989, possibly due to increased early detection and treatment. So, for almost ninety years, about the same percentage of women with breast cancer have died each year from the disease.

However, the incidence rates, which reflect the number of new cases of the disease each year, have steadily climbed over the course of this century, reaching alarming proportions. This means that more women get breast cancer now than in the past, while about the same percentage of them die from the disease. The increase in incidence is due, in part, to an improvement in the detection of tumors.

According to the most recent data from the Centers for Disease Control and Prevention, 279,731 women in the United States were diagnosed with the disease in 2022, and 42,213 women died of breast cancer in 2023. In fact, breast cancer has the highest incidence of any cancer and is the second leading cause of cancer-related death among women after lung cancer.

OUR RESEARCH MODEL

To perform our analysis of the existing breast cancer literature, we organized the information according to our research model. A research model, which is a method and philosophy for conducting the research, defines what is important to study and what can be ignored. Before you can carry out any research, you need some idea of what you are studying and how you should go about studying it. Let us briefly explain our model, which has to do with the way we perceive human beings and their diseases.

As discussed earlier, three aspects of being a human must be studied to understand the cause of disease: our biological nature, our environment, and our culture. We are biological entities who conform to and define some environment from which we obtain our resources, and we use those resources and behave in that environment according to the biases, attitudes, and standards of a particular culture. The three variables that constitute who we are as people are the what, where, and who of being a human. If we change any of these variables, we will change the others as well, although to different extents.

If someone is put into a different environment, the conditions of life that the individual must meet will also change. And an altered environment will demand new cultural information to manage the changes in life circumstances. In other words, if a person who is accustomed to life in the desert decides to relocate to the tropics, say, he will have to biologically adapt to the humidity; to changes in food and water supply; to changes in bacterial, viral, and other disease-carrying populations; and to mosquitoes and other insect pests. To make this environmental transition, the person must know how to stay dry and keep clean, how to avoid skin problems like fungal and staph infections, what foods can be eaten and in what amounts, how these foods should be prepared, what water supply is potable, and how to avoid mosquitoes and other carriers of disease. These are cultural issues. They are lifestyle factors that must be mastered to survive in the new environment.

Alternatively, if there is a change in cultural attitudes and behaviors, people will act differently. This may alter both the function of these people as biological entities and the resources they may need from their environment. When people move from one country to another, for instance, they typically adopt the lifestyle of their new culture, a process called acculturation. Second-generation immigrants are more acculturated than their parents. As a result, they may begin to develop the diseases prevalent

in their new culture, particularly those diseases associated with lifestyle, such as heart disease. They also treat their environment differently, since their new culture defines what is and is not a resource. The foods they eat, the tools and materials they use, and the way in which they organize the world around them—all of these aspects of everyday life change according to their new cultural perspective.

Finally, altering how a person functions biologically can change how that person lives, as well as the resources that he or she requires from the environment. When a woman develops breast cancer, for example, the way she thinks, feels, and lives is markedly changed. Relationships change, daily activities become altered, and the disease becomes the focus of her life. In addition, as she attempts to regain her health, there will be new demands from her environment, such as a need for a lowered stress level, more vita-mins and other nutrients, more sunshine, cleaner air, and closer proximity to health care materials and personnel.

We took all this into account when creating our research model. What made our approach unique was not our view of people as biological, environmental, or cultural entities; such perspectives have been held by researchers in other fields. What was unique was our integration of these factors—our realization that you cannot understand people by considering any one factor without also considering the others.

In our research, we viewed women with breast cancer as constituting a subculture within society. The purpose of our research was to somehow identify the characteristics that separate these women from women in the society at large who do *not* develop breast cancer. In other words, our goal was to identify those lifestyle features that result in the development of breast cancer.

The Biological Perspective

To begin, we had to first assess the state of the art of breast cancer prevention research to date. On one hand, we tried to avoid making distinctions among the categories of biology, environment, and culture, as such distinctions suggest that these components can be examined in isolation from one another. However, this thinking does represent the academic approach to this health menace. So let us begin with the biological perspective, since this aspect reflects the strength of our modern

medical research and has been explored more than either of the other research orientations.

As you may know, breast cancer research has identified certain biological risk factors that seem associated with the disease. As you read the following discussions of these factors, keep in mind that the difference between risk factors for breast cancer and a cause of breast cancer is that the risk factors do not explain why women get the disease, only that certain factors are associated with women who do develop the disease. Causal explanations have more asked of them. They must tell how something happens. They must provide a mechanism.

Age

Age is a significant breast cancer risk factor. In general, the older a woman becomes, the greater are her chances of developing breast cancer. Specifically, a steep rise in breast cancer incidence occurs between ages thirty and forty, followed by a plateau that occurs between ages forty and fifty-five. This is followed by another steep rise. The incidence of breast cancer in elderly women is more than double that in younger women.

Because nobody has proven a mechanism whereby the aging process leads to breast cancer, age is a risk factor, not a cause. In fact, it is essentially a statistical correlation and may simply reflect the cumulative effect of other factors working over time. The longer you live, the more your body has been assaulted and hampered in its functioning.

Hormones and Breast Cancer

Biology-oriented research has revealed that women who have not had children or have had children late in life; who have had an early first period, or menarche; or who have had a late menopause have a higher risk of developing breast cancer. This information, along with data from animal research, has suggested that hormones may be involved in the development of breast cancer. Since early menarche and late menopause suggest a longer exposure to estrogens and other sex hormones, the search for a specific culprit has included examinations of sex hormones and their precursor molecules, namely, estrone, estradiol, estriol, androstenedione, testosterone, dehydroepiandrosterone, progesterone, sex-hormone-binding globulin, and prolactin. Some research has even looked at thyroid hormones.

Note that the risk factors are age at menarche, childbirth history, and age at menopause. So far, nobody has adequately explained these risk factors. Research into hormones has attempted to find a biochemical mechanism for these risk factors. However, while a tremendous amount of effort has gone into this area of research, the results have been disappointing. Not only has the mechanism by which the hormones cause breast cancer remained obscure, but the identity of the hormones involved is still a mystery. Why the confusion? One problem is that the breast may be exposed to different levels of hormones than can be measured in the serum or urine, which are common fluids for measurement. Breast fluid, for example, may have estrogen levels that are five to forty-five times greater than the levels found in serum.

Other research problems have to do with experimental design and models. Research involving animals has unknown relevance to humans, leading to many false assumptions and dead ends. And studies of cells in tissue culture (test tube research) cannot possibly model the complexity of the human body. Yet animal and tissue culture studies constitute the bulk of research on the link between hormones and breast cancer.

As for estrogen being the culprit, oral contraceptives have shown a mixed effect on breast cancer incidence. Well-designed studies both support and do not support the association between breast cancer and long-term oral contraceptive use in women under forty-five years of age. Studies are also inconclusive regarding breast cancer incidence and estrogen replacement therapy.

The Genetic Factor

Other biology-oriented researchers have examined the genetic nature of breast cancer. It seems that women with first-degree relatives—a mother and/or a sister—who have had breast cancer have a higher risk of developing the disease themselves. However, the extent to which this association may be due to culture is not known. That is, in addition to their common biological factors, women of the same family have some common cultural factors. The relative contribution of these factors in the development of the disease has not been determined. However, according to researchers B. Newman et al., in the article “Inheritance of Human Breast Cancer: Evidence for Autosomal Dominant Transmission in High-Risk Families” published in the *Proceedings of the National Academy of Science*,

approximately 5 percent of all breast cancer cases might be attributed to genetic makeup. Despite recent discoveries of genes that increase cancer incidence, such as the BRCA genes that famously led actress Angelina Jolie to get a prophylactic mastectomy, the fact remains that genetics is a small piece of the breast cancer puzzle.

It is important to realize that there may be more than one cause of breast cancer. A genetic predisposition to developing breast cancer does not explain a mechanism. In other words, no one knows exactly what happens to these women biologically as a result of their genetic predisposition. Further, women without this genetic predisposition may develop breast cancer by a different mechanism. So while this genetic information is interesting at a time when geneticists are busy mapping the entire human genome (genetic makeup), it does not really illuminate the cause of breast cancer.

The Dietary Factor

Biology-oriented researchers have also looked at dietary factors as a possible cause of breast cancer. While a dietary connection was theorized because of population differences in the development of breast cancer (which will be discussed later), the majority of diet research has focused on animal studies. This line of research is thus plagued by the unknown relevance to humans of results in nonhumans, creating conflicting conclusions of different studies, depending on the species or strain of animal chosen and its idiosyncratic response to the research conditions. The results of these studies, combined with some epidemiological studies—studies of the causes, distribution, and control of diseases in populations—have shown a correlation between fat intake and breast cancer. However, researchers may be ignoring some Western dietary realities.

Part of the problem with research into diet is that the *quality* of the food is overlooked. Studies on fats in the diet rarely, if ever, consider the fat in terms of pesticide, herbicide, fungicide, and processing-chemical residues. All that is typically considered is the saturation of the fat and the number of grams consumed. But many toxins, such as pesticides, are fat soluble—they concentrate within the fat of a plant, in the cream portion of milk, and in the fat of an animal. Therefore, the cancer-causing potential of fatty foods may simply be a reflection of their toxin content. Fats themselves, which have been consumed throughout history, may be no problem at all. As research

into toxins as a cause of cancer evolves, perhaps this huge oversight may be corrected. Otherwise, we cannot know whether the problem is the fats or the toxins found in the fats.

Another problem with dietary studies is that they ignore the broader cultural context in which people eat food. In medical research, diet is examined in biochemical terms. It is equated with nutrient consumption. Dietary analysis includes carbohydrates, fats, proteins, vitamins, minerals, and other chemical components of the food consumed. But is this the way to understand how people eat and how their food can affect their health?

Eating is a broad behavior. It includes how and when the food is prepared; when, in what quantities, and with what frequency it is consumed; the stress level of the environment in which the food is eaten; the extent to which the food is chewed or cooked; the combination of ingredients in a meal, since some foods have different effects on the body when consumed with certain other foods; and one's general health, including one's exercise and activity level, since this affects digestion and appetite.

Dietary analyses usually ignore these important features of diet and reduce the entire eating process to the consumption of certain nutrients. Given this limited focus, it is little wonder that dietary research into the cause of breast cancer has proven confusing and contradictory.

In addition, when we eat, we feed more than ourselves, including billions of microorganisms living in our intestines. These bacteria process and ferment the food we eat for their own needs, and this results in their excretion of chemicals that we absorb into our bodies, such as alcohol, acetaldehyde, and other toxic chemicals. Each microorganism species produces specific chemicals when digesting our food, so bacterial species diversity and relative composition in the gut determines the quantity and types of bacterial products we absorb. Naturally, bacterial populations in the intestines change over time and are affected by the foods we eat, our immune system, and the toxins we consume, including antibiotics, which alter bacterial communities. Nutrition studies typically ignore the role of intestinal bacteria and assume that what we eat is what we get, without regard for bacterial impacts. However, you really can't understand human nutrition without understanding this essential role of microorganisms in sharing that nutrition and what that does to the body.

Some promising but inconsistent results have come out of studies on vitamin A, beta-carotene, retinol, serum vitamin C, vitamin E, and

selenium. Individual studies have shown a slight protective effect of one or another of these micronutrients.

Studies on alcohol consumption as a cause of breast cancer have also been inconclusive. The differences observed in some studies may be due to differences between the women who drink and those who do not drink, not to the alcohol itself. Of course, the bacteria in the gut can also produce alcohol when they ferment our food, which reinforces the importance of considering bacterial products when studying nutrition.

Other Biological Factors

Obesity, which is the term used to describe weight 20 percent above the ideal for the individual, has also been shown to be a risk factor for breast cancer in postmenopausal women. How can this be? Again, obesity is a risk factor, not a cause, so the connection is not clear. However, while the previously discussed hormone research has proven inconclusive at this time, many researchers nonetheless consider hormones to be part of the cause of breast cancer. Obesity is rationalized as a risk factor due to the higher conversion of androstenedione to estrogen in fat tissue and to the lower levels of sex-hormone-binding globulin found in obese women as compared with thin women.

However, obesity also may mean greater consumption of toxic food, and some of these toxins can be carcinogenic. Unfortunately, just as nutrition science ignores gut bacterial products, obesity research ignores the quality of food consumed regarding toxic contaminants from herbicides, pesticides, fungicides, and other processing chemicals used in food production, processing, and packaging.

Breastfeeding has traditionally been considered irrelevant as far as the development of breast cancer is concerned. However, recent evidence cited by the La Leche League and several epidemiological studies has suggested that the longer a woman breastfeeds, the lower her chances of developing breast cancer. The rationale offered to explain this data is that breastfeeding may alter breast tissue and its hormonal environment and exposure.

The Environmental Perspective

The term *environment* can be used to describe both an individual's physical environment—the place in which he or she lives—and an individual's

human or cultural environment. The following discussion explores only those risk factors posed by the physical environment. Following this, we will look at the cultural environment.

Toxins

When we talk about toxins, we are referring to a variety of chemical substances that act as poisons in the body. Some of these chemicals can induce immediate symptoms such as vomiting, choking, or dizziness. Cancer-causing toxins are usually less obvious in the damage they cause, at least until a tumor or some other sign of a malignancy appears. Sometimes the cancer appears many years after the toxin exposure, making the identification of the offending toxin a difficult research task.

To date, many chemical substances—including some pesticides, herbicides, fungicides, plastics, industrial waste products, and other products of our chemical age—have been shown to cause cancer. Some researchers, such as those at the World Health Organization, believe that toxins are the primary cause of cancer. Several chemical toxins have already been implicated in the development of breast cancer. Thus far, however, no one has discovered a single toxin that can explain the epidemic proportions of this worldwide disease.

One reason for this lack of a specific toxic culprit has to do with the nature of toxicology research. Toxicologists predominantly rely on epidemiological evidence, tissue culture studies, and animal research for their findings. Epidemiological research studies can show that, for example, workers with a shared occupational exposure to a certain chemical tend to develop the same cancers. With knowledge of this circumstantial evidence, the toxicologist goes to the laboratory and tries to use that chemical to create cancers in animals and in tissue cultures. Of course, the animal and tissue culture studies are not necessarily predictive of human responses, preventing the results of such studies from being definitive. Yet, through the connection of various pieces of evidence, the puzzle is put together to reveal a chemical that is responsible for certain cancers.

Apart from the problems inherent in any animal or tissue culture study, there is a built-in assumption in toxicology research that may have led much of the studies astray. Toxicologists and biochemists who try to link a toxin to a cancer must explain how the toxin preferentially targets a specific organ. Usually this can be explained by physical contact, like that which

occurs when nicotine comes in contact with lung tissue. But how does a toxin enter the body and selectively attack the breast tissue? An explanation of the specificity of the toxin for its target organ is critical in explaining the mechanism of its action. Without this explanation, you cannot be 100 percent certain that a given toxin, and not some other toxin or some separate factor, caused the cancer.

The trouble with this line of research is that it focuses on how the toxin gets into the tissue and not on how the body rids itself of the toxin. People are exposed to many toxins throughout the day, every day, in modern America. Why aren't we all sick all the time from these toxins? How does our body repair damage done and expel the offending chemical? Instead of looking at the body as a helpless bystander waiting to be assaulted by toxins, we should view the body and its immune system as actively fighting toxins and repairing the damage they cause.

With this wider appreciation of the role of the body in maintaining its own integrity and health, we can reframe the toxin question and look for ways in which the body might be prevented from cleansing itself of toxins. Could breast tissue, for example, be assaulted randomly by various toxins, but—more than other tissues of the body—be prevented from cleansing itself of these substances? By reexamining breast cancer occurrence in light of this suggested mechanism, perhaps we can gain greater insight into the cause of cancer.

Country of Origin

The area of the world in which a woman lives appears to be another environmental breast cancer risk factor. The incidence and mortality of breast cancer has been found to be highest in North America and Northern Europe, intermediate in Southern Europe and Latin America, and lowest in Asia and Africa. In recent years, there has been an increase in the incidence of breast cancer in younger women in Asia, Central Europe, and South America.

Might this pattern of breast cancer incidence be the result of heredity and not environment? It is known that Japanese women who have immigrated to the United States have breast cancer incidence rates equal to those of women who live in Japan. These women have one of the lowest breast cancer rates in the world. However, second- and third-generation Japanese American women have incidence rates that approach those of American-

born Caucasian women. This evidence suggests that the place where a woman lives—the natural environment and/or the human (cultural) environment—rather than heredity, is a major player in this disease. Other cultural studies shed further light on this topic.

The Cultural Perspective

Some research has examined the cultural background of women who develop breast cancer. In the United States, lower-than-average rates of breast cancer occur in Mexican Americans, Japanese and Filipino Hawaiians, Native Americans, Seventh Day Adventists, and Mormons, while Jewish American women have a higher-than-average incidence of the disease. Further, according to Regina Ziegler's 1993 article "Migration Patterns and Breast Cancer Risk in Asian-American Women," published in the *Journal of the National Cancer Institute*, Asian American women born in the West have a breast cancer risk that is 60 percent higher than that of Asian American women born in the East. Those with a Japanese rural background have a lower incidence than do those with an urban background. And those with grandmothers born in the East have lower rates than do those with grandmothers born in the West. The researchers concluded that exposure to Western lifestyles has a substantial impact on breast cancer risk in Asian immigrants to the United States.

Another interesting study concerns Polish women who immigrated to the United States. When compared with Polish women living in Poland, these women experience an immediate increase in breast cancer rates—although Japanese immigrants typically experience a one-generation lag before breast cancer incidence rates rise to equal those of Caucasian American women. Why the difference? According to researcher Dr. Philip Buell, while the Japanese and Polish immigrant groups studied resembled each other in that they migrated during the same decades and came from rural settings, they differed in that the Polish immigrants quickly became city dwellers. The delay in the increased risk of breast cancer for Japanese immigrants, Buell reasons, is due to a prolonged attachment to their traditional culture—an attachment better nourished by a rural setting.

Several other cultural factors also seem related to breast cancer. Specifically, higher-income women are at greater risk than lower-income women, unmarried women are at greater risk than married women, and urban women are at greater risk than rural women. In addition, women

living in the northern portion of the United States are at greater risk than those living in the southern portion.

THE BODY OF EVIDENCE

The above overview of available research on breast cancer risk factors does not include all of the factors that have been examined. A few researchers have examined other possible biological, environmental, and cultural factors, such as medications, emotional stress, depression, proximity to electric power lines, caffeine, and cigarette smoking. But, due to conflicting results or insufficient data, these studies, like those previously discussed, have led to no clear conclusions.

In short, in the medical literature, the major risk factors discovered to date are age, country of origin, alleged hormonal influences, genetics (a history of breast cancer in the woman's mother and/or sisters), diet, and toxins. All other factors explored in mainstream research are of small magnitude. In fact, according to H. Seidman's article "A Different Perspective on Breast Cancer Risk Factors," published in the journal *CA: A Cancer Journal for Clinicians*, all the known risk factors can account for only about 30 percent of breast cancer cases—leaving 70 percent unexplained by established risk factors! This means that more is unknown about breast cancer than is known. This lack of knowledge has not changed over the past thirty years.

Of course, if the bra connection we had discovered made sense, we felt that it should also explain other risk factors and offer a plausible mechanism for the way in which bras exert an influence on the breast, creating cancer. As we progressed through the literature on breast cancer, our bra theory became increasingly plausible. We saw breast cancer in a way never discussed by other researchers. A fascinating picture was coming into view. To explain the theory we began to formulate, we need to understand some human physiology.

The Lymphatic System

We reasoned that bras may have an effect on the lymphatic system. The lymphatic system is part of the immune system that cleanses the body of toxins. The general course of events in the body is that the bloodstream shuttles blood to the lungs, liver, and kidneys for cleansing and

rejuvenation. Toxins are removed and excreted, and nutrients and oxygen are added. During this action, the blood is exposed to all the cells of the body because it is through the bloodstream that our cells are fed and waste material is excreted. The bloodstream is also a communication channel for the body, allowing cells in one part, such as the pancreas, to secrete substances that will affect cells in another part—say, the buttocks. This is how hormones get around the body.

Much medical research has gone into the body's arteries, capillaries, and veins. Yet if people had only arteries, capillaries, and veins, they would swell with water and die within hours. This is because a significant percentage of fluid leaves the capillaries and bathes the cells but does not return to the capillaries. Instead, this liquid, which is called lymph, returns to the bloodstream by way of another vessel system, the lymphatic system.

When you remove your socks or shoes and find your feet are swollen, it is because of a backup of this lymph. When the lymphatics are not constricted by clothing or hampered in any other way, the lymph works its way toward the heart and back into the bloodstream.

Modern medicine acknowledges the important role of the lymphatics in removing particulate matter and other toxins from tissues. This cleansing of the tissues occurs constantly and is essential to maintaining the health and integrity of the body's tissues. To understand what this fact has to do with cancer, you need to know a little about cancer.

The Cancer Connection

Cancer is the ultimate degenerative disease. In healthy tissue, cancerous cells appear and are destroyed before they get out of control. However, assaults by toxins and other irritants can eventually lead a tissue to degenerate to the point that one or more of its cells begin to divide uncontrollably. That is, the tissue can no longer engage in the normal repair and defense mechanisms needed to fight cancerous cells. As the cells divide and divide, producing a mass of cells called a tumor, the normal tissue is further destroyed as the tumor takes over the area.

It is believed that this process of degeneration is usually the consequence of years of exposure to toxins. Of course, not every exposure to toxins causes cancer, or we would all be dead. This is where the lymphatics come into play. When a toxin enters our body through the skin, the lungs, or the intestines, it travels throughout the bloodstream and comes in contact with

all of our cells—although certain organs may be spared a toxin's reach. The brain, for one, has a special barrier between it and the bloodstream that keeps certain chemicals out. The placenta has a similar defense. Apart from these possible exceptions, a toxin makes contact with our entire body.

Normally, a toxin and the cellular debris it produces are flushed away by the lymphatic system. But what if the lymphatic system is impaired in its function? If the impairment is severe, as when a tourniquet is tied tightly around a limb, there is pain, swelling, and a bluing of the oxygen-starved tissue. You would not put up with this type of pain and discomfort for long if you had any choice. Let us consider, however, a chronic (long-term) mild impairment of lymphatic function, as may occur with the use of bras. Affecting lymph vessels more than blood vessels, minimal pressure on the body can cause lymph vessels to close while leaving open the arteries, capillaries, and veins. This means that blood continues to flow to the constricted area, feeding it oxygen and keeping the tissue alive, but the tissue develops a buildup of lymph fluid surrounding the cells. This condition, called lymphedema, is characterized by fluid retention.

Why is lymph buildup a problem in the tissues? The more lymph there is, the less effective the feeding and cleansing of the tissue. Less oxygen and fewer nutrients are delivered to the cells, while the waste products of metabolism are poorly removed from the tissue, including cancer-causing free radicals that are produced by tissues low in oxygen. This reduces all cellular functions. Toxins accumulate, poisoning cells even further. Ultimately, long-term starvation of the tissues and accumulation of toxins can lead to degeneration.

Putting the Pieces Together

If a woman wears a close-fitting garment, such as a bra, it may cause moderate but not severe constriction of the breast tissue. Signs of this could be indentations or red marks on the skin beneath the breasts or other indications of irritation. There may not be much pain, since the tissue is getting blood and fresh oxygen. However, there would be some fluid congestion of the tissue, although this may not be apparent in soft, fatty tissue such as that in the breast. The bloodstream flow to the moderately constricted tissue could be essentially normal, but the tissue drainage through the lymphatics would be impaired.

Meanwhile, as the breasts are being constricted, the woman is exposed to toxins as part of everyday life in America. These toxins are delivered to all parts of her body, including the constricted area, by the bloodstream. Yet, due to poor drainage, the toxins become concentrated in the constricted breast tissue. Other tissues of the body remove the toxins through normal lymphatic drainage, but the breasts, due to reduced drainage, experience longer-term toxin exposure.

Each day, the woman's lifestyle leads her to become reexposed to the toxins. The constricted tissue, still dealing with its last toxin dose, gets repolluted. This process is repeated day after day, concentrating toxins within the breast tissue. Over time, the process leads to degeneration of that tissue. At the same time, normal tissue repair mechanisms are impeded in their operation due to tissue congestion, created by this constriction and compression of lymphatic vessels by the bra. When lymphatic circulation is impaired, the immune system cannot effectively repair the damage to the increasingly toxified breast tissue, including fighting newly developing cancer cells. The poorly drained tissue is bathed in toxins and its own waste and sees little in the way of nutrients and oxygen from the bloodstream. After years of this, cancer—the ultimate form of tissue degeneration—could result.

We would expect from this scenario that there might be other signs of lymph congestion within the breast as a result of chronic constriction by bras. Indeed, according to Vicki Seltzer's *Every Woman's Guide to Breast Cancer*, approximately 90 percent of all women in the United States will experience a breast cancer scare by discovering a breast lump during their lifetime. Fortunately, the vast majority of these lumps will be benign. However, a large number of these lumps will consist of fluid-filled sacs. What type of fluid is this? Lymph, of course!

Clearly, this lymphatic blockage mechanism, while highly plausible, requires further study. But let us now begin examining the established breast cancer risk factors and how they might be explained by this model.

RISK FACTORS AND LYMPH CONSTRICTION

To reiterate, commonly cited risk factors associated with breast cancer are age, country of origin, hormonal influences, genetics, toxins, and diet. Let us examine these in connection with lymphatic drainage.

Age

The older a woman, the greater her chances of developing breast cancer. This makes absolute sense when you postulate that there is a progressive poisoning of breast tissue due to the bra's constriction of lymphatic drainage. The body has remarkable recovery powers. Therefore, you would expect it to take years for the accumulation of toxins to cause healthy breast tissue to degenerate to the state necessary for cancer. As long as the blood supply to the tissue is only minimally hampered, the breast cells will operate well enough to keep the tissue from developing obvious lesions or ulcers. Meanwhile, if our theory is correct, carcinogens damage breast cells day after day, year after year, aided by a state of lymphatic blockage that also impairs the immune system.

Country of Origin

The "country of origin" cited as a known major risk factor refers to North America or Northern Europe. Breast cancer is a phenomenon of industrialized nations. People in Egypt, Mexico, and other lower-income and developing countries do not have nearly the same incidence of cancers in general. Could this be the result of their lower exposure to cancer-causing toxins? Probably not, since many of these poorer nations use toxic chemicals that are so dangerous, they have been banned in the United States and other developed countries. The pesticide known as DDT, for example, has long been banned here but is still being sold by American corporations to developing countries. Indeed, many of our outmoded and dangerous chemical products and drugs are sold to developing-country markets. These nations also have extensive air pollution in urban centers, poorer sanitation and drinking water, and large numbers of smokers. So exposure to toxins is probably not the sole reason for the developed-country tendency toward breast cancer.

However, many women in developed countries culturally subscribe to a fashion and lifestyle of bra wearing. Peasant women are typically not concerned about sexy cleavages or droopy breasts and are not bombarded daily with bra ads, so they rarely wear bras. They have neither the money nor the inclination to purchase such garments. In short, their lifestyle and culture rationalize a different clothing sense, and bras just don't fit in. Perhaps, as a result, neither does breast cancer.

The only exception to the developed-country rule of breast cancer is Japan, which has one of the lowest breast cancer rates in the world. Bras, however, have not been typically worn in Japan. Traditional Japanese clothing involves kimonos and other loose-fitting garments that do not accentuate the breasts. Bras are Western in style, not Eastern. And breast cancer is predominantly a Western, not an Eastern, problem, although recent trends suggest this may be changing as the East becomes more westernized.

This cultural difference in the use of bras could explain why second-and third-generation Japanese American women—whose style of dress is Western and therefore includes the wearing of bras—exhibit the same incidence of breast cancer as that found among American-born Caucasian women. Further, evidence that immigrants from rural Japan have lower incidence rates than do urban immigrants may reflect the urban bias toward Western fashions. Japanese women who do wear bras are likely to be urban dwellers.

We can now also make sense of the data suggesting that young women in Asia, Central Europe, and South America are experiencing an increased incidence of breast cancer. As Western fashion sweeps across the globe along with other aspects of Western culture, bras increasingly find their way into previously bra-free cultures.

We also see that different cultures in the same environment have different breast cancer rates. Native Americans, who traditionally do not wear bras, have a breast cancer incidence akin to that of non-Western cultures. When we compare Native American women in New Mexico with White women in New Mexico, we see that White women have about a fourfold greater breast cancer incidence rate, according to the International Association of Cancer Registries. While this difference may be partially due to as yet unexplored genetic and dietary factors, it may also be due to differences in cultural attitudes and behaviors regarding breasts and bras. The same applies to Filipino American and Japanese American women living in Hawaii, who have a lower incidence than European American women living in Hawaii. Their origin in cultures that do not wear bras may predispose these women to avoid them.

Hormonal Influences

Bra wearing could explain some risk factors that have thus far been considered, although not proven, to be hormonal in mechanism. We can

now see how cultural practices—specifically, bra wearing—could change the way hormones normally affect the breasts, since the bra effectively alters the anatomy and physiology of the breast itself.

Estrogen levels inside a woman's body go through normal monthly fluctuations that accompany the menstrual cycle. Just as the uterus becomes prepared for a possible pregnancy, so do the breasts become prepared to feed a possible baby. By the end of a woman's cycle (before her period), the estrogen and progesterone levels are normally higher than at any other time of the month. This is the time that a woman's breasts are naturally enlarged and sometimes sore and tender. What causes this enlargement? Extra lymph. Most women discover lumps in their breasts during this time of their menstrual cycle. In young women, who are considered at low risk for breast cancer, physicians typically recommend that the woman wait a few weeks to see if the lump goes away—and it usually does. But nobody has understood why these lymph lumps occur in the first place.

We now may have an answer. At the end of her cycle, a woman's breasts are larger than at other times. However, women typically wear the same-size bra throughout the month. During times when her breasts are enlarged due to her high hormone levels and heightened lymph flow, constriction from the bra will be at its greatest. This can lead to obstruction of the lymphatic drainage and the development of lymph-filled cavities, which are experienced as lumps. When the cycle starts over and hormone levels decline, swelling is reduced, and the lumps go away.

Estrogen, then, may be associated with breast cancer because it makes breasts larger and bras more constricting, allowing toxins to build up in the breast tissue.

As mentioned earlier in the chapter, childless women have a higher incidence of breast cancer than do women who have had children. Can this be explained by the bra connection? With pregnancy comes a greater blood supply to the breast and greater lymphatic drainage of the tissue. The breasts of childless women do not have a chance to undergo full development—development that includes their lymphatic system. Given their underdeveloped lymphatic drainage system, it follows that constriction of the breasts with a bra could cause even greater damage, further compromising an already limited drainage system. Women who have had a child but have not breastfed also have a higher incidence of breast cancer, possibly because of this same mechanism.

The age at which a woman has her first child is also considered a breast cancer risk factor. The older a woman is when she gives birth for the first time, the greater her chances of getting the disease. While the reason for this connection is not clear, it has been used to explain another finding. Occupation, a lifestyle factor, also affects breast cancer incidence. Professional women have higher breast cancer incidence rates than do nonprofessional women and homemakers. It has been discovered that, in general, professional women have children at older ages, somehow predisposing them to the disease.

Both of the risk factors just discussed—being a professional and having a first child at an older age—can be explained more thoroughly, given the bra connection. Professional women typically have the need to wear a bra for a longer period each day than do nonprofessional women and homemakers. In addition, having a first child at an older age delays the development of the breasts and their lymphatics. Wearing bras and delaying breast development by having a later first child may work together to set a woman up for breast cancer.

Early menarche, another breast cancer risk factor, also makes sense in light of our theory. An early first period can lead young women to enter the adult lifestyle of wearing bras early on. The ritual of receiving the first bra marks our culture's support for young women adorning their developing breasts. The desire for even larger breasts, a Western cultural preoccupation of young and old women alike, can lead these young adults to wear padded or push-up bras, both of which can constrict their undeveloped breasts. In addition, the earlier a girl begins to wear a bra, the greater the impact of the constriction on her developing breasts.

Yet another breast cancer risk factor is late menopause. Menopause is a time when a woman's body and her hormones change. The breasts are no longer needed to nurse a possible infant, so they slightly atrophy, reducing in size. A woman who enters menopause early in life experiences this breast size reduction sooner than does a woman with a late menopause. In turn, this breast reduction may allow the breasts more room inside the bra, reducing constriction of the lymphatics. This could explain why a late menopause is associated with higher breast cancer rates.

On the other hand, a frequent change associated with menopause is weight gain—an occurrence that, in turn, increases breast size. This clearly increases the tightness of a bra. Further, larger bras have thicker side panels

that can cut off even more of the lymphatic drainage of the breasts. Of course, overweight premenopausal women have this same problem. But, interestingly, obesity is considered a risk factor only in postmenopausal women. How can this be explained?

During menopause, the breast tissue undergoes certain changes. As the breast is no longer needed for its biological purpose, its tissue structure, including its lymphatics, loses some of its integrity. Obesity then places a greater demand on a lymphatic system that has already been compromised by the changes associated with menopause. The combined effect of large breasts, bra tightness, and aged lymphatics might explain why postmenopausal obese women have higher breast cancer rates.

The important point to realize is that there are times when the breasts get more fluid as a result of estrogen levels increasing. These estrogens could be endogenous, coming from the ovaries, adrenal glands, or fat cells, or they could be exogenous, coming from the diet in the form of phytoestrogens or from chemicals found in the environment known as xenoestrogens, which mimic estrogen. The problem, however, may not be the fluid elevation itself but rather the impairment of the lymphatic system's ability to remove this fluid from the breasts due to constriction from a bra.

What Are Phytoestrogens?

Phytoestrogens are naturally occurring plant-derived compounds that have estrogen-like activity in the body. They are found in a variety of foods and herbs, including soy products such as tofu, tempeh, soy milk, and soybeans, which contain isoflavones. Flaxseeds, sesame seeds, whole grains, lentils, and berries are rich in lignans, another class of phytoestrogens. Coumestans are present in alfalfa and clover sprouts, split peas, and pinto beans, while hops and beer made from hops contain prenylflavonoids. Other sources, such as red clover and kudzu root, contain resorcylic acid lactones. These compounds can bind to estrogen receptors in the body, producing mild estrogenic or antiestrogenic effects depending on hormonal conditions. While moderate consumption in the context of a varied diet is often considered safe, excessive or concentrated intake—especially in those with hormone-sensitive conditions—can potentially disrupt normal hormonal balance, influence menstrual cycles, affect fertility, and alter the risk profile for certain cancers.

Xenoestrogens, by contrast, are synthetic or industrial chemicals that mimic estrogen but originate from manmade sources, often as environmental pollutants. Common examples include certain pesticides such as DDT and endosulfan, plastic-related chemicals like bisphenol A, bisphenol S, and phthalates, and industrial pollutants such as polychlorinated biphenyls and dioxins. They are also found in some personal care product additives, such as parabens and sunscreen chemicals like oxybenzone, and in flame retardants such as polybrominated diphenyl ethers. These compounds can accumulate in the body and the environment, leading to chronic, low-level exposure that has been linked to endocrine disruption, reproductive abnormalities, developmental disorders, early puberty, and increased risk for hormone-dependent cancers such as breast and prostate cancer. Because they can interfere with the delicate hormonal signaling that regulates growth, reproduction, and metabolism, xenoestrogens are considered a significant environmental and public health concern.

Incidentally, we may now better understand why a particular toxin has not been implicated in the development of breast cancer. Without a mechanism for targeting the breasts, a toxin would not be breast cancer specific. But research identifying a toxin with a built-in breast tissue preference is not necessary if a mechanism unrelated to the toxin could be found. Bra wearing may be this other mechanism, as it causes toxins to become concentrated in the breast tissue. This bra mechanism also implies that more than one toxin can cause breast cancer. Any carcinogen that becomes concentrated in the breast tissue by a bra can do damage to the breast.

Genetics

As for the genetic basis of breast cancer, it is possible—although it has not been researched and proven—that some women have an inherited problem with the lymphatic drainage of their breasts, a condition called primary lymphedema. On the other hand, the genetic mechanism may lead to breast cancer through a means related not to lymphatic drainage but instead to some other limitation in the ability of the breast tissue to detoxify. Clearly more information is needed to understand this genetic connection.

Toxins

As already discussed, the reason that women experience cancer of the breast more than cancer of any other tissue may be explained by the constriction of the breast lymphatics by a bra. The search for breast cancer toxins must consider the immunologic, protective functions of the body in preventing toxin damage. When the removal of the toxins from the tissue is hindered, the breast experiences toxins for longer periods. So it's not how the toxins enter the breast that's the problem, but how they get out—or don't get out. In our culture, no part of the female body is as highly constricted, or constricted for as long a time each day, as the breasts. Thus, our clothing fashions may inadvertently select the breasts as the target for toxin damage and, in turn, for cancer. This mechanism may make breast cancer the number-one malignancy of American women.

In addition, the bra itself can be toxic. As we will see, the chemicals that go into manufacturing bras, the fabric composition of the bras themselves, and the chemicals used to launder the bra are all potential sources of toxin exposure. Given the intimate association of the bra with the skin, these toxic chemicals can be absorbed into the skin and would need to be flushed out of the breast tissue using the lymphatics. This means the bra itself can both be a source of toxins and limit the elimination of toxins.

Diet

Diet has been examined as a possible risk factor for breast cancer because of studies showing that breast cancer is a lifestyle-associated disease. When Japanese women increased their daughters' risk of developing breast cancer by simply moving to America, researchers immediately postulated that an altered diet may have caused the problem. Further, in dietary research, it is assumed that human physiology is constant across cultural lines.

We now see some problems with this simplistic approach to studying diet. When people change cultures, types and levels of pesticides, herbicides, fungicides, and other chemical contaminants in the food, water, and air change as well. Animal fats, for example, may have entirely different chemical contamination profiles in different areas of the world. Further, as already mentioned, human physiology may be changed by the use of constrictive clothing such as bras. Therefore, what has up to this point been viewed as a dietary contribution to the development of breast cancer may actually be the introduction of toxins through the diet—and, most especially, through the fatty portion of the diet—followed by the

constriction of the lymphatic system by bras. The constricting bras impair the function of the lymphatics, keeping the diet-introduced toxins in the breast and triggering the growth of cancer.

A REEVALUATION

As you can see, lymphatic drainage problems that may be caused by bras could help explain most of the risk factors commonly cited for breast cancer. The bra connection thus passes the test of having wide application to many women and helps us connect and understand many other risk factors.

We mentioned at the beginning of this chapter that people can be understood from the perspective of biology, environment, and culture—the what, where, and who of being a human. We can now see how the effect of bras enters into each of these aspects of being a woman. Because of the cultural bias toward wearing bras, women have altered the environment in which their breasts exist. This, in turn, has altered the biological state of their breasts.

After Soma discovered the lump in her breast and we began to research this subject, she began to do everything she could think of to increase the lymphatic flow in her breasts, particularly the one with the unexplained lump. When time is of the essence, you try anything that seems possibly beneficial, as long as it involves little, if any, risk. Meanwhile, we anticipated the birth of our baby with intense anxiety. What would be his world as an infant, we wondered? Would he find peace and contentment at his mother's bosom? Would he discover early in life what pain and suffering can do to a family? Would he have to learn what it is like to mourn the death of his mother?

FOUR

The Big Picture

NOW THAT WE HAVE EXPLAINED THE DEVELOPMENT OF OUR THEORY LINKING breast cancer to the wearing of bras, let us make the following statement: Bras do not cause breast cancer.

Are we contradicting everything we have thus far stated?

No, we are simply refining our statement. Bras do not *cause* breast cancer in the way that radiation or carcinogenic toxins do. Bras don't directly change your DNA or cause mutations. But wearing bras, especially too tightly for too long each day, may create an environment in the breasts that triggers the disease. Were it not for toxins and other noxious stimuli that turn normal cells into cancerous cells, bras might lead to some degeneration of the breasts *other* than cancer. Let us be clear about this: No tissue, including breast tissue, likes to be constricted. Bras may be a health problem even in the absence of cancer-causing toxins. The appearance of so many lymph-filled breast lumps is possible evidence of this hazard.

Cancer is a complex topic, involving a multitude of factors. We must examine these factors more closely so that we can better understand how bras do more than create a fashionable profile.

AN OVERVIEW OF CANCER

The statistics paint a grim picture. According to the American Cancer Society's 2024 estimates, cancer is a disease that accounts for more than 600,000 deaths annually in the United States. It is estimated that 30 percent of all Americans will develop cancer and that two-thirds of those who do will die of the disorder. During the past fifty years, cancers of the skin, breast, pancreas, bladder, and testes have increased in incidence.

The need for a new approach to cancer prevention became obvious as we searched the literature for information about breast cancer. Despite all the medical wizardry of our day, with computed tomography and magnetic resonance imaging scans, powerful drugs, and hundreds of laboratory tests, including genetic screening, cancer remains a mystery to modern medicine—and a constant source of anxiety to us all.

Given cancer's prevalence in today's society, the pain and fear of it touch everyone in some way. When we think of cancer, we think not only of death but also of suffering while dying. And beyond the misery caused by the malignant growth that consumes the body is the added suffering caused by treatments for the disease. Chemotherapy, surgery, and radiation therapy further distort the lives of cancer patients, adding physical insult to the injury of the tumor. And for most of these cancers, this added medical burden often does little to prolong life or improve survival, as many critics of cancer therapies have emphasized. In fact, according to several studies cited in Ralph Moss's *The Cancer Industry*, cancer patients who opt for no treatment frequently live as long or longer than do those who choose standard therapies.

The risk factors identified by the medical establishment, cited in the previous chapter, hardly provide women with tangible advice on how breast cancer can be prevented—and it is prevention we must seek. As that much-quoted old adage wisely states, an ounce of prevention is worth a pound of cure.

The medical profession has not been deaf to the public's pleas for help, of course. Regarding breast cancer, doctors advise women to get regular mammograms and perform monthly self-examinations to detect tumors. But detection is not the same as prevention. Detection merely precedes treatment. Once the tumor is detected, you already have cancer! The doctor will then recommend the usual array of cancer treatments, fulfilling the worst fears and nightmares of the woman whose life has just been shattered.

Cancer Defined

What exactly is cancer? The term *cancer* is used to describe any malignant tumor. A tumor is simply an overgrowth of tissue that can occur in any part of the body and need not be a problem. Moles are tumors. But cancers, unlike moles, are malignant tumors.

According to the definitions provided in most medical texts, the term *malignant* describes any disease that is resistant to treatment and of a fatal nature. In the case of a tumor, it means that the tumor shows uncontrollable growth and the ability to spread throughout the body.

It is interesting to see the bias implied by this definition. Statements regarding the tumor's resistance to treatment and its uncontrollable growth reflect the inability of medical technology to stop the cancer. It is a treatment-oriented definition. This means that what is malignant today may not be so tomorrow, provided that new treatments are developed to stop the tumor's growth and spread.

There is a certain kind of fatalism to this definition. When you think of malignant cancer, you think about the inability of modern medicine to control the tumor, with death as the expected outcome. It is perhaps because of this fatalism that people tend to overlook the fact that the body develops cancer cells all the time without developing cancer.

We are composed of trillions of cells. The small probability that a mutation will occur in some of them at any given time is large when you consider the number of cells we have. To manage the cells that constitute the body, each tissue follows some inherent rules of operation. Through certain chemical and electrical messages, cells are given specific functional roles within the tissue. Some cells function as factories to synthesize and secrete substances such as enzymes or hormones; other cells have structural functions and act like a glue to maintain the integrity of the organ; other cells line the blood vessels and mediate the transfer of nutrients and waste to and from the bloodstream; and still others operate as channels for the cleansing and draining of the tissue, composing that tissue's lymphatic system.

Every cell of our body has its place and is connected to every other cell. We are integrated entities, a phenomenal orchestration of specialized tissues and organs that serve to maintain the life and integrity of the whole. Some cells, such as white blood cells and other cells of our immune system, willingly die to save the whole. Since the whole is definitely greater than the sum of the parts, there is no room for selfishness among cells and organs. The fate of all depends on the integrity and health of the whole. We innately know this within our genes, if you will.

But some cells lose sight of their connection to the whole. They lose their identities within the tissue and begin to selfishly usurp the space and

nutrients. Freed from the normal constraints that limit and control cellular reproduction, these maverick cells start to reproduce themselves, forming a tumor. If left alone, these cells soon take over the tissue and organ that once served as their guardian and master, perhaps sending tumor cells to other organs to begin uprisings there as well.

But our organs are used to such insurrection. Our immune system squelches these cellular revolts constantly. It is when the immune system is fatigued or in some other way limited in its function that the tumor cells can get a strong-enough foothold to succeed in their revolt, resulting in cancer. However, given a healthy immune system, we are typically successful in identifying and destroying mutated, tumor-producing cells. In other words, our body prevents cancer all the time.

Scientists have some theories as to how cancer cells are normally weeded out of the tissues. For the most part, this area of research is as confusing and incomplete as is the search for mechanisms that cause some cells to mutate and divide without the usual controls. But our ignorance of the mechanism should not blind us to the fact that it exists and is successful most of the time.

When we consider the standard medical definition of malignancy, the emphasis is on medical intervention designed to stop the tumor cells from dividing and spreading, or metastasizing, to other tissues. This emphasis on medical intervention, however, downplays the inherent mechanisms of our body to stem the growth and spread of the disease. Here we see a reflection of the *treatment* mentality—as opposed to a *prevention* mentality—of cancer research today. Treatment focuses on what doctors can do to stop cancer once it has begun; prevention focuses on what the body can do to stop cancer cells *before* they get out of hand and examines ways to assist the body in maintaining its stand against disease.

The typical approach to combating cancer is to try to kill the tumor cells. Unfortunately, healthy cells are also killed in the process, which is why chemotherapeutic drugs and radiation therapy wreak such havoc on the body. For those unfortunate enough to have a malignant tumor growing within their body, it would make sense to examine all forms of intervention, mainstream and alternative, since a possible outcome of no treatment at all is death. On the other hand, as already mentioned, the possible outcome of treatment may be death, while letting the body heal naturally may result in a

cure. Of course, to those without cancer, it makes much more sense to prevent cancer than to wait and treat a tumor when it appears.

When we realize that the body already knows how to prevent cancer, we see that all we really have to do is support the body in doing what it does naturally. There is no need for confusion or mysteries about cancer when it comes to prevention. From the tiniest infant to the oldest matriarch, there is a wisdom within our bodies—a “body-sense”—that knows what to do, even if our heads don’t have the slightest clue.

While our ignorance does not prevent our bodies from knowing how to fight cancer, it does sometimes lead us to behave in a way that keeps our bodies from operating optimally. We can take our healing powers for granted as long as we don’t overburden those powers. Prevention, then, should be considered a lifestyle that enables our innate healing powers to operate optimally.

Let us now return to the definition of *malignant*. Instead of referring to malignancy in terms of medical intervention, perhaps it is better defined in terms of the body. Malignancy, then, is the characteristic of a tumor that has survived the inherent defense mechanisms of the body and is reproducing and spreading without normal constraints.

The advantage of this definition over the standard one is that it focuses on the processes and mechanisms of the body, not on those of medical technology. It makes us ask what we can do to assist the defense of our bodies against cancer cells—and what we may be doing to hamper a normal, healthy immune response.

The Role of Carcinogens

Since toxins are frequently implicated as a cause of cancer, let us examine them and the role they play in this tragedy.

By the term *toxin*, we mean a toxic chemical, whether produced internally or found in the environment, that can cause cancer. We are exposed to toxins through our mouths, lungs, and skin. These are the portals of entry into our bodies. Our mouths ingest poisoned food and water. Our lungs breathe poisoned air. Our skin absorbs poisons from both the air and the water, as well as from the chemicals that we deliberately apply in the form of skin creams, deodorants, cosmetics, perfumes, insect repellents, clothing, and so forth.

It is accepted knowledge that many chemicals are toxic to our bodies and can cause cancer, which makes them carcinogens. Toxins can cause cancer by overworking the immune system and thereby reducing its effectiveness, by directly activating cells and transforming them into cancer cells, or by both these routes. One problem encountered when exploring chemical carcinogens is that our environment is filled with so many of them. When you take one chemical and test it for its cancer-causing ability, or carcinogenicity, you are studying that chemical outside the normal environmental context in which our bodies are exposed to more than one chemical at a time. It may be that the combined effect of a toxic environment is greater than the single effect of one chemical.

Further, the studies performed to determine a chemical's carcinogenicity often use nonhuman animals. Endless animal studies have been conducted at the cost of billions of dollars, only to prove that all animals respond to carcinogens differently and that animal responses do not predict human results. Beta-naphthylamine, for example, does not cause tumors in animals but is one of the most active cancer-causing chemicals in humans. You simply cannot tell whether a chemical will cause cancer in people by studying its effects on other creatures.

Yet you don't have to be a Harvard researcher to know that exposure to certain chemicals is bad for you and that many human studies have revealed a pattern of cancer arising from extensive exposure to certain chemicals. This exposure is not necessarily dramatic. You need not fall into a vat of chemicals to get cancer. A long-term exposure to low levels of toxins seems to be enough to do the trick. This makes cancer all the more difficult to prevent. If you could see the poisonous gases you breathe and watch liquid chemicals being absorbed into your skin, if you could watch your body constantly struggling to cleanse itself of these toxins, prevention would be easy. You would know that these toxins were assaulting your body. But toxic poisoning is not as obvious as this.

Hazardous Habitats and Habits

Our cultural biases can make us miss aspects of our lifestyles that are potentially hazardous to our health. Most people assume that the normal everyday world in which they live is safe from a health standpoint. But this assumption is not always correct. Mobile home syndrome revealed that the prefabricated pressed-wood paneling in mobile homes was emitting toxic

fumes that poisoned the inhabitants, as were other glues and chemicals applied to wood surfaces. When I was a child, I remember the painter filling our apartment with chemical fumes that lasted weeks. And what about the chemicals we smell in new carpeting? Are those safe to inhale for hours on end? Water pipes have traditionally been connected with lead solder; as an alternative, many water pipes in use today are made of polyvinyl chloride, which leaches some chemicals into the water we and our children are drinking. Chlorine and fluoride may already be in that water, having been placed there by many municipalities.

We poison ourselves within our homes each day. According to Jeremy Rifkin in the *Green Lifestyle Guide*, the average American uses about twenty-five gallons of hazardous chemicals each year. Products for our cars (anti-freeze and oil), household cleaners (for the oven, floor, toilet, and sink drain), grease and rust solvents, paints, lawn and garden products (fertilizers, pesticides, herbicides), nail polish remover, shoe polish, glues—these and other substances virtually surround us with chemicals. And all of these products take a toll on our bodies. The immune and lymphatic systems must remove them from the body's tissues; the liver must detoxify them; and the kidneys, lungs, intestines, and skin must excrete them. While some of these chemicals do not directly cause cancer, they launch an assault against our bodies and our defense mechanisms. You can see how the body can be overwhelmed in its cleanup job, allowing cancer cells to do their dirty work.

We also poison ourselves and our families when we eat. Foods today are typically bombarded with chemicals such as pesticides, herbicides, fungicides, preservatives, and coloring agents, many of which are suspected cancer-causing agents. Some foods are irradiated, a highly controversial procedure that is thought to generate potent carcinogens within the food substance. Yet the Food and Drug Administration (FDA) admits that in terms of human health, research on these chemicals and on irradiation is scanty, if it exists at all. There is no government requirement that a chemical company prove that its weed, insect, and fungus poisons are safe for people. Further, food is not labeled according to its history of toxin or radiation exposure. Add to this the danger posed by toxins that leach out of plastic food packaging. The FDA considers the plastic in these containers to be an unintentional food additive. This loose attitude toward food safety has

been estimated by some experts to be one of the leading causes of cancer, perhaps responsible for 35 percent of all cases.

Many of these chemicals, including a great number of pesticides, herbicides, and fungicides, are fat soluble. While some of these toxins get metabolized and eliminated once they are consumed, some become absorbed into our fat cells, resulting in their bioaccumulation inside our bodies. The same thing happens with farm animals that are exposed to these chemical contaminants in their feed. This causes toxins to accumulate within their tissues, especially their fat. Toxin bioaccumulation inside the fat of animals raises the toxin level beyond that found in their feed, making animal products more toxic than the feed they eat. Some of the toxins will be excreted in the fat portion of milk as well. This means that people who eat a diet high in toxin-containing animal-fat products, such as cheese, milk, meat, poultry, pork, and so forth, consume these toxins along with these foods. This may help explain the association between high animal-fat diets and breast and colon cancer. Of course, organic feed, which would not have these fat-soluble toxins, would create animal products that are not contaminated with these agricultural chemicals and may not pose the same health risk as typical animal products from toxin-laden feed.

Of course, the home is not the only place where we are surrounded by toxins. Our occupations bring us into direct contact with toxins on a daily basis. Once considered innocuous, asbestos has now been accused of causing 50,000 deaths per year, mostly from cancer of the lungs, esophagus, stomach, colon, and rectum. About 50 percent of office buildings built between 1958 and 1970 used asbestos fibers, mostly for fireproofing and insulation. As the buildings age and undergo repairs, these killer fibers can be released into the air and inhaled by those in the building.

Benzene, a known carcinogen, is found in photography supplies, spot removers, and a variety of solvents and plastics. This substance can be absorbed through the skin and the lungs. Formaldehyde, used as a resin in the making of plywood and particle board, is also a carcinogen and is responsible for the health problems of many office workers who are surrounded by formaldehyde-containing wood products. Plastics are contaminating environments everywhere on the planet, and microplastics are now being recognized as a serious problem. Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are among the many toxic “forever chemicals” that are now part of the environment and are used in a wide

range of products due to their ability to resist heat, grease, and water. PFAS sources include nonstick cookware, water-resistant fabrics, food packaging, firefighting foam, and various personal care products like shampoos and dental floss.

According to toxicologist and cancer specialist Dr. Samuel Epstein, synthetic versions of organic chemicals have been introduced into our environment at an alarming rate. In 1940, the United States manufactured about 1 billion pounds of these chemicals annually; by 1950, the figure had reached 30 billion pounds, and by 1980 it had reached 450 billion pounds per year. The overwhelming majority of these chemicals have never been tested for environmental effects, not to mention health effects. Virtually no health research is being performed on these chemicals, which include pesticides applied to many of the foods we eat.

To further add to this depressing picture, the chemical industry has dumped its toxic waste indiscriminately throughout the country, creating an estimated 180,000 ponds, pits, and lagoons of deadly poisons that seep into our groundwater. Gasoline exhaust fills the air, pesticides and herbicides permeate and coat our food, and industrial waste seeps into our water—dangerous chemicals that, for the most part, we cannot smell and are unaware of. And other forms of pollution, such as radiation, are invisible but extremely dangerous. Many of these carcinogens are avoidable, but many are not—if you wish to live a “normal” life. Our culture has created a society reliant on chemicals.

The environment is the medium in which we live or die. It feeds us or starves us. It supports us or damages us. It is clean, or it is toxic. It stresses our immune system, or it supports our defenses. Clearly, our increasingly toxic world is not good for us. In terms of prevention and a healthy lifestyle, it would make sense to avoid toxins as much as possible. When you smell a chemical, imagine it streaming throughout your body and possibly affecting your health.

Fortunately, there is cause for hope. Not everyone gets cancer. Therefore, toxins must not be the entire story when it comes to contracting this disease.

But our toxin-disposal system, which uses the liver, kidneys, skin, immune system, and lungs to remove these poisons from our bodies, can be overworked and overloaded by too many toxins. Further, if the toxin-disposal system is not allowed to function optimally, toxins will remain in tissues for longer periods, causing more damage to the tissue. So apart from

avoiding toxins, we might want to avoid interfering with our toxin-disposal system. Central to this cleansing system of the body are the vessels through which lymph moves, also known as lymphatics.

THE LYMPHATIC SYSTEM

Discovered in the mid-1600s, the lymphatic system has been a mystery to science for centuries. In *The Genesis of Cancer*, author L. J. Rather explains that throughout the seventeenth and eighteenth centuries, theories identified lymphatic-drainage problems as the cause of cancer. However, these theories were associated with antiquated notions of bodily humors: fluids thought to determine by their relative proportions a person's health and temperament. When medical theories shifted away from humors, the possible role of lymphatics in cancer was lost in the shuffle. In fact, on reviewing the lymphatic system, we were astonished by the lack of information that has been generated since the 1600s.

The significance of the lymphatic system in the creation of cancer became the focus of world-renown surgeon Dr. W. Sampson Handley. In his 1929 address to the British Medical Association (BMA), titled "Lymph-Stasis the Precursor of Cancer," he explained, "My observations lead me to believe that the origin of cancer is intimately associated with local obstruction of the lymph vessels in the area where the cancer arises. To produce cancer the obstruction must be of long standing—must have lasted from 20 to 30 years. It may not be complete enough to cause obvious lymphatic oedema, but may manifest itself only by papillary hypertrophy and increased cellularity of the subepithelial connective tissues." While Dr. Handley did not mention bras, which were less common in 1929, the mechanism he described is exactly what we have been describing for the bra-cancer link. Unfortunately, interest in lymphatics waned, and the medical community forgot about lymphatic impairment as a cause of cancer.

But this lack of attention does not mean that the lymphatic system is unimportant. It is a specialized part of the circulatory system that functions as a central component of the immune system. As we mentioned in the last chapter, it consists of fluid, called lymph, derived from blood and tissue fluid. This lymph moves through the lymphatics and is returned by these vessels to the bloodstream. A detailed examination of this system is

necessary if we are to understand the role that bras may play in the occurrence of breast cancer.

The Components in Detail

Most of the human body consists of water. This fluid is divided among three compartments, which are in constant communication with one another. The largest compartment—which holds two-thirds of the body’s fluid, or approximately thirty quarts—is the cells themselves. The next-largest fluid compartment is directly outside the cells, in the spaces between them. The twelve quarts of interstitial fluid found in this compartment bathe the cells and remain in intimate contact with both the cells and the bloodstream. Finally, there is the bloodstream itself—three quarts of fluid found in arteries, capillaries, and veins.

Lymph is the clear fluid that bathes the cells. The interstitial fluid contains cell debris, nutrients, waste products, fats, proteins, sugars, hormones, and everything else you can imagine a cell would be exposed to, including toxins. This interstitial space, also called the extracellular matrix, is the micro-environment of our cells. Clearly it is important to drain this space so that it is cleaned of debris, waste, and toxins. If the interstitial space were kept stagnant, the cells would die—starved of oxygen and nutrients and poisoned by their own toxic waste, as well as by environmental toxins that enter the body through food, water, and air contamination. Drainage of the tissue occurs with the help of the bloodstream and lymphatics. New fluid, filled with nutrients and oxygen, seeps through capillary walls into the interstitial space. Some fluid returns to the capillaries, but a significant amount of fluid, as well as white blood cells, proteins, fats, some toxins, and large particles of debris, are left behind, constituting the lymph, which must find another way back into the bloodstream.

Lymphatics are found throughout all tissues of the body, except for striated muscles (the muscles we can flex voluntarily, such as the biceps), eyes, nails, and hair. Lymphatics have even been found in the brain; they are called glymphatics. This discovery didn’t happen until 2015, revealing how little is really known about the lymphatic system. Along these lymphatic vessels are a large number of valves that keep the lymph moving in the proper direction. Veins also have valves, and for the same reason—to keep the blood flowing in one direction. Veins are helped in this task by

blood pressure, which moves the blood back to the heart. Unlike veins, lymphatics get no help from the heart but rely mostly on the muscles that massage the outside of the vessels to maintain flow. In addition, lymph flow is aided by other mechanisms. One mechanism, respiration, pulls the lymph along each time we inhale. Other mechanisms include the pressure of the pulses in the arteries, which pushes the lymph vessels that lie near them; changes in posture; and the passive compression of soft tissues. Body movement provides a type of passive compression of the breasts that can increase lymph flow, as when the breasts naturally bounce and move when a woman walks or runs.

Given the passive nature of lymphatic flow, you can see the importance of having good valves within your lymphatics. Without the valves, there would be little flow of fluid, and backed-up lymph would cause body parts to swell like balloons.

Notice that something as subtle as a pulse can affect lymphatic flow. Because lymphatic vessels are very thin, they are extremely sensitive to pressure and are easily compressed. If the compression is rhythmical—like that created by natural movement or massage—lymph will flow. If the compression is constant, the vessel walls will remain closed, hampering flow. In the breast, which is an accessory skin gland and actually considered a modified sweat gland, the lymphatic vessels are close to the surface and therefore are especially easy to compress.

We must mention another important structure in the lymphatic system. Lymphatics pass through successive lymph nodes, specialized glands found in clusters throughout the body. Lymph from the legs and parts of the genitals drain through the inguinal lymph nodes, which you can feel in the crease between your legs and belly. The floor of the mouth contains nodes that filter lymph from the nose, lips, and teeth. Nodes are also located along the sides of the neck and behind the ears. The tonsils, in fact, contain one such mass of lymph nodes. And one of the largest cluster of nodes is in the armpit, where twenty to thirty nodes reside deep within the underarm and upper chest regions. These are the nodes we are interested in regarding breast cancer, since this cluster filters lymph from the breast, as well as from the arm and the upper part of the chest wall.

Because the lymph nodes filter out unwanted matter drained from the tissues by the lymphatic system, they are central to the prevention of disease. In addition, the lymph nodes are the site of much white blood cell

and antibody manufacture. These cells are key players in our immune system. When the lymph node detects foreign objects such as bacteria, toxins, or even cancer cells, it activates the synthesis of these immune system cells. Sometimes this process causes the lymph nodes to swell painfully, as can be the case with sore throats.

Besides the tasks of filtering tissue fluids and producing certain blood cells, lymphatics perform a long-term function in the removal of fat-soluble toxins from the body. We accumulate fat-soluble toxins within our body fat. The breast is one area where this storage can occur. Yet our bodies are not static entities. They are in constant flux, replacing cells, proteins, fats, and carbohydrates. Just as fat will exit a fat cell and enter the surrounding tissue over time, so, too, will fat-soluble toxins. The storage of toxins in body fat is harmful because it provides a reservoir of toxins that continually seep out into the surrounding tissue and do their damage.

Of course, tissue that is drained consistently will be cleansed of these toxins. But tissue that is congested and sluggishly drained may keep its toxin reservoir for longer periods. Over the years, this may result in tissues having a relatively high toxin exposure compared with freely draining tissue.

Breast Tissue and Drainage

Over 85 percent of the lymph fluid flowing from the breast drains to the armpit, or axillary, lymph nodes. Most of the remaining fluid enters nodes alongside the breastbone. A small number of lymphatic vessels drain their fluid downward from the breast and into the liver.

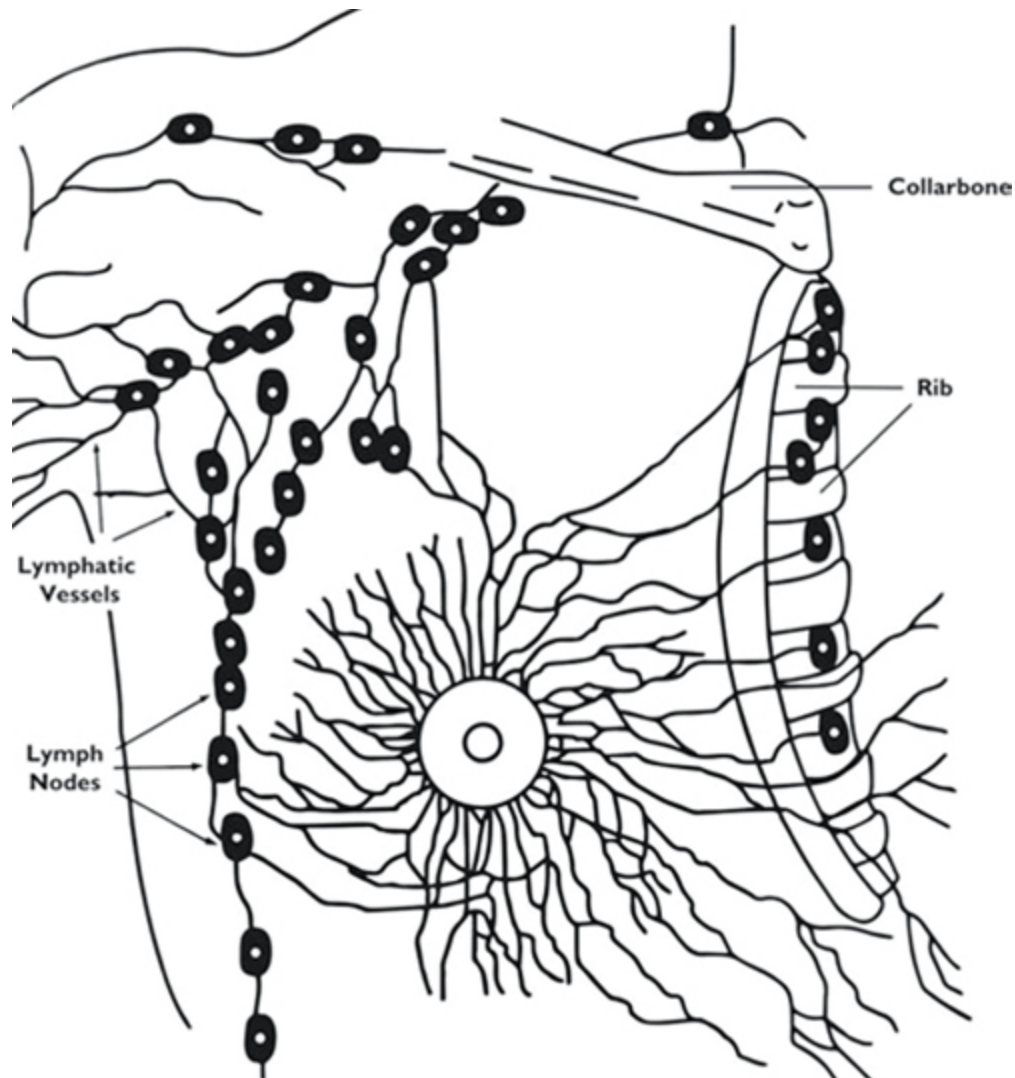


Figure 4.1.
The Lymphatic System

If anything were to constrict the flow of lymph from the breast, there would be poor drainage of the breast tissue. How severe must this constriction be to impede drainage? When it comes to lymph vessels, it doesn't take much force to affect flow. Slight pressure, such as soft tissue compression, can influence the flow within the vessels.

Now, what do you suppose a bra can do to the lymphatic flow?

Brassieres

Throughout recorded history, men have been interested in the shape of women, particularly of their breasts, waists, and hips. An obsession with

reshaping women into the “perfect” female figure has led to the creation of body-altering clothing that can be traced back through the millennia. Around 2500 BC, Minoan women on the isle of Crete wore bra-like garments that lifted their bare breasts out of their clothing. Cretans, too, developed the first-known corset—a wide leather belt or “cinch girdle”—and the smallest waist in the history of costume. Throughout the centuries of Western history, corsets have employed steel, whalebone, cane, and wood to transform body shape. Breasts were sometimes pushed up to be accentuated and at other times were flattened. Hips were emphasized or squeezed. And waists were sometimes constricted to the point of skeletal deformity or organ abnormality. Women were the usual recipients of these portable torture racks, although fashion sometimes dictated that children and men wear them as well.

In the late 1700s, doctors, philosophers, and reformers unsuccessfully cried out for an end to tight lacing, which was seen as a health threat. By the late 1890s, corsets were full-bodied garments. Made of heavy cotton, these corsets were boned to produce the eighteen-inch wasp waist so essential to the fashionable hourglass silhouette. Corsets were being mass-produced by that time, making them widely available. Groups combating corsets blossomed: the Pre-Raphaelites, with their uncorseted aesthetic dress; the rational dress movement; and the Healthy and Artistic Dress Union. The suffragette movement was influential in the better adaptation of corsets to female anatomy. Medical research also played a part in corset design, discovering that the corset required to achieve the infamous S-bend of the Gibson girl look distorted the spine.

Warnings to women about the health hazards posed by tight clothing in general—and by corsets in particular—continued into the twentieth century. And the warnings were much needed. In her book *Dress Reform*, Dr. Caroline Hastings explains how corseted women developed “diseases produced by this continuous pressure [from corsets]. For instance, the obstruction of pulmonary (lung) circulation may and does cause enlargement of the left ventricle of the heart, as well as congestion of the brain, liver, and kidneys.”

However, fashions are difficult to change. Major reform had to wait until 1912, when Paul Poiret, the French fashion king, helped put an end to the armor-like corset. In its place he offered an elastic and light stockinette belt

or girdle, complemented by the bust bodice. The bust bodice, of course, evolved into the bra.

Since their introduction to fashion, bras have undergone their own history of development. Every decade has placed its own emphasis on breasts. And through different combinations of padding and underwire support, bras have continually been adapted to reflect the fashions of the time. However, its fashion history makes clear that the bra was primarily made not for women's comfort but for men's pleasure. In fact, the bra industry is almost exclusively dominated by men. It is no surprise that bras are loaded with sexual innuendo and that so many women equate bras with appearance.

This historical interpretation explains why many women now regard the bra as necessary for comfort. Comfort is, after all, a relative term. Since the 1920s, the bra has been compared, implicitly if not explicitly, with its predecessor, the corset. When compared with the corset, the bra is, of course, a godsend. Today, many women think of the bra as being both a comfortable garment and an appearance enhancer—a perfect combination of consumer attitudes for the fashion industry.

Needless to say, if you offered bras to women from a culture that promotes bare breasts, few of them would likely call them comfortable. Why do we make this inference? It follows from what bras do to the breast tissue.

The Effect of Bras on the Lymph System

Because of the way bras are constructed, the weight of the breasts is distributed between the shoulder straps, the side panels, the cups' underwire or cloth support, and the band between the cups. In addition to supporting the weight of the breasts, the bra lifts and shapes the breasts, which exerts extra pressure on the breast tissue.

When you consider the lymphatic drainage of the breasts, it seems plausible that the armpit lymph nodes and the lymphatics leading to them are constricted by a bra. The drainage to the breastbone lymph nodes may also be hampered, particularly by bras that have underwires. Bras designed for comfort, ironically, usually have thicker side panels, reaching high up into the armpit and threatening all of this lymphatic drainage. Drainage to the liver from below the breast may also be stopped by the pressure of the cups against the breast. Shoulder straps, too, may potentially cut off

drainage of those lymphatics that run from the top of the breast to the armpit. As mentioned in [Chapter 2](#), shoulder straps have already been implicated in the constriction of nerves to the arms and hands, which requires even greater pressure to achieve. And when a bra wearer raises her arms, the shoulder strap gets even tighter.

Research has shown that pressure from a bra can impair the autonomic nervous system (ANS). For example, a 2002 study titled “Effects of Clothing Pressure Caused by Different Types of Brassieres on Autonomic Nervous System Activity Evaluated by Heart Rate Variability Power Spectral Analysis” concluded, “Our data indicate that the higher clothing pressures exerted by a conventional brassiere have a significant negative impact on the ANS activity, which is predominantly attributable to the significant decrease in the parasympathetic as well as the thermoregulatory sympathetic nerve activities. Since the ANS activity plays an important role in modulating the internal environment in the human body, excess clothing pressures caused by constricting types of foundation garments on the body would consequently undermine women’s health.” Tight bras have been shown to slow digestion, cause constipation and irritable bowel syndrome, and increase body temperature. In addition, according to a study titled “The Effects of Skin Pressure by Clothing on Circadian Rhythms of Core Temperature and Salivary Melatonin,” wearing a bra decreases melatonin production. Melatonin, a hormone known for its role in circadian rhythm and telling your body when to sleep, also boosts immunity, fights aging, and slows the growth of certain cancers, including breast cancer.

Research has also shown that bras can impair lymphatic drainage from the breasts. Neil Piller of the Flinders Foundation is an expert in lymphatics and studies the impact of bras on lymphatic drainage. As he explains on the Flinders Foundation’s website,

Our current major project involves the investigation of the impact of made to measure vs off the shelf bras and looks at attempting to answer the question “Do bras precipitate or worsen breast oedema and lymphoedema.” To date it seems many bras exert unnecessarily high pressures on the rather delicate and superficial lymphatics and that for some women in the trial this leads to reduced breast tissue health through sub-optimal fluid clearance from them via the remaining lymphatics. . . . There is no doubt however that the

superficial lymphatic system is susceptible to constant external pressure. If it's in the wrong place (i.e., a shoulder strap of a bra or the elastic in underpants) it may just be the factor that causes the arm, breast or leg to swell unnecessarily.

The effect of the bra on the lymphatic system is implicit in the advice to women who have had their armpit lymph nodes removed and have lymphedema issues. These women are advised by lymphatics experts not to wear anything that is tight, be it jewelry or bras, because this can exacerbate the lymphedema. Of course, if the breasts are getting congested with fluid because of the constriction from bras, you would expect some women with this problem would experience breast pain. In fact, this is exactly what research has found. For example, a 2003 study published in the *British Journal of Plastic Surgery* looked at 103 women coming for breast reduction surgery because of breast pain. The researchers found that all the women were wearing the wrong size bra. Many of these women were obese, and obese women were even more likely to wear too small a bra. According to the authors, "Obesity, breast hypertrophy, fashion and bra-fitting practices combine to make those women who most need supportive bras the least likely to get accurately fitted bras, so exacerbating the symptoms for which they seek surgery."

According to a 2007 press release by the BMA, wearing the wrong-sized bra is a leading cause of breast pain and requests for breast reduction surgery. They explain that cosmetic surgeons are often consulted by women who mistakenly think they need breast reduction surgery when a correctly fitted bra would end their discomfort. The BMA concludes that the National Health Service should offer women free bra fittings to cut the number getting unnecessary breast reductions.

As you can see, a bra by itself can cause problems. Add to this the fact that the workplace has increasingly become a toxic, cancer-causing environment, as the field of environmental health has shown. These carcinogens, combined with those we are exposed to at home, in our food and water, and in the air, enter our bodies and course through our arteries and capillaries. The toxins then enter all the tissues of the body. When conditions in the body are ideal, lymphatics immediately get busy draining the tissues of toxin-filled fluid and the debris of damaged cells caused by

the poisoning. The lymph nodes filter the lymph of contaminants, and the liver helps process the toxins for disposal from the body.

This is how the body works—except when we restrict the lymphatic flow and prevent the drainage of certain tissues. Many women who wear bras may be constricting their breast lymphatics and keeping toxins within their breast tissue for as long as eighteen to twenty-four hours daily. Meanwhile, the toxins are doing their best to transform normal cells into cancer cells.

A 1990 Japanese study, “Breast Form Changes Resulting from a Certain Brassiere,” written by K. Ashizawa and published in the *Journal of Human Ergology*, provides an important example of the effect of at least some bras on breasts. This study was designed to find ways to enlarge a woman’s breasts. After three months of brassiere constraint, all the subjects experienced smaller underbust circumference but enlarged chest circumference. The distance between the right and left nipples became wider, and the breasts tended to hang down. In other words, the breasts swelled under the influence of the bra. What could cause this swelling? The buildup of lymph. These breasts suffered from edema caused by the use of a certain bra.

Further, constriction of the lymphatics may cause toxins to become concentrated within the breast tissue. While the rest of the body slowly loses the toxins after exposure, the constricted breast tissue may maintain a higher level. When the next round of toxin exposure occurs, the breast tissue then gets a second dose on top of the first one. This leads to higher concentrations of toxins within the breasts than within nonconstricted tissues—a mechanism that may explain why women exposed to carcinogens more frequently develop cancer in their breasts rather than in other organs, making breast cancer the primary cancer of women.

The theoretical model, then, is this: The immune system of the breast is being hampered in its job by the bra. Unable to drain the tissue, the immune system cannot filter out toxins and repair damage. For women who take off their bras at night, the process of cleansing and repair can finally begin. Yet each day the breasts are again assaulted with toxins and compromised lymphatic drainage. We are asking a lot of our immune system—tying its hands for eighteen hours a day and then assuming it will clean up the mess we have made, only for us to make the same mess again the next day. Over the years, this chronic constriction of the breast tissue takes its toll.

Overburdened, the immune system is beaten, and some breast cells become malignant.

While the tissue-cleansing role of lymphatics is already understood by modern medicine, this clothing-constriction model has never been thoroughly studied, although the facts presented above make the validity of this model highly probable. From this we can postulate the possible damage to health that other constrictive garments may cause.

Other Constrictive Clothing

Certainly by now you may be wondering about other clothing and other cancers, for the same principles that apply to the constriction of lymphatic drainage may also explain cancers of the prostate, uterus, rectum and colon, testicles, ovaries, and bladder.

All of these organs except for the testicles are found in the pelvic cavity. The lymphatic drainage of both the pelvic organs and the testicles occurs via lymph nodes and lymphatics that begin below the level of the navel and ultimately ascend the body along the back of the abdominal wall. Alongside these lymphatic vessels is a highway of major arteries and veins that lead to and from the heart.

Now, imagine a belt being drawn tightly around your waist. Lymphatics, due to their lack of internal pressure and their extremely thin, compressible walls, may react to this constriction by inhibiting the flow of lymph from the pelvis. Constriction from a belt might selectively affect one organ more than another because of the particular placement of the belt and the location of the lymphatic vessels and nodes in a given person. In general, however, a belt can possibly reduce lymphatic drainage of the pelvis. The only force countering the belt's constriction would be that of body movement, the pulse of the arteries in close proximity, and breathing. But considering the sedentary lifestyle of most Americans, our abdomens get little opportunity for the contraction that might otherwise assist lymphatic drainage. And few of us breathe deeply when sitting, limiting the effectiveness of this important pump of the lymphatics.

When it comes to colon cancer, the greatest incidence is found in the parts of the colon that lie below the belt line, specifically in the sigmoid colon and the rectum. The mechanism by which lymphatic drainage may be inhibited by belts could help explain this phenomenon.

Are we saying that all cancers could be caused by clothing? Of course not! Tight clothing may simply serve as a handicap to our immune system because of its effect on the lymphatic system. In combination with other noxious stimuli and events, such as toxins, stress, poor diet, and so forth, the constriction of our bodies by clothing can set up a protracted process of degeneration, possibly leading to cancer.

In an April 1991 *USA Today* magazine article titled “Dress for Health, Not Style,” Dr. Leonard Morgan, assistant professor of family medicine at the University of Oklahoma Health Sciences Center, warns, “Tight clothing is a definite year-round problem. Clothing should never be tight. Tight clothes interfere with blood circulation to the skin. Too-tight shirt collars and ties can interfere somewhat with blood flow to the brain. For people who already have arteriosclerosis, which is impeded blood flow to the brain, tight collars and ties can increase their risk of problems. Knee-hi hose and elasticized socks also can contribute to the development of varicose veins.”

We suggest that this effect of clothing in general on the development of disease should be termed *chronic clothing constriction* (CCC) to characterize the long-term effect that tight clothing has on tissues, given its inhibition of lymphatic drainage. CCC is not a disease in itself but a cultural behavior that may be involved in the creation of disease.

Tight pants syndrome is an offshoot of CCC. A 1993 report in the medical journal *Archives of Internal Medicine* declared that tight pants may be the cause of otherwise unexplainable stomach cramps, chest pain, and heartburn. Recently, skinny jeans have been shown to cause nerve and muscle damage in the legs and leg edema as a result of compression. A painful condition called meralgia paresthetica, the medical term for pain and sensations of burning or numbness in the thigh area, is due to compression of a nerve by tight jeans.

Tight shoes have plagued humanity for eons. Shoes distort and misshape feet and toes and soak the feet in toxic chemicals used in their manufacture. When you walk into a shoe store, you can smell some of these toxic chemicals. Socks, often worn with shoes, typically have tight bands around the ankles to prevent the socks from falling. You can see how this constricts the skin when you remove your socks and see indentations in your legs where the socks were extra tight to hold on. This constricts the lymphatics draining the skin of the feet and, along with shoe tightness and standing for

long hours, contributes to swollen feet at the end of the day. Meanwhile, shoe chemicals mix with foot sweat and enter the skin of the feet. This could help explain why melanoma skin cancer has a high incidence on the bottoms of the feet. The shoes provide the toxins, the socks limit lymphatic drainage, and the feet suffer from fungus, anatomical distortion, swelling, and disease. Add to this the problems with posture created by high heels, which also stress the ankles, knees, hips, and spine, and you can see how something as apparently innocuous as shoes can be a major health threat.

When you begin to view tight clothing as a possible health risk, it becomes clear that apparel can affect health through mechanisms other than lymphatic constriction. While these other mechanisms may not be directly related to cancer development, they do show that clothing can have a marked effect on body functions.

Garments used to support the body are particularly problematic. The human body has natural internal supportive structures, called ligaments, that create stability from inside the body's tissues. We are not animals, like lobsters, with an exoskeleton, or an external support, that holds in our tissues. We have an endoskeleton, or internal support built into our tissues, that supports us from the inside. When a garment is used on the outside of the body to support structures, as a bra is supposed to support the breasts, it creates an unnatural compression of the body from the outside, affecting circulation. Bras are essentially operating as an exoligament and alter our anatomy by compressing it from the outside. This also results in weakening of the natural suspensory ligaments inside the breasts, resulting in dependence on the bra for support and making the breasts droop more than they would naturally from gravity.

Besides the effect of tight clothing, we must also consider the effect of wearing certain tight-fitting items such as eyeglasses. As explained by Dr. Wrynn Smith in *A Profile of Health and Disease in America: Cancer*, "Another cited risk factor for cancer is trauma or repeated irritation. One of the most common sites of skin cancer is the bridge of the nose where eyeglasses continually rest." Notice that trauma or repeated irritation is cited as the culprit, not exposure to ultraviolet radiation from the sun.

These statements, of course, do not solve the mystery of how eyeglasses can cause trauma and how this trauma can lead to cancer. This mystery may be solved, though, by considering that eyeglasses squeeze the skin tissue with their weight, hampering the lymphatic drainage of that section of skin.

Without proper drainage, the effects of toxins and ultraviolet radiation are more severe, as damaged cells and radiation products cannot be effectively cleared from the area.

It is unfortunate that the medical profession has typically ignored the role of lymphatics in the maintenance of health. Apparently, lymphatics are so small that they are easily forgotten. Even *Gray's Anatomy*, a medical textbook, admits, "As these structures [lymphatic vessels] are not readily seen in his dissections, the student is apt to forget the study of lymphatic drainage." The fact that virtually nothing is written about the lymphatic system also makes it easy for doctors to forget about the lymphatic structures. The thymus, an organ of the lymphatic system, is hardly understood by medical science. The spleen, which is lumped in with the lymphatic system, is also poorly understood. All that the medical literature typically states about these organs is that they are involved with blood cells and the immune system.

This ignorance regarding lymphatics has led to surgical procedures now considered inappropriate, such as the routine removal of tonsils. Instead of interpreting the swelling of tonsils as a sign that the body was doing its job, doctors felt it necessary to remove the tonsils altogether. About the only time lymphatics are mentioned these days is in connection with cancer, especially breast cancer. They are not, however, seen as an important system in the prevention of cancer. Rather, lymph nodes are considered pathways for the spread of the disease. Surgeons study the nodes' locations so they can remove them when performing mastectomies.

Of course, lymph nodes can get diseased and damaged. After years of chronic constriction, lymphatics and their nodes will suffer. Importantly, the valves in lymphatics can become damaged by trauma and congestion. Once the valves are gone, forget the prospect of moving the lymph away from the tissues toward the heart. Tissues drained by these defective lymphatics swell and suffer from congestion.

In summary, then, breast cancer may be caused by the combined effects of toxins and bras on breasts. The plausible medical mechanism for this connection is that bras focus and concentrate toxins within breast tissue by limiting lymphatic drainage and prevent the immune system from effectively cleansing and repairing the damage.

THE NEXT STEP

By the time we had reached this point in our research, we were extremely excited. It is difficult to describe our feelings. In one sense, we were intellectually fascinated by what appeared to be a perfect example of a culture-caused, or culturogenic, disease. We felt like pioneers charting unexplored territory. Perhaps the deepest-felt emotion, though, was expectation. Imagine how significant this finding could be! Millions of women might be spared breast cancer by this easy-to-adopt lifestyle modification.

We were ready for the next step. We had to put our theory to the test.

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FIVE

Testing the Theory

RESEARCH IS EASY. GOOD RESEARCH IS DIFFICULT. I HAVE SEEN SO MUCH research—in anthropology, medicine, biochemistry, sociology, psychology, and other academic fields—that is not worth the paper on which it is printed. We did not want to add ours to the pile.

To perform good research, you have to understand what you are looking for—your variables—and have controls in place for other variables that may confuse the picture. You also have to design the experiment to assess whether the variables in question are the ones you should have been looking at in the first place.

CHARTING THE TERRITORY

If a particular lifestyle predisposes women to breast cancer, we might be able to characterize women with breast cancer as a subculture—a smaller culture that exists within the larger culture. Since this particular lifestyle choice pertains to the wearing of bras, we would expect women with breast cancer and women without breast cancer to differ from each other in the way they wear their bras. And since lifestyles are related to attitudes and values, we would also expect that accompanying their different bra-wearing behavior, women in the breast cancer subculture would have different attitudes and values about their bras and breasts.

On the other hand, it was possible that the lifestyle choices of women with breast cancer were no different from those of other women, in which case either our theory was wrong or we had ignored other variables that determine which women get breast cancer and which are spared. As we worked our way through the research design, we shared our theory with

some friends and professionals who quickly caught our enthusiasm. Some of these people were women who had suffered from breast cancer. Several of them were very committed to our efforts to forge a new path in breast cancer research and offered to assist us in financing the research. We loosely organized what is now the Institute for the Study of Culturogenic Disease and decided that this would be the institute's first project. Our total operating budget was \$20,000.

That doesn't sound like a whole lot of money, but we were elated. Our major expenses would be air travel, lodging, and food. All the work could be performed by trained and supervised volunteers.

As we filled in the details of our research plan, we wondered how many surprises lay ahead. The study of women's attitudes toward and behaviors around their breasts and bras was and is new territory as a subject of science. In some respects, this subject could not have been studied in American culture without our liberalized sexual attitudes. Until recently, it would not have been considered appropriate to ask a strange woman about her bra-wearing behavior or her attitudes toward bras and her breasts. Nevertheless, we felt that our excursion into the private lives of women would elicit new information about something that affects virtually every American woman but probably has never before been discussed or even considered.

When a woman stands alone in front of a mirror, she looks at more than her physical features. She sees herself as *female*, with all the cultural trappings that come with that classification. She assesses whether her face is the right shape; whether her nose is too large or small, too flat or pointed; whether her hair is the right length. She looks at her body, determining whether she is too fat, too flabby, too tall, or too short. And she looks at her breasts and judges their shape, size, and tone.

Of course, men do the same thing with their bodies, using different standards and perhaps looking at different body parts. We all do this to ourselves. Some of us are more preoccupied with such self-assessment than others, but we all seem caught up in comparing ourselves with some standard of physical beauty.

Who sets this standard? Nobody seems to know for certain. I have watched teenage girls compare themselves with movie and television stars and use fashion magazines as textbooks on personal appearance. "What makes you think that these styles are beautiful?" I have asked some of these

girls on occasion. Typically, the response is a blank stare that seems to say, “Everybody knows this is beautiful. It’s the way people are supposed to look.”

Our culture conditions us without our being aware of the process. Few people stop to ask who is setting the fashion and what makes a popular fashion acceptable.

Of course, breasts are in fashion. In Western civilizations, they have been for centuries. One hundred years ago, fashion dictated that women constrict their bodies with corsets to the point of disease. Disease was an unfortunate side effect of being beautiful—if disfigurement in the shape of an hourglass is one’s idea of beauty.

But women are at least now able to talk about such things. And as anthropologists, we talk to people as a primary form of investigation. In developing a questionnaire, we tried to allow for candor in the responses. Some questions can be leading, resulting in biased responses. It was therefore crucial that we develop the right questions.

In our study, we were trying to distinguish between groups of women on the basis of breast cancer incidence and to see whether this distinction was associated with specific behaviors and attitudes toward bras and breasts. If bra-wearing behavior was indeed associated with breast cancer, we would have to make sure there were no other factors that could explain the connection.

We felt no need to repeat other researchers’ work by examining all the known risk factors in our questionnaire. Besides, as risk factors, they are not causally related to breast cancer but are merely predictive of the disease. The connection of bras to breast cancer, however, could be more than a correlation. Given the lymphatic mechanism we described, the relationship could be causal.

In other words, we did not have to ask whether, for example, the interviewee had a close relative with breast cancer. We already know that more women with breast cancer have this history than do women without breast cancer. Since this has nothing to do with the wearing of bras or the lifestyle surrounding that behavior, we did not need to ask about it.

How can significant risk factors be viewed as unnecessary to this study? This is an important question, and to answer it, we must examine the nature of research into the cause of disease.

The purpose of this type of research is to discover significant relationships between a disease and aspects of life that relate to that disease. We must look for biological, environmental, and cultural factors, since we must understand human nature from each of these perspectives to have a complete picture. However, as you might guess, it would be impossible to conduct any research project if all the possible variables of human biology, environment, and culture had to be considered at the same time. Indeed, one of the goals of research is to identify these variables. To surmount this problem, a research project is designed to examine as few variables as possible, hoping that other variables can be ignored for that study. Here is where problems can occur, since the whole of human nature cannot be easily divided into relevant and irrelevant features with regard to a particular disease—especially a disease that is still largely a mystery.

The art of science lies in recognizing the relevant connections between various aspects of human nature and in seeing the whole through an examination of many parts. In practice, researchers study a feature of human nature—the variable—along with other features, or variables, that may relate to it. Variables that have no significant connection can be ignored. Because these other variables are independent of the one being studied, they have no direct bearing on the study.

In the bulk of breast cancer research, the perspective of human nature studied is biochemistry focused. As mentioned earlier, estrogen has been traditionally considered a potential breast cancer factor. Because estrogen, being a hormone, is connected to so many bodily functions, it must be considered in virtually every biochemical study of breast cancer. As a result, even studies of dietary factors consider estrogen levels. Dietary fiber, for example, has been thought to reduce breast cancer incidence through an effect on estrogen excretion in the intestines. Many other breast cancer factors have also been thought to operate via a hormonal mechanism—a mechanism as yet not fully understood—that might involve estrogen. It is clear from the literature that any study that may involve a biochemical mechanism for breast cancer must consider all biochemistry-associated risk factors as potentially relevant variables, since the fundamental mechanism(s) underlying the risk factors may have biochemical connections. Hence, age at menarche, age at menopause, use of oral contraceptives, and other risk factors that may be connected to estrogen levels are considered in all good biochemical studies of breast cancer. On

the other hand, known risk factors that are not biochemistry oriented—such as income, country of birth, and profession—are ignored.

However, not all breast cancer studies are biochemistry focused, and the variables considered along with the studied variable must be of the same type. Biochemical studies consider biochemistry-related variables; cultural studies consider cultural variables. Hence, a study reported in the *Journal of the National Cancer Institute*, P. Buell's "Changing Incidence of Breast Cancer in Japanese-American Women," considered the demographic variables of place of birth and age at immigration. Biochemical risk factors were ignored, since they have no relevance to emigration patterns—even though they do relate to breast cancer.

Our study was to be a cultural analysis of attitudes and behaviors regarding breasts and bras. Risk factors not significant in their effect on attitudes and behaviors regarding breasts and bras—such as age at menopause, use of oral contraceptives, and number of children—could be ignored. However, we did have to consider some factors that happen also to be known breast cancer risk factors, as these factors potentially relate to attitudes and behaviors regarding bras and breasts. Age, breastfeeding experience, and income all seemed relevant to our study, since different age and economic groups may have different attitudes and behaviors regarding breasts and bras, and since breastfeeding reflects a woman's attitude toward her breasts. We also had to ask how long a bra was worn daily, what the subject's attitudes were regarding her appearance, and so forth. We even had to be aware of the order of the questions. One question can bias the interviewee in a way that affects her responses to later questions.

GATHERING THE DATA

The Bra and Breast Cancer (BBC) Study began in May 1991 and ended in November 1993. The research took us to five major cities across the United States: San Francisco, Denver, Phoenix, Dallas, and New York City. In each city, we interviewed approximately 400 women, for a total of 2,056, who had been diagnosed with breast cancer. In each city, we also interviewed approximately 500 women, for a total of 2,674, who had no known diagnosis of breast cancer. The interview style was conversational, and any comments that women made in response to the questions were also recorded and analyzed.

Soma was the principal fieldwork investigator. We felt that a woman should ask the questions, since a male interviewer might make the women uncomfortable. On occasion, Soma recruited the help of female volunteers, all of whom received instructions regarding how the questions should be asked and how the responses should be recorded. Soma tried to match the ages of interviewer and interviewee as much as possible to reduce communication barriers. Our young volunteers were college students. Our older volunteers were found through senior centers.

One methodological challenge we encountered in the study was that women with breast cancer were being asked solely about their past attitudes and behaviors, while those without cancer were being questioned about current and past behavior. We assumed that breast cancer diagnosis and treatment would alter a woman's attitudes and behaviors regarding her breasts. Since our focus was on prevention, in our interviews we emphasized that we wanted to know how the women had felt and acted toward their breasts before their diagnosis.

Frequently, we were able to obtain confirmation of the women's responses from their spouses, who were present during about 50 percent of the interviews. In virtually no case did we get any contradiction of the woman's response. We therefore felt confident that we were successfully eliciting past attitudes and behaviors from these women.

It is important to realize that the women who had received breast cancer diagnoses were under active treatment for breast cancer. Their diagnoses were recent enough to allow them to remember patterns of bra usage and the effect of this usage on their breasts. Indeed, not one woman questioned responded, "I don't remember." In addition, it is vital to keep in mind that, according to the American Cancer Society, breast cancer is a process that can begin up to twenty years before the disease is detected and diagnosed. Our purpose was to find attitudes and behaviors that dispose a woman to breast cancer. If we assume that these lifestyle characteristics can take years to exact their price on a woman's breasts, it becomes clear that past behavior must be studied in the case of women with breast cancer. In the case of those without breast cancer, their past and present are still writing the story of their future.

This brings us to another point. The women we questioned from the general population were not certified forever free from cancer. According to national statistics, almost 13 percent of them will go on to develop breast

cancer. Some of them, no doubt, had undetected tumors growing in their breasts at the time of the study. Consequently, we should not consider all their behaviors and attitudes as examples of how breast cancer can be prevented. While the majority of these women will be spared breast cancer, the results from this population will reflect some of the lifestyles of people on the road to cancer. This makes a statistical analysis of the study's results highly problematic, since such an analysis would require "pure" groups, with no crossover, particularly of an uncertain number. Fortunately, we do not need a complex statistical analysis to understand the findings.

To avoid the confusion inherent in questioning women of different ethnic backgrounds, we chose to limit the BBC Study to Caucasian women. Worldwide, these women have the highest incidence of breast cancer. While the rate of occurrence differs among races and cultures, we expected that any evidence of bras leading to breast cancer is significant for all women who wear bras, regardless of racial or cultural background.

Finally, we were sensitive to the fact that, despite our more liberalized society, questions about bras and breasts are still somewhat taboo. Therefore, women with cancer might be either more or less comfortable discussing this topic than women from the general population. This difference could theoretically skew the results of the questionnaire. However, we found that the same percentage of women with cancer and from the general population—about 30 percent—were willing to talk with us about these issues. This suggests that the subculture of women with cancer and the general population of women did not react differently to the questionnaire, although this variable certainly should be considered in any future uses of the questionnaire.

With questionnaires in hand, Soma questioned women outside hospitals, clinics, doctor offices, and anywhere else she could find women with breast cancer. Many times, she was given a referral from one cancer patient to another and would complete the questionnaire over the phone. Women without breast cancer were also good sources of referrals to women with the disease. It was amazing to find how many people know someone with breast cancer.

When the data was finally collected, the results were astounding—and beyond our wildest imagination.

Six

Taking It to the Street

OUR OBJECTIVE HAD TAKEN OVER OUR LIVES. THE WORK OF PORING through mountains of research and interviewing over 4,500 women, about half of whom had breast cancer, was an all-consuming task.

It is the duty of any researcher to remain impartial throughout the data-gathering phase, as well as during the interpretation of results. I had gained practice in this art of self-control during years of working in biochemistry research labs, sitting in front of large machines and looking at test results as they flashed on a screen or were sketched on paper. If you care about the results, you anxiously await the data and chart it, hoping to substantiate your theory and thereby make the experiment a success.

With experience—and wisdom—the researcher comes to realize that all experiments are successful as long as they provide some meaningful information. The results do not have to match expectations for a study to be termed a success. In fact, you sometimes learn more from surprise findings than you do from expected ones. Surprises let you know that you have more to learn, and they can point you in a more profitable direction.

We assumed that the Bra and Breast Cancer (BBC) Study would yield some surprises—and it did, as you shall see. But as you shall also see, our theory passed the test. And with flying colors!

THE FINDINGS

Let us present the test findings to you one question at a time. The original sequence of questions was designed to elicit the least-biased response. (See “The Questionnaire” on p. 78.) However, to analyze the responses properly, we have divided them into three categories: background information,

attitudes, and behavior. It is most instructive to review the results in light of these categories.

The Questionnaire

1. What is your age?
2. Would you place yourself or your family in a low-income, medium-income, or high-income bracket?
3. Have you ever had an occupation that exposed you to chemical fumes, radiation, or other toxins?
4. Are you comfortable with the size and shape of your breasts without a bra?
5. Do you select bras to shape or accentuate your breasts?
6. Other than price, what is the most important feature you look for when buying a bra?
7. Does your bra occasionally seem tight or uncomfortable?
8. Does your bra ever make red marks on your skin or cause irritations?
9. How long do you wear your bra each day on the average?
10. Do you wear a bra or breast-supporting garment to sleep?
11. Do you wear a bra? Have you always worn (or not worn) a bra? During what ages in your life did you not wear a bra?
12. Have you breastfed?

Background Information

As stated in earlier chapters, human beings must be understood from biological, environmental, and cultural perspectives if any assessment of disease is to be complete. As we explored women's attitudes and behaviors regarding breasts and bras, we needed to address basic biological, environmental, and cultural variables that help define these women. Of course, biologically, we had to assess whether or not the woman had been diagnosed with breast cancer in her lifetime. This assessment, which was essential for placing the woman in either the standard or the cancer group, was made prior to the interview and so does not appear on the questionnaire. Another variable that defines a woman biologically is age. An environmental issue of great concern is exposure to toxins, since this may predispose a woman to breast cancer. Finally, income level helps

define a cultural variable that frequently influences a woman's lifestyle choices.

■ What Is Your Age?

The ages of the women ranged from thirty to seventy-nine, with the majority falling between forty and seventy. The distribution of ages in both groups was approximately the same and did not reflect any national averages for breast cancer or for women in general. This is no surprise or problem, since we made no attempt and felt no need to get such a distribution for this type of study. However, it was important to determine if there was any relationship between age and lifestyle practices. And here we found some interesting results.

Women of different ages in both groups did not significantly differ from one another in their attitudes or behavior regarding their breasts. Women over seventy tended to put slightly less lifestyle emphasis on their breasts, although this was more the case in the standard group than in the cancer group. Apart from this finding, we were able to treat all women within each group the same, regardless of age.

It is interesting to note that many older women stated at the time of the study that they felt the same way about themselves as they had when they were younger. Personal identity, particularly sexual identity, seemed relatively unchanged through time. Some women made statements such as "I am sixty-eight but feel forty" and "You're as old as you feel."

Frankly, we were surprised by this finding. Knowing that age is a risk factor for breast cancer, we expected that older women and younger women might have different attitudes or behaviors regarding their breasts. But when you consider that cancers can take many years to develop, it seems that the cause of the higher breast cancer incidence among older women may simply be a longer exposure to toxins, coupled with years of other unhealthful lifestyle practices and attitudes.

■ Would You Place Yourself or Your Family in a Low-, Medium-, or High-Income Bracket?

Results

Standard group: 37 percent low; 55 percent medium; 8 percent high
Cancer group: 30 percent low; 60 percent medium; 10 percent high

In both the standard and the cancer groups, most of the women fell into the medium-income bracket. A greater percentage of women in the high-income group were found in the cancer group. This is consistent with the finding that high income, which is related to high socioeconomic status, is a breast cancer risk factor.

■ **Have You Ever Had an Occupation That Exposed You to Chemical Fumes, Radiation, or Other Toxins?**

This was the only question that the women had difficulty answering. Most women had no idea of the toxins in their workplace, and their answers to this question reflected more their ignorance about toxin exposure than their actual exposure. In some cases, a woman was clear about her toxin exposure at work, and this was more the case in the cancer group than the standard group. The diagnosis of cancer may have stimulated some women to reflect on their history of toxin exposure. However, the number of clear responses was too small to permit generalizations.

Attitudes

The next group of questions concerned attitudinal responses. Attitude is a state of mind and feelings. Our questions were designed to explore these women's feelings about bras and breasts.

■ **Are You Comfortable with the Size and Shape of Your Breasts Without a Bra?**

Results

Standard group: 18 percent yes

Cancer group: 5 percent yes

In cultures in which a woman's breasts are viewed primarily as a means of nourishing infants, a woman's contentment with her breasts hinges on practical issues. Do her breasts provide enough milk? Do they get in the way of working? Such women, and their men, give breasts little attention. And these societies have extremely low rates of breast cancer. In fact, according to C. Muir's *Cancer on Five Continents*, some of the lowest breast cancer incidence rates in the world are found among the women of non-Jewish Israel; Singapore, Malay; rural Poland; and Bombay, India. In our own country, low rates are found among Native Americans in New

Mexico. What do these groups have in common? In their cultures, the primary form of dress does not include the bra.

In our society, breasts are, in part, sex objects for men, and men primarily have the greatest social power. The practicality of attractive cleavage in our society means that a woman may be more appealing to men for favors, admiration, status, or companionship. For a woman lucky enough to have a pinup figure, her organs of lactation have been transformed into door and eye openers. Those with less than pinup outlines might prefer minimizing the focus on their breasts. But society will not allow that. Comparisons are made, and breasts are judged, regardless of a woman's personal attitudes. Women are forced to assess their breasts and fall into a breast-defined pecking-order relationship with other women. They may love their breasts or hate them, but they will come to regard their breasts as important in regard to friends, lovers, and even the attitudes of strangers.

In our survey, the overwhelming majority of women were uncomfortable with the appearance of their breasts. Those in the cancer group were even more uncomfortable than those in the standard group. Remember that this referred to the attitude they had *before* getting cancer. Only 5 percent of the cancer group women stated that they had felt good about their breast size and shape. The standard group was also mostly displeased with their breasts' appearance, but 18 percent said they were comfortable. It is interesting to note that almost all the women in both groups had an opinion about their breasts. Positive sentiments about their breasts were typically stated with some modesty, with a response such as "I feel fine about my figure." On the other hand, women who disliked their breasts were very clear in their feelings, with some women saying, "I look terrible without a bra!"

It is no surprise that these women were mostly displeased with their breast appearance. After all, images of "perfect" breasts permeate the minds of men and women daily through advertisements, television, and movies. Fashion does not cater to the bodies of women but demands that women conform to the dictates of fashion designers. Designers have a distinct preconception of how the ideal breast should look. Few women feel that they fit the image.

Many women who fail to look like models eternally try to do so. Women have been conditioned to believe that they are lacking in some essential

quality if their breasts do not curve, arch, and point correctly. That the standard of beautiful breasts is clearly subjective makes no difference to most women. Cultural values set the standards for the masses. Those who live within a culture are subjected to those standards, regardless of reasonability. (We will further address the cultural values of breasts and bras in [Chapter 7](#).)

Incidentally, standards of breast size do change over time. Sometimes small breasts are in fashion, sometimes large ones. The challenge for women is to meet the ideal, whatever it may be at any given moment. And ideals are characteristically difficult, if not impossible, to reach. This, of course, keeps women uncomfortable with themselves and unhappy with their breasts—and forever turning to the fashion industry for a means of making their breasts conform to current standards. They even go to doctors to help them conform to social beauty standards. About 4 percent of women in the United States have augmented their breasts with implants solely for cosmetic reasons.

■ Do You Select Bras to Shape or Accentuate Your Breasts?

Results

Standard group: 74 percent yes

Cancer group: 87 percent yes

The standard for beautiful breasts has clearly made many women uncomfortable with their own bodies. What do they do? They buy bras to change the appearance of their breasts.

We are starting to see a pattern here. Women in the cancer group were more concerned about breast appearance than were women in the standard group, and more than other women, women in the cancer group selected bras to change the look of their breasts. Could this attitude be related to breast cancer? This cannot be inferred until the rest of the data is revealed. But we should start to look for a continuation of this attitudinal pattern, which we will call a *fashion focus*.

■ Other Than Price, What Is the Most Important Feature You Look for When Buying a Bra?

Results

Standard group: 30 percent appearance; 51 percent comfort; 19 percent both

Cancer group: 62 percent appearance; 25 percent comfort; 13 percent both

This question was used to verify the woman's attitude toward bras. When we designed the questionnaire, we were concerned that some women would not admit that they were interested in appearance, as such an admission might be perceived as revealing their insecurities about their breasts. To surmount this possible problem, when the response to this question included both appearance and comfort, the interviewer was instructed to ask, "Which is more important to you?" This follow-up question allowed us to determine the woman's primary consideration when buying bras. If the response was still "both," we recorded it as such. Otherwise, we recorded the response as either "comfort" or "appearance."

What do bras represent to women? Some women—especially large-breasted women—use bras for comfort. A bra can distribute the weight of large breasts by means of the shoulder straps and side bands. Here the bra would function as a harness. Responses such as "I look for a good fit" and "I look for a bra that supports my breasts" we grouped together as comfort concerns.

But small-breasted women clearly have no need for a breast harness. And, let's face it, the concept of a "breast harness" would not sell. It makes a bra sound more like a prosthesis than a fashion garment. Clearly, many women select bras for fashion rather than function. Responses such as "I look for a bra that makes me look sexy" and "I look for a bra that makes my clothes fit better" we grouped as appearance concerns.

Women in both groups were very aware of the need for bra comfort, although the standard group was more aware of this need for comfort than was the cancer group. Generally speaking, a concern for comfort makes sense when choosing a potentially uncomfortable garment. Of course, any garment can cause discomfort, but you would expect comfort to be of greatest concern in the selection of apparel that has the greatest potential for causing discomfort. Bras, other underwear, and shoes fit more tightly than other garments and therefore have the greatest potential for causing discomfort. This comfort response, then, clearly shows that women are aware that bras can be uncomfortable.

Fashion, however, often prevails over discomfort. In the cancer group especially, appearing beautiful, or at least socially acceptable, was often more important than being comfortable. Or perhaps we should conclude that the discomfort of a poor appearance is greater than the discomfort of a

tight bra. Keep this in mind as another aspect of the fashion-focused woman.

What does this information tell us? In this study, women with breast cancer were two times as likely to value appearance when selecting a bra as the standard group of women. In addition, women from the cancer group were half as likely to consider comfort than were those in the standard group. The cancer group women often selected bras more for style than fit. Fashion focus, then, unfolds further, suggesting that women with this attitude willingly sacrifice physical comfort in response to a standard of beauty imposed on them by society.

How does this relate to breast cancer? When breasts are squeezed by a bra, the woman usually receives some negative feedback in the form of red marks, skin irritations, and perhaps even pain. But women with a fashion focus seem largely to ignore these warning signs. Their body-sense is silenced by the self-assurance that they are successfully looking the part of a fashionable or sexy woman.

Let's test this impression. The next question will prove revealing.

■ Does Your Bra Occasionally Feel Tight or Uncomfortable?

Results

Standard group: 28 percent rarely; 55 percent sometimes; 17 percent always
Cancer group: 48 percent rarely; 34 percent sometimes; 18 percent always

Since many women claimed that comfort was important to them, you would assume they had comfortable bras. On the other hand, perhaps women think about comfort because they rarely find it.

To harness the breasts and keep them in an artificial shape requires pressure from the bra. Pressure is never comfortable, especially for long periods. Perhaps the claims of bra manufacturers that their products are both beautifying and comfortable are ideals or empty promises rather than a reality.

According to our results—and this is quite interesting—48 percent of the cancer group reported rarely having discomfort from their bras. At the same time, 28 percent of the standard group asserted that their bras rarely caused discomfort. The majority of women in the standard group, 55 percent, said that they sometimes felt discomfort from their bras, compared with 34 percent of the cancer group. About the same percentage of women in each

group—approximately 18 percent—said that they always had discomfort from their bras.

Realize that this question measured subjective impressions regarding bra comfort and that comfort is a relative concept, close in meaning to “acceptable.” Many of us have learned to be comfortable with experiences that are not necessarily pleasant. We learn to accept those disagreeable events and experiences that we believe we cannot avoid. Take, for example, rush-hour traffic, having a dentist work on your teeth, or paying the phone bill. Although these are not intrinsically pleasant events, somehow we learn to be comfortable with them.

Part of our mechanism for associating comfort with an unpleasant stimulus is to focus on a pleasant stimulus. Rush-hour discomfort is diminished by the pleasure of music on the radio or the anticipation of getting where you want to go. We learn to be comfortable with a dentist’s drill whirring in our mouths by thinking about a nicer smile or less oral pain.

Women with a fashion focus may report less discomfort with their bras because, in being interested in looks more than comfort, they have already made a subconscious trade-off. If comfort is a secondary concern, women will not think about bra discomfort. They will focus more on the reason for wearing the bra in the first place, which will be measured more in terms of the reaction from others—particularly men—than in terms of the reaction from their breasts.

On the other hand, it would be incorrect to conclude that all women who reported feeling comfortable were denying their pain or were insensitive to the feelings of their breasts. Women who state that their bras are comfortable may simply wear looser bras. Another possibility is that physiologically, these women have a higher threshold of pain and discomfort. Some women, too, may have learned to feel comfortable in a bra after years of bra wearing, just as some women learn to feel comfortable in tight, pointed, high-heeled shoes. It is important to note that in many instances, our society raises our threshold of discomfort. Consider, for example, a baby who keeps kicking off his shoes because he finds them so uncomfortable. His mother and father, however, probably wear shoes for many hours at a time without feeling discomfort. The constant wearing of shoes has raised their threshold of discomfort to a point where they can wear most shoes without experiencing any unpleasant sensations. In fact, as

we will discuss later, the cultural practice of giving a young girl a “training bra” is a way of getting her to accept the discomfort of wearing a bra.

If Soma had been asked about the comfort of her bra before she discovered her breast lump, she would have reported a feeling of comfort. Like most American women, Soma had worn a bra daily since adolescence. Her breasts had never known the sensation of being bra-free. Here we see a problem inherent in subjective appraisals of comfort. *Comfort* is, to a degree, a relative term. When we asked women if their bras felt comfortable, an appropriate response might have been “Comfortable compared with what?” If we are assessing the comfort of bra wearing compared with being braless, few American women would be able to make this comparison. In Soma’s case, once she became bra-free, she was able to compare the feeling of wearing a bra with that of being braless. She now realizes that she had been uncomfortable in her bra.

This means that subjective appraisals of comfort can change and are not a terribly reliable measure of how a bra may be constricting the breast tissue. Is there a more objective way to determine if a woman is being damaged by her bra? By examining a woman’s behaviors, we can gain further insight into the effects of bra wearing.

Behaviors

Attitudes are in people’s heads; behaviors are what people do. They reflect the way people conduct their lives on a daily basis. And behaviors are easier to measure than attitudes, since they create events we can see.

■ Does Your Bra Ever Make Red Marks on Your Skin or Cause Irritations?

Results

Standard group: 25 percent rarely; 52 percent sometimes; 23 percent always
Cancer group: 14 percent rarely; 46 percent sometimes; 40 percent always

The purpose of this question was to create some physical appraisal of a bra’s effect on breast tissue. Tight, constricting bras leave red marks and tend to create irritations and other signs of damage. As just discussed, whether or not this causes a woman to experience discomfort or pain can depend on many things. The last question showed that most women in both groups found bras uncomfortable at least some of the time. With this

question, we tried to discover whether subjective reports of discomfort corresponded to objective signs of breast irritation. Our assumption was that breasts that show signs of irritation will also feel uncomfortable. Did the results support this assumption?

Notice that only 14 percent of the cancer group reported that red marks and irritations occurred rarely. On the other hand, 86 percent reported having signs of irritation from their bras sometimes or always. Yet, from the previous question we saw that 48 percent of the women in this group reported rare bra discomfort. What does this mean? How could about half these women say they were not uncomfortable, yet almost 90 percent of them have red marks or irritation around their shoulders, chests, and breasts at least some of the time?

Further, almost half the women in the cancer group reported always having red marks or irritations from their bras. At the same time, only 18 percent reported always being uncomfortable. Could this mean that red marks and irritations were not uncomfortable to them?

Let's look at the standard group results. These women reported physical signs of irritation from their bras in the same proportions that they reported subjective impressions of discomfort. That is, 28 percent said bras rarely felt uncomfortable, and 25 percent said they rarely found irritation or marks from wearing a bra. But 55 percent said bras were sometimes uncomfortable, and 52 percent reported sometimes having physical signs of discomfort. And 17 percent said they always felt uncomfortable in bras, while 23 percent reported always having physical signs of irritation from them. When we checked which women gave which results, there was a good correlation between responses for these two questions. That is, women who sometimes felt discomfort usually said they sometimes had red marks; those who rarely felt discomfort rarely had red marks, and so forth.

This difference between the two groups' responses suggests that women in the cancer group, for whatever reason, tended to feel less discomfort from their bras than did women in the standard group, despite more frequent reports of objective signs of breast irritation. These women seem to have experienced physical signs of irritation without the subjective feelings of discomfort that one would expect to result from these irritations. How can we explain this paradox? In part, these responses may have been the result of the higher threshold of discomfort discussed earlier in the chapter. Further, we may be seeing another aspect of the fashion focus, which was

characteristic of many women in the cancer group. Women who believe that bras are necessary for beauty may subordinate their body-sense to their fashion sense. Red marks and irritations left by bras may not feel good, but a fashion-focused woman may believe that beauty is worth the price.

What this does to a woman's breasts, however, is not beautiful. If you are not listening to your breasts, you are apt to abuse them. Compressing lymphatic drainage with a tight bra could be a mechanism for developing cancer. The more insensitive a woman is to her breasts, the more likely she will ignore the messages from her body saying, "Stop constricting me!" Red marks, irritations, and swollen tissue are signs that the breast is in trouble. Ignoring those signs is like turning off a smoke alarm while the house is on fire. And once a woman is insensitive to her own body, she is apt to do other damaging behaviors, as the next question illustrates.

■ **How Long Do You Wear Your Bra Each Day on Average?**

Results

Standard group: 20 percent less than twelve hours daily; 80 percent more than twelve hours daily

Cancer group: 1 percent less than twelve hours daily; 99 percent more than twelve hours daily

Here we were trying to assess the amount of time a woman feels it necessary to support or enhance the appearance of her breasts. Of course, some women may wear a bra not for deliberate support or beauty enhancement but simply because it is the norm. Regardless of the motivation, from our hypothesis we would expect the women with breast cancer to have possibly compromised their lymphatic drainage more severely by wearing bras for longer periods.

When asking women this question, we offered two response choices: A bra is worn less than twelve hours daily, or a bra is worn more than twelve hours daily. Obviously this question pertained only to women who wore bras and not to the entire sample of women.

How would you expect women with a fashion focus to respond to this question? Would women who feel the need to wear bras for beauty or as a social norm shed these undergarments at the earliest possible moment during the day?

The response from the cancer group was that 99 percent wore bras more than twelve hours daily, compared with the 80 percent response of the standard group. This certainly is consistent with the anticipated results.

Women with a fashion focus would identify their breasts with their appearance. Their spouses may even be attracted to them in large part because of their appearance. Just as some women feel the need to wear makeup all day to look their best, women who believe that their breasts need the assistance of bras to look their finest will wear them as long as they are being observed, even if the observers are their own family members. In fact, several women in both groups reported that their husbands liked to see them in sexy clothes in the evening. The women making these comments all wore their bras at least until bedtime.

Single women, on the other hand, are spared the need to worry about their breast appearance at home. But these women may have social lives that keep them on their toes, from a fashion and appearance point of view. "You never know who may stop by," one woman explained.

Besides these social concerns, women with a fashion focus may identify with their clothing-enhanced appearance. When your self-image and self-esteem are partly related to your breast shape, you are apt to keep a bra on to feel your best. Most people, for example, probably comb or brush their hair regardless of whether they are in the company of others. The mirrors we all glance at allow us to assess ourselves. We all want to feel good about the way we look. When a woman places a great deal of psychological emphasis on her breasts, and she feels that they are unsightly without the shaping effect of a bra, she is likely to continue wearing her bra. As one woman aptly put it, "I can't stand the way I look without a bra on." Another woman summed up her reason for wearing a bra in the evening by saying, "My tits will sag all the way to my navel without a bra. It makes me feel like an old bag." And another woman explained, "I do my best to look as young as I can."

There is an important point to make here regarding the cancer group and a fashion focus. Not all women in the cancer group had a fashion focus. Many women had simply become accustomed to wearing bras. Admittedly, there were some women who felt that their breasts were large and uncomfortable. Women sometimes perspire under their breasts, and the skin of each breast can get irritated as the breasts rub against other skin or each other. Also, large-breasted women can develop postural difficulties and

back problems because of an unequal distribution of weight between anterior and posterior, causing them to lean forward. For these women, comfort is a real issue, and they turn to bras for an answer. One woman who wears a bra until bedtime told us, “They [her breasts] just get in the way.”

But comfort is a subjective issue. Bra manufacturers advertise that their products can assist in comfort, and many women believe the ads. That is the power of advertising. Regardless of the truth of the claims, bras may be worn to satisfy a woman’s need for comfort. This comfort may be psychological or physical, but once women get used to wearing bras for whatever reason, they may continue wearing them over long periods of the day.

Despite the motivation, these women may pay a price regarding the health of their breast tissue. All our behaviors are trade-offs. We exchange some physical and psychological discomforts for others. When it comes to bras, the discomfort caused by limited lymphatic drainage of the breasts may not feel severe enough—at the time—to outweigh other considerations. But time moves on, and disease often creeps up on us step by step, catching up to us when we least expect it.

Therefore, as far as breast cancer is concerned, it does not really matter whether the women in the cancer group all had a fashion focus or not. What really matters is their behaviors. On the other hand, it is helpful to see a pattern of attitudes associated with certain destructive behaviors so that women who do not have breast cancer can observe the pitfalls—and hopefully avoid them.

Clearly, in comparison with the standard group, the cancer group had a larger percentage of women who wore bras for more than twelve hours a day. Whether because of a fashion focus or a variable completely unrelated to appearance, they were behaving in a manner that may be associated with breast cancer.

When we checked the details of each woman’s response, we discovered an important and instructive distinction between the two groups of women. Of the 1 percent of women in the cancer group who removed their bras before twelve hours of wearing time, almost all reported having red marks sometimes or always, with almost none reporting rare irritation. In fact, most of these women reported *always* having red marks. This means that despite the fact that they wore their bras for shorter periods than other women, they experienced signs of possible breast irritation as a result of

wearing bras. Some of these women even stated that feelings of discomfort led them to remove their bras early in the day. “I couldn’t wait to get home [from work] to take off my bra,” one woman explained.

The women in the standard group, however, had a different story to tell. Of those 20 percent who took off their bras after less than twelve hours of wearing time, most reported no red marks or irritations.

Why would the women in the cancer group who removed their bras after less than twelve hours of wearing time have a greater tendency to experience physical signs of possible bra irritation than had women in the standard group with the same behavior? It may be that the women in the cancer group wore bras that were too tight or wore a type of bra, such as a push-up or underwire, that is inherently constricting. In addition, when compared with the women in the standard group who removed their bras before experiencing physical signs of irritation, the women in the cancer group may have had a higher threshold of breast discomfort.

■ Do You Wear a Bra or Breast-Supporting Garment to Sleep?

Results

Standard group: 3 percent yes

Cancer group: 18 percent yes

Many people wear clothing to sleep. Usually sleepwear is comfortable, loose-fitting apparel: T-shirts, nightshirts, loose nightgowns, and the like.

On the other hand, bed is also a place for sex. Lingerie or sexy undergarments often squeeze breasts into pinup dimensions, serving as a costume for the performance to follow.

Another reason a woman might wear a bra to sleep is that bras are standard underwear, and some people believe that underwear must be worn all the time, even in bed. Then there are the women who find the snug feeling of a bra comfortable. We received comments from women that reflected each of these perspectives.

When we asked this question, we made certain to ask what type of nightdress was worn, to ascertain whether breast lymphatic drainage would possibly be compromised by the garment. If the garment was a bra, there was no difficulty in recording the results. Otherwise, we assumed that most pajamas and nightgowns were loose enough to allow for lymphatic drainage of the breasts, and we interpreted the answer as a “no” response. When the

response was vague, the interviewer asked a follow-up question about the tightness of the breast-supporting garment to determine if it was a bra-like article. In other words, we erred on the side of underreporting rather than overreporting breast constriction.

The responses to this question were no surprise. The percentage of women with breast cancer who slept with bras or breast-supporting garments was six times greater than that for the standard group: 18 percent compared with 3 percent. When we examined this sample of women with regard to other questionnaire results, we discovered that most of these women were younger than the rest of their group, being in their forties and fifties. The majority of these younger women chose bras on the basis of appearance and generally fit the model of women with a fashion focus. By contrast, most of the older women who slept with bras or breast-constricting garments seemed to do so for comfort. Finally, all the women who slept with breast support also wore bras throughout the day and evening. In other words, these people had some garment squeezing their breast tissue virtually twenty-four hours a day.

You would expect that this group of women would also have reported constant discomfort from their bras. Interestingly, this was not the case, with some reporting discomfort only sometimes, and a few even saying they rarely had any discomfort. How can this be? Surely wearing a bra twenty-four hours a day has a good chance of causing red marks and grooves around the breasts and under the shoulder straps. Surely such physical signs of a problem must impress the consciousness as well as the tissue.

But consider this: Women who cover their breasts with close-fitting garments all the time, perhaps removing them only to bathe and change clothes, may have little awareness of the feelings of their breasts. Irritations and other discomforts will disappear from the mind if they are constant, just as we ignore the aches and pains of aging. We tend to get used to certain stimuli, unless they change significantly for the worse. In this case, the discomfort caused by the continual wearing of a bra may be ignored until the breast tissue deteriorates to the point of disease.

After years of wearing a bra and seeing red marks on their bodies, these women may have come to accept bra marks as signs of womanhood. In fact, when we asked one woman if her bra left red marks on her skin, she responded, "Oh, *those*. I suppose I have them. But doesn't every woman?"

Obviously some women have come to accept the tribulations of bra wearing as part of life or as the price to pay for fashion. Other women may feel no discomfort from their bras, leading them to ignore any physical evidence of irritation. But this study suggests that these attitudes better characterize women with breast cancer than the general female population.

But what about the other extreme? How do women who do not wear bras fit into this picture? This brings us to the next question.

■ Do You Wear a Bra? Have You Always Worn (or Not Worn) a Bra? During What Ages in Your Life Did You Not Wear a Bra?

Results

Standard group: 5 percent no bra

Cancer group: 0.24 percent no bra

As you would expect, most of the women we questioned did wear bras. However, and this was astounding, only five women in the cancer group did not wear a bra—approximately 0.24 percent of those surveyed. Three of these women were in their sixties, one was in her seventies, and one was in her thirties. The older women said that they had worn bras for most of their lives but no longer did so. The young woman had a history of multiple radiation exposures from X-rays taken of her chest as a young adult.

On the other hand, 5 percent of the standard group was braless. Approximately 40 percent of these women stated that they “sometimes” or “occasionally” wore a bra for special occasions or with certain clothing, but for the most part they did not wear one. The majority of these women had stopped regularly wearing bras in young adulthood. Some had never worn bras. Their ages spanned the entire spectrum, with most in their forties and fifties.

While we will not know how many of these women go on to get breast cancer, the fact that virtually all of the women in the cancer group wore bras further supports our hypothesis that bras can trigger the development of breast cancer.

■ Have You Breastfed?

Results

Standard group: 14 percent yes

Cancer group: 4 percent yes

Our society places so much emphasis on the appearance of breasts that we often forget that they are organs with specific biological functions. Our bodies, of course, know what breasts are for. Indeed, pregnancy is a time of extensive breast development. What was fat in the immature breast becomes secretory tissue. The breasts become an amazing milk-production factory, filtering nutrients from the blood; transforming them into proteins, fats, and sugars; and secreting them for the nourishment of an infant.

Pregnancy leads to only part of the development of the breasts as milk producers. The rest of the development takes place as the newborn nurses. Like all organs, the breast gets stronger and more developed as it is used. The blood supply to the breast increases dramatically with use, as does the drainage of lymph away from the breast. Active breast tissue needs more nutrients and oxygen than inactive tissue, and when there is greater blood circulation, there is greater lymphatic drainage. Eventually, after they have been used as intended, the breasts typically reduce in size and become less firm than they were prior to pregnancy.

Of course, this prospect of softer, less firm breasts leads some women to opt for bottle feeding over breastfeeding. Other women choose bottle feeding because of the need to return to work as soon as possible, perhaps after only a month of maternity leave. Still other women abandon breastfeeding because of nipple discomfort, the development of breast infections (mastitis), or other health concerns. And, of course, during historical periods in which the medical community has promoted bottle feeding over breastfeeding, women have been either actively discouraged from nursing or deterred by the lack of available support.

The results of our questionnaire show that women in the cancer group were less likely to have breastfed their babies than those in the standard group. Only 4 percent of the cancer group nursed their babies, while 14 percent of the standard group did so.

These results support the claim that better-developed breasts may have a lower incidence of cancer. When you consider the constriction of the breast tissue by a bra, it makes sense that tissue with greater drainage could be healthier. Additionally, breasts that have lactated also tend to reduce in size and become more flexible once the nursing is over. While some women may see this as an unfortunate outcome of breastfeeding, it may be that these smaller, more flexible breasts are squeezed less by bras than are

firmer, underdeveloped breasts. The more flexible the breast tissue, the less resistance it offers to the shaping pressures of a bra.

According to other research, women who have never had children have a higher incidence of breast cancer. Obviously, women who have never given birth have never breastfed. This is consistent with our results, and we can now understand a possible mechanism for this finding. Of all women, those who have never experienced full breast development through the stimulation of either pregnancy or lactation will have the least-developed lymphatic system.

An interesting historical pattern of breastfeeding deserves mention. The decline in breastfeeding between 1940 and 1980 may now be exacting its price on women. We are experiencing an explosion of breast cancer cases. This increase is a recent phenomenon, with the major increases having begun in the 1980s. According to the American Cancer Society, in 1970 there were 69,000 cases of breast cancer; in 1980 the figure was 109,000; and by 1990 it had reached 150,000. Some of this increased incidence is possibly attributable to better and earlier detection of tumors. However, many experts agree there is more to these increased rates than simply improved detection and reporting.

As discussed in [Chapter 3](#), many researchers believe that toxins are the primary cause of cancer. It may be that environmental toxins that have increased over the past decades are now revealing their cancer-causing ability. But perhaps the body's defenses have been sabotaged as well, making this toxin exposure even more damaging.

How does this tie in with a lack of breastfeeding experience? A less-developed breast may suffer from bra constriction more easily than a developed one, as toxins could be even more concentrated and have a greater chance of damaging such tissue. Remember that breast cancer is age related. Many of today's breast cancer cases are occurring in women who were mothers during that bottle-feeding period of the 1940s to the 1980s.

REVIEWING THE FINDINGS

What do our findings suggest about a connection between bras and breast cancer? The first impression is that there were meaningful differences between the responses of the cancer group and those of the standard group. This was the first test of the hypotheses behind the Bra and Breast Cancer Study. If our theory was incorrect, we would not expect to find much

difference between the two groups in their responses to our questionnaire. On the other hand, we would expect, and would demand, that the two groups demonstrate significantly different responses to the questionnaire for us to conclude that the variables studied were important and possibly valid. Indeed, the cancer group differed from the standard group in many ways relating to bra wearing and attitudes toward breasts. This tells us that bras may be a significant factor in the development of breast cancer and that the breast cancer group can be characterized as a subculture within the larger population of women.

How significant a factor do bras seem to be in the development of breast cancer? Let's analyze the results.

The standard group represents women in the public at large with no known diagnosis of breast cancer. However, we know that approximately 13 percent of these women will eventually develop breast cancer, according to current statistics presented by the medical community. Who constitutes this 13 percent? We may be able to identify them by examining the cancer group. Our questionnaire defined the general attitudes and behaviors of women with a known breast cancer diagnosis in regard to their bras and breasts. We would expect, then, that the "hidden" 13 percent of standard group women who will later develop the disease will conform to this cancer group profile.

One note before we delve into the numbers that follow. At times we will indicate results in terms of percentages, and at other times we will speak of "-fold" differences, which, in this case, refers to multiples of 100 percent. For example, a sixfold difference means that there is a 600 percent difference between the compared variables. When referring to percentages of over 100, this makes the discussion easier to understand. Otherwise, we would have to refer to a 125-fold difference as a 12,500 percent difference. But differences of less than 100 percent would be confusing when expressed this way; a 30 percent difference would be referred to as a 1.3-fold difference. Therefore, in the discussion that follows, we will use either a multiple or a percentage to express differences, whichever seems clearest. Hopefully this will not generate any confusion.

Further, the mathematical process we used to determine the relative rates of breast cancer incidence involved comparing the standard and cancer groups in terms of specific bra-wearing behavior. If a certain behavior was more prevalent in the cancer group than the standard group, this suggests

that the behavior is more associated with women who develop breast cancer. Conversely, if the behavior was more prevalent in the standard group, it suggests that the behavior is associated with women who will not develop breast cancer. Any behavior that occurred to the same degree in both groups, when expressed as a percentage, is regarded as neutral.

To illustrate, let's say we asked women about the colors of bras worn. If the cancer and standard groups had about the same distribution of bra colors, we would conclude that bra color has nothing to do with developing cancer. On the other hand, if certain color bras leached toxins more than others, or if, say, blue bras were typically tighter than white ones, we would expect to find a difference between the groups regarding colors of bras worn. (In the actual research model, we expected bra color to be neutral, which is why we ignored it as a variable. However, some dyes are more toxic than others, so this should be considered in future studies.)

In summary, then, we ascertained relative risk factors by determining the percentage of women in each group with a given behavior and expressing the relationship of those percentages as a ratio. For example, if 50 percent of the cancer group exhibited a certain behavior, while 25 percent of the standard group exhibited that behavior, we would conclude that women with that behavior have a twofold higher incidence of breast cancer than do women in the standard group.

The Analysis

Let's first address the number of women who wear no bras at all. According to the results of the BBC Study, just 5 of the 2,056 women in the cancer group had been braless, a mere 0.24 percent. The number is sufficiently small to permit us to treat the entire group—100 percent—as bra wearers. Now, consider the response to the question concerning how long a bra is worn per day. We have divided up the total into those who wear them less than twelve hours daily and those who wear them more than twelve hours daily. Keep in mind that the category of those wearing bras for more than twelve hours daily includes those women who wear bras to sleep. We will later identify two subgroups: those women who wear bras more than twelve hours but not to sleep and those who wear their bras virtually twenty-four hours a day.

Nearly all the women in the cancer group, 99 percent, said they had worn their bras twelve hours or more per day. Since essentially all the

cancer group women were in this category of extensive daily bra wearing, we would expect a standard group woman who will later develop breast cancer to also be in this category. In other words, we can expect that women who will later develop breast cancer will have a history of wearing a bra more than twelve hours daily.

We have thus located the vast majority of the 13 percent of the standard group that was previously “hidden.” Further, on the basis of our theory, virtually none of the women in the 24 percent of the standard group who either wore no bra or who wore a bra for less than twelve hours daily will develop breast cancer.

We can also separate out the women who wear a bra to sleep from those who wear one over twelve hours daily but remove it at bedtime. *By wearing a bra for more than twelve hours daily, but not to sleep, a woman increases her chances of developing breast cancer by 11 percent, compared with the general standard population.*

How about those women who wear their bras for less than twelve hours daily? We know that only 1 percent of the cancer group was in this category, compared with 20 percent of the standard group. This means that wearing a bra less than twelve hours daily is a behavior associated with women who more often avoid breast cancer.

From the calculations, it would appear that there is a nineteenfold protection against breast cancer achieved by wearing a bra for less than twelve hours daily, as compared with the general standard population. In other words, the average White American woman is nineteen times more likely to develop breast cancer than is a comparable woman who wears a bra for less than twelve hours daily. Also, women who wear bras for over twelve hours daily, but not to sleep, have a twenty-one-fold greater chance of developing breast cancer than do women who remove their bras before twelve hours.

When we consider those women who wear their bras to sleep, we see that 18 percent of the cancer group did so, compared with 3 percent of the standard group. *This means that there is a sixfold greater incidence of breast cancer among women who wear a bra all day and to bed, or virtually twenty-four hours per day, than among the general population.*

When we compare those women who wear their bras for less than twelve hours a day to those who wear them twenty-four hours a day, we see an enormous and extremely significant difference in breast cancer rates.

Women who wear their bras all the time have a 113-fold increase in breast cancer incidence when compared with women who wear their bras less than twelve hours daily!

This remarkable and dramatic difference in breast cancer incidence is also the case for women who do not wear bras at all. Only 0.24 percent of the cancer group women were braless, compared with 5 percent of the standard group women. *It follows that going braless is associated with a twenty-one-fold reduction in breast cancer incidence compared with the general standard population. This also means that wearing a bra for less than twelve hours daily is associated with a 10 percent greater incidence of breast cancer than is not wearing a bra. Further, wearing a bra all the time is associated with a 125-fold greater incidence of breast cancer than is wearing no bra at all.*

Finally, we can assess the effect of breastfeeding on breast cancer incidence. In the BBC Study, only 4 percent of the cancer group women breast-fed their infants, while 14 percent of the standard group did so. *It follows that breastfeeding affords a 3.5-fold protection against breast cancer.* These results are consistent with estimates suggested by other research regarding the benefits of breastfeeding in the prevention of breast cancer.

Putting the Numbers in Perspective

We all now know that cigarette smoking causes lung cancer. Lung cancer is ten to thirty times more common in smokers than in nonsmokers. In the Bra and Breast Cancer Study, we learned that women who wear bras twenty-four hours a day have a 125-fold greater chance of getting breast cancer than do women who do not wear bras at all and a 113-fold greater chance of getting breast cancer than do women who wear bras for less than twelve hours daily. This is anywhere from four to twelve times greater in significance than the connection between cigarette smoking and lung cancer!

Let's put this into perspective in another way. Men also get breast cancer, although in bra-wearing cultures the incidence is about one hundred times less than for women. Meanwhile, this study showed that bra-free women have an incidence of breast cancer about one hundred times lower than women who wear bras 24/7. This means that bra-free women have about the same incidence of breast cancer as men, while the tighter and longer the

bra is worn, the higher the incidence rises. This also means that the reason why women have more breast cancer than men may be because women wear bras. Note, however, that some men are now starting to wear bras, and we may end up seeing male breast cancer rates rising in the future.

These numbers may be powerful indicators of how women develop breast cancer through their use of bras. But we must not lose sight of the bigger picture in this forest of numbers. A woman's attitude regarding her breasts and bras will determine how long she wears her bra each day, the type and tightness of the bra she chooses, whether she breastfeeds her baby, and so forth. In a sense, bra-wearing behavior is a result of many cultural biases and attitudes.

What about women who develop breast cancer but do not show all of the behaviors and attitudes just discussed? While the BBC Study has suggested a significant causal relationship between bra wearing and breast cancer, the entire story of cancer also includes toxin exposure, radiation exposure, and overall health. We must realize that there is a great complexity of cultural factors and behaviors associated with breast cancer. We should also keep in mind that some factors may counterbalance other factors. For example, a higher toxin exposure or a history of radiation to the chest could increase the risk of developing breast cancer. However, removing the bra before twelve hours of wearing time could lower the risk. These two opposing factors may cancel each other out so that a woman with such a history and behavior might have the same risk of developing breast cancer as a woman who has had normal toxin and radiation exposure but wears her bra for over twelve hours a day.

Nevertheless, the results of the research are significant and clear: Women who want to avoid breast cancer should wear a bra for the shortest period possible—certainly for less than twelve hours daily. This is no surprise, given the world statistics on breast cancer. As discussed earlier in the chapter, where there are no bras, there is little breast cancer.

FURTHER THOUGHTS ON THE BBC STUDY

We must make a final point about the BBC Study. Clearly, in any groundbreaking study of this type, there are factors and variables that could not have been predicted prior to the study. In retrospect, we wish that we had asked for more detailed responses when questioning the women about their length of daily bra wearing. We assumed that working women would wear a

bra to work, resulting in a minimum of ten hours of wearing time once commuting time was factored in. On the other hand, many homemakers might wear their bras for shorter periods or intermittently, perhaps only when going out in public. These women might therefore wear their bras for as few as two to four hours daily. If we had made such distinctions in our questionnaire, we might have been able to further characterize the breast cancer risks for women who wear a bra for less than twelve hours daily.

The same distinctions could have been made for the group of women who wear their bras for more than twelve hours daily. Some of the women in this group may wear their bras for eighteen hours—say, from 7 a.m. until midnight. Others may wear their bras for only twelve hours daily. Reexamining this group with finer time distinctions might reveal a critical number of bra-wearing hours after which the risk for developing breast cancer increases dramatically.

It should also be realized that the results of this research reflect a given average exposure to environmental toxins. But toxin exposure is changing over time. Every year we become exposed to new, potentially more hazardous toxins and to increasing amounts of toxins in general. Since constriction of breast tissue with bras may focus these toxins in the breast because of diminished lymphatic drainage, it follows that more hazardous toxins or a greater concentration of them in the environment would possibly reduce the amount of time the breasts need to be constricted by a bra to damage the breast tissue. That is, more dangerous and injurious toxins may do their damage to the breasts in a shorter period.

In retrospect, it also would have been valuable to examine the effect of bra type on cancer rates. While the results are clear about the effect of bras in general, finer distinctions between bra types might be informative. Push-up bras and other bras with underwire are typically tight fitting. These would be expected to exert greater pressure on the breast tissue, causing more damage than would more comfortable, looser-fitting bras worn for the same period. One problem we had with addressing this issue is that many women wear more than one bra type. Further, because of the delay time in the development of breast cancer, it is difficult to question women about the particulars of past bras worn, the length of time each type of bra was worn each day, and so forth. On the other hand, the critical factor may not be bra type as much as bra tightness and length of wearing time. In short, while we suspect that tighter bras accentuate the problems created by bras in general,

we were not able to make this assessment in detail. Perhaps a different questionnaire design could surmount this problem.

Another factor that we ignored but might prove a valuable subject of investigation is the effect of breast size on bra-wearing behavior. We ignored breast size in the BBC Study because we were looking for lifestyle practices that occurred over a long period during which breast size may not have been constant. Women gain and lose weight over the years, resulting in changes in breast size. In addition, breast size has not been considered an established risk factor for breast cancer. However, breast size may influence a woman's attitudes and behaviors regarding her breasts and bra. Do those large-breasted women who look for comfort wear bras longer each day than do smaller-breasted women? Or might smaller-breasted women who look for cleavage be more inclined to wear constrictive push-up or underwire bras? Further studies can examine this issue and gain a more complete picture of bra-wearing behavior.

Understanding the Statistics

Figure 6.1 shows the raw data comparing women in each group according to bra-wearing behavior. Here we can compare the bra-wearing behavior of the cancer group with that of the standard group. It is quite clear that the women in the cancer group show longer daily bra wear than do the women in the standard group.

When referring to a cancer risk factor or protection factor, we are expressing the odds of cancer occurring in any individual. To arrive at the protection factor shown in Figure 6.2 for each of the first two bra-wearing behaviors, the standard group percentage in Figure 6.1 was divided by the cancer group percentage. To arrive at the risk factor shown for the third and fourth bra-wearing behaviors, the cancer group percentage was divided by the standard group percentage. Keep in mind that the factors arrived at specifically reflect the women in the BBC Study.

Figure 6.2 compares the BBC Study risk/protection factor listed above each bar with the general female population, in which one out of eight women develop breast cancer. The number beneath each bar indicates the risk of the average woman getting breast cancer when following that bra-wearing behavior. This number is the product of multiplying the risk/protection factor by the $\frac{1}{8}$ general female population factor. For example, twenty-four-hour-a-day bra wear has a sixfold increased risk of breast cancer. When you multiply the 6 by $\frac{1}{8}$, you get $\frac{6}{8}$ —or $\frac{3}{4}$, as indicated by the graph.

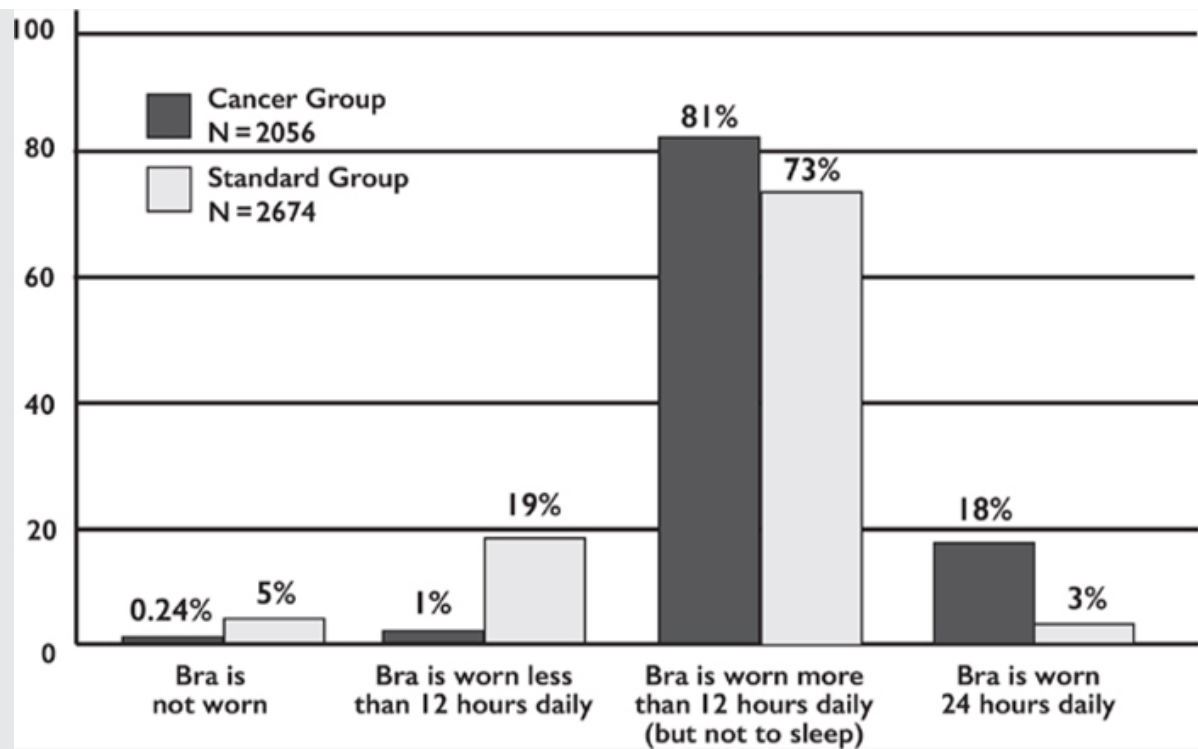


Figure 6.1. Comparison between Cancer and Standard Groups in Regard to Daily Bra-Wearing Behavior

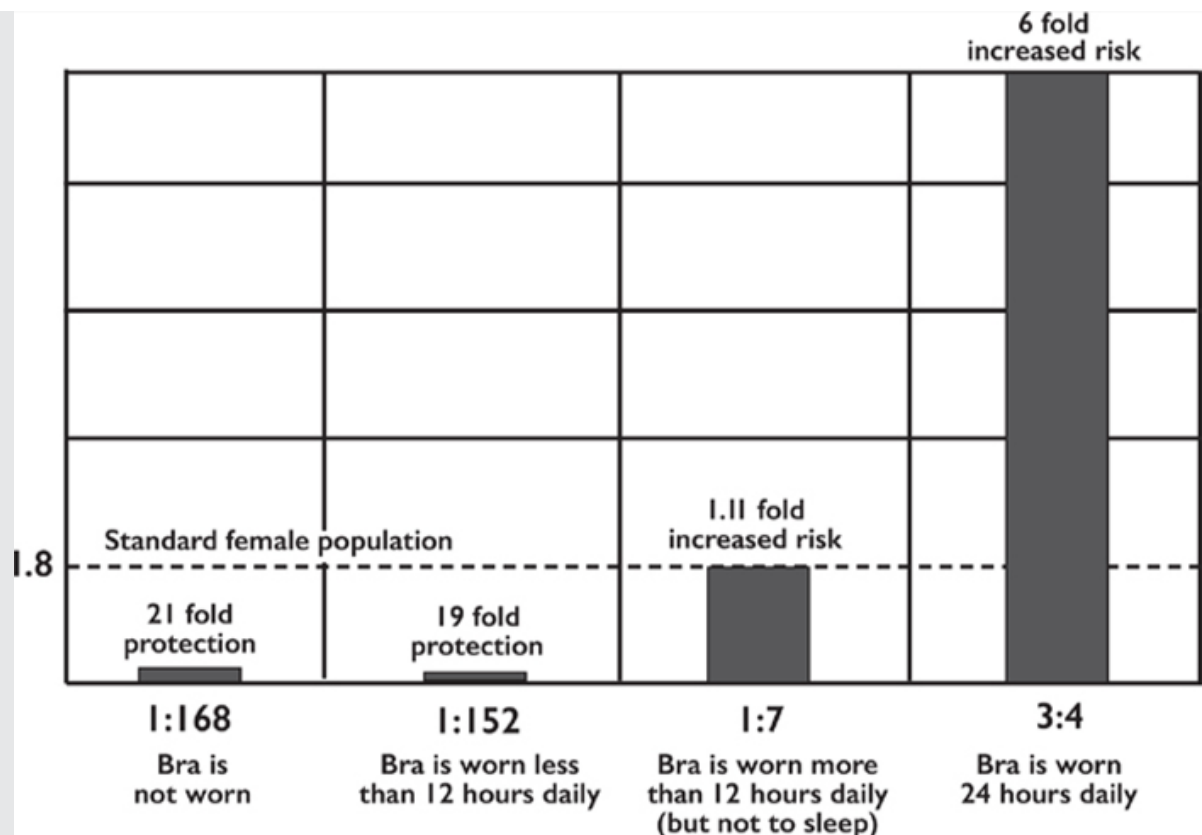


Figure 6.2. Comparison between General Female Population and Indicated Bra-Wearing Behavior

To calculate the difference between one bra-wearing column and another, you multiply the risk/protection factor of one column with that of another. For instance, to compare twenty-four-hour-a-day bra wear with bra-free behavior, you multiply 21 by 6, and get a 125-fold difference in incidence between the two behaviors ($21 \times 6 = 126$, which is rounded down to 125). In other words, a woman who wears her bra twenty-four hours a day has a 125-fold greater chance of developing breast cancer than does a woman who does not wear a bra at all.

It is interesting to note that the majority of women in the study fall into the third column and that the odds of these women getting cancer closely reflect the national norm.

It might also prove valuable to conduct a study in which a large group of women with similar bra-wearing behavior is divided into two groups. One group would stop wearing bras and the other would continue wearing bras as before. Over time, would the women who were bra-free experience fewer

breast problems—such as mastitis, benign lumps, and cancerous tumors—than the second group?

Of course, the best follow-up experiment would be an individual study done by each woman. What would a woman experience by removing her bra for, say, one month? How would her breasts feel after that time? And how would they feel after she put her bra back on? This personal experiment might be the only means by which a woman can determine how her bra may be compromising her comfort and health. And it would be risk free, as bras provide no proven health benefits. Indeed, we have helped women perform their own self-study with our International Bra-Free Study, which we will discuss in [Chapter 10](#).

Tight-Bra Syndrome

Since doing this study we have encouraged others to reexamine these issues and expand on the information generated by our findings. But there was one group of “researchers” we didn’t expect would immediately get involved. It was women who wear bras. Hearing about our research, many women with breast pain and cysts decided on their own to stop wearing their bras. For many women, bras are a pain, literally; they instinctively rip off their bras the moment they get home and feel they don’t need them anymore for social reasons. For these women, trying their own self-study of being bra-free was obvious. What these women discovered on their own bodies was astounding.

While we did not consider fibrocystic breast disease in our original study, women who experimented with being bra-free recovered from breast pain and cysts. The change was quick and dramatic, occurring within weeks if not days of ending the constriction caused by their bras. Some women knew when their menstrual period was coming by tenderness in their breasts, but even this tenderness disappeared. For many women it seemed miraculous. After years of pain and going to the doctor for needle aspirations of their breast cysts, where a needle is inserted into the breast cyst and the lymph fluid is removed, these women had come to accept that breast pain and cysts were their lot in life. Recovering breast health by simply quitting the bra habit was nothing short of amazing.

While these bra-free self-studies were only anecdotal, more formal studies were soon underway. In the year 2000, two British breast surgeons conducted clinical trials at two breast clinics in England and Wales, under

the supervision of breast surgeons Dr. Simon Cawthorn of Frenchay Hospital in Bristol, England, and Dr. Robert Mansel, head of the surgery department at the University of Wales Medical School. They studied one hundred women who had fibrocystic breast disease to see if going bra-free could lessen breast pain and cysts. The study, called “Bras: The Bare Facts,” was documented for the TV series *Dispatches* and was shown on nationwide television in November 2000 on Channel 4 UK. Several of the women were interviewed and discussed the life-altering improvements in their breast health, such as being able to now pick up their children or hug their spouse without pain.

Doctors interviewed in the film commented about how breasts in bras are hotter than bra-free breasts and the possible connection of this breast heating with breast cancer. Professor Hugh Simpson discussed his published research, which has previously proven that both precancerous and cancerous breasts are hotter than normal breasts.

Other Supportive Studies

After this research on fibrocystic breast disease was broadcast in 2000, other studies began to appear around the world. A 2009 Chinese study titled “Risk Factors of Breast Cancer in Women in Guangdong and the Countermeasures” found that sleeping without a bra seemed protective against breast cancer, lowering the risk 60 percent. Additional studies in China confirm these findings. Also in 2009, an article called “Burn the Bra! (and Men’s Tight Underpants Too): Compromised ‘Chaotic’ Cooling by Constrictive Clothing in the Causation of Testicular and Breast Cancers” was published in *Medical Hypotheses*. Written by Dr. A. Kumar, the article suggests that, as the mammary gland is the only completely mobile structure in the female body, restricting its mobility by wearing a bra would compromise its temperature and functioning.

In 2011, a Venezuelan study showed that bras might cause breast disease and cancer, as 75 percent of its subjects who wore a bra for more than twelve hours a day presented with mammary lesions. The authors concluded that women should not use a bra that compresses the breast or changes its shape, should make sure that the bra does not leave marks on the skin, and should avoid underwire bras. They also advise not wearing a bra more than twelve hours daily.

In 2015, researchers in Kenya studied the effect of wearing bras on breast cancer incidence in nearly 700 women and found that both premenopausal and postmenopausal women experienced a significant increase in cancer incidence the longer a bra was worn. The study, titled “Comparative Study of Breast Cancer Risk Factors at Kenyatta National Hospital and the Nairobi Hospital,” states,

Women who wore brassieres all the time, even when in bed were significantly associated with breast cancer occurrence as compared with those who never wore brassieres, or those who only did so on important occasions. The wearing of brassieres, particularly underwire types or those that fit tightly, has been proposed to increase the risk of breast cancer. Singer and Grismaijer published their report in the book called Dressed to Kill, which describes a study they conducted. They reasoned that brassieres cause physical constriction that reduces lymphatic circulation, resulting in the retention of carcinogenic toxins. . . . To add to their theory, carcinogens released from blocked lymphatics may cause epigenetic changes impacting on cellular downstream signaling that may culminate in cancer.

In 2016, in a study of 304 women, a research team in Brazil did the first epidemiological study to look at bra tightness and time worn and found a significant bra-cancer link. Published in *Advances in Oncology Research and Treatment*, the study, titled “Wearing a Tight Bra for Many Hours a Day Is Associated with Increased Risk of Breast Cancer,” found that “wearing a bra for a long period of time was a significant risk factor for breast cancer, which is in agreement with a previous study that found that premenopausal women who did not wear a bra had half the risk of developing the disease compared to those who wore it.” It also found “an association in wearing a bra for a long period and breast cancer among pre-and postmenopausal women . . . [and] also observed that women with breast cancer had the peculiar habit of frequently wearing a bra to sleep (36.84%), as opposed to those without the disease (7.23%).” The study also discovered that “obese breast cancer patients were more likely to wear a bra to sleep (32.25%), than obese patients without the disease (10.52%). One possible interpretation for this association, if it is real, is that the constriction caused

by a tight bra for a long period of time contributes to the development of the disease in addition to obesity itself.”

This article also offers some possible mechanisms by which bras may cause breast cancer. “The bra is the only article of clothing that tightens the whole organ that it covers, and the repetitive and chronic direct trauma of this garment pressing all quadrants of the breast could lead to disease through the radial scars. The radial scars is [sic] a hyperplastic proliferative disease of the breast that is associated with a high risk of breast cancer. The chronic ischemia of the breast with subsequent slow infarction has been associated with those lesions.” The article then describes another possible mechanism that reflects our lymphatic theory, stating,

More than 88% of breast drainage occurs via axillary lymph nodes. When foreign substances (i.e., antigens) invade the body, antigenic material and cells that mediate the inflammatory response produced by the local immune activity at the aggression site are collected by all lymphatic vessels and transported into the lymph flow. The system of lymphatic vessels has been called an “information superhighway” because lymph contains a wealth of information about local inflammatory conditions in upstream drainage fields. Bras and other external tight clothing can impede flow, cutting off lymphatic drainage so that toxic chemicals are trapped in the breast.

This article also cites the work of oncologist Dr. Michael Schachter, who in 1996 wrote *The Prevention and Complementary Treatment of Breast Cancer*. Dr. Schachter explains,

It is the job of the lymphatic system of the body to help drain toxic substances from tissues and poor lymphatic drainage may play a role in breast cancer formation. . . . It is very sensitive to constricting external pressure which can impede its flow. . . . Bras and other external tight clothing can impede flow. The nature of the bra, the tightness, and the length of time worn, will all influence the degree of blockage of lymphatic drainage. Thus, wearing a bra might contribute to the development of breast cancer as a result of cutting off lymphatic drainage, so that toxic chemicals are trapped in the breast. . . . So, the take home message to women is to wear bras as

little as possible and when wearing them try to choose one that is least constricting.

In *Fight New Ways: Breast Cancer*, radiologist and mammography expert Dr. Parvis Gamagami echoes this idea as he offers his direct observations of what he believes to be a link between underwire bras and breast cancer. In the book, he states that in over fifty years of practicing medicine and viewing over 350,000 mammograms, “25% to 30% of breast cancer that we have seen developed in a semicircular line around the breast where the underwire presses hard, particularly underneath the breast. This is where we discover bilateral breast cancer, and for us that was the most convincing proof that underwire brassiere can provoke breast cancer.”

There have been numerous studies done in China regarding bras and breast cancer, and one study was a review of this research. In this 2015 paper, titled “Brassiere Wearing and Breast Cancer Risk: A Systematic Review and Meta-analysis,” twelve case-control studies were included in a meta-analysis, which tried to weigh the various studies and their results to reach a consensus conclusion. It showed brassiere wearing during sleep was associated with a 100 percent increase in the odds of developing breast cancer. The authors concluded, “Further research is essential; specifically, a large-scale epidemio-logical study of a better design is needed to examine the association between various forms of brassiere exposure in detail and breast cancer risk, with adequate control of confounding variables.”

In 2019, a study from Iran, titled “Wearing Brassiere: A Less Well Known Factor Associated with Breast Cancer in Women,” found a significant link between bra usage and breast cancer incidence. Breast cancer research in Iran now routinely asks about bra usage, including sleeping in a bra, as an essential factor to consider (with bra usage shown to have a greater impact on breast cancer incidence than family history).

Back to Fiji

In addition to the previously referenced studies, we decided to do our own follow-up study in Fiji. Bra usage is new to Fijian women. When we did this study in 1996, about half of the women in Fiji went braless. The other half needed to wear bras as part of the dress code for working women. Our goal was to ask the Fijian government to participate in a study to see if there

was a difference in breast cancer incidence between these two groups of women.

We wanted to find case histories of women who had developed breast cancer to see if they were bra users or not. Along the way we talked with nurses who served these rural communities, and they confirmed that bras were relatively new to Fiji, but that some women were now wearing their bras around the clock after being told by bra salespeople that bras were important for breast health. Many of these women were developing breast disease, including cancer. In one remote village, we were told of a woman who developed breast cancer and died. She was the only woman in the village who ever had breast cancer and was the only woman in the village who had ever worn a bra. We went from village to village looking for other cases of breast cancer and ultimately discovered twenty-four cases—all in women who were bra users. Given the same village, with the same environment, genetics, and diet, the women getting breast disease, including cancer, were the ones wearing bras.

After our Fiji study, we went to New Zealand and Australia and learned from local doctors that the Maoris, the Indigenous people of New Zealand, have been completely acculturated and wear bras. As it happens, their breast cancer rates are high and comparable to those of other New Zealand women. On the other hand, the Australian Aborigines are not acculturated and don't wear bras, and breast cancer is unheard of in Aboriginal women.

UNDERSTANDING THE HAZARD

Will women continue to wear bras despite the apparent hazard? Understanding the liability of a lifestyle does not guarantee that it will be eliminated from one's life. Look at cigarette smoking. Whether bras continue to be worn or not depends on how they fit into the lives of women and men in our society. What makes bras fashionable? What do they do to women and men? Could our current society allow women to sport a natural bustline?

SEVEN

Beauty and the Bra

IS BREAST CANCER A CELLULAR PROBLEM WHEREBY MUTATED CELLS REPRODUCE out of control and take over the body? Is breast cancer the product of a weakened immune system, poor diet, lack of exercise, high stress levels, or exposure to toxins? Or is breast cancer the outcome of cultural attitudes and behaviors that lead to the extended usage of bras?

It is all of these—and more.

Breast cancer, like all diseases, can be understood on many levels. Humans are made up of cells, live in an environment, and act according to certain customs and beliefs. Knowledge about disease on all these levels is valuable. The search for the cause of a disease, which is essential to curing and preventing it, requires the broadest perspective possible.

We have thus far examined many of the trees within the forest of breast cancer. It is time to see the forest in its entirety. Breast cancer is a culturogenic disease. The forest of breast cancer is the culture that supports the attitudes and behaviors that lead women to be exposed to toxins, wear bras, and develop mutated cells. In the next chapter, we will further explore the hazard posed by toxins. For now, we will focus on bras, fashion, and the culture of breasts.

Be forewarned! It is not easy to look at one's own culture. We are invested in believing in its value to us, since it is where we live, raise a family, and die. But we can never hope to understand ourselves or our diseases without this broader awareness of our culture.

CLOTHING AND CULTURE

Bras are a specialized form and fashion of clothing. Before we explore the meaning and role of bras in American life, some general principles regarding clothing deserve mention.

The wearing of any particular fashion is a result of many cultural factors that most people take for granted. Women with a fashion focus tend to respond to fashion, or the way women “should” look, as a cultural given. This attitude toward personal appearance typically evokes little, if any, self-reflection. “You’re just supposed to look a certain way,” would be the motto of these women.

Of course, throughout history there have been standards of appearance imposed on women of all cultures. Looking a certain way can be considered “right” or “wrong” from the standpoint of some perceived cultural standard of appearance. Women who subscribe to the dictates of such fashion are playing by the rules of society, and they will find their place among the players. Women who rebel against those norms will suffer the consequences of breaking the rules. And, of course, not all women passively play this game. Some know the rules well and use them to their advantage.

People can be categorized by the appearance of their clothing. Clothing functions as an identification badge and can indicate caste, social class, income level, occupation, religion, educational level, and so forth. Soldiers look different from farmers or carpenters; monks, nuns, and priests have their distinctive costumes; white-collar professionals dress differently from blue-collar workers.

The important function of clothing in this regard is to communicate to others an essential aspect of one’s social identity. Much social interaction relies on the instantaneous appraisal of others based on dress. Dress conveys a person’s intentions and sense of self. Especially important is the fact that virtually all face-to-face social encounters are initiated with a mutual surveying of clothing. This establishment of class difference and social identification helps to better manage the interaction that follows. Such reliance on clothing for social interchange confers a responsibility on the individual to accurately and faithfully indicate his or her social status. In many cultures, India being one, it is taboo to wear the dress of a caste different from one’s own. “Birds of a feather flock together,” goes the old saying—and among people, those feathers are clothing.

In modern American society, people frequently use clothing as a way to get certain results in business or social activities. Hence, people dress for

success, and it is not unusual to find people dressing like those with wealth to impart a particular impression. Another aspect of this identity issue is that people are expected to adhere to established fashions, or codes of dress, to impart their social standing in the least ambiguous way possible. Those who ignore dress codes are often ridiculed—not necessarily for aesthetic reasons but for defying established norms and standards. Since dress codes are used to size people up, those who defy those codes are not easily pigeonholed at first sight, which makes many people uncomfortable.

As for aesthetics, these are another cultural function of fashion. People in a culture develop a shared sense of what looks good. Of course, someone has to come up with the fashion sense in the first place, and typically those with social power make these decisions. Fashion designers bring their creations to the rich and famous, and the selections of the latter group set the trends for those who are below them in social standing. People without wealth typically dress like those with wealth, not the other way around. Generally, the social climate dictates basic fashion style, and personal aesthetics allow for slight variations on that theme. For example, American professional men essentially have to wear a suit and tie to their offices. However, the color of the suit and tie is up to the discretion of the individual.

The subject of clothing as a cultural phenomenon is a broad one, but from this brief analysis, we see that clothing fashions are not necessarily based on a scientific understanding of the human body and the environment in which it must function. Instead, society becomes the environment to which people must adapt, even if this causes some problems from a biological standpoint.

This brings us to bras and breasts.

BREASTS, BRAS, AND CULTURE

In Western societies, breasts are a major component of a woman's identity. One outcome of the BBC Study has been a fuller appreciation of the meaning of bras and breasts in the American culture. Because our anthropological approach to research is characteristically open-ended in its information-gathering style, our questionnaire allowed room for comment by the interviewed women. We were also able to record our impressions about the interviewed women, particularly in regard to their appearance,

behavior, and attitude toward the questions, toward us, and toward themselves.

Many women, particularly those with breast cancer, saw the questionnaire as an opportunity to express themselves. Perhaps these women needed to rationalize or better understand their personal roles in the development of the disease. As one woman expressed it to us, “I want to get something off my chest.” Interestingly, she had just had a mastectomy. Some women asked us how other women had responded to the questions, showing both an interest in and a lack of knowledge about other women’s feelings and behavior regarding their breasts and bras.

An understanding of the cultural significance of bras and breasts is central to the understanding of women’s behaviors regarding this aspect of their lives. Needless to say, men have their own interpretation of the significance of bras and breasts, and social interaction between the sexes demands that each have some idea of how the other approaches the issue. Usually, these interactions take place unconsciously or reflexively. In a sense, virtually every American knows that bras and breasts are important, but the reasons for this importance—and sensitivity to how others might feel about the subject—are lacking.

As long as breasts are considered relevant to female identity, and as long as breasts (and bras) speak of the way society sees women, women will be sized up—by themselves and by others. Their cultural significance helps mold how a woman will feel about herself, based on her natural endowments, and influences how others will treat her.

So let us turn to this broader cultural consciousness and see why bras have come to be the health hazard that our study suggests they are.

The Nonconforming Breast

If we begin our discussion by examining women who do not wear bras, we see that several different lifestyle approaches make bra wearing seem undesirable. One woman who generally projected an image of low self-esteem once described to us her approach to life by saying, “Honey, I’m fifty years old, fat, and ugly, and I don’t care what anybody thinks about how I look.”

What we see here is the possibility that women who cannot live up to a culturally defined image of beauty may choose to ignore appearance

altogether. We can imagine a spectrum of beauty by which women assess themselves. Using this spectrum as a standard, women try to identify with a beauty image that best reflects both who they are, and, with the use of makeup and clothing, what they can look like. Perhaps the most well-adjusted women naturally look as beautiful as they want to look, but for many women, there is a great discrepancy in the way they look upon awakening and when they are ready to leave the house.

One of the features of this beauty spectrum, as displayed in cosmetic and fashion advertisements, is the assurance that all women, no matter how beautiful, have room for improvement. Typically, makeup and fashionable clothing are the means to this improvement. No matter how unattractive a woman feels, she is promised at least some improvement in appearance through the use of makeup and the right clothing, including bras. Some women, however, feel so low on the beauty spectrum that they opt out of the beauty race altogether. The obese woman quoted above is an example of this type of woman. It is important to note that her exit from the beauty stage is also indicative of a marginal association with society itself. This woman was economically poor, and her general health did not seem good. In addition, people with her appearance are treated as less important. A subconscious shunning takes place when people who are not attractive, and who don't care about their looks, deal with others. For women who cannot or will not conform to the beauty spectrum, there is isolation and ridicule. Americans place a great deal of importance on appearance, and those who stray from the standard guidelines, for whatever reason, are punished.

Some women who could easily conform to society's standards of beauty choose not to do so. These women typically do not wear bras, at least not as an essential garment. In their rejection of society's standards, these women may wear no makeup at all or may wear cosmetics and clothing in a unique way, perhaps even to signal to others their refusal to conform to societal standards. Women in this group include so-called hippies, punks, New Agers, millennials, and members of other subcultures. "Bras aren't natural," commented one free-spirited young woman. One woman who characterized herself as a liberated woman from the 1960s explained, "Bras are for men, so let *them* wear them!"

Then there are those women who elect not to wear a bra because they feel sexier without one. Here we see a variation of our society's usual view of breasts and bras. On one hand, bouncing breasts and protruding nipples

are considered sexy. On the other hand, breasts lifted and pushed together by a bra are considered sexy. Upon closer examination, you can see a connection between these two aesthetic judgments. In cultures where bras do not exist, breasts that bounce are not the thrill to men that they are in cultures where breasts are typically concealed by a bra. The old adage “Out of sight, out of mind” does not apply when it comes to breasts and bras, especially when many bra styles make certain that breasts are not really out of sight or mind but simply undercover. When men are accustomed to seeing covered breasts, seeing them without a bra is akin to seeing a naked woman, which, in America, is a sexually provocative situation.

Further, we have women who feel that nature has endowed them with ideal breasts that meet the standards of society. For some of them, bralessness is a badge of beauty. Women who feel that they do not have facial beauty may be particularly proud of gorgeous breasts. As one braless woman said, “If you’ve got ’em, flaunt ’em.”

Finally, there are women who refuse to play the beauty game, not because they can’t win or don’t like the rules but because they feel it is not worthy of their notice. According to one respondent, the beauty issue is “a sales ploy of the beauty industry, which uses advertising and other means to make women buy makeup, certain clothing styles, and other props for altering how a woman looks. It’s all very superficial and silly.” Another woman stated, “Beauty is reflected in who you are and what you do, not in the shape of your breasts.”

Although women who do not wear bras may be motivated by different values, from the standpoint of breast cancer prevention, these women seem to be in the most favorable situation, having about a twentyfold lower incidence of the disease than women who wear bras. As mentioned before, this has the same statistical significance as a comparison of the health risks among nonsmokers and smokers.

Let us now turn our attention to the group of women whose fashion choices may pose health hazards—and who constitute the bulk of American women.

The Conforming Breast

From our results, we have been able to characterize many subcultures of women who wear bras. As we discuss these subcultures, remember that we

are not focusing only on the bra-wearing behavior itself but also on the values, beliefs, and other cultural pressures that result in this behavior.

Conformity and the Power Game

In all cultures, people learn their attitudes and behaviors by observing those around them. But the learning of cultural attitudes and behaviors does not take place solely as a result of observation and imitation. One of the major mechanisms that mold people is the pressure exerted by other people in that society. This power of others to influence the thoughts, attitudes, and behaviors of people is one reason that some women wear bras.

Two aspects of societal pressure relate to bra wearing. Some women feel the need to conform to a standard of beauty. Other women wear bras to gain power over others, exploiting their breasts as tools for social control.

Let's first discuss women who wear bras because of a need or desire to conform to societal standards. These women may not feel that bras are particularly important in terms of beauty but may simply regard them as normal apparel. Dress styles are one of those cultural features that people typically take for granted. We tend to reflexively dress ourselves in the clothing of our time, without reflecting on the reasons for wearing particular garments. The style, fabric, and purpose of the clothing we all wear are functions of our particular culture and moment in history.

Of course, the clothing we wear has to be produced by someone, and generally this is done according to the fashion sense of various designers. Since most designers have accepted the cultural model of the bra-clad breast, the garments they produce often seem to demand the wearing of a bra. For instance, a dress with a plunging neckline may call for a push-up bra, while a strapless dress may call for a strapless bra.

How did bras come to be so widely accepted? From their creation in the early twentieth century, bras have been mass-produced, mass-marketed garments that increasingly entered into the wardrobes of American women. As our culture shifted into the consumer age we live in today, successful fashion marketers sold bras to 95 percent of American women. In modern-day America, young girls now look forward to their first training bra as a rite of passage into womanhood.

Along with this acceptance of bras has come an accepted image of an aesthetically perfect breast. The proliferation of magazines such as *Playboy*

has fostered the adoption of this standard of beauty—a standard lent credibility by the mass distribution of such magazines. As soon as standards of perfection are set, people will be judged accordingly, whether they want to be or not. Those so judged may not even agree with the standards set forth. It doesn't matter. They will be appraised in terms of others' standards, not their own.

The standard established for beautiful breasts has created a means by which women can be ranked with regard to their appearance. Women who have beautiful breasts tend to get more smiles and approval from men than do women who provide less of a view. Of course, breasts are not the only external features by which women are judged. A woman's face, legs, and hair are also assessed by others. Thus, the various elements of a woman's appearance—including her breasts—determine her position in the beauty pecking order. As noted earlier in this book, women at the top of the pecking order too often get the most attention and help from others and, in general, tend to be more powerful than those below them. In a society that judges a book by its cover, women born with dull covers are at a distinct disadvantage.

It is important to note that because of the strength of societal pressures, some women don't believe that they even have the option of not wearing a bra. "I have to wear a bra at work," was a frequent comment of the women in our study. "I have to look good." Here, the term *good* takes on a meaning different from *beautiful*, since "good" also refers to a woman's willingness to conform to the standards that society has set for her. Women who rebel against those standards may not look "good" for two reasons. First, they may be viewed as cultural subversives for their demonstrated defiance of socially accepted norms and values. Second, without a bra, their breasts may display some flaw compared with "ideal" breasts.

Of course, while some women accept any social ranking determined by breast size and shape, others know that they are winners in the game of looks and capitalize on their ability to turn heads. These women are better respected and recognized not just by men but also by other women, who recognize their responsibility to respect those considered more beautiful than they.

It is important to understand that most of the time, this struggle to meet societal standards or to gain power is not conscious. As a cultural phenomenon of huge proportions, the rules of this social contract are often

unquestioningly accepted without people even reading the terms of the agreement. Indeed, most women may not even realize that they are playing the game. “It’s just what women do,” one woman told us when explaining why she wore a bra.

Staying Young

An aspect of beauty that we have not yet discussed is women’s desire to stay young. Can bras deliver here as well? Many women hope that the answer is yes.

“My bra helps me keep my figure,” a fifty-four-year-old woman told us. When you consider the lifting action of bras, you can understand her statement, which, like all the quotes included in this chapter, reflects the beliefs of many women in our sample. Young breasts that have not yet lactated are typically firm and high. It follows that bras, which offer women a youthful breast shape, are in demand by women who want to retain a youthful appearance.

Enhancing Breast Size

Beyond offering the wearer a younger shape, a bra can make breasts appear larger than they naturally are. In American culture, bigger is almost always better. According to this logic, if breasts are sexy, big breasts are *very* sexy. Thus, many women choose bras that employ padding and shaping to temporarily create a larger bust.

Of course, it should be noted that bigger is perceived as better only up to a point. When a woman’s breast size exceeds some poorly defined limit, she risks being seen as unintelligent and perhaps even as sexually promiscuous. Since this culture views breasts as sex objects, the larger a woman’s breasts, the more others may identify that woman with sex.

Nevertheless, the desire for larger breasts is often a strong one—so strong, in fact, that it sometimes results in surgical intervention. Breast implants are the surgeon’s equivalent of a padded bra. Both are meant to bolster a woman’s self-confidence and sex appeal. At the other extreme is breast-reduction surgery, which is sometimes used to allow exceptionally buxom women to achieve a more socially acceptable—and perhaps more comfortable—bustline.

Improving Comfort

Some women—especially those with large, heavy breasts—may wear bras to distribute the weight of the breasts to the shoulders and to prevent an excessive and annoying movement of the breasts during sports or everyday activities. However, when a woman has been raised in a bra-wearing culture, one may question how much discomfort is due to the actual weight of the breasts and how much is due to the woman's culture-created intolerance for the feeling of being braless.

As mentioned in earlier chapters, comfort is a relative state. When compared with corsets, bras are great. But modern-day women who have been wearing bras since the first budding of their adolescent breasts have little frame of reference for a comparison. They simply have not had much experience of breasts without bras. To assess breast comfort, then, they compare one bra with another of a different size or style. If these women were to get used to the experience of being braless—allowing their breasts to reach a natural bustline, instead of artificially placing them high on the chest wall—they might actually enjoy far greater comfort.

Actually, the issue of large-breasted women wearing bras for comfort is more complex. Shifting the weight of the breasts to the shoulders results in deep grooves in the shoulders, which causes back and neck pain and results in compression of the nerves going down the arm, leading to numbness and tingling in the fingers. In addition, some of the weight of the breasts may be due to excessive lymphatic fluid resulting from bra-caused constriction—in other words, bras are actually making the breast heavier. It is interesting that many large-breasted women believe they need a bra for support, and this is a common cultural assumption perpetuated by the bra industry. However, nothing in the design of the female breast requires correction by twenty-first-century lingerie. And in cultures where women go braless, large-breasted women have no breast problems or desire for bras. Indeed, in the follow-up study we did in Fiji, a number of large-breasted Fijian women told us they couldn't wear bras “because they were too uncomfortable and too tight.” It's clear that the women who think they need bras for support are the ones who are conditioned to wearing them.

Defying Gravity

Perhaps one of the most compelling reasons that many women wear bras is the myth that bras can prevent the breasts from sagging. This myth was the

focus of medical debate in 1972. In the *Journal of the American Medical Association*, Alfred B. Sundquist, a physician from Manchester, Connecticut, asked, “What do you think of the recent trend among some young women of going braless? Should they not be warned by the American Medical Association that the lack of mammary support may lead to the development of pendulous breasts caused by stretching of the fibrous tissue attaching the breasts to the chest?”

Beyond this doctor’s curiosity, however, how exactly did the subject of “pendulous breasts” become a medical issue and not merely one of fashion? Medically, such breasts cause no problem. Nevertheless, medicine may address cosmetic issues, so a response from an American Medical Association consultant who was a surgeon appeared in the journal: “Yes, the fibrous attachments which support the breasts do stretch under the influence of gravity, more so in some women than in others, and especially in those breasts naturally large or fat or pregnant or lactating. Once lengthened by tension, these fibrous connections (Cooper’s suspensory ligaments) do not resume youthful dimensions.” A second consultant added that “a supportive bra” is important to keep Western women from developing the breast profile prominent “in numerous cultures where bras are never worn.”

Soon after these comments were made, bralessness went out of vogue. But a medical myth about bras and breasts had been created. Why is this idea a myth and not a fact? As Christine Haycock, a surgeon at the New Jersey Medical School in Newark, explains, “Cooper’s ligaments have nothing to do with supporting the breast tissue. They just serve to divide the breast into compartments.” The reason breasts succumb to gravity over time is not related to ligaments or even to breast size. It is due to inherited characteristics such as skin elasticity and breast density, which is the ratio of lightweight fat to heavier glands. Our research uncovered no scientific evidence supporting the notion that bras can prevent breasts from sagging. In fact, numerous women in our study admitted that lifelong bra wearing had failed to keep their breasts from “drooping.”

Reinforcing this false belief in the need for bras to prevent droop are old *National Geographic* images of African tribal women with pendulous breasts. It is assumed that women who don’t wear bras are asking for this pendulous look, since it is assumed that these African women’s breasts are what “natural” breasts would look like. However, this look is actually

desired in many African cultures and is achieved by various methods. Some women bind their breasts to smash them, hang weights from their breasts to pull them down, and even practice breast ironing, a painful and destructive procedure that keeps breasts from developing properly. These women also tend to breastfeed lots of children, which stretches their breasts. And they carry children using an under-the-shoulder wrap that holds itself up by pressing on the breasts. So these women are not any more “natural” than Western women. They just prefer pendulous breasts, or at least don’t care if they have them.

The real issue here is one discussed earlier in the chapter. Women simply do not want to look old. Aging is a frightening process in this culture, especially for women. Antiwrinkle creams, hair coloring, bras and girdles, and cosmetic surgery all feed on women’s fears of looking old and, presumably, less attractive. The myth that bras can prevent breast aging is too enticing not to be believed. The evidence that older women with a lifetime history of bra wearing have not escaped this aging process has not overthrown the myth. Hope springs eternal, even in defiance of reason. And for those women who do recognize the inevitability of aging, a bra, they have been led to believe, can at least make them *look* younger than they are.

The idea that a garment can improve women’s health is not a new one. In the late nineteenth and early twentieth centuries, corsets were considered to be beneficial for both a woman’s moral character and her physical state. The health value of corsets was expressed by *Vogue* in 1932: “Women’s abdominal muscles are notoriously weak, and even hard exercise doesn’t keep your figure from spreading if you don’t give it some support.”

This view of the female body justified the fashion of corsets on biological grounds—grounds that have since been shaken and shown to be absurd. From our twenty-first-century vantage point, this justification sounds like a rationalization for the fashion of corsets, not a solid piece of medical advice. But bras, the direct descendants of corsets, have been recommended with the same type of medical rationalization.

Is Western culture capable of changing sufficiently to allow women to reduce their bra-wearing time? Are women who feel that they cannot survive without a bra simply reflecting the powerful influence that culture has over us all? As we approach a rational, balanced resolution to this conflict between culture and health, let us examine the roots of our lifestyles themselves. If lifestyles cause problems, what causes lifestyles?

IN THE BEGINNING. . .

Traditionally, lifestyles have had their foundation in religion. Religions address *metaphysics*, assumptions concerning the nature of the world, and *ethics*, the rules and standards that guide people's behavior within that world. The Old and New Testaments are, in part, compilations of lifestyle advice handed down throughout the centuries. In fact, the works of all the great religions, Eastern and Western, examine how people are supposed to live to ensure optimal health, longevity, and happiness.

When you study the great religions, you find that their messages are fundamentally similar, with any differences usually reflecting the environmental and cultural idiosyncrasies of different civilizations. Humans in their environments are not as dissimilar throughout the world or throughout history as the trappings of material culture would suggest. We all are *Homo sapiens*, and we all live on planet Earth. These two inescapable facts tie all cultures together in some form of kinship.

When people follow the age-old lifestyle formulas provided by the great religions, they follow a path that has led others through life for centuries, if not millennia. Wisdom concerning food tells the followers what is to be eaten, how it is to be prepared, and when to fast. Religious doctrine also spells out the social roles and obligations of men and women, parents and children. Rites of passage from one stage of life into another are defined and ritualized. And styles of clothing are sometimes prescribed, as with the skullcap of the Jews, the plain clothing of the Amish, and the robe of the Buddhist monk.

Most modern-day Americans no longer turn to their Bible or to their religious leaders for advice on lifestyle issues. Many turn instead to popular media and social influencers for motivation to live a certain way, consume certain products, and adopt a certain attitude. Popular magazines and internet sites serve as bibles for young men and women alike, telling them the correct way to dress and act. Movie stars and other celebrities are regarded as role models and emulated in dress and behavior.

In America, values and behaviors rooted in religion and antiquity have partially displaced values and behaviors rooted in the economic interests of those who pay for the advertisements. In a culture in which "new and improved" is a successful sales pitch, the concept of tradition has come to mean years or, at most, decades, instead of centuries and millennia. Lifestyle choices come and go like fads. In fact, they *are* fads. The result is

a destabilized culture that is not necessarily evolving as much as it is aimlessly changing. The forces that mold our lifestyles are not necessarily founded on age-old wisdom or even on a new conception of metaphysics or ethics. Instead, Madison Avenue advertising and public relations firms hand down lifestyle decisions. And the ultimate purpose of these decisions is not to enhance health, longevity, or happiness but to bolster the economic bottom lines of those who stand to gain from the acceptance of these decisions.

We are not claiming that business has waged a war against society. People are not being forced into compliance with these well-advertised lifestyle choices. This economy-focused manipulation of culture succeeds because many Americans have elevated pop culture to religious significance. Throughout the world and throughout recorded history, all peoples have had some religious affiliation. The uncertainty of natural events and the fear of the unknown compel people to seek metaphysical and ethical solutions. For better or worse, the decline of religion in American life has created a void that has been filled by popular secular culture. And the new god's name is fashion.

One value of age-old lifestyle practices is that they have withstood the test of time. However, the lifestyles dictated by the religion of fashion cannot boast such strength. Focused on fads, sound bites, and consumerism, the lifestyles dictated by fashion are in constant flux. The ultimate determinant of fashionable lifestyles is what sells, not what makes sense—or what is healthy or wise.

A fundamental practice dictated by fashion is the wearing of bras, and most women have embraced this practice without question. How highly is the bra valued? Typically, religions prescribe rites of passage that mark the entry of the initiate into the religious and social world of the adult. In modern America, young women eagerly anticipate their entry into adulthood—and the adult world of fashion—with the ritual of wearing their first bra.

Viewing fashion as a religion explains why so many American women have a fashion focus that outweighs their body-sense. All religions have devoted followers who willingly sacrifice comfort and health as a sign of devotion to their god. When a woman in high heels, a tight skirt, and a constricting bra suffers the discomforts of fashion for a sense of happiness,

identity, or conformity, she is behaving like any self-denying religious follower.

Fortunately, fashions, like culture, change with time. Some fashions are easier to change than others, and altering bra usage will require many aspects of our culture to change to allow women to free themselves from this tight garment. To make a major change to culture sometimes requires a major interruption of historical proportions. The COVID-19 pandemic was one such interruption. Lockdowns and working from home transformed our culture, and freed women from the demands of dress codes that compelled compliance with bra usage for professional appearance. Women discovered that they could be comfortable working from home being bra-free and still do their jobs. This allowed women to experiment with bra freedom, and many have not gone back to bras. The current cultural priority of comfort in clothing has also helped, as women begin to question why they need to wear bras in the first place.

Another current cultural development that has impacted bra usage is the promotion of alternative gender identifications, challenging the traditional male-female roles and appearance standards. However, while this has liberated many women from the constraints of tight bras, it has also resulted in some women, who identify as men, or trans men, desiring to reduce their breast appearance, which they achieve by binding their breasts to minimize them. Breast binding is known to harm the breasts and cause lots of problems from compression and constriction. Meanwhile, men who identify as women, or trans women, are wearing bras to enhance their cultural identification as women, exposing these biological men to the risks of breast disease, including cancer.

Men who don't wear bras have 1 percent of the breast cancer incidence of women who wear bras, but these statistics may change as more men decide to identify as women and wear bras. So the current trends in gender identification will have mixed results on breast health. More men will get breast disease, including cancer, as they wear bras to look like women. And more women who bind their breasts to look more like men will have higher rates of breast cancer. So expect breast disease and cancer rates to be higher for trans men and trans women, so long as breasts define gender. Meanwhile, rates of breast cancer should decline for the women who choose to free their breasts from bra-caused constriction and compression.

This analysis is not meant to diminish the positive achievements of American culture or to suggest that Americans should attend a house of worship more often. Our goal is to understand the larger context in which women find themselves making lifestyle choices regarding their breasts and the wearing of bras. Altering these attitudes and behaviors is not easy, as it is akin to challenging a person's religious beliefs. And from a practical standpoint, bras as a fashion will probably not go away. Given that some women will continue to wear bras, at least for the near future, is there anything that these women can do to prevent breast cancer? This is the focus of our next chapter.

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EIGHT

To B or Not to B

THROUGHOUT OUR RESEARCH, OUR GOAL HAS BEEN TO HELP WOMEN AVOID the devastation of breast cancer. Our approach to this subject has been both novel and promising. Factors ignored in previous breast cancer prevention research—such as the role of the lymphatics and the wearing of bras—now seem important avenues for further investigation.

We now see that our culture, and the values, attitudes, and behaviors it instills, may be a major cause of breast cancer. Specifically, the two major breast cancer triggers seem to be the presence of toxins and the wearing of a bra for over twelve hours daily. Ideally, it would be best to avoid all toxins and to abandon the bra. However, this may be more easily said than done. Toxins appear to have infiltrated every aspect of our lives! Yet, while not totally avoidable, toxic exposure can be reduced.

Unlike toxin exposure, bra wearing is a personal behavior, and therefore is within a woman's control. Yet not all women will stop wearing bras. For those who don't, the risk posed by bra wearing, like the risk posed by toxins, can be decreased by choosing and wearing a bra in a way that minimizes harm to the body.

Other lifestyle choices, too, can work to reduce the risk of breast cancer. Exercise, proper diet, and other elements can be combined to create a lifestyle that allows the body to fight off disease and reach a greater level of well-being.

REDUCING TOXIC EXPOSURE

The number of toxins in our lives seems greater than ever and is constantly on the rise. Fortunately, there are many ways to reduce toxin intake. Mary

Kerney Levenstein's *Everyday Cancer Risks and How to Avoid Them* details the steps you can take to reduce your toxic exposure. For instance, you can eat less meat, poultry, and fish, which often contain pesticides and other toxins. When you do choose to eat these foods, you can buy organic products, or when you can't find organic meat, you can remove most fat, as toxins tend to accumulate in fatty tissue. You can further limit your toxin exposure by filtering your water and by eating organically grown fruits and vegetables.

As you strive for a healthier lifestyle, keep in mind that our skin absorbs many chemicals through contact with our clothes. Be aware that many laundry detergents contain perfumes and dyes and search out one that is free of these. Also consider that new clothing is often treated with chemicals that prevent insect damage and fabric deterioration. You can sometimes smell these chemicals, which should be washed away before the garment is worn.

Then there is the garment itself. Certain synthetic fabrics are composed of chemicals and may contain additional chemicals used in the production process. Synthetic fabrics, including elastics and polyesters, are polymers, which are created by linking chemical units into a chain. Over time, this chain breaks back down into its component chemical units, and many of these are cancer-causing agents.

Elastic in bras, for example, breaks down to the carcinogen 2,4 butadiene. While fabrics that contain these substances are, of course, never healthful, they may be particularly harmful when used to make bras and other underwear—garments that remain in intimate contact with the skin. Bras made with spandex fibers may contain a number of chemicals, including phenolic- and sulfur-containing compounds, which have been shown to cause skin problems. H. L. Joseph and H. I. Maibach's 1967 article in the *Journal of the American Medical Association* discussed cases of contact dermatitis that were caused by spandex brassieres. Another article, written by S. S. Bleehan and P. Hall-Smith and published in a 1970 issue of the *British Journal of Dermatology*, cited cases of skin color loss that, again, were due to spandex bras. In this instance, the skin under the bra was apparently depigmented by the chemical mercaptobenzothiazole, which had been used in the garment's production process. This chemical remained in the fabric and leached out onto the skin, causing problems in sensitive individuals.

It may surprise you to hear that toxins can enter the body through the skin. Indeed, like the lungs, the skin is capable of absorbing chemicals. In fact, this absorptive capacity of the skin is often exploited by physicians, who administer certain drugs through skin patches. What does this tell you about other chemicals—found in skin lotions, underarm deodorants, and other toiletries—that may come in contact with your skin?

One way to avoid the toxins that may leach out of clothing is to choose natural fibers like cotton, linen, and wool. You may even be able to find a bra made of organic cotton! When you select clothes—or a purchase of any kind, for that matter—keep your nose open. If you smell a chemical, ask yourself if you want that chemical inside you. And finally, as already discussed, wash any new garments before wearing them—using a natural, environmentally safe detergent, of course. This should help eliminate the chemicals used in the production process, including cancer-causing formaldehyde.

Unfortunately, while you can take steps to reduce your exposure to harmful substances, our modern life makes it impossible to avoid all toxins. For this reason, we must make certain that we can rid ourselves of toxins as efficiently as possible. This brings us to the subject of bras.

MAKING CHANGES GRADUALLY

Earlier in the book, we explained that the lymphatic system works to move toxins out of the breast tissue and, ultimately, out of the body. Of course, the best way to maximize the effectiveness of this system is to stop wearing bras altogether. But given the fashions of our time and the widespread acceptance of bras, we know that some women will not be willing to toss out this popular undergarment—at least not right away. What, then, can these women do to help the lymphatic system do its job? Two aspects of bra wearing can be modified to reduce risk. The first is the way the bra is worn and the second is the selection of the bra itself. Let's examine each of these in turn.

One excellent course of action for most women is to reduce the time the bra is worn each day. To reiterate our findings, wearing a bra for less than twelve hours daily seems to be extremely protective against breast cancer. Put your bra on as late as possible before going to work or to another outside-the-home activity, and remove it as soon as you return home.

Do not wear a bra to sleep! As suggested by the Bra and Breast Cancer Study, wearing a bra to sleep is the riskiest lifestyle behavior of all. For most women, nighttime is the only time that breast tissues get a much-needed rest from constriction. So remove your bra before going to sleep, and if you do wear clothes in bed, select only loose-fitting garments.

Perhaps just as important as the amount of time the bra is worn is the construction and fit of the bra. When shopping for a bra, keep in mind that the more a bra tries to shape your breasts, the more pressure it will apply to the breast tissue. Therefore, try to avoid bras with underwire or other stiff breast-shaping components. Also avoid all push-up bras and most sports bras, which typically compress the breasts. Whenever you feel tempted to shape your breasts with a bra, realize that all shaping requires pressure. While the “cup runneth over” look may seem desirable to some women, this effect is achieved by squeezing the breast tissue and possibly hindering lymphatic flow.

Avoid strapless bras for more than occasional use. Because the shoulder straps are missing from these bras, the full weight of the breasts is supported by the side panels and cups. As a result, these bras are especially tight around the armpits and are more constricting—and potentially more hazardous—than other bra types.

You may be tempted to wear a sports bra as an alternative, but these are also very constrictive. If you feel you need some breast support for a short time for a particular activity, just make sure you don’t wear it beyond that activity. You may benefit by selecting activities that are appropriate for your breast size. Large-breasted women may be more comfortable swimming or biking, for example, than jogging or playing tennis.

Once you select a bra model, take steps to avoid buying it in too small a size. Unfortunately, sizing a bra can be a messy ordeal. And you can’t rely on bra fitters, who don’t necessarily know what they are doing. Here are the usual tips for selecting a proper-fitting bra:

- Take a deep breath; then exhale and relax. Using a tape measure, take the measurement of your rib cage under your breasts. Add five inches to this measurement. This will give you your “body size.” If the measurement is an odd number, skip to the next highest even number.
- To determine your cup size, first put on a bra that is not too tight. Then take a comfortably snug, but not tight, measurement around your chest

across the fullest part of your bust. If the measurement is about one inch bigger than the calculated body size, your cup size is an A; if it is two inches bigger, it is a B; if it is three inches bigger, it is a C; and if it is four inches bigger, it is a D, and so on.

- After selecting the proper-size bra, put the garment on and note the way it fits. If the bra cup wrinkles, it is the wrong size—either too large or too small. Try to slide two fingers under the shoulder straps and the side panels. If the bra fits properly, your fingers should easily slide under the garment.
- Keep in mind that your size estimate may not apply to all bra styles. The best indication of bra size is how the bra feels, particularly after hours of wear. If the bra leaves red marks or grooves on your skin, it is too tight even if you do not experience discomfort when wearing it.
- Finally, if you experience breast-size fluctuations throughout your menstrual cycle, either select different bras for different times of the month or purchase your bra when your breasts are at their largest and most tender.

Unfortunately, women will still experience breast and bra issues using these sizing guidelines. Sue McDonald is an expert on bras and attended De Montfort University in Leicester, England, at that time the only university in Europe offering a degree course titled “Contour Fashion, or How to Make a Bra.” She says the way bras are measured is absurd. In a personal communication with us, McDonald explained, “An examination and analysis of the design blueprint and the measuring formula revealed that the global lingerie industry is based on non-science and arguable heuristics and the conventional bra is, categorically, incompatible with a woman!”

So, what exactly is the problem with bra design? “All conventional bras, wired or wire-free, focus on the breast and push in against the chest wall, fixing the weight at the front. Tightening the straps to try to lift the front is counter-intuitive [*sic*] . . . and, effectively shortens the back and pulls the shoulders and head down causing neck/shoulder/back pain and headaches.” Yet wearing a “well-fitted bra” is often recommended for women with breast pain. What is a “well-fitted bra”? According to McDonald, this recommendation is really based on a special bra design that is different from the designs available commercially. As she explains,

In 1976 research was carried out at the University of South Manchester, UK, by Professors Wilson and Sellwood, and entitled “Therapeutic value of a supporting brassiere in Mastodynia.” Their findings supported the clinical impression that a fitted, supporting brassiere has considerable therapeutic value. . . .

To this day, these findings form the basis for the mainstay advice for the treatment of breast pain. However, the garment used in this research was no ordinary bra, it was a “special bra . . . which was designed on the cantilever principle,” unlike the conventional bra which is based on compression and encapsulation. This “special bra” was never commercially available and the conclusions of the study were therefore taken out of context and applied to the conventional bra and fitting techniques, which is grossly misleading and has allowed the fashion industry carte blanche to promote their product without challenge.

Some bra manufacturers are now using a more elaborate sizing formula to try avoiding fit problems. Given the fact that a woman’s breasts are sometimes different sizes and change size depending on the time of the month and estrogen levels, the process of fitting a bra is clearly a problem. Perhaps the best advice is to make sure that there are no red marks or indentations left in the skin by the bra. These are signs of constriction.

For women who choose to wear bras but want them to not be a health hazard, there are now numerous bra manufacturers with newly patented bras that claim to be better for the lymphatic system, although there is no scientific proof that they are any better than other bras. Let your body be your guide.

Underwire

Underwire is part of the design of many bras, and the lymphatic compression from underwire is particularly bad. But some health care practitioners believe that another possible factor being discussed in alternative medicine circles regarding underwire may contribute to breast disease. It has to do with metal in the underwire and the effect of this metal on acupuncture points. Dr. George Goodheart, also known as the father of applied kinesiology, found that taping a small metal ball over an acupuncture point generated a much longer electrical stimulation to that

area of the body. He called this the “antenna effect.” This discovery led to the development of small magnetic patches that doctors and chiropractors all over the world use every day.

The problem, according to this theory, is that we live in a world where there is a large amount of electromagnetic radiation from cell phones, Wi-Fi, and other electronic devices, and these signals may be captured, sustained, and magnified by the metal in underwire. Underwire comes in contact with two neuro-lymphatic reflex points on the body: the point below the right breast, which is connected to the liver and gallbladder, and the one below the left breast, which is linked to the stomach. Overstimulation of these points risks not only cancerous mutation of breast tissue but also additional problems in the liver, gallbladder, and stomach.

Of course, this theory needs further research. Some bra companies have replaced metal underwire with plastic. However, this will still result in lymphatic impairment, so it is not a good solution. You could just remove the underwire altogether, but bras engineered to have an underwire will be destroyed by removing it. A better solution, if you choose to wear a bra, is to get one designed without an underwire.

We must add one further issue connected to bra usage that may be causing a problem according to some oncologists. Many women apparently store their cell phones in their bras. These devices are radio transmitters, emitting microwave energy, which can significantly heat the skin and possibly deeper tissues when placed in contact with the body. There is scientific evidence that cell phones increase brain and parotid (salivary) gland cancer incidence. It is not hard to understand how they might increase breast cancer incidence, too, if stored on top of the breast.

Hot Breasts

Many women complain about how hot their breasts become in a bra. Besides the obvious discomfort of having sweaty breasts, breast heat is considered both a cause and a sign of breast disease, including cancer. Inflammation of the breast tissue manifests as heat, and when cancers grow and develop, there is increased blood flow to the tumor, which increases heat to that part of the breast. In addition, inflammation is thought to help cancers develop, creating an environment in the tissues that promotes tumor growth. Looking for heat signals in the breast is a way to tell if there is inflammation, and thermograms are sometimes used to show this heat

pattern. New diagnostic breast cancer detection bras are being designed that have temperature sensors that may tell if there is some area of the breast that is abnormally heated and needs further examination.

The fact that bras can heat the breasts is consequently considered a possible mechanism for the development of breast cancer. As mentioned before, research has shown that bras do, in fact, heat the breasts, which should be no surprise to most bra-using women. We know that heat from tight underwear can harm men's testes, leading to infertility and possibly cancer. The body does not like to be constantly heated artificially, as happens when women wear bras. Some bra manufacturers have tried to develop cooler fabrics to help mitigate this problem, although they will also need to mitigate the issue of constriction.

A FINAL FASHION NOTE

We know that, faced with the need to look sharp at the office and throughout much of the evening, many women may feel it is necessary to wear a bra that is not necessarily comfortable and to keep it on for over twelve hours daily. What can these women do to lower their risk of breast cancer?

Let's consider the assumption that looking smart requires an uncomfortable but appearance-enhancing bra. Many women make this assumption because they have chosen a fashion that emphasizes their breasts. The best solution, then, may be to change the fashion focus to one that still looks stylish but does not spotlight the bust.

We asked fashion experts to tell us how clothing can be used to downplay the breasts. With less of a focus on the bustline, a woman can feel freer to wear a looser bra or, perhaps, to sometimes dress without a bra. Here are some suggestions:

- When selecting a blouse, choose one made with a thicker, less clingy material, such as a bulky knit.
- Choose darker colors rather than light colors that tend to draw attention. Also choose prints rather than solids.
- Avoid blouses with extremely low or high necklines. A low neckline draws the eyes to the breasts, while a high neckline can make less-firm breasts appear even lower.

- Wear loose-fitting blouses whenever possible. If you must tuck in your blouse, don't tuck it in too tightly. Allow it to hang as loosely as possible.
- Use accessories like a short necklace, attractive earrings, and a bright belt. They can draw attention away from the breasts.
- When possible, wear a loose-fitting sweater, blazer, vest, or scarf—all useful coverings that can de-emphasize the breast. Take care to choose a blazer whose lapels draw attention away from the bustline.

Of course, we can't ignore the fact that the safest way to deal with bras is to not wear them at all. And for women bold enough to make a fashion change by discarding their bras, the health benefits may provide ample compensation for the initial emotional and physical discomforts of going braless. Remember that after wearing a tight-fitting garment against the skin for decades, it takes time to get used to the feeling of bralessness. Fortunately, it need not be an all-or-nothing decision. For some women, a slow adjustment to bra-free living may be the answer. Others may find that some days call for bras more than others, depending on the style of clothing worn and the nature of the occasion.

HELPING THE LYMPHATICS

Whether you choose to wear a bra or not, there are ways in which you can help your lymphatics do their job. Massage, exercise, and other techniques can be valuable allies in your fight to prevent breast cancer.

Massage is a truly excellent means of promoting the flow of lymph. As you may recall, massage created by surrounding muscles is primarily responsible for the movement of lymph through the lymphatics. Therefore, additional massage can assist the drainage of lymph from your breast tissue. Given the prevalence of lymphedema in women who have had their lymph nodes removed following breast cancer surgery, lymphatic massage has become much more common. You don't need to wait until you have surgery to massage your breasts.

Note that massage may not be appropriate when cancerous breast tumors are present. Further research into the effect of massage on such tumors is needed before massage can be considered a safe therapy. If you do not have cancer, however, massage can greatly enhance both lymph flow and a

general feeling of wellness. The therapeutic effects of massage have been known for centuries, and knowledge of the lymphatics may explain the connection between massage and health. The more sedentary your life, the greater the benefits of your massage sessions will be.

Try to massage your breasts every day, as soon as you remove your bra. Besides aiding the lymphatics, this will make you an expert at breast self-examination, which is recommended for breast cancer screening. When performing the massage, consider the direction of lymph flow and imitate this flow with your hands by moving them from the nipple outward, mostly toward the armpit. This will maximize the effectiveness of the massage.

Exercise is yet another great tissue-draining activity. The motion of the muscles during exercise helps to move the lymph through the lymphatics ten to fifteen times faster than the usual rate. In fact, exercise has been shown by some investigators to reduce the incidence of breast cancer significantly, although the mechanism for this protective effect has been unknown—until now. And, of course, exercise also increases general circulation. How much exercise do you need? As always, use your body-sense to determine how much is enough.

Keep in mind that if you exercise while wearing a sports bra, then your breasts will not fully benefit from the increased lymphatic circulation from the exercise. Try to wean yourself off of using any bra during exercise. Many women exercise braless, even on a trampoline, although if you are a bra user, you may require some time to adjust. As for the ligaments in the breasts, they strengthen with exercise and use. As research has shown, and as many women have told us from their experiences, breasts lift and tone once a bra is no longer worn.

Deep breathing, too, is an excellent means of assisting lymphatic flow. It is also a wonderful way to reduce stress, provide your body with much-needed oxygen, and revitalize your tissues.

If you're looking for an entertaining way to help your lymph system, try singing. As the chest and abdominal muscles expand and contract during breathing, the lymph will be pumped up toward the heart.

Earlier in the chapter we discussed how dietary choices—specifically the consumption of organically grown foods and the limiting of animal-sourced foods—can reduce the toxins in your body and thereby help your lymphatics. Keep in mind that a good diet does not merely limit toxins but is also well balanced and rich in the nutrients that are necessary for the

proper functioning of the body. It is important to remember, though, that each of us is unique in our biological, environmental, and cultural makeup. The foods that work well for one person may not work equally well for another. So feel free to experiment and, again, to use your body-sense to select the diet that is best for you.

Perhaps most important is an attitude that values health above all else. For those who have experienced disease, there is no greater truth than “health is wealth.” With this positive attitude, we can choose a healthy lifestyle that enables us to steer clear of the toxins that are avoidable and to assist our bodies in eliminating those that aren’t. It is a lifestyle in which fashion adorns bodies instead of disabling them.

OUR HAPPY ENDING

This positive attitude toward health is what sustained Soma and me as she modified her lifestyle to rid herself of the lump in her breast. Removing her bra was the first step. Initially the feeling of her breasts without a bra was strange, although it was not uncomfortable from a physical standpoint. But after a week of wearing no bra, her breasts felt better than ever before. If there was any discomfort, it occurred when we were in public. At such times, Soma felt that the appearance she had to maintain demanded a bra. But soon even this discomfort evaporated, particularly as we increasingly viewed bras as health hazards. Eventually Soma stopped caring about what others might think of her natural bustline. Fortunately, I am now the only man whose opinion she cares about—and I have come to see artificially supported breasts as both unnatural and unhealthy, making them aesthetically unappealing.

After a few weeks, Soma’s breasts seemed more connected to her body. She described the feeling of removing her bra as similar to that of removing a belt after eating a large meal. At such a time, the tightness and tension is relieved, and you experience a greater flow of energy and a greater ease of movement. About a month after removing her bra, Soma had the “need” to wear one for a social occasion. She tried on a bra that she had previously worn without any apparent discomfort. Now it felt like a constricting harness. So she decided to dress without a bra, but to de-emphasize her breasts.

When we became aware of the effect of massage on lymphatic drainage, Soma began to massage her breasts on a daily basis. Though it isn’t clear if

massage is advisable in the case of a malignant tumor, we were not sure if the lump was malignant. Just as important, Soma's body-sense told her that the massage was having a healing effect. She combined the massage with regular exercise, such as bicycle riding, and an organic vegetarian diet. She further avoided toxins by drinking purified water and living in the mountains. Vita-min supplements, garlic, and herbal supplements completed her lifestyle approach to health.

Within two months after beginning these practices, Soma's lump disappeared. While we cannot be certain that she had cancer, we do know that her lifestyle approach returned her breasts to health. Healthy breasts don't have lumps—cancerous or benign. Our joy was matched only by our relief. Not only had healthy lifestyle practices saved her breast from disease, but they had also resulted in a wonderful pregnancy that ultimately produced our son, Solomon.

NINE

The Real Enemy

WHEN I WAS TWELVE YEARS OLD, I MET A NEW FRIEND WHOSE FATHER HAD a subscription to *Playboy*. The boy led me to his closet to see the boxes of magazines piled high. I gulped and blushed, feeling that I was about to do something wrong. But curiosity led me forward through the anxiety. The boy opened one of the centerfolds. My eyes opened wide in amazement. “So that’s what they look like,” I thought to myself. We spent the next hour or so looking through the stack of magazines and assessing which women were the “best.” For a long time, breasts were nothing more to me than sex objects. I once thought of bras as sexy because sexually provocative models wore them in magazines and movies. I never thought that breasts were anything other than a means of eliciting sexual attraction.

Women are ultimately responsible for their personal attitudes and behaviors regarding their breasts, but it would not be fair to place the blame on the victim. Women are indoctrinated by the culture in which they live—and American culture sees breasts primarily as subjects of fashion or objects for display, rather than a source of love and sustenance for a baby.

One and a half years after our frightening discovery of Soma’s breast lump, our view of breasts had dramatically changed. We lay in bed together, contemplating our discovery of a cultural trigger for breast cancer. Our son, Solomon, who was almost a year old, lay between us, nursing contentedly at his mother’s breast. He would have been purring if humans could. His eyes rolled up into his head as he tasted the sweet milk. His little hands kneaded Soma’s soft, warm breast. The scene was as beautiful as one can imagine.

“Now I know what breasts are for,” I thought to myself.

The Bra and Breast Cancer Study taught us some very important lessons. In the fight against breast cancer, one of our major enemies is the way we see and treat women and condition women to see and treat themselves. Contrary to our cultural viewpoint, a woman is not a collection of objects—breasts, hips, legs, face, and hair. She is a whole human being.

“Losing my breasts to cancer set me free,” a woman once told us. “I’m not an object for men any longer. I’m just a woman with scars.”

When a woman learns to treat her breasts as objects that enhance appearance, they belong not to the woman but to her viewers. Thus a woman becomes alienated from her own body. This doesn’t mean that we should no longer view breasts as beautiful, but we should realize that this viewpoint is a reflection of society’s distorted perspective. By setting up a cultural fixation on the appearance of breasts, society has created a potentially self-destructive standard by which a woman establishes her identity and self-esteem.

The problem of alienation is not limited to women. We are all living in a time of alienation. We are alienated from our bodies, our lifestyles, our environment, and our cultures. Cancer is a disease of alienation. Some cells of the body become alienated from their neighbors and grow selfishly out of balance to the detriment of the whole. Urbanization is spreading like a cancer across the globe, leaving cement where once there was field, smog where once there was freshness, polluted water where once there was pristine spring, and engine noise where once there was bird song. Crime, the alienation of neighbor from neighbor, is spreading like a cancer. And we, the people, stand and watch helplessly as the times change. We are the cells of our society. As the parts of the whole of our culture, we will feel the signs of a sick culture within ourselves. Cancer is one symptom.

It doesn’t take billions of dollars of research to realize that the human body was not constructed for the artificial world we have come to inhabit. How can our bodies know how to detoxify themselves when we subject them to such unnatural toxins? Can our bodies operate naturally and healthfully when stressed to meet the pressures of modern life? What is our culture doing to our biology and environment?

The writing is on the wall. We must all take the responsibility to read it for ourselves. Unfortunately, most people rely on some expert to read the writing for them. Who is the best expert on your life and the world you see? We tried to notify experts about our findings. We wrote to the director of the

National Cancer Institute and presented him with our results. We sent the same information to the national vice president of the American Cancer Society (ACS), the President's Cancer Panel, the executive director of the American Women's Medical Association, the president of the National Organization for Women, the executive director of the Women's Research and Education Institute, the executive director of the National Women's Health Network, the executive director of the National Women's Health Resource Center, and a professor at the University of Illinois School of Public Health. None responded—not even the women's groups.

Whom can you trust when your culture is the biggest enemy of your health? Can you trust your culture's leading authorities? Can you trust your culture's government? Can you trust your culture's private industry?

When the first edition of *Dressed to Kill* was released in 1995, it generated intense media interest and lots of news stories about the book around the country. We gave interviews to a number of well-known television shows. The overall reaction to the release of the book was shock and awe mixed with horror and embarrassment. Alternative health news outlets were generally supportive, while mainstream outlets found doctors to scoff at the findings. Our theory, which we thought would spread like wildfire, was quickly extinguished by cancer experts of the day.

As we have shown, bras have been theorized in the scientific literature as a cause of breast cancer as far back as there have been bras. However, while other scientists may have realized the importance of the bra issue before, they may have felt too much pressure, culturally and professionally, to press forward with such a controversial issue. Controversy can get you fired. There are probably lots of brilliant ideas that have been quashed by controversy and cultural discomfort. In fact, years after the book was released, we were contacted by a retired breast cancer researcher who had worked at the National Institutes of Health. He called to tell us that he felt our theory had merit, but when he mentioned it to his female research associates, they reacted to him as though he were some pervert wanting to see them without a bra! Realize that these are professional cancer researchers, and the issue of whether a bra is causing cancer was too threatening to female researchers to even discuss. It shows that researchers and doctors are not above the cultural fray when it comes to breasts and bras. They are part of the same culture, after all.

It has been said that new ideas go through three stages as they become accepted. The first stage is ridicule, followed by opposition, followed by acceptance. We felt the ridicule right away. The opposition was not far behind. But through this opposition we learned much more about this culture and how it contributes to breast disease by ignoring or suppressing the bra-cancer link.

Getting Past the Smoke Screen

Imagine shopping for a bra and finding that the small label on the back contained the words “Warning: Bra Wearing May Be Hazardous to Your Health.” If this sounds impossible, consider the case of smoking and lung cancer.

Today, few people question the fact that smoking is detrimental to health. Just read the warnings on cigarette packages: “Smoking Causes Lung Cancer, Heart Disease, Emphysema, and May Complicate Pregnancy”; “Quitting Smoking Now Greatly Reduces Risks to Your Health”; “Cigarette Smoke Contains Carbon Monoxide.” Consider, too, the ever-tightening restrictions on smoking in public. It seems impossible these days for anyone to be overprotected from the harmful effects of tobacco.

But smoking wasn’t always recognized as a serious health threat. It took many years for studies to conclude that smoking was a health hazard and still more time for the US government to issue an official warning. The story of how this habit came to be viewed as a risk is an interesting one.

Efforts to assess smoking’s health risks began as far back as 1858, when a French physician named Eugène Bouisson observed sixty-eight patients with cancer of the mouth, tonsils, tongue, or lips. All of the patients used tobacco, with all but two smoking short-stemmed clay pipes. Dr. Bouisson suggested that the heat and tobacco products may have been factors in causing the cancers. Whether or not there was a causal connection between the habit and the cancers, short-stemmed clay pipes soon went out of style, along with scientific interest in smoking and health.

Other studies conducted in the years following Bouisson’s generated little attention. But in the 1930s, a number of separate observations marked renewed curiosity in smoking’s relationship to health, including A. H. Roffo’s 1931 research, which reported the production of cancer in rabbits that had been painted with tobacco extracts; Dr. Alton Ochsner’s 1936 work, which speculated that cigarettes might be a major factor in lung cancer, as most of his lung cancer patients were smokers; and the 1938 paper by

Raymond Pearl of Johns Hopkins University that reported statistical evidence of smokers having a shorter life expectancy than nonsmokers.

Unfortunately these low-profile studies had little effect. In fact, since 1900, yearly per capita cigarette consumption had increased markedly: 50 cigarettes per person before 1910; 138 in 1910; 1,365 in 1930; 1,828 in 1940; and 3,322 in 1950. The brilliant advertising campaigns waged by the cigarette industries had transformed the act of smoking into a positive social behavior—good for your health and your image—leaving little room for detractors.

The first major warning appeared in 1950, in a paper authored by E. L. Wynder and E. A. Graham in the *Journal of the American Medical Association*. In that report, the researchers noted that almost all patients with lung cancer had been long-time heavy cigarette smokers and that lung cancer rarely occurred in nonsmokers. Although this report was carried by a prestigious medical journal, few heeded its message.

Soon after, scientists concluded that the effects of smoking could best be evaluated by studying a group of people over a period of years. In 1951, two such studies—each independent and unknown to the other—were begun by research groups in the United States and Great Britain. In Great Britain, Drs. W. Richard Doll and A. Bradford Hill used questionnaires to study the smoking habits of physicians. With the sponsorship of the American Cancer Society, Drs. E. Cuyler Hammond and Daniel Horn led the American study. The first results of both studies were published in 1954 and received a great deal of attention and public interest. When all the data was compiled, the studies reached the same conclusion: The risk of death from lung cancer increases directly with the number of cigarettes smoked per day.

Perhaps to the credit of the British and American research groups, per capita smoking of cigarettes dropped in 1953 and 1954. But in an effort to boost their waning sales, cigarette companies in the mid-1950s introduced filter-tipped cigarettes, which many smokers believed were less harmful to their health than the nonfiltered types. By 1964, the popularity of the filter tips had not only increased the industry's sales but also cut its costs, as less tobacco is used in filtered cigarettes.

In January 1964—ten years after the results of the British and American studies had been presented—the association between lung cancer and smoking was finally made official in the United States with the release of Surgeon General Luther Terry's report on smoking and health. In the surgeon general's report, the study panel found no doubt about the role of cigarette smoking in causing cancer of the lungs. It stated that in men who smoke cigarettes, the death rate from lung cancer is 1,000 percent higher than in nonsmoking males. The study also found smoking to be a cause of chronic bronchitis, emphysema, and coronary artery disease.

Given the gravity of the 1964 report, decisive action was called for. So in 1965, President Lyndon Johnson signed a much-debated bill requiring a warning on all boxes and cartons of cigarettes. Yet, despite the definitiveness of the surgeon general's report, the first warning read simply, "Caution, cigarette smoking may be hazardous to your health."

Unfortunately, the behavior of smokers and the tobacco industry was unchanged shortly after the report's release. The tobacco industry refused to accept defeat, and, for the most part, smokers kept smoking. In fact, the tobacco industry president at the time, G. V. Allen, called for more research, rejecting the report as the final word in the debate on the pleasures and risks of smoking. Although cigarette sales had declined following the surgeon general's statement, by year's end total sales were almost back to 1964 levels.

Since the mid-1960s, antitobacco activity in the United States has been vigorous. Some of the major blows to smokers and the tobacco companies have included the 1969 banning of radio and TV cigarette ads by Congress, the surgeon general's linking of passive smoke with lung cancer and other diseases in 1986, and the surgeon general's 1988 declaration that nicotine is addictive.

But antitobacco forces state that the stern health warnings regarding smoking are still not being heeded. As reasons for concern, they cite the end of a twenty-five-year decline in cigarette smoking, aggressive tobacco industry lobbying, and shrewd marketing tactics, as well as the sobering fact that, despite more than a century of study and over three decades of warnings, tobacco still kills more than 420,000 Americans every year.

The problem with the way the United States has treated the hazard posed by smoking is, unfortunately, typical of the way we handle many health risks. How long must it take—how long should it take—for us to recognize a real problem and then do something about it?

CONFLICT OF INTEREST

As previously mentioned, within weeks of *Dressed to Kill* hitting the bookstores, we received interview requests from several television programs. The producer of a particular primetime national newsmagazine show, in fact, told us that she had read about our book in the *National Enquirer* while getting her hair done and wanted to do a piece on our research. The story in the *National Enquirer* was actually well done and had been arranged by our publisher. Back in 1995, the *Enquirer* was an effective way to get information out to the public. Admittedly, that publication was

not a good place to promote a new book release if you were concerned about ridicule, since it is known for sensationalism. This sensationalism attracted the producer, though, and we were excited to have the national coverage.

The producer even used medical historian Dr. Robert Proctor, author of *Cancer Wars: How Politics Shapes What We Know and Don't Know about Cancer*, as an expert source on the subject, and he told both her and us that we should be congratulated for bringing the lymphatic system back into the discussion of the causes of cancer. At that time, in 1995, the lymphatic system was still mostly ignored by medicine, looked upon only as the route by which cancer may spread.

Coincidentally, the producer, much to her own surprise, soon had her own breast health epiphany. She confided in us that she had experienced breast pain and cysts and that she never took off her bra. After interviewing us, she decided to try going braless for a few days to see what might happen. She soon found that her cysts and pain were greatly reduced. She was becoming a believer in our theory. She admitted that she had originally doubted our work and was planning on running a negative piece, but now that had all changed. Maybe we weren't crazy after all.

Unfortunately, the interview was killed before it could make it to air. The producer explained to us that her program was owned by a network, which in turn was owned by a larger parent company. It was the policy of this parent company that its programs never run stories that could negatively impact its products or holdings. As it happened, this network's parent company was a manufacturer of medical equipment. It was feared that announcing the bra-cancer link might harm sales of this equipment, so the piece was canceled.

That was the first time we ran into the conflict between the treatment of disease and the prevention of disease. Another example of this problem is our unsuccessful attempt to hire a public relations firm in Sydney, Australia, to help us with outreach about our work. We were told that, while the firm didn't represent a bra company, it did represent a drug company that made a breast cancer treatment drug, and it therefore had a conflict of interest.

The cancer industry's knee-jerk reaction to the bra-cancer link was to deny that any link could exist and to say that the entire theory is nonsense and not deserving of further research. That was the position of the American Cancer Society, the standard-bearer of the cancer industry. It condemned

our work for not being peer-reviewed, which really means that it didn't have its union label, and insisted that there was no scientific evidence of a bra-cancer link. The American Cancer Society would acknowledge, however, a peer-reviewed study that had been done in 1991 by Harvard researchers. It looked at breast size and whether a woman was right- or left-handed and investigated how these issues related to breast cancer incidence. Published in the *European Journal of Cancer* and titled "Breast Size, Handedness, and Breast Cancer Risk" (which we discuss in [Chapter 2](#)), this study did not look at bra usage, per se, but used bra size as a way of measuring breast size. (Actually, this was a bad means of measurement, since studies have shown that approximately 85 percent of women wear the wrong-sized bra.) As an accidental discovery, the researchers found that premenopausal women who went braless had half the risk of breast cancer as bra users. Put differently, wearing a bra increased risk 100 percent in premenopausal women.

The researchers were surprised by this finding and could not explain it. They guessed that bra-free premenopausal women may have lower breast cancer rates "possibly because they are thinner and likely to have smaller breasts," although they had no evidence of this from their study. However, their own study did show that "larger cup size was associated with an increased risk for breast cancer . . . only among postmenopausal women." The reduced cancer incidence in bra-free women was found in this study in premenopausal women but not in postmenopausal women. According to their own study, breast size is not a factor in premenopausal women, so it cannot explain the lower cancer rates they found.

Other studies have shown that breast size is not a good predictor of cancer incidence. You would guess that bigger-breasted women have more breast tissue to get cancer. But that doesn't hold up to research. Many mainstream cancer experts do not consider breast size to have anything to do with cancer incidence. If there is a link, it is small and cannot explain the 100 percent increase in incidence seen in this study between bra-free women and bra users.

You would think that breast cancer experts and nonprofits would be interested in looking into any leads they could find to discover the causes of breast cancer, especially since these same experts admit that they cannot explain the cause of over 70 percent of breast cancer cases. Here was a lead that suggested a 100 percent increase in cancer incidence due to bra usage.

That's significant. If they cared about finding the cause, then they would have looked further into this link instead of trying to dismiss it with hypothetical excuses. Even the authors of the study, who rely on cancer industry funding, have denied that there is a bra-cancer link, despite their findings. The American Cancer Society, the Susan G. Komen Foundation, and other mainstream breast cancer fundraisers still insist that there is no scientific evidence supporting the link, even after seeing this Harvard study.

UNBALANCED

Ironically, while the American Cancer Society criticized our work for not being peer-reviewed, its attempt to debunk our work was based on a “study” that was also not peer-reviewed. “Axillary Lymphatic Disruption Does Not Increase Risk of Breast Carcinoma,” in the American Cancer Society–owned *Breast Journal*, was not a peer-reviewed study but rather a letter to the editor. Not all the data was shown. It was an editorial, not a scientific report. It was a review of data from women who had had armpit lymph node removal due to conditions other than breast cancer, and it set out to see if this loss of lymph node function increased breast cancer incidence. The idea was to test our hypothesis that lymphatic impairment from constrictive bras increases cancer incidence.

Actually, the letter's model was not a good one for comparison with bra usage. Bras slowly harm the breasts over decades, while this “study” looked only at cancers occurring in fewer than ten years, and often much less than that, following lymph node removal. The report, however, did show a significant increase of skin cancers after lymph node removal—skin cancer rates rose by 700 percent. But instead of focusing on this remarkable discovery, which would support the theory that lymphatic impairment causes cancer, they focused instead only on the breast cancer results. The letter says the data showed that there was not a significant increase in breast cancers. However, it does mention that there was not enough data for this conclusion to be statistically valid. In other words, there was not enough data to tell the impact on breast cancer, but this did not stop them from concluding that the bra-cancer link is bunk and not deserving of any research attention. No wonder this “study” needed to be published as a letter, not as a study. It could not stand up to peer review. Of course, the letter ended with a reassurance to women that wearing bras does not cause breast cancer.

Misleading Studies

The *Breast Journal* letter failed to kill the bra-cancer theory, so the cancer industry decided to fund a study to disprove the link once and for all. The Fred Hutchinson Cancer Research Center, aware of the 1991 Harvard study that showed a bra-cancer link in premenopausal women and not in postmenopausal women, decided to study postmenopausal women to confirm that no link exists. They chose only women over fifty-five who were lifetime bra users, some with breast cancer and some without. Since all the women were bra users, there was no bra-free control group, making this a flawed and useless study for assessing the impact of bras. It was like studying the effects of smoking on lung cancer and looking only at old smokers, with no comparison to nonsmokers.

Studying old people to learn about lifestyles and health sounds like a good idea, since you would expect a bad lifestyle would certainly cause problems if practiced over a lifetime. You might assume that the longer it is practiced, the more likely the damage, making older people prime examples of what that lifestyle does. However, this is a fallacy and introduces an error in research due to the survivor bias. When you look only at those who were able to survive the lifestyle and ignore those who died from it, the harmful lifestyle seems safer than it is. If you tried, you could find a group of elderly men in their nineties who smoke and drink alcohol, but that doesn't mean those are good, healthy habits that increase longevity. It means those men were, for some constitutional reason, able to survive these lifestyles.

This study found no bra-usage differences between the postmenopausal women with or without breast cancer, so they concluded that a bra-cancer link does not exist and that the bra-cancer theory was thereby refuted, once and for all, so women can wear bras without fear. Of course, the results in postmenopausal women may not apply to younger women with younger breasts, but that important disclaimer is minimized, if mentioned at all. In addition, this study did not address bra tightness, which is a central concern of the bra-cancer theory. But it did achieve its apparent purpose, which was to cast doubt on the bra-cancer link and end its scientific consideration.

This misleading study, titled “Bra Wearing Not Associated with Breast Cancer Risk: A Population-Based Case-Control Study,” was published in 2014, and then Fred Hutchinson Cancer Research Center released its own press release and article about this research, titled “Bras Cause Breast Cancer? No Support for That Claim, Fred Hutch Study Finds: Population-

Based, Case-Control Analysis Should Put Internet Rumors to Rest, Cancer Experts Say.” The bias in their news story says it all:

“We weren’t really surprised,” Chen, the lead researcher, said. “We knew that the biological plausibility of a link between bras and breast cancer was really weak.”

The study was aimed in part at answering a persistent question that has circulated in published accounts and internet rumors for nearly 20 years. It started in 1995, with the book Dressed to Kill: The Link Between Breast Cancer and Bras by husband-and-wife team Sydney Ross Singer and Soma Grismaijer. . . .

Both the theory and the authors’ research methods were debunked by the ACS, along with a 1991 Harvard study that appeared to find a link between bra-wearing and breast cancer. It was criticized for design flaws, including not adjusting for known breast cancer risks such as weight and age.

The National Cancer Institute and the Susan G. Komen Foundation say that bras are not among the factors that increase breast cancer risk. . . .

Such information raises concerns in a country where nearly 675 million bras are sold each year, according to the American Apparel & Foot-wear Association. It’s not only misguided, however; it also can be harmful, said Dr. Ted Gansler, director of medical content for the ACS.

“Among women who do not have a personal history of breast cancer, this concern could be a source of anxiety and a distraction from proven strategies for prevention and early detection,” he wrote in an email. “Among women already diagnosed with breast cancer, this claim might be a source of guilt.”

He praised the Fred Hutch study for shedding new light on the science of the issue and using rigorous analysis to reach their conclusions.

“Their use of sophisticated statistical methods relieves potential concerns regarding influence of other factors obscuring or distorting a potential connection between bras and breast cancer,” Gansler added. . . .

Whether the internet catches up with the new conclusions remains to be seen, but in Gansler's view, the question should be settled.

"The study . . . should reassure women that they can safely ignore this matter," he wrote.

Realize that no one study is definitive, and all studies need repeating. One study should not "safely reassure women to ignore this matter." And given the fact that this study was only on postmenopausal women and did not include a control group of bra-free women for comparison, it is distorted, inaccurate, and misleading and certainly does not settle the issue.

Incidentally, the 2016 Brazilian study, "Wearing a Tight Bra for Many Hours a Day Is Associated with Increased Risk of Breast Cancer," discussed in [Chapter 6](#), had some criticism of the Hutchinson study: "Although Chen et al. did not observe this correlation in regard to postmenopausal women, it is believed that it happened because those studies were performed with women of different socio-economic and educational level." In other words, the Hutchinson study did not adjust for known breast cancer risks, which is the same criticism the Hutchinson study leveled against our study and against the 1991 Harvard study.

But this bias didn't stop the cancer industry's worldwide media network from announcing this Hutchinson study as the final word on the bra-cancer issue. We were mentioned in these news reports but never called for comment. These outlets didn't want their stories to be balanced. They were meant to kill the bra-cancer link once and for all.

It is important to note that there is also evidence of a hidden agenda in regard to the Hutchinson study, which states there were no reported conflicts of interest but does not mention that the Fred Hutchinson Cancer Research Center receives money annually from a "Bra Dash" fundraiser, where pink bras are worn on the outside of clothing during a 5K race to raise breast cancer research funds. It would be very ironic to criticize bras for causing cancer when they are used to raise funds for cancer research.

Wiki Lies

In addition to the misleading studies being used to discredit this issue and discourage any further research, there has been a deliberate and malicious attempt on Wikipedia to discredit our work. In the early 2000s, someone created a Wikipedia page about *Dressed to Kill* and used that page to attack

us. The editors at Wikipedia are anonymous, so you don't know what conflicts of interest they have. The editor controlling the page about *Dressed to Kill* has refused to allow any supportive studies or references to be posted. Many have tried to add information, but edits are immediately removed. It would seem that this editor is in an elevated position at Wikipedia and also does a wiki page on the history of lingerie. There is actually more information about the Hutchinson study on the *Dressed to Kill* page than about our book itself. And we are personally ridiculed in the "About the Author" section that mischaracterizes our other research projects and tries to make us look like kooks. Given Wikipedia's online presence and the trust many people have in the information found on this site, this page has caused us a lot of aggravation and has surely led many gullible women down the wrong path, back to pain and suffering.

Another website with misinformation is breastcancer.org, which is regarded as authoritative. This particular website is supported by over twenty pharmaceutical companies and has a page dedicated to discrediting the bra-cancer link. Alluding to the Hutchinson study, this website claims, "Underwire bras do not cause breast cancer. Only one scientific study has looked at the link between wearing a bra and breast cancer. There was no real difference in risk between women who wore a bra and women who didn't wear a bra." The study referred to is the Hutchinson study described earlier, which, as we have explained, did not include any bra-free women. To deal with this fundamental problem in the Hutchinson study, this supposedly authoritative website falsely claims that bra-free women were involved. We contacted them twice, explaining their error, but got no reply. Unfortunately, this website is often cited by others opposing the bra-cancer link, so the false claims about the Hutchinson study comparing bra-free women with bra users gets spread like a virus.

SUPPORT FROM NON-US RESEARCHERS

Other studies have come out since the Hutchinson study, and these support the bra-cancer link. However, it is interesting to note that these studies are being done outside the United States. Breast cancer is relatively new in cultures that had previously gone without bras. As a culture accepts the bra as a necessary garment for women, breast cancer rates start to climb. These cultures are more willing to question the bra as a cause, since it is a

relatively new fashion to them, just as breast cancer is a relatively new disease to them.

Both the 2015 Kenyan and 2016 Brazilian studies previously mentioned, which support the bra-cancer link, were published by peer-reviewed online journals that are unfortunately not part of the US National Library of Medicine database run by the National Institutes of Health, also known as PubMed. New peer-reviewed online journals are not all indexed in PubMed. The indexing criteria for PubMed are not clear but have nothing to do with quality of the journal, and there have been many complaints about the effective censorship of research through lack of inclusion in this database. (See, for example, Dr. Steve Hickey's 2006 article "Censorship of Medical Journals" in the *British Medical Journal*.) This means that doctors and researchers looking for these studies will not find them on PubMed. And when lazy media people check Wikipedia, they will not find these studies either, since they are being censored.

Is it any wonder, given the difficulty of finding these supportive studies, that the bra-cancer link is considered a "myth" by mainstream media? How can women make an informed choice about wearing bras if they never get the full story?

FIGHTING THE LIES

One bad aspect about the internet is that misinformation never goes away. New studies may come out, but old conclusions remain published online, and the new studies may never come up on search engines. In fact, search results can be rigged to keep some subjects from even appearing.

We have taken it upon ourselves to contact the websites giving out misinformation about this issue, especially if it comes from the media or from a medical facility, and offer numerous references in support of the bra-cancer link, asking them to correct their pages. Sometimes we are successful, which gives us hope that some people still care about speaking the truth. But other times, no matter what evidence we show, there is no changing their incorrect statements.

One example of misinformation we could not change is an article from the magazine *Health*, titled "25 Breast Cancer Myths Busted," which is particularly pernicious and is used widely on the internet. It reads, "Myth: Wearing an underwire bra increases your risk of getting breast cancer. Reality: Claims that underwire bras compress the lymphatic system of the

breast, causing toxins to accumulate and cause breast cancer, have been widely debunked as unscientific. The consensus is that neither the type of bra you wear nor the tightness of your underwear or other clothing has any connection to breast cancer risk.” We contacted *Health* about this erroneous entry and included references to studies that support the link, but we were told the piece was a “paid placement” and could not be changed. In other words, it was essentially a commercial with an agenda. This same article also calls the link between fibrocystic breast disease and breast cancer a myth and claims that you cannot prevent breast cancer. Websites that use this faulty *Health* article as a source of information usually tell women to get mammograms for early detection, since prevention, especially by eliminating the bra, is allegedly impossible. In reality, the only impossibility is getting *Health* to correct its misleading article.

Fortunately, when we notify some websites about their errors, they take down the incorrect information. But we often have to fight to have misleading articles removed. For example, in 2016, Evangelical Hospital in Lewisburg, Pennsylvania, posted on its website a page that was developed for Breast Cancer Awareness Month. It called the bra-cancer link a myth and said there are no scientific studies to support the link. In fact, it did more than just that. It actually claimed that a 2014 study had compared bra-free women to bra users and found no link. We asked for a reference to this alleged study, and, of course, there was none. The hospital had been referring to the Hutchinson study, which was done in 2014. But, as already explained, there were no bra-free women in that study.

We contacted Evangelical Hospital and tried to get the information changed on its website. We explained to the IT person in charge of the webpage that new studies show a significant bra-cancer link and sent him the studies. We explained that the 2014 study mentioned was probably the Fred Hutchinson Cancer Research Center study commissioned to disprove the bra-cancer link, that the study was only done on postmenopausal women, and that it did not include any bra-free women and therefore had no control group, despite the claims made on the Evangelical Hospital’s website. The IT person felt conflicted but finally decided to remove the false information, although the website continues to assert that there is no bra-cancer link, using the American Cancer Society as a source. It states, “According to the American Cancer Society (ACS), there are no scientifically valid studies that show wearing underwire bras causes cancer.

The ACS adds it is not aware of any epidemiologic studies published in scientific journals that suggest wearing any type of bra directly contributes to breast cancer risk.”

Frankly, we were appalled. We had shown them the studies, but here the hospital was knowingly publishing false information simply because the ACS had said it was true. We decided to write to the Evangelical Hospital president and to the vice president of medical affairs, asking how they could publish information they knew to be false. They finally removed the webpage from the internet. Premier Health and Tristar Skyline Medical Center have also removed their pages containing ACS misinformation about the bra-cancer link, as well as misinformation from various mainstream media outlets.

We had similar experiences with television stations and other media outlets. Their claims that the bra-cancer link is a myth all came back to the ACS as a source. Whatever the ACS says is considered gospel by mainstream media and medicine. And when you explain how this information is wrong, they still want to side with their recognized authority. It’s amazing how much faith our culture has in its medical authorities. If the authorities have been corrupted, then the entire culture suffers.

THE SHOWDOWN

We decided to take the issue directly to the ACS’s director of media relations, David Sampson. In 2014, prior to the Hutchinson study, Sampson had written a hit piece titled “Bras and Breast Cancer: A Theory That Lacks Support.” We wanted to discuss this issue with him and to share the two new peer-reviewed epidemiological studies done in 2015 and 2016, which showed a significant link between bras and breast cancer. How could he ignore new research showing this connection, especially if it had been peer-reviewed?

After making email contact and sending him the information, we made a phone call and spoke with him for over an hour. It’s hard changing someone’s mind, especially when he has publicly stated a position. Not surprisingly, we found his attitude to be rather defensive. He also shared that he had been opposing us for the past twenty years, yet ironically congratulated us on having the impact we have had. But there was no budging his attitude. There was no way to make him reverse himself.

Finally, he assured us that his epidemiologist would review the new research we had referenced. We were hopeful, but not for long.

The references we had sent him included the 1991 Harvard study, of which he already knew. In his article against our theory, Sampson incorrectly reasons that the Harvard study findings—that premenopausal bra-free subjects had half the incidence of breast cancer compared to bra users—were probably due to breast size, a statement that we debunked earlier. We asked to see his epidemiologist’s notes about the Harvard study. The reply was very telling. Regarding the Harvard study, the epidemiologist wrote, “Couldn’t access the full text of this study from 1991. But in abstract the authors offer reasonable reasons for associations,” referring to the debunked smaller-breast argument.

We wrote Sampson back and said we were surprised his epidemiologist could not find the Harvard study’s full text, especially since he used that study in his argument. You would think that an epidemiologist for the ACS would have access to research, especially studies on which he is commenting. How can an epidemiologist make an informed conclusion without the full text of a study? Remember that this study found a significant, 100 percent increase in cancer incidence in premenopausal women who wore bras. The shallow assessment of this study by this ACS epidemiologist revealed more about the epidemiologist and the ACS than about the study itself.

The epidemiologist’s response to the 2015 and 2016 studies we had sent to him was equally biased. He was not impressed. In reply, Sampson claimed that there are studies that refute the link and referred to the previously mentioned 2009 letter to the editor in the ACS’s *Breast Journal* and to the 2014 Hutchinson study. We shared with him the flaws in these sources and said that he couldn’t just ignore other research, including peer-reviewed studies, which show a link. He was unmoved. We said that the ACS should at least acknowledge that there are studies that suggest a bra-cancer link and that the organization should be calling for, if not actually funding, more studies on this issue.

About a year later, in March 2017, the ACS finally updated its online statement about the bra-cancer link: “Internet and e-mail rumors and at least one book have suggested that bras cause breast cancer by obstructing lymph flow. There is no good scientific or clinical basis for this claim, and a recent

study of more than 1,500 women found no association between wearing a bra and breast cancer risk.”

Clearly, the ACS does not want the bra-cancer link to become part of the medical approach to breast cancer prevention. After all, the ACS is about detecting and treating cancer with drugs, radiation, and surgery. The ACS even sells bras and breast prostheses for women who have had their breasts removed, so these cancer survivors can feel more “normal” by wearing a bra. The fact is that preventing this disease by ending the constriction of the breasts caused by wearing tight bras is not a medical procedure and does not make any money for the cancer industry.

The Susan G. Komen Foundation, like other breast cancer nonprofit organizations, follows the ACS. The Komen website lists the link between breast cancer and bras under the heading “Factors That Do Not Increase Breast Cancer Risk.” It claims,

Scientific evidence does not support a link between wearing an under-wire bra (or any type of bra) and breast cancer risk. There is no biological reason the two would be linked. Any observed relationship is likely due to other factors. A 1991 case-control study found women who did not wear bras had a lower risk of breast cancer than women who did wear bras. However, the authors stated this link was likely due to factors related to wearing a bra rather than the bra itself. The women in the study who did not wear a bra were more likely to be thin, which the authors concluded might account for their decreased risk of breast cancer. Although wearing a bra does not appear to be linked to breast cancer risk, breast size is under study as a potential risk factor.

As you can see, they use the Harvard study, which found that women who wear bras have a 100 percent increase in incidence of breast cancer compared to bra-free women, and discount the findings based on a guess of how thin the bra-free women may have been. Revealingly, the Komen website then discusses breast size, which it says is under consideration in its research, and states, “Study findings on a potential link between breast size and breast cancer have been mixed. Some studies have found having a larger breast size increases risk, while others have found no link between breast size and risk.”

In other words, the breast-size issue is mixed, and certainly cannot explain the 100 percent increase in cancer rate seen in the Harvard study. Why did Komen downplay the Harvard study instead of seeing it as a possible research lead? Why did Komen ignore all the other studies done that show a link? If you are looking for the cause of breast cancer and claim that you don't know the cause of over 70 percent of cases, shouldn't you be interested in turning over every stone in search of this cause?

Other mainstream breast cancer charities follow the ACS and Komen Foundation. Even the National Cancer Institute follows the opinions of the ACS. All have one thing in common: They are highly influenced by the pharmaceutical industry, which profits greatly from breast cancer treatment. These drug interests have even developed preventative drugs, such as tamoxifen. For the drug industry, even prevention needs drugs.

Unfortunately, these irrational and highly biased statements against the bra-cancer link have a major effect on research efforts. Breast cancer researchers with grants from these charities or from the National Cancer Institute are essentially being told that the bra-cancer link is a taboo subject. This is not a scientific conclusion. It is a political statement. Researchers who want to look at the link may lose funding or be blacklisted. Doctors have explained this sad reality to us many times over the years. Researchers don't want to cross their funding sources. So these unscientific statements from the ACS, the Komen Foundation, and others are not just for public consumption but also let breast cancer researchers know that funding will not go to this area.

According to the ACS's Ted Gansler in a 2010 *New York Times* article titled "Bras and Cancer," "Because the idea of bras causing breast cancer is so scientifically implausible, it seems unlikely that researchers will ever spend their time and resources to test it in a real epidemiological study." Of course, this statement simply means that an epidemiologist who finds the bra-cancer theory scientifically plausible must be a bad scientist, and the ACS will not fund bad science. It is no surprise, then, that the only epidemiological study that the ACS likes on this issue is one commissioned by the National Cancer Institute and done by the Fred Hutchinson Cancer Research Center to disprove the link. This is also why other studies that have come out supporting the link are being done outside the United States.

SAVING FACE

The mainstream cancer industry doesn't want to admit that bras are causing breast cancer. This is a political stance, not a scientific one. How will it save face and justify years of research that did not include this essential issue when studying breast cancer? Our research has been criticized by the ACS for not including all known risk factors. But the factors we omitted were not necessary for understanding the bra link to breast cancer, as we have explained. On the other hand, doing a breast cancer study on women and not considering their bra-wearing habits is a gross oversight and invalidates any study.

It doesn't matter if you are studying cells in culture or animal models of cancer. Petri dishes and rats don't wear bras. But women do. And a woman's breast health depends on how long and how tightly she wears a bra. Not knowing whether subjects are bra users when researching breast cancer in women is like ignoring which subjects are smokers when researching lung cancer. It also is why so much breast cancer research is conflicted and confused, and why researchers who ignore the bra-cancer link still claim they can't explain the cause of over 70 percent of breast cancers. Billions of dollars have been spent over decades looking at breast cancer and ignoring the bra. All this research is now in doubt.

This book reveals a fundamental flaw with the way our culture does scientific research. Researchers live in a competitive, publish-or-perish world, and their incomes rely on obtaining grants, which in turn rely on good reputations and expert statuses. When new information is discovered that challenges or overthrows the assumptions of past research, it often meets with resistance from a defensive old guard. This is why new ideas are usually fiercely opposed. Maybe we should see these problems as growing pains, as the science develops and matures. Unfortunately, the scientists and experts who ignore this vital link see these problems as merely a pain in the neck.

Of course, how can these experts admit that their denial of the bra-cancer link for the past thirty years may have resulted in numerous women getting breast cancer? Doctors who opposed our work from the beginning in a knee-jerk fashion will have a hard time admitting they were wrong. This is why it usually takes decades to get new ideas accepted by the culture. We need to wait until those in power who have staked their reputations on opposing this new approach either pass on or retire, allowing new blood and

new ideas to enter the field. Meanwhile, as medical experts work out their power struggles, the public continues to suffer.

The Artificial Intelligence Problem

Since this issue is so inconvenient for the breast cancer industry, there have been concerted efforts to suppress, censor, and cover up what you have read in this book. When the cancer “authorities” like the ACS and Komen Foundation say there is no bra-cancer link, everyone is supposed to defer to their proclamations. Wikipedia defers to these experts, despite any research to the contrary. The bra-cancer link has been labeled as “pseudoscience” by mainstream medicine, and this has translated into a lack of interest in the link and in doing further studies. When the National Cancer Institute and the American Cancer Society, both of which give research grants, say that there is no bra-cancer link, don’t expect them to give you a grant to study it. And if you do study it, don’t expect to keep your other grants either, even if they are about a different subject. And don’t expect a peer-reviewed journal to accept your study, regardless of its validity. When a subject is taboo, anyone dealing with it risks being tainted and rejected.

There is an ongoing war on cancer, being funded by lots of money, both corporate and public. Truth is the first casualty of war, even in a war on cancer. And the medical-industrial complex is not interested in anything that does not use its drug, surgery, and radiation weapons, or worse, in any information that helps end the war.

When you search for the bra-cancer link on the internet, search engines suppress articles that show any signs of supporting this issue. “Pseudoscience” is considered misinformation, and when it comes to health issues, the internet is invested in controlling medical misinformation, especially after COVID-19 and the crackdown on dissenting medical opinion, considered dangerous misinformation at the time by public health authorities. Search algorithms now place denials of the bra-cancer link prominently in search results, and supportive websites and articles are way, way down the list, if you can find them. This is a type of censorship, but it is nothing new. Ideas that threaten the status quo are often suppressed, even—or rather, especially—if they are correct.

However, the ability to censor the bra-cancer link has just entered a new phase. Using artificial intelligence (AI) to get your information will make sure that you get the party line opposing this link, and few people will

challenge what the AI model says. These models are trained on data from mainstream sources that deny this link, and these models try to defend that denial, even to the point of making up studies. The AI model will defend the Hutchinson 2014 study and ignore its limitations (no bra-free control, only looking at women over fifty-five) and will deflect and diminish the impact of all studies showing a link. It will lie that there are many large-scale national studies that did not find a bra-cancer link, when in reality large national studies, like the Nurses' Health Study, have completely ignored bra usage.

Perhaps this is not a surprise. If the internet is dominated by mainstream medicine saying this issue is pseudoscience, AI models will be trained on that. They also are trained to give priority to mainstream sources, without considering the validity of mainstream opinion. AI will give a biased response, and most people will not delve deeper into sources or question the validity of statements and studies done by those sources. Opposing voices and viewpoints will be marginalized and ignored, and people will stop searching for themselves, accepting what AI tells them is the answer to their question.

This all speaks to the culturogenic nature of breast cancer. The solution is not as simple as eliminating tight bra usage. Industries, as well as women, are affected by the bra-cancer link. Medicine will be criticized for ignoring the most obvious cultural factor affecting breasts. Worse than that, medicine has argued against this link and has encouraged women to continue wearing bras, despite evidence from numerous studies worldwide. There were no calls from mainstream experts for more studies of this issue. Their negative, biased opinion was firm. This link cannot be accepted, since it upsets the entire breast cancer field and threatens Breast Cancer Inc.

This is more than an oversight. This is corruption. But despite the mainstream corruption and resistance, the bra-cancer link is spreading. Studies have been done to determine what various cultures around the world consider to be the causes of breast cancer. Over the years, more and more people, including nurses and other health care professionals, have come to consider bras a leading cause of cancer. In many countries, the majority of people accept the bra-cancer link as true. As mentioned already, Iranian research into breast cancer routinely asks about bra usage, accepting the importance of this factor in breast disease.

What can explain the persistence of this issue for thirty years, despite the institutional resistance? We believe it is due to the ability of women to test this issue for themselves. By eliminating the bra, women have made an important discovery about the negative impact of the bra on their breasts. They can feel it for themselves, spreading the word from woman to woman. Going braless feels so much healthier, and while this doesn't prove bra wearing causes cancer, it does prove to these women that their bras have been harming their breasts, despite what the lingerie and medical industries have been telling them.

There are clearly times when the culture is the enemy of your health. This is one of those times. People make money selling bras and treating the diseases they cause. The fashion industry relies on bras to design women's clothes. Bras have been marketed as essential garments, despite their lack of benefit and their known hazards. Nobody makes money being natural and not wearing bras. This is a market-driven culture, where lingerie and medicine share the common goal of making money. It's easy to put the pieces together and see that your breast health doesn't really matter to this culture. So long as the lingerie and the breast cancer detection and treatment businesses are profitable, there will be bras. They will even promise you better-looking breast implants once your breasts have been removed. It doesn't matter to these industries that your breast cancer may have been caused by a bra in the first place.

But it should matter to you.

If Breasts Could Talk

BREAST CANCER MAY BE CAUSED BY THE CULTURE, BUT IT CAN BE STOPPED one bra at a time.

When we wrote the second edition of *Dressed to Kill* in 2017, we decided to start a new study, called the International Bra-Free Study. The goal was to create a group, or cohort, of bra-free women who could serve other researchers needing a bra-free control group. This was in response to the 2014 Hutchinson study that did not include bra-free women, with the researchers giving the excuse that they couldn't find any. We also wanted to see what these women experienced personally and culturally by eliminating the bra.

BRAS CONSTRICT MORE THAN THE LYMPHATICS

First, we must explain that tight bras compress more than just the lymphatics. They also compress nerves and muscles. In fact, research has shown that wearing tight bras impairs the autonomic nervous system, leading to a host of problems.

For example, researchers have found that tight bras essentially create a full-body stress response. One study, titled "Effects of Pressure on the Skin Exerted by Clothing on Responses of Urinary Catecholamines and Cortisol, Heart Rate and Nocturnal Urinary Melatonin in Humans," explains, "The main results can be summarized as follows: (1) urinary excretion of adrenaline, noradrenaline and cortisol was facilitated, and the amounts of urinary excretion were significantly higher when TC (tight clothing) were worn. Heart rate was significantly higher in the TC group; (2) nocturnal urinary melatonin excretion was significantly greater in the TC group.

These results are discussed in terms of an enhancement of diurnal sympathetic nervous system activity caused by pressure on the skin produced by tight clothing.”

Another study, titled “Field Studies on Inhibitory Influence of Skin Pressure Exerted by a Body Compensatory Brassiere on the Amount of Feces,” found that constipation is a result, presumably due to suppression of the parasympathetic nervous system and intestinal mobility. The study “Disturbance of the Duration in the Menstrual Cycle under the Influence of Tight Clothing” found that women who were bra-free had shorter menstrual cycles, averaging thirty days, compared to bra users, whose menstrual cycle averaged forty-five days. Another study, “The Effect of Clothing on Inhalation Volume,” found that tight clothing hampers breathing, reducing lung expansion, inhalation volume, and deep breathing.

Research has also shown that breasts lift and tone once the bra is no longer worn. The study “Bras Make Breasts Sag, 15-Year Study Concludes” found that “medically, physiologically, anatomically—breasts gain no benefit from being denied gravity. On the contrary, they get saggier with a bra.” While this scientific finding stands in contrast to bra-industry propaganda claiming that bras prevent droop, the science behind the bra-causes-droop effect is that reliance on the bra results in weakened suspensory ligaments and more droop. Once the bra is no longer worn, the ligaments strengthen, and the breasts lift and tone. In addition, bras make the breasts heavy with excess fluid due to lymphatic impairment, resulting in more pendulous breasts.

SURPRISING RESULTS OF THE INTERNATIONAL BRA-FREE STUDY

We had no idea how many other problems not wearing a bra would improve until we started the International Bra-Free Study. While the study is ongoing at BraFreeStudy.org, we feel that it is imperative that women learn how bras can interfere with their health so that they can take proper precautionary measures.

In the study, we ask participants to stop wearing bras, and we then follow their progress. We now have participants from Albania, Australia, Austria, Brazil, Canada, Central African Republic, China, Côte d’Ivoire, Croatia, Curacao, England, France, Germany, Ghana, Greece, Guatemala, India, Iran, Ireland, Israel, Italy, Lithuania, Mexico, the Netherlands, New

Zealand, Nigeria, Pakistan, Poland, Portugal, Qatar, Scotland, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, and the United States.

After no longer wearing a bra, everyone reported reduction of breast pain and cysts, if they had them before starting the study. In no case has breast pain or cysts worsened. Most report that their breasts became less saggy and got rounder. Some report that their nipples developed more feeling than when they wore bras.

Every woman reported that she breathes easier without a bra. Most women report that their digestion has improved. Women who had shoulder pain with a bra report loss of that pain once being bra-free. Many women report loss of headaches since being bra-free.

Most women report having more confidence in public without a bra and a greater sense of self-assurance and empowerment. Women in the study report they have no problem being bra-free at work and appreciate the comfort.

Most women report that they like their breasts more since being bra-free. Most report friends and family supporting their decision to be bra-free. Surprisingly, being bra-free does not seem to alter these women's sex lives. Some women reported that their menstrual cycles became shorter and normalized after they went bra-free.

Importantly, not one participant has experienced any negative effects of being bra-free.

We also found that once women freed themselves from bras, they began to free themselves from other oppressive aspects of their lives. As one participant explained, "I am more confident, I like my breasts now, and I want to advocate for girls and women to understand the link between bras and cancer and how easy, rewarding and healthful it can be to feel this comfortable. I am more empowered now, too."

To give you an idea of how impactful being bra-free has been for these women, here are some comments from participants in the study, made in reply to open-ended questions about their experiences after becoming bra-free. The comments are presented as written.

PARTICIPANT COMMENTS

- "I now find wearing a bra to be so uncomfortable & restrictive, I find I care less what people think. My comfort and freedom to breathe are

more important than what thoughts others may or may not have about my body. To keep my confidence up, I have my mantra—women have breasts, these are mine. If you don't like the way they look, that is definitely not my problem. I have gained a lot of self-confidence that I would not otherwise have found."

- "My breasts seem slightly firmer than they were 6 months ago."
- "I can tell you that I have been staying bra free. Last fall I attended a wedding and thought I needed a bra with the dress. When I took the bra off I was in pain. I vowed never to try that again. Visible nipples versus days of pain is worth being braless. I dress conservatively for work as it is a more corporate office, but no bras."
- "I have noticed since going braless the ptosis that I had from wearing a bra (where they looked flat on top) has reduced greatly. I have a lift in my breast tone, and lifting weights along with other exercises helps greatly. I have noticed less monthly pain in the breast. With less lumpiness. So this has been a very positive change. Physically I feel like I look better too. Some of my friends can't believe I am braless."
- "I had physical therapy, but realized it was the sports bra cutting into my neck and causing shoulder pain."
- "I occasionally get migraines which are associated with monthly hormone levels. But regular headaches were a result of my bra causing pain in my shoulders and tensing my back and neck, the result was headaches. Those are virtually gone"
- "I actually like the [breast] movement and it is less now that my ligaments are stronger."
- "I am more confident, I like my breasts now, and I want to advocate for girls and women to understand the link between bras and cancer and how easy, rewarding and healthful it can be to feel this comfortable. I am more empowered now too."
- "I have forgotten I'm not wearing a bra."
- "I'm very uncomfy in one [a bra] now from those months of bra-freeness so not sure what I'd do if I had to wear one! We went to my brother's funeral in Jan & I didn't wear one & was most comfy with a warm sweater over my top; didn't even think of being bra-less cause I'm so used to it now & don't even consider wearing one, even for something like that."

- “I wore a loose, lacy, non-supportive bra that was still tight around the band. It felt HORRIBLE! I went back home and took off the bra and changed my outfit.”
- “I’ve been braless for 20+ years; as a human freedom from constriction is my right!!”
- “I started wearing a bra at 10 years old. I was frankly sick of wearing them. They really are not comfortable. I try to hide the fact that I don’t wear them because I know it’s not socially acceptable . . . but at this point, I don’t think wearing a bra should be socially acceptable. You know, after I stopped wearing them, I realized that there had been a lot of tension in my chest. I felt all bound up in the upper half of my body. Removing the bra from my life (mostly) has been not just freeing in terms of just the breast, I feel freer all over.”
- “I had been bra free before discovering this study (almost 3 years now). I had cysts in my breasts, infected cysts in my armpits, shoulder pain, digestion issues and regular shortness of breath. All these symptoms faded away when I stopped wearing a bra.”
- “I have less pain in my breasts during my menstruation period now compared to 6 months ago.”
- “A year after going bra free (in 2017) my cysts disappeared. My nipples are higher. Breast are not sagging at all.”
- “I had regular acid reflux, gas and constipation. No longer.”
- “Much more comfort. People look. Some judge. Overall the experience teaches me to get over other peoples’ opinions of me.”
- “My overall appearance has improved (posture). Less back and shoulder pain. Self esteem [*sic*] and confidence are way up allowing me to be more socially confident. Don’t feel so restricted while moving around. my postures improved leaps and bounds. My breathings alot better and deeper now.”
- “You know that overwhelming sense of relief you have when you get home after a long day and remove the bra? I have that all day now.”

CONCLUSION

These comments are representative of the kind of experiences women have been having since becoming bra-free. Fortunately, comfort is now important

to young women, who are ditching the bra. Sexist fashions that demean women and cause them discomfort and harm are now being seen for what they are. Today's woman is more independent and self-confident, and she does not think her identity should be dependent on her breast shape, especially at the expense of her comfort and health. With bra-free fashions being the latest trend, lingerie companies try luring back customers with less constrictive designs.

But too many women have now heard the call of their breasts, asking for freedom from the bra, for the trend to reverse. Once women feel for themselves what it's like to be free of bras, they rarely go back. They have become empowered. They have experienced freedom. They have come to hear the voice of their now bra-free breasts shouting, "Free at Last! Free at Last! Thank God Almighty, I'm Free at Last!"

You, too, can be free. When the culture trains and brainwashes its citizens to do things that are opposed to health, it is our personal responsibility to stand up to that culture and stand up for ourselves. You don't need a doctor to tell you to remove your bra. Just try it, and let your body be your guide.

Conclusion

WHEN A DISEASE IS CAUSED BY THE CULTURE, YOU NEED TO CHANGE THE culture. When we first wrote *Dressed to Kill*, we believed that our information would be the beginning of the end of the breast cancer epidemic. We assumed that our culture would value health over all else. We were surprised that, as medical establishment outsiders, we were the ones to bring attention to this cultural cause of breast cancer, a cause that seems so obvious in retrospect. How could the medical establishment be so oblivious of and resistant to acknowledging the impact of tight bras on breasts?

We expected women would reject their bras and embrace this simple way to prevent breast disease, including cancer. We could not imagine that women would be more invested in fashion than in health and we underestimated their fear of appearing in public without a bra. We believed that most people want to be healthy and assumed that getting the word out to the media would turn the light on and generate public pressure to further research in this important new direction and begin the cultural transformation needed to liberate women from the health hazards of bras.

Now, thirty years later, we see mixed results. As a result of continual cultural pressure to wear bras and the explicit mainstream medical denial of the validity of the bra-cancer link, many women still choose to wear bras, even if it means being uncomfortable. They prefer the pain of bras over the pain of possible ridicule. For them, properly fitting into their culture is more important than properly fitting into their clothing.

On the other hand, there are women who are now taking a different approach to clothing and are demanding comfortable, nontoxic garments. And meeting that growing demand are segments of the intimate apparel industry that are trying to adapt. Many of these women are choosing to be bra-free, not only for comfort but also for health. For those who still want a garment to cover their breasts, there is also an increasing choice of bra

designs created to improve comfort and reduce lymphatic impairment. And fabric, dye, and cleaning products have all trended toward less-toxic alternatives. Modern fashion has also embraced being bra-free, especially for younger women.

The medical industry is also seeing some changes, and for the better. Researchers are now focusing more on the physics of how the body works, going beyond biochemistry. Biomechanics is a growing field that examines the impact of physical forces on the body, including how tight clothing can impair the lymphatics, especially in the breasts. More researchers are studying the ergonomics of clothing, trying to fit clothes to the body instead of fitting the body to clothes. These researchers are finding that impairing the lymphatics means impairing immune function and that this increases cancer rates. They have even discovered that surgical scarring, or any other interference with the lymphatics, increases cancer incidence.

Medical science now has all the pieces of the bra-cancer puzzle, as outlined in this book. But the breast cancer industry, at least in the United States, still disregards this cultural basis of breast cancer and generally ignores the effect of tight clothing on the lymphatics. Traditional Western medicine is not yet ready to admit this oversight in understanding breast health and disease. With billions of dollars at stake, medical decisions about the bra-cancer link will be made slowly, conservatively, and, as we have seen, defensively.

Meanwhile, new generations of girls are still being introduced to bra usage, especially as they enter puberty, and they are being kept ignorant of the hazards of bras. If they do hear about them, they will check the internet and ask AI models about the bra-cancer link, but they will receive preprogrammed misinformation based on the biased opinions of cancer industry authorities. These girls become another generation of women to be exploited by fashion and medicine.

This is an outrage. The question is, now that you know what's happening, are you outraged enough to stop wearing a bra? Can you stand up for yourself when the culture wants to mold you, and your breasts, into something else? Can you say no to bras and discomfort and yes to health and freedom?

We hope you can. And with your help, other women will also be able to ditch the bra, as we continue to help save women from breast disease and cancer, two breasts at a time.

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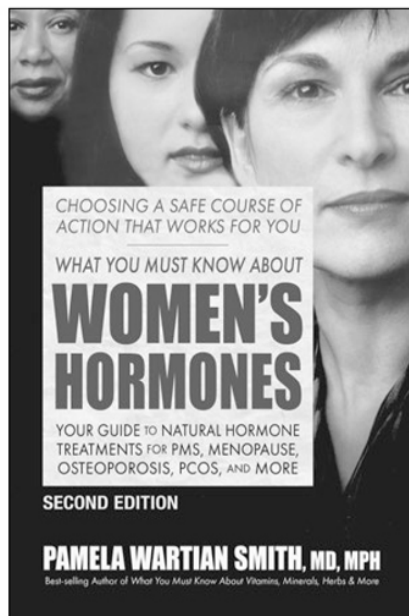
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