

Ancient History of Hospitals

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ABSTRACT

The history of medicine and different healing therapies have been extensively studied and published, but the history of 'Hospitals' or the place where these healing activities were actually carried out, often escapes attention of medical historians. In this review article the authors have presented a lucid account of the Ancient History of Hospitals from approx. 6500 BC to 650 AD. Beginning with the etymological investigation of the word 'Hospital', the author describes in detail the Neolithic 'Cave Hospitals', Ancient Indian 'Ayurvedic Medical Schools' of Takshila and Kasi, the Buddhist 'Monastic Hospitals' in Srilanka, Mesopotamian 'House of Life & Healing', Tibet's 'Palace hospitals', Greek Temple Hospitals 'Asclepeions', Roman Military Hospitals 'Valetudinaria', Medicity 'Basilias', and 'Bimaristans' of Gondeshapur. This endeavour reviews the ancient history of hospitals to highlight the charisma of the past 'achievements' in an innovative style and through a new paradigm.

Keywords: History of Hospital, Asclepeions, Valetudinaria, Basilias, Bimaristan

INTRODUCTION

"Whoever wishes to foresee the future must consult the past" - Machiavelli.

There is a lot of literature available on 'History of Medicine' and the other 'Healing Therapies' that is often referred to by the contemporary physicians and surgeons. However the 'Ancient History of Hospitals' (approx. 6500 BC to 650 AD) is not adequately researched, perhaps due to

dearth of primary sources, unreliable secondary sources and numerous hypotheses. A hospital is a place for receiving medical or surgical care. The authors aim to review the existing literature on this topic and present a lucid account, steering away from unnecessary factual details, dates and scholarly differences, but at the same time trying to bring about the charisma of the past 'achievements' in an innovative style and through a new paradigm.

Etymology of the word 'Hospital'

Etymology is the study of the history of words. Etymologically, the journey of the word 'Hospital' started as Latin 'Hospes' and was modified to 'hospitalis', 'hospitale' and finally to 'hospital'. Latin 'hospes', means 'a stranger, foreigner, or a guest', and the noun form derived from this word is 'hospitium' which means 'hospitality'. 'Hospes' is also the root for few English words like host, hospitality, hospice, hostel and hotel. They are related partially by function too and there are similarities in the words used for Hospital in different languages. The German word is 'Spital', the French use 'hôpital', in Irish it is 'ospidéal', in Hindi and Urdu it is 'Haspataal' or 'Aspataal', in Turkish it is 'Hastane' and in Polish language it is 'szpital'.

The Prehistoric 'Cave Hospitals'

'Disease' must be as old as the human race itself. The power of 'self-

awareness' is endowed to the Homo Sapiens, to take care of themselves and their loved ones if they were not well.

Hospitals would invariably exist in any crude form, if 'Surgical Procedures' and 'Treatment' of the diseased took place. The oldest surgical procedure known is 'trephination' and we have archaeological evidence in the form of trephined skulls discovered from 'Neolithic period'. At a burial site dating to 6500 BCE, in France, there were forty trephined skulls found together. [1] Many of the skulls showed healing signs, indicating that the patients spent their post-operative time somewhere recovering, while the wounds healed and then lived for years after the surgery. [2] There is evidence of prehistoric trephination being commonly performed in the Cusco region, of Andean highlands. This is the same region where mysterious caves called 'Naupaiglesia' have been discovered with interesting geometry, especially flat smooth surfaces, made by high technology machines. [3] This coincidence leads to the question, if these caves were used as hospitals for surgeries? Along with neurosurgery, dentistry was also practiced during this period as archaeologists have found Neolithic teeth in Mehgarh, Baluchistan province, showing clear signs of drilling, using flint-tipped drills and bowstrings. [4]

In prehistoric communities there were medicine men, witch doctors or 'shamans' who were in charge of the tribe's health, practiced plant based medicines, carried out rudimentary surgeries like trephinations and of course, used spells and charms to ward off evil spirits. In the cave of Lascaux, France, where Neanderthals and early Homo Sapiens lived 30,000 years ago, there is a cave painting depicting a 'Disemboweled bison' and bird-headed human figure, which is interpreted by archaeologists as a 'shaman', a kind of priest or healer with powers including the ability to communicate with spirits of other worlds. Similar paintings of witch doctors

have been found in Nyero rock paintings of Eastern Uganda. [5]

The clear evidences of surgeries being successfully performed and the coincidence of proximity to mysterious caves in Peru and cave paintings of witch-doctors inside the caves, lends support to the hypothesis that the first hospitals in the prehistoric times of 'cave men' were indeed the 'cave hospitals'.

Ancient Indian 'Ayurvedic Medical Schools'

Ayurveda is sacredly considered to be as old as 'Brahma' the Hindu God of Creation. The practice may have started in pre historic times when people started to become conscious of their health and became aware that they had to take measures to improve and preserve their lives. By the time of Indus Valley Civilization, Ayurveda was the established system of healthcare. Archaeologists have found stag-horn and cuttlefish bone suggesting that vegetables, animals and minerals were used as sources for drugs. [6] Indus Valley people placed great emphasis on personal hygiene and used cosmetics like collyrium for preventing and curing eye diseases. [7] There are no documented evidences, but the excavations of the archaeological sites at Harappa and Mohenjo Daro, show a high degree of town planning, awareness and practice regarding public health and sanitation, therefore the strong possibility of one of the buildings being used as a 'Hospital', exists.

The knowledge of Ayurveda is believed to have been passed on through 'Shruti and Smriti' from 'Brahma' through a chain of great Sages like 'Atreya' and 'Dhanvantri', eventually to 'Maharshi Charak'. There is no consensus on the dates when Maharshi Charak lived but few researchers claim this as 200-100 BC. [8] He wrote "Charak Samhita", which is considered as an encyclopaedia of Ayurveda and he is hailed as the Father of Indian medicine. The place where the Sages Atreya and Maharshi Charak taught and practiced

the art of Ayurveda, was 'Taxila' or 'TakshShila' the ancient world's first international university that existed approx. 400-500 BCE to 550 CE. ^[9] The University was undoubtedly the first 'Teaching Hospital' for Ayurvedic medicine and surgery that was studied for up to seven years. This famous university not only attracted medical students from far off places in India and from foreign countries like Babylonia, Egypt, Phoenicia, Syria, Arabia, China and Greece. 'Jivaka', the great physician to Gautama Buddha and an expert in pulse reading is also said to have studied Ayurveda in TakshaShila University for seven years.

Maharshi 'Sushruta', often referred to as the "Father of Plastic Surgery," was an influential physician in ancient India (circa 600 BCE) who is still revered today for the critical development of Ayurvedic surgical procedures and his work 'Sushruta Samhita'. ^[10] It describes 'shalya tantra', the practice of surgery and it is the oldest known document on surgery in the world. The book describes more than 300 surgical procedures, including plastic reconstruction surgery (like Rhinoplasty) and the removal of cataracts. It also describes over 120 surgical instruments including 'tubular' instruments (endoscopy) and more than 1,120 diseases, injuries, and conditions. ^[11]

However there is no mention of the 'Hospital' with the 'Operation Theaters' where he performed his great surgeries. We may certainly conclude that the 'Surgical Hospital' was also very developed technically to match the brilliance of the 'Father of Indian Surgery'. He is known to have practiced medicine in northern India along the banks of the Ganges River, near Varanasi. It may be inferred that Maharshi Sushruta taught and practiced in the university at 'Benares' or 'Kasi' which was a famous school of medicine, moulded on the lines of Taxila by students from Taxila. It flourished from 7th B. C. to 12 AD. Another ancient medical school was the Nalanda University, founded in 427 AD in northeastern India (Bihar), and it survived

until 1197. It was devoted to Buddhist studies, but it also trained students in medicine. ^[12]

Buddhist Sinhalese 'Monastic Hospitals'

The art of healing was promoted in Buddhism, with Buddha himself emphasizing that health was among the most precious goods a person can possess. In one iconic story in the 'Vinaya Pitaka', the Buddha comes across a monk with dysentery who has been abandoned by his fellow monastics. After caring for the monk with Ananda's help, the Buddha admonishes the sangha. "Whoever would tend to me," he says, "should tend to the sick." Buddha first taught medicine to his 'sangha' and then he allowed monks to visit patients and to carry medicines with them as described in the 'Dulwa-smangzhi', in Vinaya Pitaka. He later taught the 'Gyud-shi', which are the four medical 'tantras' that laid the foundation of the Tibetan medical system. This system focuses on the direct healing of the patient's body and mind with the help of the appropriate medicines, diet, behaviour and therapies in order to pacify the result of mentally negative passions. The second rock edict of King Asoka states that monasteries functioned as hospitals in early Indian society. King Asoka established hospitals for men and animals (3rd century BC) and the old Buddhist medicine of Mahavagga (4th century BC), was practiced. ^[14]

The earliest Monastic hospitals can be traced back as far as the 5th Century BC, to the ancient 'Sinhalese' (Sri Lankans). Excavations have revealed three hospitals situated in Buddhist monasteries in Anuradhapura, Madirigivi and Polonnaruva. According to the 'Mahavamsa', written in the 4th century B.C., King 'Pandukabhaya' had 'Sivikasotthi Sala' or 'lying in homes' as hospitals built in various parts of the country. 'Mihintale' is a mountain peak near Anuradhapura in Sri Lanka. Several significant artifacts were discovered in ancient hospital site like medicine grinders of granite, vessels, medical instruments of

bronze and a medicinal trough of stone 'Behethoruwa' (Medicine bath bed). This is carved in the shape of the human body; the length is 7 feet and the width is 2 ½ feet. A Buddha image was in the middle of the hospital complex. The structures include a dispensary room, a large patient waiting hall, two separate rooms presumably used for examining patients, an inner court with a Buddha Shrine, with a corridor leading to 32 residential rooms for in-house patients. Each of these rooms measures 3.96m x 3.96 meters. There was also a 'Jantaghara' or a room where steam and hot water therapy was administered in the hospital building. The remains of a separate building, which could be the kitchen of the hospital, are visible in the northern side beyond the hospital. [15,16]

Mesopotamia and Egypt's 'House of Life'

The ancient Mesopotamians used a balance of rational science and magic for healing. At around 3500 B.C., there were two kinds of medicine men in Mesopotamia—the asipu who practiced the more ritual or magical side of medicine and the asu who practiced therapeutic medicine, composed of surgical and herbal treatments. Although modern-day scholars refer to the asipu as a 'witch doctor' or expert in 'white magic' and the asu as a 'medical practitioner,' the Mesopotamians regarded the two with equal respect. The asu kept cots in their places of business for the treatment and recovery of patients; had surgical and pharmacological equipment; and though there were no large facilities that could be termed as hospitals, these facilities resembled small clinics. The asu were trained in schools associated with temples of the goddess of medicine and healing called Gula and would remain always associated with some temple complex. The practices of asu were later regulated by the famous Code of Hammurabi. [17] Asu used medical manoeuvres such as inspection, palpation and auscultation in order to obtain information from the patient's body and used the concept of syndromes. Practices in

this early period included bandaging and making plasters for wounds. The Asus made house calls and many patients were treated in their home.

For the Asipu, institutions, referred to as 'House of Life' (per ankh) are known to have been established in ancient Egypt as early as 2200 BC. These institutions could perform amazing feats with magic and could call upon the power of the gods. Magic was so relevant that healing amulets played an important role in treatments, especially one called the 'Eye of Horus'. The symbolic shape 'Rx' continues to be used at the beginning of all medical prescriptions by physicians even today. The hieroglyphic script found under the statue of chief physician 'Wedjahorresnet', now in the Gregorian Egyptian Museum at Vatican, states that the King Darius commanded him to return to Egypt to establish the bureau of the 'House of Life' for the exercise of healing. [18] Thus we may conclude that the 'House of Life', were the earliest hospitals in Mesopotamia and Egypt.

The first architect of the great pyramids 'Imhotep' who lived in Egypt during the reign of pharaoh 'Djoser' (2667-2648 BC) was also his 'vizier' or chief minister. Imhotep is also hailed as founder of Egyptian medicine and as the author of the scroll 'Smith papyrus' which is considered the oldest treatise on trauma. Imhotep was considered as the 'inventor of healing' and after his death, he was elevated to the position of a god of medicine and healing. [19] At the temple of Heliopolis, a major city of ancient Egypt, they discovered gravestones of the doctors. Engraved on them are inscriptions as "superintendent of the secrets of health of the house of Thoth", "the greatest of doctors", "eye specialist to the palace." From the hieroglyphics found on the tomb of doctor Iry, we learn that he was called "keeper of the king's rectum." There was also a "keeper of the king's right eye," and "keeper of the king's left eye." Ancient Egyptian medicine was later adopted by the Greeks who purified it from its magic concepts. [20]

Chinese Healer Monks on ‘House Calls’

In China there were Buddhist ‘healer-monks’ who worked as missionaries, translators, and advisers across medieval Asia and there was a huge inter-regional trade in medicinal substances such as herbs, animal products, gemstones, relics, and other magical materials. Buddhist healing became popular in the early medieval period (3rd to 8th century C.E.) among both the common people and the elite. A network of monastic dispensaries, hospices, and asylums were established across the empire. The concept of ‘Medicine Buddha (Bhaishajyaguru)’ became an important part of the medieval Chinese healing practice. The Medicine Buddha mantra is held to be extremely powerful for healing of physical illnesses and purification of negative karma. Chinese medicine includes Acupuncture, Tai Chi and Herbal medicines. Physicians during this time did not have offices or one exact area where they treated patients. So, these individuals travelled to the patient’s houses, and treated them at home on ‘house calls’. This is very different from today’s society where doctors have their own offices in hospitals or medical facilities. ^[21]

Tibetan ‘Palaces’ as Buddhist Hospital

It has been mentioned in a Bon text titled “Jam-ma tsa-drel” (200 B.C.), that there lived twelve scholars of Bon tradition including a medical scholar, who treated diseases through medication and therapy. This indicates that there were Tibetan physicians even prior to the advent of Buddhism in Tibet. The introduction of Buddhist medicine happened when in 245-364 A.D., two monks Biji Gaje and Bila Gaje, went to Taxilla and studied medicine under the great Physician Atreya and then visited Magadha to study under Kumara Jivaka. The Tibetan King Lha Thotho-Ri-Nyantsen, invited both to his Palace in Tibet. He requested them to remain there to teach and practice medicine, and he gave his daughter YidkyiRolcha as a bride to Biji Gaje. It is believed in Tibet that Biji Gaje

and Bila Gaje attained immortality and still exist in a forest of sandalwood. It is therefore inferred that the palace of the King ‘Yumbu Lakhar’ must have housed the first ‘Buddhist Hospital’ of Tibet. ^[22]

Greek Temple Hospitals ‘Asclepeions’.

In Homer's Iliad, Asclepius was the physician healing the soldiers wounded on the battlefield at Troy. He was considered the son of Apollo, the patron God of Medicine. Asclepius was so an expert in the art of surgery, that he was known to have the ability to return the living from the dead. He was later elevated to the status of the Gods. In ancient Greece, around 350 BCE, temples known as ‘Asclepieia’ were dedicated to him as the healer-god ‘Asclepius’, and they functioned as centres of medical advice, prognosis, and healing, where patients and pilgrims would flock to seek spiritual and physical healing. Over 300 asclepieia have been discovered throughout ancient Greece, the famous ones at Trikka, Epidaurus, island of Kos, Athens, Corinth and Pergamon. It was peculiar to have presence of dogs and non-venomous snakes, known as ‘Aesculapian snake’ at these temples. The treatment practised was of two stages- Katharsis & Incubation. The initial step of ‘Katharsis’, or purification, consisted of a series of cleansing baths and purgation, accompanied by a cleansing diet, which lasted several days. The next step of ‘Incubation’ or ‘Dream Therapy’ was performed at an “Abaton” or “Enkoimeterion,” which was a dormitory located in the asclepeion. Patients would be induced into a dream-like state of sleep known as ‘enkoimesis’, and this practice was known as ‘incubatio’, or ‘Temple Sleep’. Asclepius or his daughters, Hygea and Panacea, would come in their dreams and tell them how to cure their ailment. The patients would interpret the dream with the help of the priests and perform the ritual that was mostly to visit the baths or a gymnasium.

In the Asclepieion of Epidaurus, there are three large marble boards dating

back to 350 BC having the names, case histories, complaints, and cures of about 70 patients who had been successfully treated there. It includes realistic details of surgical cures, such as the draining an abdominal abscess or the removal of traumatic foreign body, perhaps under the influence of 'enkeimiasis' which could have been opium. These asclepeion was also the first Greek Medical School. The 'Father of Medicine' Hippocrates (470-360 BCE) is said to have received his medical training at an asclepeion on the isle of Kos. Claudius Galenus or Galen (129-210 AD), one of the most accomplished of all medical researchers of ancient times, treated and studied at the famed asclepeion at Pergamon. [23]

Roman Military Hospitals 'Valetudinaria'

The Romans established hospitals 'valetudinaria' for the treatment of their sick slaves and injured soldiers; their care was important because it was upon the integrity of the legions that the power of ancient Rome was based. Latin term valetudinarian is derived from 'valetudo', or "good health". They were built in the time of Emperor Augustus, as military hospitals within each legion. The concept was to isolate the diseased from the community till he was normal again. Initially the valetudinaria were 'field hospitals' or 'flying military camps' and began as a small cluster of tents and fortresses dedicated to wounded soldiers. Over time, the temporary forts developed into permanent facilities. The original hospitals were built along major roads, and soon became part of Roman fort architecture. They were usually placed near the outer wall in a quiet part of the fortification. A standard valetudinarium was a rectangular building consisting of four wings, connected by an entrance hall that could be used as a triage centre. Each legion's hospital was constructed to accommodate 6% to 10% of the legion's 5,000 men. The building also included a large hall, reception ward, dispensary,

kitchen, staff quarters, and washing and latrine facilities. [24]

Marcus Terentius Varro (116BC–27BC) a Roman scholar who was patronized by Augustus, knew the importance of micro-organisms in the pathogenesis of disease long before Louis Pasteur formalised the germ theory of disease and his guidance was used for the designing of the valetudinarian. "When building a hospital special care should be taken to place it at the foot of a wooded hill where it is exposed to health-giving winds. Care should be taken where there are swamps in the neighbourhood, because certain tiny creatures which cannot be seen by the eyes breed there. These float through the air and enter the body by the mouth and nose and cause serious disease." [25] The Roman valetudinarian, set pioneering standards in Hospital Infection Control Practices.

Roman Medi-cities 'Basiliads'

Around A.D. 325, with Christianity becoming an accepted religion in the Roman Empire, the construction of a hospital in every cathedral town was begun. The first Christian hospital in the eastern Byzantine Empire (Asia Minor- modern day Turkey) was built by Basil of Caesarea, or Saint Basil the Great, the bishop of Caesarea in Cappadocia. Therefore these hospitals were called as Basiliad, Basileias or Basileiados. They resembled a town that included housing for doctors and nurses, separate buildings for various types of patients and separate section for lepers. There were few basiliads with libraries and training activities where doctors compiled their medical and pharmacological studies into manuscripts. The hospital staff included the Chief Physician (archiatroi), professional nurses (hypourgoi) and the orderlies (hyperetai). John Chrysostom, the bishop of Constantinople, in 398-404 AD developed a Basilia in Constantinople, and many basiliads arose in other cities, some run by monks, some supported by wealthy citizens and they also received privileged tax treatment from the government. Between 420 and 650

AD, the hospitals became more numerous and larger, like the ones found in Ephesus, Edessa, and Jerusalem (of 200 beds). The famous basilia of Sampson Xenon, was built by physician Saint Sampson, in the late fourth century in Constantinople. It was a complex of elaborate buildings where patients were treated in wards by specialized physicians. It may be noted that the Greek word 'Hospital' signifies the etymological link between 'Hotel, Hospitality and Hospital' as these structures catered to the 'travellers', strangers, orphans, sick and poor. In fact the 'basiliad' was a social welfare endeavour. The Roman 'basilias' were indeed the earliest professionally administrated hospitals.

The 'Bimaristan' of Gundeshapur

The Persian mythology ascribes the introduction of medicine to Persia to 'Jamshid' who was the fourth king of Iran. 'Gundeshapur' was one of the major cities in Khuzestan province of the Persian empire. The Sasanian King Shāpur I, founded the city as a garrison town after defeating a roman army and later made it his capital. 'Gund-dēz-i Shāpūr', means "military fortress of Shapur". Shāpur I's wife, was the daughter of 'Aurelian' the Roman Emperor, who lived in the capital with him. She had brought with her two Greek physicians, who settled in the city and taught Hippocratic medicine. Gundeshapur soon had a teaching hospital with a library. It provided systemized medical treatment to patients and the scholars of the academy imparted formal medical education of the highest standards where medical students were required to work in the hospital under the supervision of the medical faculty. The Arabic text, the 'Tārīkh al-ḥukamā' records that medical students had to pass exams in order to practice as accredited Gundeshapur physicians. The emperor Khusraw I, (A.D. 531-579) gave refuge to various Greek philosophers fleeing religious persecution by the Byzantine empire and ordered these refugees to translate Greek and Syriac texts

of Medicine into the literary language of the Sasanian Empire - 'Pahlavi'. He also sent the famous physician 'Borzouye' to invite Indian and Chinese scholars to Gundeshapur. These visitors helped translate Indian texts on medicine and Chinese texts on herbal medicine to be taught at Gundeshapur. Interestingly the teaching hospital was known as 'bimaristan', which is a compound of "bimar" (sick or ill) and "stan" (place). The most notable Indian doctor who contributed to the development of the medical school at Gundeshapur, was Mankah. Thus Gundeshapur developed into a uniquely tolerant and peaceful meeting point for the study of the philosophical and medical traditions of Persians, Greeks, Indians, Zoroastrians, Jews and Nestorians. In fact Harith bin Kalada, the Prophet Mohammed's physician, was also trained at Gundeshapur. [26] Elgood writes that 'to a very large extent, the credit for the whole hospital system must be given to Persia'. [27]

The history continues with tremendous intellectual activity, culminating in the 'Golden era of Islamic Medicine' but as the period of Ancient History by consensus extends till the coming of Islam (650 AD), the scope of this article concludes here.

CONCLUSION

Thus the journey of rediscovering the 'Ancient History of hospitals' comes to an end. It began with hypothesis that hospitals existed as 'Cave Hospitals' in prehistoric times as early as the Neolithic era, where surgeries like trephination were performed and witch doctors healed the sick. The discussion followed to the Ancient Indian 'Ayurvedic Medical Schools' during 7th century BC of Takshila and Kasi where Charaka and Sushruta taught medicine and surgery. Then Buddhist 'Monastic Hospitals' in Srilanka of 3rd Century BC, especially the oldest ruins of Mihintale Hospital was described. The ancient Mesopotamian 'House of Life & Healing' that used magic charms in temple hospitals,

Chinese 'House Call' system and Tibet's Palace hospitals in 2nd century BC was discussed. The Before Christ era ended with descriptions of the Greek Temple Hospitals 'asclepeions' and Roman Military Hospitals 'valetudinaria'. The Anno Domini or "In the year of Our Lord" era started with Roman Medi-cities 'Basilias'. The journey was cut short with a short description of the 'Bimaristans' of Gondeshapur as the scope of this review extended till 650AD when the Ancient History period is considered to have paved the way for the Medieval period. After this long journey through time, it will be appropriate to end with the disclaimer, as quoted by Sir Winston Churchill - "History is written by the victors."

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