

# The Science behind Healthy Living and Disease Prevention

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**Abstract:** *This article explores the various strategies for achieving longevity and maintaining a healthy lifestyle. It discusses the importance of diet, exercise, and regular health checkups, as well as the limitations of modern medicine in preventing fatal diseases like cancer and heart disease. The article also examines the role of metabolism in cancer development and highlights the significance of early detection and preventive measures. Through references to relevant literature, the article provides insights into the science behind living a long and healthy life.*

**Keywords:** longevity, disease prevention, healthy living, cancer, metabolism

## 1. Introduction

As the very title indicates living healthy means to lead a healthy and comfortable life free from the painful diseases of the world. It also suggests that except for severe & serious ailments one should avoid consulting doctors and lead healthy life style but that could in no way prevent death. Because it is so powerful that it lays its icy hands whenever it wants and the Lord of Death, Yamaraj can pull you by the neck and take you either to hell or heaven according to the deeds performed by men - good or bad. Even saints and seers who are said to be nearer to God is not spared but there is no scientific proof of this.

**Keywords:** Longevity, Disease prevention, healthy living, cancer, metabolism.

## Research Methods

A structured literature review, analysis of epidemiological data, and synthesis of existing research findings on longevity and disease prevention moved strengthen the research methodology.

## Ways and Means of living healthy

There are many ways of keeping healthy but some of the ways which can be taken care of in our day-to-day life are given below –

- 1) Eat more green vegetables to help your immune system.
- 2) Avoid stress
- 3) Maintain exercise regularly to keep your body fit.
- 4) Avoid smoking and liquor
- 5) Take plenty of water
- 6) Get your cholesterol and blood - pressure blood sugar checked intermittently.
- 7) Eat mushrooms, Berries, Papayas, Spinach, beans, kidney beans and take dark chocolates and green teas as well.
- 8) Wash your hands often with soap and water because whenever you are sick you should avoid touching your eyes, nose and mouth. Cover your cough and sneezes with your hanky so that you do not spread germs.
- 9) Consume vitamin D and take Multivitamin tablets.
- 10) Last, but not the least, manage blood sugar levels where required to not forget to take insulin.

But despite taking all the aforementioned precautions you must remember that even the greatest doctors cannot help you out when you fall prey to such diseases. These patients

are given extensive treatment, including drugs that help the body produce more insulin, drugs that reduce the amount of glucose the body produces, and eventually insulin itself to force glucose into their highly resistant tissues.

- 1) Cancer
- 2) Dementia including Alzheimer's Disease
- 3) Stroke
- 4) Advanced lung cancer
- 5) Heart, kidney and other liver diseases including motor neurons.
- 6) Multiple Sclerosis
- 7) Huntington Disease
- 8) HIV - AIDS (Treatable Now)

Doctors say that heart attack comes just like an iceberg and sinks the steamer / boat inside the ocean with little hope of saving. There are many other symptoms of diseases and various other fruits to eat which is not possible to be given here. Regarding intake of milk, my personal view is that one should take a cup of hot milk before going to bed which is always helpful.

## From Fast Death to Slow Death

I give here some of the examples of the long game (from fast to slow death) taken from Peter Attia "The science and Art of Longevity. 1923 Penguin Random Serious (Book Outline)

As a surgical resident at Hopkins, I would learn that death comes at two speeds, fast and slow. In an inner city, Baltimore, fast death ruled the streets meted out by guns, knives and speeding automobiles. As perverse as it sounds, the violence of the city was a feature of the training programme. While I chose Hopkins because of its excellence in liver and pancreatic cancer surgery, the fact that it averaged more than ten penetrating trauma cases per day, mostly gunshot or stab wounds, meant that my colleagues and I would have ample opportunity to develop our surgical skills repairing bodies that were too often too young poor, black and male.

The article explores the various strategies for achieving longevity and maintaining a healthy life style. It discusses the importance of diet, exercise and regular health checking as well as the limitations of modern science in preventing fatal diseases like cancer and heart disease. The article also examines the role of metabolism in cancer development and highlights the significance of early detection and preventive measure through references to relevant literature, the article

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provides insight into the science behind living a long and healthy life.

If trauma dominated the night time our days belonged to patients with vascular disease, G I disease and especially cancer. The difference was that these patients' wounds were caused by slow growing, long undetected tumors, and not all of them survived either not even the wealthy ones, the ones who were on top of the world. Cancer does not care how rich you are or who your surgeon is really. If it wants to find a way to kill you, it will. Ultimately, these slow deaths ended up by bothering me even more.

### On Longevity

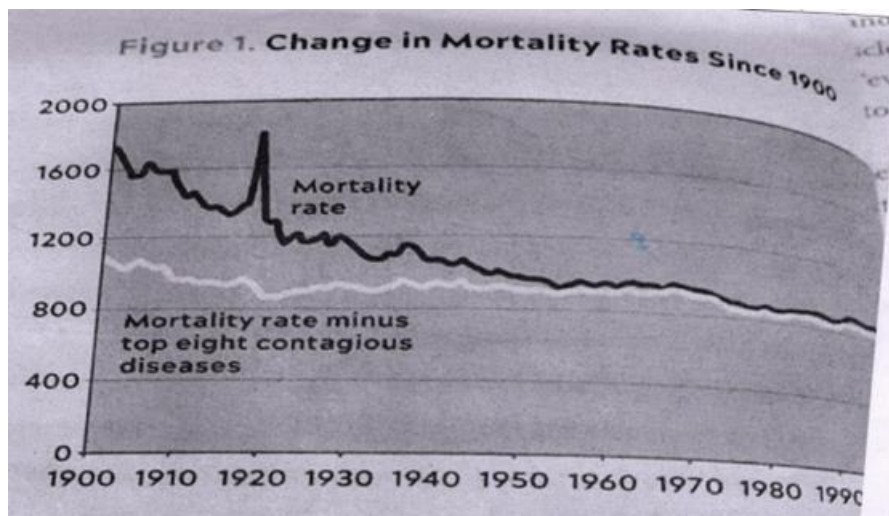
Focus should be there as a physician on longevity. Longevity not mean living forever or even at age 120 or 150, which some proclaimed experts are now routinely promising to the followers. Nor does longevity means matching more and more birth days as we slowly wither away. That is what happened to hapless mythical Greek Tithonous, who asked the Gods for eternal life. To his joy, the gods granted his wish but because he forgets to ask for eternal youth as well, his body continued to decay Oops.

Longevity, has two components. The first is how long you live, your chronological life span, but the second and equally important part is that how well you live the quality of your years. This is called health span, and this is what Tithonous

forgot to ask for. Health span is typically defined as the period of life when we are free from disability or disease, but I find this too simplistic. One of the main obstacles in Tanyon's quest for longevity is the fact that skills that my Peter Attia's colleagues and acquired during medical training have proved to be far more effective against fast death than slow death. The problem is not that we are not trying to save the lives of patients because modern medicine has thrown an unbelievable amount of effort and resources at each of these diseases mentioned above. The standard and care of treatment guidelines of the American Diabetes Association that a patient can be diagnosed with diabetic mellitus when they return a hemoglobin A/C (HbA/C) test result of 6.5 percent; higher corresponding to an average of blood glucose level of 140 mg dl (normal to more than 100 mg/dl or an Hb A/c of 5.1 percent). These patients are given extensive treatment, including drugs that help the body produce more insulin, drugs that reduce the amount of glucose the body produces, and eventually the hormone insulin itself, to ram glucose into their highly resident tissues. Instead, they have a condition called pre diabetes.

This chart shows change in Mortality Rates since 1900 1.

This graph shows how little real mortality rates have improved since 1900, once you remove this top eight contagious infectious diseases which were largely controlled by the advent of antibiotics in the early twentieth century.



### Cancer incidence by Age in the United States

In my third year of medical school, I got the opportunity to spend four months in Rosenberg's lab, at the epicenter of American cancer research. But the time Peter Attia arrived, it had been nearly three decades since Richard Nixon had declared a national war on the aforesaid diseases in 1971. Initially the hope was that cancer would be "cured" within five years, in time for the Bicentennial Despite well over \$ 100 spent on Research via the National cancer Institute but to no result. That is because it becomes exponentially more prevalent with each decade of life as shown in figure given below. But it can be deadly at almost any age, especially middle age. The median age of cancer diagnoses is 66, but in 2017 there were more cancer deaths among people between forty-five and sixty six liver disease, and stroke combined 2. Globally about 12 to 13 percent of all cancer cases are thought to be attributable to obesity. Obesity itself is

strongly associated with thirteen different types of cancer including pancreatic, oesophageal, renal, ovarian and breast cancers as well as multiple myeloma (Fig.7). Diabetes Type 2 also increases the risks of certain cancers, by as much as double in some cases (such as pancreatic and endometrial cancers) and extreme obesity (BM 1>40) is as associated with a 52 percent greater risk of death from all cancers in men and 62 percent in woman.

### Now the question arises What is Cancer

One major reason why cancer is so deadly and so scary is that we still do not know how it begins and why it spreads. They stop responding to the body's signals which regulate growth and revision.

Cancer cells are different from normal cells in two important ways. Contrary to popular belief, cancer cells do not grow

faster than non - cancerous counter parts, they do not stop growing when they are supposed to be. For the same reason, they stop listening to the body's signals and tell them when to grow and when to stop growing. This process is thought to begin when normal cells acquire certain genetic mutations. For example, a gene called PTEN, which normally stops cells from growing or dividing (and eventually become tumours) is often mutated or "lost" in people with cancer, including about 31 percent of men with advanced prostate cancer. Such tumour suppression genes are critically important to our understanding of the disease. The second property that defines cancer, cells is their ability to travel from one part of the body to a distant site where they should not be. This is called metastasis, and it is what enables a cancerous cell from a local manageable problem to a fatal, system disease. Beyond these two common properties, however the similarities among different cancer is not one single, simple, straightforward disease but a condition with mind boggling complexity.

### Cancer Metabolism

As you might have gathered by now, we think of cancer as primarily a genetic disease, driven by mutations of unknown causes. Clearly cancer cells are genetically distinct from normal human cells. But for the last century or so, a handful of researchers have been investigating another unique property of cancer cells, and that is their metabolism.

In the 1920's, a German physiologist named Otto Warburg covered that cancer cells had a strangely gluttonous appetite for glucose, devouring it at upto forty times the rate of healthy tissues 4. But their cancer cells current "respiring" the way normal cells do, consuming oxygen and producing lots of ATP, the n=energy currency of the cell, via the mitochondria. Rather they appeared to be using a different pathway that cells normally use to produce energy under anaerobic conditions meaning without sufficient oxygen such as when we are sprinting. The strange thing was that these cancer cells were resorting to this inefficient metabolic pathway despite have plenty of oxygen available to them.

Nearly forty years into the War of Cancer, however, Watson himself had become convinced that genetics did not hold key to successful cancer treatment after all. "We may have to turn our main research focus away from decoding the genetic instructions behind cancer and toward understanding the chemical reactions within cancer cells "he wrote therapies that targeted cancer's metabolism as well as its genetics.

Globally about 12 to 13 percent of all cancer cases are thought to be attributable to obesity 5. Obesity itself is associated with thirteen different types of cancers, including pancreatic, esophageal, renal, ovarian, and breast cancers, as well as multiple myeloma (See Fig 7) Type 2 diabetes also increases the risk of certain cancers by as much as double in some cases such as pancreatic and endometrial cancers) and extreme obesity (BMI $\geq$ ) is associated with a 52 percent greater risk of death from all cancers in men and 62 percent in women.



### Early Detection

The final and perhaps most important tool in our anticancer arsenal is early, aggressive screening. This remains a controversial topic, but the evidence is overwhelming that catching cancer early is almost always beneficial. Very few treatments work against these advanced cancers, in most cases, outside of the few that respond to immune therapies, the best we can hope for is to delay death slightly. The ten-year survival rate for patients with metalloid cancer is virtually the same now as it was fifty years ago. We need to do more than hope the novel therapies.

There is a similar story for patients with breast cancer. Patients with HER - 2 - positive metastatic breast cancer can expect a median survival time of just under five years, with standard treatment consisting of three chemotherapy drugs.

### Eat less live longer 3.

### The Science of Hunger and Health

In the face of 2016, I met three friends at George Bush International Airport in Houston to embark on a somewhat unusual vacation. We flew 11 hours overnight to Santiago, Chile, where we drank coffee and ate breakfast before boarding another plane to fly six more hours to the west, across 2500 miles of open ocean to Easter Island, the world's most isolated body of land that is inhabited by humans. We were all men in our forties, but this was not your typical guy's weekend. Most people know about Easter Island because of the thousand or so mysterious giant stone heads, called moa dotting its shoreline, but there is a lot more to it. The island was named by European explorers who landed there on Easter Sunday in 1772, but the natives called it Rupa Nui. It is an extreme, isolated spectacular place. The triangle shaped island of roughly sixty-three square miles is what's left of a trio of ancient volcanoes that surged up more than two miles from the seabed millions of years ago. One end of the island is ringed by very high cliffs



that plunged down into the gorgeous blue ocean. The nearest human settlement is more than one thousand miles away. We were not there as tourists. We were on a pilgrimage to the source of one of the most intriguing molecules in all of medicine, one that most people have never heard of.

### Exercise and Sleep

The most powerful Longevity Drug is Exercise because it keeps us healthy and fit. On the other hand, sleep is essential for everybody 6. Even a nap of 2 or 3 hrs during day time keeps one healthy who is above 80 or more. Also, there are several exercises for aged people living at home (13 in number) which does not require him to go to gym. Gym is only for the young ones as I feel. It is obviously not a revelation that exercise is good for you, so is chicken soup if you have a sore throat. But not many people realize how profound its effects really are. Study after study has found that regular exercises give you to live as much as a decade longer than sedentary people. Not only do habitual runners and cyclists tend to live longer, but they stay in better health with less morbidity from causes related to metabolic dysfunctions. For those who are not habitual exercisers (yet) you are in luck. The benefits of exercise begin with any amount of activity even brisk walking and go up from there. Just as almost any diet represents a vast improvement over eating only fast food, almost any exercise is better than remaining sedentary.

### How to improve your health

The following are some rules and suggestions to help men sleep better. These are not magic bullets but mostly about creating better conditions for sleeping and letting your brand and body do the rest. It's best not to obsess over sleep. But the more of these you can check of, the better your odds of a good night sleep.

- 1) Don't drink any alcohol 7. And if you absolutely, positively must limit yourself to drink before about 6 p. m. Don't confuse the drowsiness it produces with quality sleep.
- 2) Don't eat anything less than three hours before bedtime and ideally longer 8. It's best to go to bed with just a little bit of hunger.
- 3) Abstain from stimulating electronics, beginning two hours from bed.
- 4) For at least one hour before bed, if not more, avoid

doing anything that is anxiety producing or stimulating, such as reading work email or God help you, checking social media.

- 5) The room should be cool ideally in the mid-sixties. The bed should be cool to use a "cool" mattress!! or one of the many bed cooling devices out there.
- 6) Darken the room completely. Make it dark enough that you can't see your hand in front of your face with your eyes open. If that is not possible use your eye shadow.

There are also many other things which obstructs your sleep avoid them.

### List of Centurions in and outside India

Latest Estimate Report says –

India 6.05 Lakh individuals (17.5.2019) Other Countries

- 1) Israel – 3061 (2017)
- 2) Ireland – 2179 (2021)
- 3) Italy – 22552 – (2024)
- 4) India – 6.05 Lakhs (17.5.2019) Maharashtra alone has 57, 000 people.

### Food taken by the centurions 9 (a)

They eat fruits, vegetables, wholesome grains, beans. They also eat animal foods as eggs, meat, fish etc. They also enjoy flavor dishes as celebrity dishes.

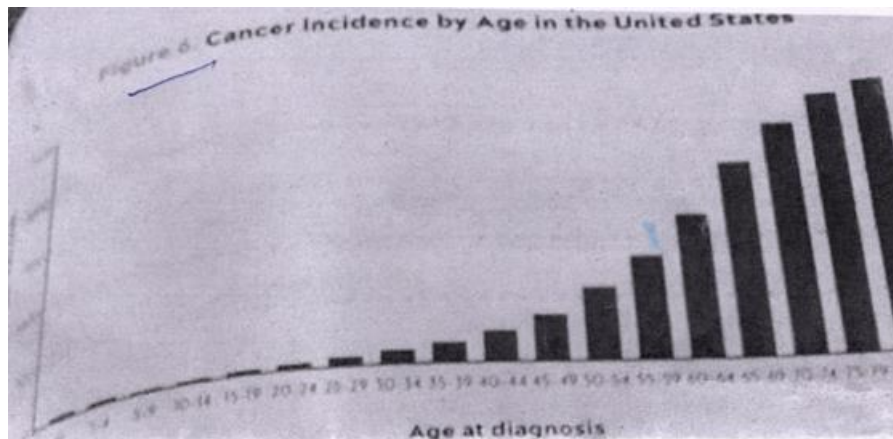
### Centurions around the world 9 (b)

The United States, centurions in the world are the largest at 1, 08, 000. Japan is the Country with the largest number of people at 1, 46, 000 (9th June, 2024).

People in the Blue Zones (such as Japan, Italy, Nickoya, Costa Rica, Ikaria, Greece and Loma, Linds, California live longer because they have lower rates/chronic diseases and Japan has the lowest rate of heart disease, obesity and diabetes and so they have the largest span of their lives (9c).

### Purpose of the Article

The purpose of this article is to educate readers on the various strategies for living a healthy life and achieving longevity with a focus of disease prevention, the role of metabolism in cancer and the importance of early detection and preventive measures.



## 2. Observation

It was observed from the paragraphs given above that man is so greedy about taking food knowing that is harmful he does not spare the restaurants and bars selling fried fruits such as KFC, Chicken, Pakoras, Momo's, Jalebies with Rabri / Milk etc. to this taste. He wants to remain healthy at all costs but does not spare his tongue.

Further, we have seen how centurions live longer than common people because their food habits are healthy. They do not take animal foods like fish, meat, eggs etc. and they preferably avoid alcohol except when attending parties and that too sparingly.

Though they are free from avoidable and unavoidable diseases but still they are better than common man. We have seen how Japan has the lowest heart disease, obesity and diabetes. Also, people in the Blue Zones are healthy because they also do not take milk and sugary foods, processed foods etc. and remain satisfied with the common preparation of foods. They also avoid drink and alcohol that is why they also remain healthy. The article is significant as it provides a comprehensive overview of the strategies for achieving longevity and preventing diseases contributing to the border standing of health science and public health practices.

## 3. Conclusion

In conclusion, while modern medicine provides numerous tools for managing health and preventing disease, the best approach to longevity remains a balanced life style that includes a healthy diet, regular exercise, and preventing measures like cancer and the importance of early detection emphasizing that longevity is not just about living longer but also living healthier.

### List of References provided

Yes, the list directly supports the claims and discussions provided.

## References

- [1] Chart showing change in mortality rates since 1900.
- [2] Figures showing in 2017 how 45 to 64 deaths occurred due to heart disease, liver disease and stroke combined.
- [3] Eat less and live longer Peter Attia Penguin Random Series (1923) (Outlive).
- [4] In the 1920's a German physiologist named Otto Warburg discovered that cancer cells have a strongly gluttonous appetite for glucose, devouring it at about forty times the rate of healthy tissues.
- [5] Globally about 12 to 13 percent of all cancer cases are thought to be attributable to obesity.
- [6] Exercise and sleep are the most powerful longevity drugs essential for everybody be he so or more.
- [7] Don't drink alcohol and limit your drink before about 6 p. m.
- [8] Don't eat anything less than three hours before bed time and ideally longer.
- [9] 9 (a) (b) (c). Foods taken by the centurions around the world and centuries around the world and Blue Zones.
- [10] (NB – I feel that one should go through Peter Attia's

book Penguin Random Series (1923) (Outlive – The Science and Art of Longevity at least once in a year to know about the diseases and their remedial measures).

- [11] (Some excerpts have been taken from Peter Attia's book Outline and some words are also used as it is) It is a useful book.