# Global Views

# Medical implication in the Bible and its relevance to modern medicine

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ABSTRACT: The Holy Bible, as the root of Western civilization, has imposed great influence in the fields far beyond religion. In this thesis, the author intended to reveal the medical implication in the Holy Bible and its relevance to the modern medical science by exploring the biblical medical information and comparing it with the current medical theory and practice. The conclusion of the exploration is surprising yet inspiring: the Holy Bible, as an ancient religious book, contains rich medical information around themes such as sexual relations, dietary guidelines, hygiene, etc., which is not at odds, but in harmony with the modern medicine.

KEYWORDS: implication; Holy Bible; modern medicine; relevance

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#### 1 Introduction

The Holy Bible was not written for scientific, historical or medical purpose, but it has provided inexhaustible sources of inspirations for scientists, cosmologists, philosophers, educators, and anthropologists in their respective research. To give just one example, the oceanographer M. F. Maury (1806-1873), known as the "father of oceanography", said he got the inspiration and motivation to explore the currents of water and wind in oceans from the Bible when his son read Psalm 8 to him during his sickness, "The fowl of the air, and the fish of the sea, and whatsoever passeth through the paths of the seas..." (Psalm 8:8)[1]. It suddenly struck him that there must be paths in the sea if the Bible said so. Later, Maury observed the ships' fastest routes and mapped them out across the ocean and created something like "paths" in the sea, which enabled ships to progress more quickly<sup>[2]</sup>.

There has been a close relationship between medicine and religion in human history. Religion and spirituality play an essential role in meeting the needs and desires of patients. And many religious ministries commit to the care giving of patients with terminal illnesses and chronic medical conditions. In China as well as in other countries, many hospitals were set up by Christian missionaries. Since late Qing dynasty, "Medical Missionaries" in China has become a special cultural phenomenon. According to the statistic in 1887, 150 Medical Missionaries came to China, including Peter Parker (1804-1889), Robert Morrison (1782-1834), Livingstone and T.R. Colledge. They all had both degrees for medicine and theology. The hospitals and medical institutes they set up nurtured a lot of Chinese medical experts and made great contributions to the development of modern medicine in China<sup>[3]</sup>.

The reasons above are what motivated the author to examine the medical implication in the Scriptures concerning different aspects of medicine. As the classic of Christianity, the Bible undoubtedly contains some medical message, and the exploration of it would hopefully provide significant implication to modern medicine. The findings of the research are that the statements in the Bible suggesting medical knowledge are consistent with the related medical world.

#### 2 Humanistic ideas to the sick and the weak

The Bible shows great concern to the patients, the weak, and the wanderers, which is also the concern of medicine. In the *Old Testament*, God once accused the power-holders



in Israel of being indifferent to the sick, the weak, the hurt, and the lost. "The diseased have ye not strengthened, neither have ye healed that which was sick, neither have ye bound up that which was broken, neither have ye brought again that which was driven away, neither have ye sought that which was lost; but with force and with cruelty have ye ruled them." (*Ezekiel* 34:4)<sup>[1]</sup>

In Verse 16 of the same chapter, God continued to show his compassion and care to those people. "I will seek that which was lost, and bring again that which was driven away, and will bind up that which was broken, and will strengthen that which was sick..." (Ezekiel 34:16)<sup>[1]</sup>

In the New Testament, Jesus showed his loving kindness to those who were suffering from all kinds of diseases. In the record of his miracles in all the four Gospels, he healed many patients, rich or poor, with love from their refractory diseases.

These humanistic ideas can be related to both traditional Chinese medicine (TCM) and modern medicine. Love, concern, care and respect to the patients' rights can still be seen (though not as often as it should be) in modern hospitals and from itinerant physicians. That is also why charity and hospitals are always connected.

#### 3 The medical application of wine

Wine is a controversial issue among *the Bible* readers because it was mentioned many times in this book and the attitudes towards it seem to be inconsistent in some way. On the one hand, it is described as something evil, and connected with self-indulgence. Such as: "Woe unto them that rise up early in the morning, that they may follow strong drink; that continue until night, till wine inflame them!" (*Isaiah* 5:11)<sup>[1]</sup>

On the other hand, it is connected with God's provision and is often mentioned together with other produce of the land as rich blessings from the Lord: "And the floors shall be full of wheat, and the vats shall overflow with wine and oil." (*Joel* 2:24)<sup>[1]</sup>

It was even used directly for medical use, as the Samaritan did when he saw a man wounded in his journey. He "bound up his wounds, pouring in oil and wine."(*Luke* 10:34)<sup>[1]</sup>

Apostle Paul once told Timothy, his adopted son to "use a little wine for thy stomach's sake" (2 *Timothy* 5:23) [1] because Timothy's stomach often had infirmities.

Most theologians believe that there are two different wines in *the Bible*: one is just like grape juice, which is a wonderful blessing from the Lord; the other means the stronger fermented drink, which can make people lose their senses thus should be careful in using it. So *the Bible* did not forbid people to use wine, but never encouraged excessive drinking of it, which is still relevant today considering the drunken driving taking place everywhere.

#### 4 Marriage and sexual relations

Biblical law is of great importance in Judaism, who sees *the Old Testament* as their highest authority. The identity of Jews does not rely on the land they inhabit together, or certain government agency, but the collective ownership of the Biblical law<sup>[4]</sup>.

The core of the Biblical law is the Ten Commandments, but in *Torah* (the first five books of *the Bible*), there are totally 613 items, concerning sacrifice, sexual relationships, dietary guidelines, sanitary rules, etc.

Marriage is an important issue in the Scriptures. The first couple Adam and Eve was put together by God himself in the Garden of Eden. *Genesis* 2 is believed by Judaists and Christians as the beginning of marriage. Therefore Biblical marriage is between a man and a woman. And Biblical law explicitly condemns homosexual practice (*Leviticus* 20:13)<sup>[1]</sup>.

Actually the whole part of *Leviticus* 20:10-21 is about how God forbids consanguineous marriage and any kind of immoral sexual relationship: adultery, fornication and sexual relations with animals. There is no need to discuss its harm to people's health and its undermining influence for human beings as a whole.

That is probably why God's wrath seems to be understandably merciless towards any kind of offences of these rules. "And if a woman approach unto any beast, and lie down thereto, thou shalt kill the woman, and the beast: they shall surely be put to death; their blood shall be upon them." (*Leviticus* 20:16)<sup>[1]</sup>

These principles about moral sexual relationship seem to be still relevant today considering promiscuity has become a common social problem and sexually transmitted diseases have become one of the major threats to the people's health.

The Bible also discourages husbands and wives to be apart from each other for too long, which is very advisable. "Defraud ye not one the other, except it be with consent for a time, that ye may give yourselves to fasting and prayer; and come together again, that Satan tempt you not for your incontinency." (1 Corinthians 7:5)<sup>[1]</sup>

One of the problems of today's marriage is too many married couples are separate from each other for some reason, mostly for the convenience of work, as in the case of migrant workers. It is very unhealthy and what is more, it will subject them to a very risky situation, making them easy to be seduced.

There are restrictions on sexual activity even within marriage. The major restriction is any sexual intercourse during menstruation period (*Leviticus* 20:18)<sup>[1]</sup>. It makes sense in medical science, for women's immune system is very weak during the menstruation period and will easily

get infection during sexual intercourse.

Interestingly enough, the ancient Chinese people used to call menstruation "Chengji's sickness" [5], a similar way of euphemism with *the Bible*'s "sickness".

The Bible clearly warns those who are stuck in sexual indulgence about its detriment to their body: "Flee fornication. Every sin that a man doeth is without the body; but he that committeth fornication sinneth against his own body." (1 Corinthians 6:18)<sup>[1]</sup>

According to the TCM theory, excessive sexual intercourse exhausts the kidney qi and weakens the vital qi, lowering the resistance against diseases. Modern science has proved that frequent sexual intercourse reduces prostaglandin and zinc, causes rennin disorderly secreted, makes rennin fail to regulate certain parts of the body normally, and weakens the immunologic function. That is to say, excessive sexual intercourse does induce surgical diseases<sup>[6]</sup>.

#### 5 Sitting-in custom after delivery

The Chinese women enjoy the special privilege of at least a whole month's maternity leave after childbirth even after a miscarriage. During this period, the woman's main job is to milk the baby (if there is one) and nourish herself. She normally is served well and does not need to do any heavy task. Although this custom seems to be strange in the Western eyes, it is very biblical. As it shows in *Leviticus* 12:4: "And she shall then continue in the blood of her purifying three and thirty days; she shall touch no hallowed thing, nor come into the sanctuary, until the days of her purifying be fulfilled." [1]

Women after delivery are not supposed to go to public places during the first month. This is a protection to both women themselves and their babies, for they will have more chances to be infected with any viruses if they are in crowds of people.

# 6 Dietary guidelines

Among the 613 Biblical laws, more than 30 are about food. *Leviticus* 11 clearly listed what animals can be eaten and what can not be. These dietary laws are written primarily out of religious or ethical motives, but Ben Hobrink found out that these laws also aim to protect the public health and the biological balance of nature<sup>[2]</sup>. The only animals permitted for consumption were those that did not represent a threat to public health and were not important for the balance of nature. For example, scientific research has revealed that trichinae (worms too small to detect with the naked eye but can cause fatal diseases) occur in animals such as pigs, wild boars, dogs, wolves, hyenas, jackals, foxes, lions, leopards, bears, cats, badgers, mink, and martens...<sup>[2]</sup>. These are exactly the animals that were

not to be eaten according to the dietary regulations in the Scriptures. Nevertheless "the meat of cows and sheep cannot even be artificially contaminated with trichinae" so they are considered to be "clean" animals and thus are edible in Moses' dietary regulations.

Predators are not allowed to be eaten in *the Old Testament* because they are "nature's health police": they maintain the health of nature by disposing of weak, sick and dead animals. They prevent too great an increase in diseases and plagues of harmful animals<sup>[2]</sup>.

Besides, there are some other prohibitions like blood and dead animals. Blood is excluded from the table menu because it is "an ideal breeding ground for germs" [2], especially in unhygienic conditions. Dead animals are "unclean" because the bacteria they may carry.

Fish is a recommended food in the list and it is described as food more frequently in *the New Testament* than anywhere else in *the Bible*. "Only in the last decade have scientists begun to understand how right *the Bible* is, as an astonishing array of ailments cured or relieved by fish comes to light." For example (to name just a few): acquired immune deficiency syndrome (AIDS), arthritis, clogged arteries, high blood pressure, stroke, diabetes, colon cancer, blindness, blood clots, breast cancer, heart attacks and lupus.

The Bible recommended various vegetarian foods, like grains, spices, garlic, nuts, almonds, pomegranates, apples, figs, grapes, honey and olive oil. Right at the start of *the Bible*, the Scriptures said: "And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat." (*Genesis* 1:29)<sup>[1]</sup>. Research has proved that eating a lot of fresh fruit, grains and raw vegetables is very important in avoiding cancer<sup>[2]</sup>.

Take garlic as an example. "Eating garlic may help to prevent diseased arteries." Besides, "hundreds of physicians have found garlic to be the safest, most dependable way to relieve high blood pressure." And apples have a widely accepted reputation of being healthy. There is even an English proverb saying like this, "An apple a day keeps a doctor away."

Being mentioned more than 200 times, olive oil is the most important food in *the Bible*. Modern medical practitioners found its use in restoring sight and hearing, overcoming stiffness in spine and shoulders, relieving gall-bladder problems and other medical purposes<sup>[7]</sup>. "People in Mediterranean countries — Greece, Italy, Spain, and southern France — who are heavily dependent on olive oil in their diets are only half likely to die of heart disease as are Americans." [7]

Some Biblical herbs are still used today for medicinal use, like myrrh, peppermint and balm. Peppermint oil is a miracle cure for headaches — fast acting and safer than



aspirin. The menthol in peppermint leaves has positive effects in curing gallstones and arthritis. It can also be served as toothache relief, mental alertness, and senility<sup>[7]</sup>.

Human beings now tend to eat whatever they can find, which may lead to new waves of plagues. If people can follow the biblical dietary guidelines, it is quite possible that many lives would have been spared from the world-wide epidemic — severe acute respiratory syndromes (SARS) in 2003 and many food-poisoning cases. "The most amazing thing is that even 'modern' diseases such as heart and vascular diseases and cancer, cannot be prevented or countered in any better way than by following the prescriptions of Moses. The best guarantee still for a long and healthy life is to follow the dietary rules of *the Bible*." [2]

Most of the Jewish people are still observing the Biblical food laws, as these are, like circumcision, "reminders of God's covenant with Israel" Israel's legal system even set kosher food (clean food prepared according to the Jewish food laws, especially meat) as the standard for public institutions<sup>[9]</sup>.

These food laws efficiently prevent the Jewish people from eating or catching wild animals, and there are never scandals about selling stale meat or meat of dead animals in Jewish market<sup>[4]</sup>. Its rigid requirements to food on the dining tables attract increasingly more non-Jewish organizations to research the Jewish food laws to get implication out of it. Some American food factories and food-regulating institutions are co-operating with some Jewish food institutions, negotiating the possibility of using "kosher" as a trademark to restore people's trust on meat in the market. More non-Jewish people going to kosher food store is a convincing fact about the reliability of the Biblical food laws<sup>[4]</sup>.

#### 7 Quarantines and sanitation

The first five books of *the Bible*, written by Moses approximately 1491-1451 B.C. not only reveals advanced principles and knowledge about hygiene, quarantine and sanitation far superior to that possessed by the Egyptians and other ancient societies of that day, but also far exceeded medical standards practiced as recently as the 19th century. Here are some examples.

*Leviticus* records the earliest literature for quarantine for the leper who had plague of leprosy. *Leviticus* 13 also reveals some other strict commands about how to deal with leprosy and other infectious diseases. These laws are believed to be "the first model of sanitary legislation"<sup>[2]</sup>.

If a Jew became unclean through an infectious disease, he had to observe a period of purification and isolation rules. If the plague was healed, the victim would be declared clean after a careful observation and a further seven days of living outside the camp. Infected garments were to be burned, and the victims' hair was to be shaved (*Leviticus*  $13-14)^{[1]}$ .

In contrast, medical science did not have a full understanding of the fact that the most diseases are caused by infection of microscopic organisms until the 19th century. Accordingly, the medical values of sterilization, sanitation, and quarantines were virtually unappreciated.

During the devastating Black Death in the Middle Ages, patients who were sick or dead were kept in the same rooms with their families. People often wondered why the disease was affecting so many people at one time. Then the doctors in Italy noticed that fewer epidemics occurred among the Jews who were carefully observing Moses' isolation laws. Then the Biblical practice soon became a government law and was made obligatory for all Italians who had infectious diseases<sup>[2]</sup>. Careful and earlier attention to the medical commands revealed in *Leviticus* would have saved untold millions of lives.

Another interesting discovery is the sanitary legislation in Moses' time. "And when he that has an issue is cleansed of his issue; then he shall number to himself seven days for his cleansing, and wash his clothes, and bathe his flesh in running water, and shall be clean" (*Leviticus* 15:13)<sup>[1]</sup>.

The Israelites were instructed to wash their hands and their clothes with running water if they had a bodily discharge. Yet until the 19th century, doctors washed their hands in a basin of water, spreading invisible germs rapidly like wild fire. In the end of 19th century, a French microbiologist, Louis Pasteur (in the 1860s) found out that most infectious diseases were caused by microorganisms originating from outside the body. He proposed his *Germ Theory of Disease* and tried to convince the whole Europe to improve sanitary standards. Until the invention of microscope and the establishment of the science of bacteria the doctors started to wash their hands in running water. *Leviticus* was written in 1490 BC, the science was three millennia later than *the Bible* in this point<sup>[10]</sup>.

Even the seemingly strange instructions in *Leviticus* 13:45 have its insight here: "And the leper...shall put a covering upon his upper lip, and shall cry, unclean, unclean." Contemporary research reveals that infection of leprosy primarily occurs through inhaling the bacteria through breathing them in or swallowing them, thus by covering the upper lip, the leper put a "mask" to stop the spread of bacteria<sup>[2]</sup>.

Many professors of medical history express their great admiration for the marvelous regulations relating to public health in the Scriptures. Karl Sudhoff put it this way: "The 13th and 14th...chapters of (*Leviticus*) are weighty official documents in the history of preventative medicine which deserve to be written in letters of radiant gold, which... were destined to be the germ of our modern prophylaxis against infectious diseases." [11]

#### 8 Circumcision

"And he that is eight days old shall be circumcised among you, every man child in your generations..." (*Genesis* 17:12)<sup>[1]</sup>

The Bible consistently says that a baby must be circumcised on the eighth day. Why the eighth day? Medical science has only recently discovered that the newborn babies' blood-clotting function increases every day after birth, reaches its peak on the eighth day and then starts to reduce. That's why the eighth day is the best time when "surgery can safely be performed without jeopardizing the life of the baby" [10].

But why having circumcision at all? For Jewish people, circumcision is a sign of covenant with God. "By this fruitful cut, the identity of the Jewish male body — and the Jewish social body — came to be distinguished from the bodies of other cultures." [8] Yet, in America many males have posthetomy after birth to reduce the chances of getting carcinoma of penis. People also find that Jewish women seldom suffer from cervical cancer, which obviously is the effect of circumcision.

#### 9 Sabbath

Another big influence of *the Bible* to our daily life is the concept of "week". According to *the Bible*, God created the heavens and the earth in six days, and rested on the seventh day. So He especially appointed the seventh day of the week, Sabbath, for his people in order to relax from all work and to enjoy life. "Six days may work be done; but in the seventh is the Sabbath of rest ... Wherefore the children of Israel shall keep the Sabbath, to observe the Sabbath throughout their generations, for a perpetual covenant .... for in six days the LORD made heaven and earth, and on the seventh day he rested, and was refreshed". (*Exodus* 31:15-17)<sup>[1]</sup>

Sabbath is one of the most important festivals among Jews. Even while they were exiled and wandered among other nations, they observed Sabbath in a very serious way as it is a "sign of the covenant" (*Exodus* 31:12-17)<sup>[1]</sup>. Thus the saying, "It's better to say that Sabbath reserved Jews rather than to say the Jews reserved Sabbath." [4]

Sabbath is a great contribution that the Jews gave to the people of the world<sup>[12]</sup>. The fact that men and women may rest for one day a week is really a gift of *the Bible*. With one day of complete rest, they can do more work in the other six days of the week and feel so much better and healthier both mentally and physically, and they have more time for social contacts.

"In our 24/7 economy, a general day of rest is valued less and less... It is not surprising that there are more

complaints about stress, depression, and burnout than ever before." While people spend large sum of money in order to get out of depression and stress, all they need to do is to get some implication from the Biblical rules concerning work and rest and restore the balance of life.

#### 10 Other medical implication

The Bible also implies medical information in other aspects, like the implication of blood as the source of life in *Leviticus* 17:11: "For the life of the flesh is in the blood..." [1]. Modern science found that all human being's life information lies in the blood. Life ends when blood is gone.

It seems to us that the importance of blood to life is obvious and should not require special knowledge to realize this. Nevertheless, as recently as just two centuries ago, doctors made a patient bleed (the procedure of which was called bloodletting until 1900) as a cure for any kind of illness without realizing that by reducing the blood volume they endangered one's life. Historians generally agree that "two hundred years ago American president, George Washington, was literally bled to death" [10] by his friend and his personal physician Dr. James Craik and the other two physicians treated him with the bloodletting.

The Bible also implies many times that one's emotion is closely connected with one's physical health: "A merry heart doeth good like a medicine: but a broken spirit drieth the bones." (Proverb 17:22)<sup>[1]</sup>

As recent as decades ago, the effect of optimism as a health benefactor was not taken seriously until Scheier and Carver tightly connected psychology and biology after publishing their study of 438 male and 336 female undergraduates in the article of a scholarly journal *Health Psychology* in 1985<sup>[10]</sup>.

#### 11 Conclusions

Although hard to believe, as a book written thousands of years ago, *the Bible* includes medical information either in harmony with or at least not contradictory with modern medicine. Considering the books written at the same time either disappeared long time ago or could only be found in library shelves for a very small group of certain anthropologists for research purpose, it is hard to believe *the Bible* contains such "modern" ideas. This is the mystery of the book and the reason why after so many years, it is still the best seller in human history and why it has such a huge reader group.

It is interesting to find that the medical information in this book covers both traditional medicine — like the food cures, organic way of living, the medical use of herbs, and the modern medicine — like the sanitary principles



and circumcision practice. If a human is to function as a harmonious unit, the medicine should be considered as a whole practice; there is no need to deliberately divide what is traditional from what is modern. The most important thing is to know what is really healthy to human beings.

A harmonious society is an ideal existence in modern world. In the light of this, during May 31st to July 3rd 2010, Oxford Institute for Religion and Society in Asia and School of Eastern Languages of Beijing University held an international academic seminar. Its theme is *Ancient Wisdom and Harmonious Society*. And the ancient wisdom here, in the first place, refers to the wisdom in the *Bible*<sup>[13]</sup>.

As technology progresses, the whole society benefits from the advance, yet the newness sometimes brings damage due to the misconception that the new is inherently better than the old. Yet, wisdom is not bound by the flow of calendar. And much research reveals that modern discoveries are actually a rediscovery of ancient knowledge practically in all major fields of technology and sciences. It's wise to study both the tradition and the knowledge of modern medicine in our quest to benefit the society's well being.

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#### **REFERENCES**

- Holy Bible. King James Version. Hong Kong: Hong Kong Bible Society. 1992.
- 2 Hobrink B. Modern science in *the Bible*: amazing scientific truths found in ancient texts. New York: Howard Books. 2005: 24, 26, 30, 66, 86, 89, 91, 116-117, 243.
- 3 Sun MY. The Christian culture and the modern Western medicine in China. Yi Xue Yu She Hui. 1997; 10(4): 51-53. Chinese.
- 4 Xu X. A history of Jewish culture. Beijing: Peking University Press. 2006: 85, 93, 93, 181. Chinese.
- 5 Xu JS. Medical anecdotes in Chinese history. Beijing: People's Medical Publishing House. 2011: 10. Chinese.
- 6 Li L. TCM-related English. Beijing: Science Press. 2003: 149.
- 7 Dubin R. Miracle food cures from *the Bible*. New York: Prentice Hall Press. 1999: 13, 136, 227, 229, 320, 321.
- 8 David Biale. Cultures of the Jews. NewYork: The Sheep Meadow Press. 2002: 61.
- Solomon N. Judaism. Nanjing: Yilin Press. 2011: 113. Chinese and English.
- 10 Peace A, Anderson J. Modern technology and sciences in the Bible. Bloomington: Xlibris Corporation. 2012: 397, 402, 408, 410-411.
- 11 Sudhoff K. Essays in the history of medicine. New York: Medical Life. 1926: 146.
- 12 Xu X. The Hebrew civilization explore. Xi'an: Taibai Culture and Art Publishing House. 2011: 160. Chinese.
- 13 Zhong ZB. Biblical studies in the Chinese academia: retrospect and prospect. Sheng Jing Wen Xue Yan Jiu. 2012: 6: 25. Chinese.



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