

# THEORIES OF DISEASE CAUSATION

A PAPER PRESENTED

BY

ROTIMI OJO

There are several theories of disease causation, the focus of this paper will be on the following theory of disease, namely; The Demonic Theory, The Punitive Theory, The Miasmatic Theory, Germ Theory, Supernatural Theory Of Disease, Ecological Theory, Multifactorial Causation Theory, Fracastoro And The Contagion Theory, Hahnemann And Homoeopathy Theory, Web Causation Theory, Diathesis–Stress Theory, Psychosomatic Theory Of Disease, Christian Science Theories, Cellular Theory

## 1. THE DEMONIC THEORY

Man's common belief as to the causation of those "thousand ills which human flesh is heir to, has always been fairly compatible with the general state of human knowledge. It has always been pretty well related to the state of civilization and learning of the race or country.

The savage of today and the races of antiquity are at one in their reliance on what is often spoken of as the demonic theory.

According to this theory, disease was produced by demons, one or more evil spirits had fixed their abode in the victim's body. The sick man was possessed of a devil. It was therefore logical to attempt to cure him by a system of incantation and sorcery, something calculated either to drive or coax the demon out. Disease was conceived of, not so much as a condition of the body itself, as an entity apart from man which dwelt with, or even replaced, the soul within its ordained temple. Savage or primitive imagination pictured a great world of things unseen and supernatural and from this world the fathers of the race drew the characters who were assigned to play the villains' parts in the great struggles of the mortal body with its invading maladies. The association of religion with primitive medicine was very close.

The priest or man of religion was usually the medicine man or doctor whose good offices were required for exorcising the evil spirits of disease.

Much has been written of the history of primitive belief in the demonic source of disease and of the superstitions connected with its cure. These superstitions and the practices they direct were

often very fantastic and interesting. Unhappily some of them still survive in many of the most highly civilized countries.

In our own country a great many of these beliefs are still practiced among the laity, especially among the illiterate of the more remote country places.

Magnetic rings are still worn for the cure of rheumatism. Dried potatoes and horse-chestnuts are still wearing holes in mainly a trousers pocket; parents are still making their children the object of their little friends' ridicule by compelling them to wear bags of asafetida to keep off communicable disease. Breaking a mirror, beginning a journey on Friday and a host of other ridiculous, inconsequential notions about ill luck are still unexploded in the minds of a great many people. Successful men of business and refined modern women, well informed about most things, continue to believe charlatans and quacks simply because they are not informed as well upon the subject of their own bodies, how they function and what will interfere with those functions, as they are about the workings of an automobile or even the principles of international law.

## 2. THE PUNITIVE THEORY

The association of religion with the cure and treatment of sickness probably had much to do with the evolution of what we may call the punitive theory disease; the belief that one's attitude toward the deity was responsible as a cause of sickness. From a period centuries prior to the Christian era down to the present time, there have been good people who have believed disease was a punishment meted out by an outraged God for the sins of the individual or the race.

The Old Testament bears evidence of the currency of this notion among the Hebrews of Bible time. We are told that Jehovah is a jealous God, we find him recorded as rewarding his chosen people in divers ways and as sternly punishing them in his displeasure. In

II Chronicles, Chapter XXI, there is related the story of a terrible plague in which the whole nation suffered for a sin of David and which was stayed only by David's repentance and the making of a sacrifice.

Following out this theory an afflicted individual or a plagued people instead of cajoling evil spirits, sought to be healed by propitiating the deity. Piety, repentance of sin, prayer and sacrifice were esteemed to be of great value. As we have seen, David built an altar and made sacrifices.

Jehovah saw that he had turned from evil, the divine wrath was appeased and the plague was stayed.

In accepting this record of Hebrew life and religion literally, the early Christian Church quite logically found a place for the punitive theory of disease. Special prayers and services, special rituals and even special saints, who should intercede for the victims of disease, came into being. The heated religious controversies of the Dark Ages are full of references to this subject. The best means of petitioning relief from disease was regarded as a religious question. The terrible outbreaks of bubonic plague which ravaged Europe in the late medieval and early modern period gave the church an occasion for directing its energies to this matter.

### 3. THE MIASMIC THEORY

After long years we begin to emerge from the "thousand years without a bath," which made up the brilliant Age of Chivalry, and begin to hear more about the miasmatic theory of disease.

That curious notion of vapors or miasms coming up out of the ground and striking down the people with disease was not really born at the time above mentioned.

It had been suggested long before by the Greeks and the Romans. After being buried for centuries under the stupendous weight of middle-age superstition and ignorance, this old idea began to revive.

The people, who believed in this, said that the air arising from certain kinds of ground, especially low, swampy areas, was a cause of disease. Certain places were thus given a very evil reputation, because the ground was said to exude some invisible, insensible vapor, some miasm, which produced disease.

Such places were spoken of as unhealthy spots. Not only was the air of swamps miasmatic but so also was night air.

The clever fellows who invented miasms have been the unwitting cause of much trouble on the part of modern physicians, who cannot get out of their patients' heads the persistent old superstition that, if they breathe the night air, all sorts of trouble will result. The fact that malaria was prevalent in the vicinity of swampy land, and some evidence that people who ventured out in these swampy places were more likely to get the disease, lent plausibility to this theory and it has been an almost hopeless task to dislodge it from the minds of a great many people.

It was the belief in the air as the causative agent that gave malaria its name, the Italian for "bad air." Somewhere in the inexhaustible fund of interesting information which he drew upon so freely to supplement his vivid imagination,

Shakespeare found this miasmatic conception of disease, for, in his Julius

Caesar he makes Portia say to Brutus, who has been walking in the garden in the small hours of the night, "Is Brutus sick? and is it physical

To walk unbraced, and suck the humours Of the dank morning? What! is –Brutus sick,

And will he steal out of his wholesome bed To dare the vile contagion of the night, And tempt the rheumy, unpurged air?"

This quotation expresses the whole idea of miasms, namely that the air is contagious, that the "contagium" or cause of disease is in the very air itself.

The wise old heads who invented miasma were really beginning to be scientific after all. At least, they were searching for a material, natural cause, instead of blaming it all on either a god or a devil. They were great, in that they had the fundamentally important conception, that something cannot come out of nothing. Even the suggestion that night air in low swampy places was disease laden was not so bad in one sense. The old physicians simply reckoned without the active anopheles who is so particularly blood-thirsty at night.

These three conceptions of the origin of disease are the ones that have been practically universal. They are the ones that have taken their place in the popular fancy and have woven themselves into the history of nations that have left their mark upon the folk lore and the earlier literature of many peoples.

#### 4. GERM THEORY

Germ theory: Microbes (germs) were found to be the cause for many known diseases. Pasteur, Henle, Koch was the strong proponents of microbial theory after they discovered the micro-organisms in the patients' secretions or excretions.

Henle and Koch have postulated that

1. Each disease will be caused by a germ
2. Without that germ that disease will not be caused

3. By introducing that germ , that disease can be caused in animals experimentally,
4. And that germ can again be isolated from that sick animal experimented with.

#### 5. SUPERNATURAL THEORY OF DISEASE:

In the early past, the disease was thought mainly due to either the curse of god or due to the evil force of the demons. Accordingly, people used to please the gods by prayers and offerings or used to resort to witchcraft to tame the devils.

#### 6. ECOLOGICAL THEORY

Around 463 BC, hippocrates is the first epidemiologist who advised to search the environment for the cause of the disease.

##### ENVIRONMENTAL INFLUENCE

Interactions among humans, other living creatures, plants, animals, micro organisms, ecosystems, and climate, geography, and topography are so complex that despite much study we are often uncertain what is really happening.

##### ECOLOGICAL DETERMINANTS OF DISEASE

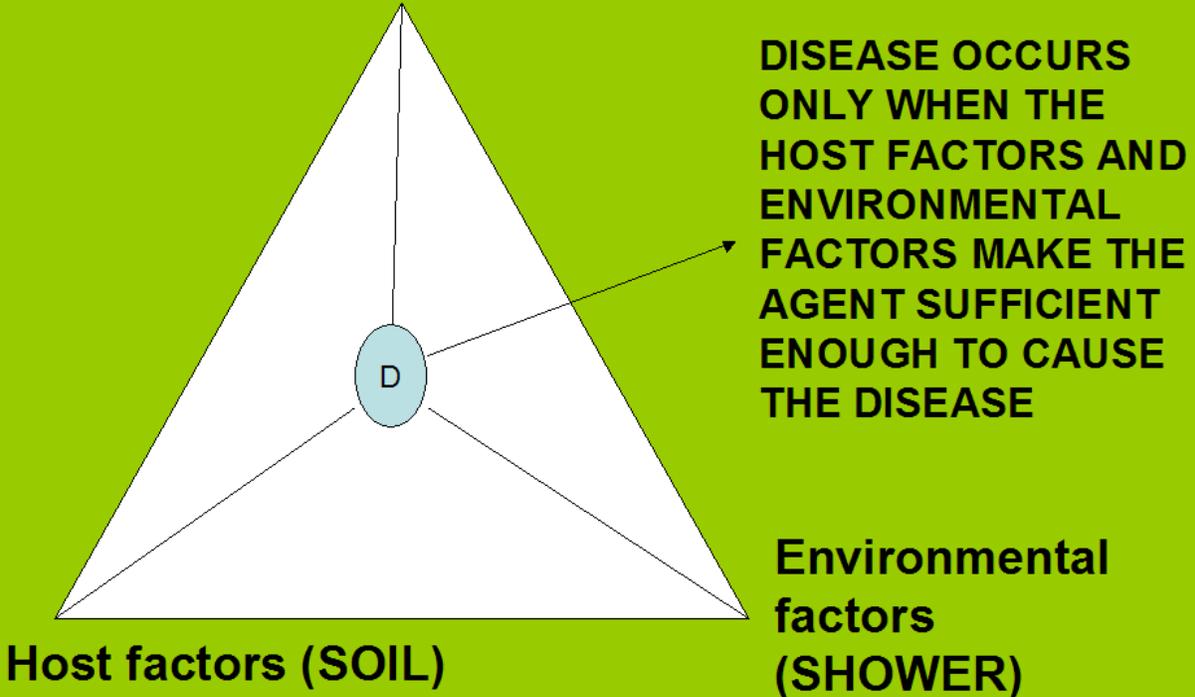
Mckeown has pointed out, improved health owes less to advances in medical science than to the operation of natural ecological laws

#### 7. MULTIFACTORIAL CAUSATION THEORY

Pettenkoffer stated that Agent, Host and Environmental factors will act and interact synergistically and as join independent partners in causing the disease

# WHEN THE DISEASE OCCURS?

Agent (SEED) factors

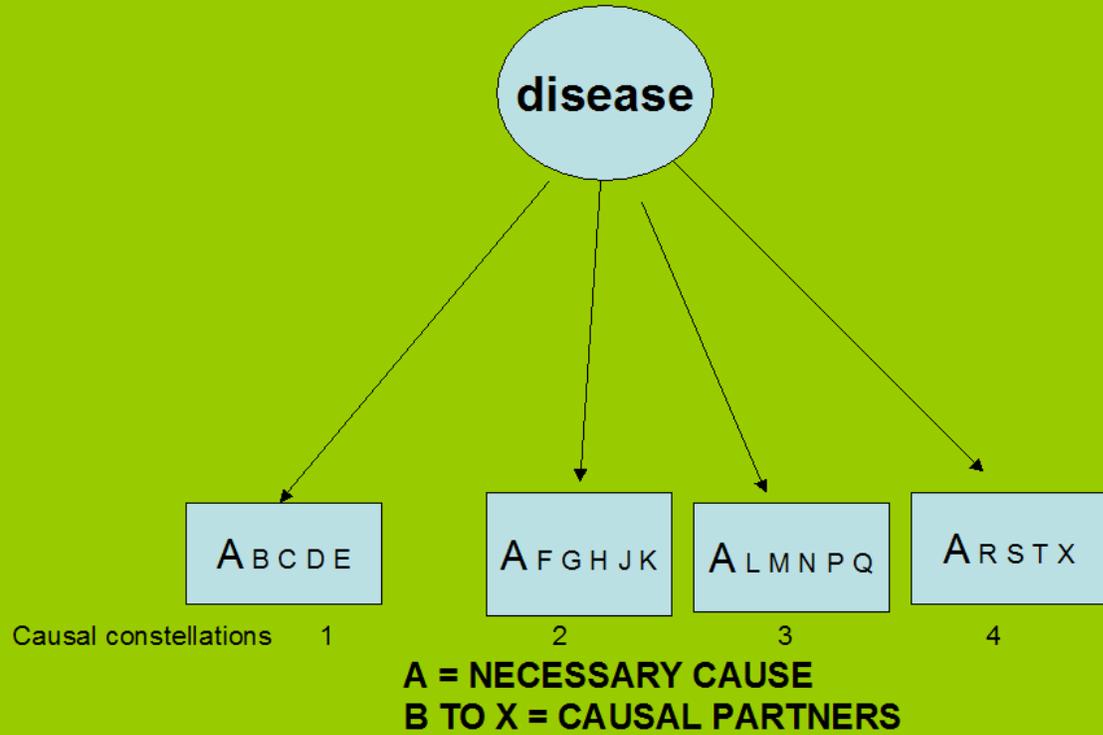


Environmental factors (SHOWER)

Host factors (SOIL)

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# CAUSAL CONSTELLATIONS



## Examples

Lung cancer is caused by a constellation of causes like

- Smoking
- Unfiltered cigarettes
- 10 years duration
- And host susceptibility

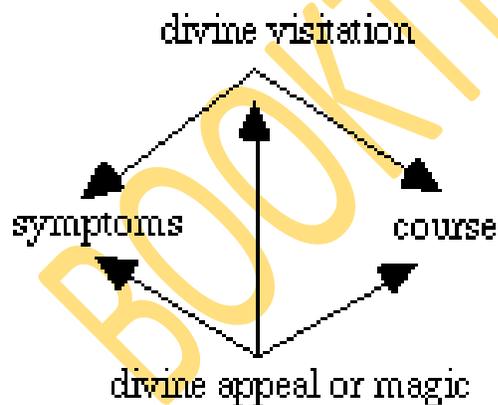
## TISSUE INSULT DUE TO CHRONIC IRRITATION

- Chronic irritation of any tissue may lead to disease

MARJOLIN'S ULCER- in the past, barbers used to wipe their razors on their forearms frequently while shaving the beards of their clients. This chronic irritation has resulted in squamous epitheliomatous changes and cancers (Marjolin's ulcers) in barbers

### 8. Hippocrates and the Humoral Theory

Hippocrates developed a naturalistic approach to medicine that contrasted sharply with the religious views that preceded him. The figure below shows the causal network that the Hippocratics rejected, for example in their discussion of the "sacred disease", epilepsy. On the traditional view, epilepsy was caused by divine visitation, and hence could only be cured by using an appeal to the gods or other magic. Little was said of the existence of a physical disorder responsible for the observable symptoms. The Hippocratics argued that epilepsy is no more sacred than any other disease, and contended that it is caused by an excess of phlegm, one of the four humors (fluids) that constitute the human body.



. Causal structure of religious disease concepts.

The following quotes from Hippocratic treatises concisely summarize the humoral theory:

The human body contains blood, phlegm, yellow bile, and black bile. These are the things that make up its constitution and cause its pains and health. Health is primarily a state in which these constituent substances are in the correct proportion to each other, both in strength and quantity, and are well mixed. (Lloyd, 1978, p. 262)

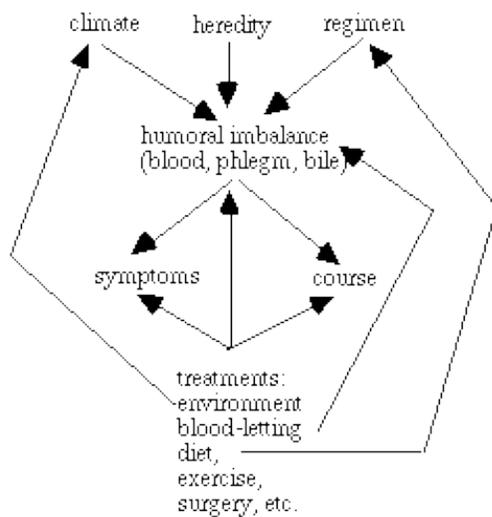
All human diseases arise from bile and phlegm; the bile and phlegm produce diseases when, inside the body, one of them becomes too moist, too dry, too hot, or too cold; they become this way from foods and drinks, from exertions and wounds, from smell, sound, sight, and venery, and from heat and cold. (Hippocrates, 1988, p. 7).

To modern ears, the humoral theory sounds odd, but contextually it possessed a great deal of conceptual and explanatory coherence. Many of Hippocrates' contemporaries believed that there are four fundamental elements: earth, air, fire, and water. These possess various combinations of the four qualities of moist, dry, hot, and cold; for example, fire is hot and dry. The four humors also possess these qualities in different degrees, so that bile tends to be hot and phlegm tends to be cold.

Diseases arise because of humoral imbalances. For example, too much bile can produce various fevers, and too much phlegm can cause epilepsy or angina. Imbalances arise from natural causes such as heredity (phlegmatic parents have phlegmatic children), regimen (diet and other behavior), and climate (temperature, wind, and moisture conditions). Different kinds of imbalance produce different diseases with symptoms and development that were acutely observed by the Hippocratics. They described in detail not only the symptoms of patients with a particular disease, but also the ways that the patients tended to develop toward recovery or death. The course of a disease was affected by the development of a particular humor, producing crises that signaled basic changes in patient outcome. Fevers were classified as tertian, quartan, and so on based on the number of days before a crisis occurred.

Treatment of a disease can address either the causes of the humoral imbalance by changing diet and environment, or the humoral balance itself. To rid the body of excess bile or phlegm, methods were used to induce vomiting or evacuation of the bowels, and veins were opened to let blood. The use of emetics, purgatives, and phlebotomy remained standard medical practice well

into the nineteenth century. These techniques make sense within the Hippocratic framework because they are means of changing fluid balances. The figure below displays the structure of the causal network underlying the Hippocratic concept of disease.



Causal structure of Hippocratic disease concepts.

## 9. FRACASTORO AND THE CONTAGION THEORY

Although some Hippocratic physicians recognized that consumption (tuberculosis) is contagious, contagion played little role in medical explanations of disease until the work of Fracastoro, who was born in Verona about 1478. In 1525 he published a long poem about the newly-recognized disease syphilis, and in 1546 he published his major treatise on contagion.

Fracastoro did not deny the existence of bodily humors such as phlegm, but he contended that there is a large class of diseases caused by contagion rather than humoral imbalance. Persons can contract infections even if their humors are normally balanced. He defined a contagion as a "corruption which develops in the substance of a combination, passes from one thing to another, and is originally caused by infection of the imperceptible particles" (Fracastorius, 1930, p. 5.). He called the particles the *seminaria* (seeds or seedlets) of contagion. (I translate Fracastoro's "seminaria" as "seeds" rather than the customary but anachronistic "germs".) Fracastoro was

unable to say much about the nature of these conjectured particles; bacteria were not observed by van Leeuwenhoek until 1683, and their role in infection was not appreciated until the 1860s. Fracastoro nevertheless discussed the causes and treatment of various contagious diseases.

He described how contagion can occur by direct contact, by indirect contact via clothes and other substances, and by long-distance transmission. In addition, he stated that diseases can arise within an individual spontaneously. His book has chapters for the arrangement of contagious diseases shown in table 3.

The differences between diseases are explained by their having different "active principles", i.e. different seeds. Fracastoro distinguished between different kinds of fevers in part on the basis of their being caused by different kinds of contagion. Rather than abandoning the humoral theory, he blended it with his contagion theory, suggesting that seeds for different diseases have different analogies (affinities) for different humors. For example, the principles of syphilis have an affinity with thick phlegm, whereas those of elephantiasis have an affinity with black bile.

Just as Fracastoro's contagion theory of disease postulates different causes than the humoral theory, it also recommends different treatments. Cure comes not from restoring a bodily imbalance, but from destroying or expelling the seeds of contagion. Remedies that destroy the seeds of contagion include extreme heat and cold, while evacuation of the seeds can be brought about by bowel movements, urination, sweating, blood-letting, and other methods. Methods of treatment thus overlap with those advocated by the Hippocratics, although Fracastoro urged that blood-letting not be used for contagious diseases that arise from without as opposed to those spontaneously generated from within. Figure 4 shows the causal structure of Fracastoro's conception of disease. The *seminaria* produce an infection that can be treated by destroying or expelling them.

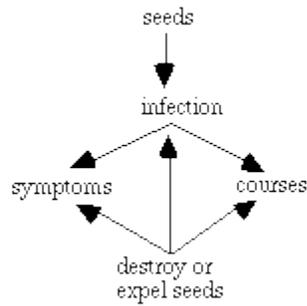


Figure 4. Causal structure of Fracastoro' disease concepts.

According to Nutton (1990), Fracastoro's theory of contagion was respectfully received by his contemporaries, although they tended to assimilate his views to the Galenist metaphor of "seeds of disease" which did not, unlike Fracastoro's view, assume that such seeds are infectious agents transmitted from one person to another. Since no one had observed the *seminaria* postulated by Fracastoro, his hypothesis had no obvious advantage over Hippocratic assumptions that noxious airs rather than germs are a main source of epidemic diseases. After 1650, Fracastoro had little influence, although interest in his work revived in the nineteenth century when the modern germ theory emerged.

## 10. HAHNEMANN AND HOMOEOPATHY THEORY

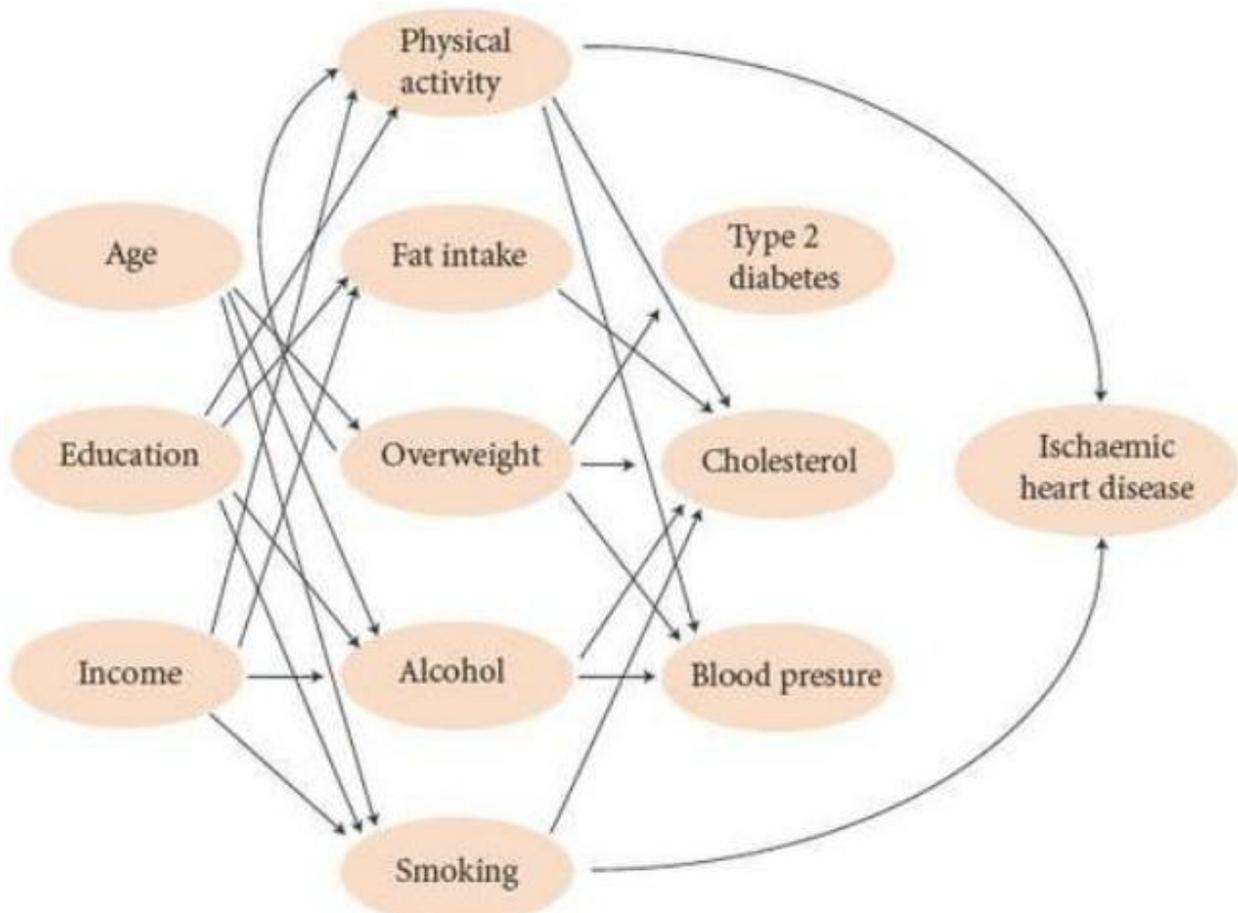
Homeopathy, in its essentials, is founded on the theory of Hahnemann, who urged that disease is due to some spiritual influence, that it consists of its symptoms taken collectively, that it may be treated by the removal of those symptoms and that this result is to be obtained by introducing into the body of the sick person, in small quantities, such drugs as have been found to produce the identical symptoms in a well person. The whole fabric of this scheme is highly artificial and it was put forward by a man who was a theorist first and an observer and student of the human body and its ways only incidentally. In our day, when facts count for what they are and not for what we should like to have them, it is naturally unsatisfactory in its whole structure. The school of homeopathy, as it remains with us today, has almost, if not entirely, shaken off this fanciful chain of reasoning by which, under Hahnemann, it was bound up with the empiricism of an earlier and even less enlightened period and the homeopathic physicians of today actually make use of much the same methods in diagnosis and treatment of disease as the

so-called "regular" or "old school" physicians. The true physician, under whatever name or creed he may have entered the communion of the healing art, must in this day deal in fact, not theory. He must be, above all things, broad-minded and well informed; he must be ready to accept and to employ the discoveries of science as soon as their therapeutic value be established upon a firm basis in accordance with the most reliable tests of modern experimental medicine.

## 11. WEB CAUSATION THEORY

This theory was given by Macmoham and Pugh

According to them, disease never depends upon single isolated cause rather it develops from a chain of causation in which each link itself is a result of complex interaction of preceding events these chain of causation which may be the fraction of the whole complex is known as web of causation.



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## 12. DIATHESIS–STRESS THEORY

The diathesis–stress model is a [psychological theory](#) that attempts to explain behavior as a predispositional vulnerability together with stress from life experiences. The term [diathesis](#) derives from the [Greek](#) term (διάθεσις) for disposition, or vulnerability, and it can take the form of genetic, psychological, biological, or situational factors.<sup>[1]</sup> A large range of individual differences exist between persons in their vulnerability to the development of disorder. (Ingram, & Luxton, 2005)

The diathesis, or predisposition, interacts with the subsequent [stress](#) response of an individual. Stress refers to a life event or series of events that disrupt a person’s psychological equilibrium and potentially serves as a catalyst to the development of a disorder. (Ormel et al., 2013). Thus, the diathesis–stress model serves to explore how biological or genetic traits (*diatheses*) interact with environmental influences (*stressors*) to produce disorders, such as depression, anxiety, or schizophrenia. (Oatley et al., 2006)

Stress can be conceptualized as a life event that disrupts the equilibrium of a person’s life. (Jeronimus et al., 2013). For instance, a person may be vulnerable to become depressed, but will not develop depression unless he or she is exposed to a specific stress, which may trigger a depressive disorder. (Nolen, 2008). Stressors can take the form of a discrete event, such the [divorce](#) of parents or a [death](#) in the family, or can be more chronic factors such as having a [long-term illness](#), or ongoing marital problems. (Oatley, 2006). Stresses can also be related to more daily hassles such as school assignment deadlines

## 13. PSYCHOSOMATIC THEORY OF DISEASE

Sigmund Freud and Jean-Martin Charcot were born 150 years ago, but their ideas about the effect of the subconscious on disease continue to [resonate](#) in the scientific community. (Friedman ) Freud and colleagues argued that unconscious mental processes such as sublimated rage could manifest as physical symptoms. However, with the advent of superior technology, one by one,

many diseases once supposed to be caused by psychological stress have since been attributed to other factors including infections.

According to the [Marshall Pathogenesis](#), [chronic fatigue syndrome](#), [multiple chemical sensitivity](#) and other chronic inflammatory diseases are likely caused by pathogens, yet many physicians consider these diseases to be “medically unexplained.” Medically unexplained diseases are widely prevalent but at the same time have few discernible markers or objectively measurable symptoms. (Nimnuan, 2001). While a lot of Freudian ideas have fallen out of favor, one legacy remains: difficult-to-explain diseases are still routinely attributed to psychological causes. The process by which patients supposedly manifest psychological problems as a disease has been named and renamed, classified and reclassified: hysteria, [psychosomatic](#) disorder, somatoform disorder, conversion disorder, functional disorder, etc. In each of these diagnoses, however, the stated origin of disease is unchanged: symptoms that cannot be explained are ultimately “all in a patient's head.”

#### 14. CHRISTIAN SCIENCE THEORIES

The Christian Science theory of disease explain that reality only exists in the mind; only sick if your mind thinks you're sick

#### 15. SUBLUXATION THEORY

Subluxation theory postulated chiropractic; pressure on spinal nerves that causes the manifestation of disease; remove pressure, illness goes away

#### 16. CELLULAR THEORY

This theory stated that diseases arise from micro-organism within the cell of the body.

#### 17. MAGNETIC THEORY

Magnetic theory explain that disease is caused by distribution of the minerals in the body, people get sick; magnetic fields restore balance.

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