

CHAPTER IV

‘EUROPEAN’ PHYSICIANS AND THEIR SYSTEM OF MEDICINE IN INDIA

It was the discovery of the direct maritime route to India by Vasco da Gama in 1498 which marked the beginning of not only the formation of Estado da India but also a new era of trade between Europe and Asia.¹

With the opening of the sea route through the Cape of Good Hope led to an influx of not only adventurers, merchants, mercenaries, missionaries and diplomatic agents but also professionals like physicians and barber-surgeons of European origin and training. Most of the later initially voyaged to India as ship physicians and surgeons and later absorbed in the hospitals and infirmaries run by the merchant companies. A number of these European physicians however paid attention more to business and commercial enterprise rather than medicine.² A number of them were also not professionally qualified to carry on practice. Amongst the European men of medicine who came to India were the Portuguese, Dutch, English and the French.³

¹ See for Example Sushil Chaudary and Mickel Morineau (ed.), *Merchants Companies and Trade: Europe and Asia in the Early Modern Era*, Cambridge, 1999, p.1; See also F.C. Danvers, *Report on the Portuguese Records Relating to the East Indies*, Asian Educational Services, New Delhi, 1991, p.1.

² C. Regnier France, “French Physicians in 17th Century Mughal India”, *Medicographia*, Vol. 31, no.1, 2009, p.92.

³ See M.S. Rao, “The History of Medicine in India and Burma”, *Medical History*, The official Journal of the British Society for the History of Medicine, Vol, XII, 1968, pp. 55-

Amongst all these merchants groups, the Portuguese were the first to arrive in India and by 1510 had established their own settlement on the west coast of the Indian sub- continent with Goa as their capital. The Dutch followed in their footsteps in 1595, while the English arrived with the East Indian Company in 1606 and opened their first trading post in 1608. It has recently been argued that the major bulk of imported drugs in England from outside Europe (14% in 1588, 48% in 1622 and 70% in 1669) came from India and the East Indies.⁴

The coming of European men of medicine and their system was bound to impact the indigenous systems which till then were being practiced in India. It has been argued that this impact was ‘in the form of an open and informal dialogue’ between the newly arrived European and the old Indigenous practitioners.⁵ All the three systems- the *Ayurvedic*, *Unani* and the European (or Western) - were allopathic in nature. In all of them the diseases was to be treated with drugs having effects opposite to the symptoms in order to restore the balance of the humours. The human body in all the three was composed of humours which displayed the quality of moisture,

56; C. Regnier France, “French Physicians”, op. cit.; Ines G. Zupanov, “Drugs, health, bodies and souls in the tropics: Medical experiments in the sixteenth century Portuguese India”, *Indian Economic Social History Review*, 39, 1, 2002, pp.1-43.

⁴ T. J. S. Patterson, “The Relationship of Indian and European Practitioners of Medicine from the Sixteenth Century,” in Gerrit Jan Meulenbeld and Dominik Wujastyk (eds.), *Studies on Indian Medical History*, Groningen: Forsten, 1987, reprinted, New Delhi 2001, pp. 119–129.

⁵ cf. Biswamoy Patti and Mark Harrison, *Health, Medicine and Empire: Perspective of Colonial India*, Orient Longman, New Delhi, 2001, p.10.

warmth, cold and dryness.⁶ Further, both the prevalent *Unani*, as well as the incoming European medicine followed Galen methods and practices. In all the three systems examination of pulse was essential for diagnosis and prognosis and the important of diet was stressed. Treatment was mainly directed to the relief of symptoms. The barber-surgeons of the early trading companies, especially the Portuguese, who were well versed with the Galenic principles of pathology, mistook the Vedic doctrine of transmigration as Pythagorean.⁷

From our sources it appears that the relationship between the European and Indigenous systems of medicine passed through the four distinct phases. The first phase started with the earliest voyages of the Portuguese and ended around 1670. The second spanned between 1670 to 1770; while the third was between 1770 to 1820. The last and the fourth phase covered the period from 1820 to 1900.

The first phase is marked by the arrival of the Portuguese in India and characterized by receptiveness on the part of the Europeans to learn from the Indigenous *Ayurvedic* and *Unani* system of medicine. It was the period when the European system of medicine was in many respects inferior to the other systems.

⁶ Ibid., p.40.

⁷ For details see Tom Patterson, "The Interaction of Indian Medicine and Modern Medicine (Colonial Period), in B. V. Subbarayappa (ed.), *Medicine and Life Science in India* bearing Vol. IV, pt. 2, of *History of Science, Philosophy and Culture in Indian Civilization*, PHISPC, New Delhi, 2001, pp.574-605.

Soon after the arrival of the Portuguese on the Indian shores a hospital was opened at Goa by Albuquerque in 1510 which in 1591 was placed in the hands of the Jesuits who converted it into one of the ‘best-run hospitals in the world’.⁸

One of the early trained European to land in India was Garcia da Orta who lived and worked in Goa (1538-68). It was he who initially introduced Europe to the ‘Indian’ drugs, herbs and treatments. He had a firsthand knowledge of the indigenous systems as he is known to have consulted the local men of medicine and tried to learn from them. From whatever he has left behind, it appears that although he was critical to some of their knowledge - he for example is critical of the local physician’s knowledge and understanding of anatomy – he acknowledged their effective remedies and his own indebtedness to them for learning new drugs and their efficacies.⁹

In 1563 da Orta wrote his celebrated book, *Colloquies on the Simples, Drugs and Materia Medica of India*, which was the third book to be printed from Goa and India, and the first on medicine. It introduces *bhang* (Cannabis), tamarind along with sixty nine plants and drugs found and used in India. It also gives the first account of the treatment of cholera.¹⁰ The book is in the form of a dialogue between a questioner and an expert. Through these

⁸ J. B. Tavernier, *Travels in India*, trans. V. Ball and edited William Crooke, New Delhi, 1889, Vol. I, p.160.

⁹ For a detailed discussion on da Orta and his contribution in dissemination of medical knowledge of India see C. Markham, *Colloquies on the Simples and Drugs of India by Garcia da Orta*, London, 1913.

¹⁰ *Ibid.*, pp.275, 195.

replies da Orta tries to establish his credentials as a person who rejects received wisdom in favour of empirical knowledge. Thus at one place he writes:

“...For me the testimony of an eye-witness is worth more than that of all the physicians, and all the fathers of medicine who wrote on false information”.¹¹

He not only made an extensive study of the local plants and drugs but also compared the methods of treatment of the Indian physicians with the European and Arab (*Unani*) methods. Elaborating on his self-approach to the subject and the desire to understand the prevalent medicinal knowledge of India Garcia da Orta write:

“I have a great desire to learn about medical drugs (those which in Portugal are called of the pharmacy) and other simple [or herbal] remedies (*mezinhas simples*), that exist here, and all the fruits, and pepper. About all these things I would like to know the names in all the languages, as well as all the countries in which they grow and about the trees and plants that produce them, and also would like to know how they were used by the Indian physicians (*fisicos indianos*), and also would like to know some other plants and fruits of this land, although they are not medical, and about some customs of the Country.....all these things should be true, seen by you or by persons worthy of faith”.¹²

Garcia da Orta’s admiration of the new drugs, plants and approach was qualified with certain reservations regarding the Indian Knowledge of anatomy. Thus he informs us:

¹¹ Ibid., p.68.

¹² *Colloquiem*, I, p.19, cf. Ines G. Zupanov, “Drugs, health, bodies and souls”, *IESHR*, op. cit., p.5

“As for anatomy they [the Indian physicians] do not know where the liver is, or the spleen, or anything else”.¹³

Some of local diseases which da Orta encountered at Goa were to those found at Europe. However, according to him, some of them were more virulent in India as compared to those in Europe. One such example which he gives is that of cholera which spread as an epidemic at Goa in 1543. This epidemic proved to be a turning point in the history of medicine in India as it led to an exchange of medicinal practices between the Portuguese and the local physicians. During the epidemic the Portuguese Governor of Goa convened a meeting of the Portuguese and Indian physicians in order to determine preventive measures to combat the infection. Garcia da Orta informs us that the Indians would tackle the disease by putting rice-water into the mouth of the patients and making him drink it. Garcia da Orta disagreed with this treatment but he says, he followed the local method of cauterizing the sole of the feet of the patient.¹⁴

The horrors of the cholera epidemic of 1543, also appears to have led to the first recorded *post-mortem* on the Indian soil at Goa to ascertain the cause of death and the progress of the disease:

“...and since the illness was so terrifying a man died of this malady of *morexy* [cholera] in the hospital, the Governor ordered all the doctors (*mestres*) to assemble and he ordered them to open him up, and in the whole inside of the body they did not find anything wrong, except for the shrunken stomach, as small as a hen’s gizzard, and wrinkled like

¹³ Markham, op. cit., p.36.

¹⁴ See Tom Patterson, “The Interaction of Indian Medicine and Modern Medicine”, op. cit., p.578.

leather set on fire. What the doctors said about the ill effects of this disease attacked the stomach and shrunk it with immediate mortal consequences”.¹⁵

An attempt to study the Indian drugs and diseases was in fact made as early as the first decades of the Sixteenth Century. Tom Pires wrote *Suma Oriental* in 1512-15 in which he mentioned some Indian diseases known to the Europeans. He also describes the Indian drugs in a letter written to the Portuguese king in 1516 from Cochin where he was posted as “*feiter das drogrian*” (Factor of the Drugs) and In charge of the supply of medicine.¹⁶

By 1670, the initial respect for Indian medicine and its practitioners though still evident, was beginning to disappear. This probably was as a consequence of new ideas and knowledge acquired by the European medicine, anatomy, and natural philosophy. William Harvey’s work on the circulation of the blood also revolutionized the medical theories in the west. But its echoes were found reverberating in India as well.¹⁷ We have the evidence of Danishmand Khan, who was also acquainted with the theories of the circulation of blood.¹⁸

During the period between 1670 and 1770, the gap between European and Indian system become still wider, reflecting the expansion of formal

¹⁵ Gaspar Correia, *Lendas da India*, Rodrigo Jose de Lima Felner, ed., Lisbon, 1864, 4 Vols, Vol. IV, pp.288-89. cf. Ines G. Zupanov, “Drugs, health, bodies and souls”, *IESHR*, op. cit., pp.1-2.

¹⁶ P. D. Gaitonde, *Portuguese Pioneers in India: Spotlight on Medicine*, Bombay, Popular Prakashan, 1983, pp.109-118.

¹⁷ *Ibid.*, p.40.

¹⁸ Francois Bernier, *Travels in the Mogul Empire A.D.1656-68*, trans. Irving Brock, New Delhi, 1972, p.4.

medical education at the universities of Leiden and Edinburgh, and the impact upon medicine by Newton's theories of mechanics. The demise of humoral medicine in Europe meant that any debts owed to Indian system of medicine were overwhelming empirical and therapeutic and in this phase European medicine appeared to be superior in every other department. Western medicine was scientific and based on reason and observation, whereas Indian system of medicine seemed to be following the tradition in slavish manner in which the priest craft and superstition were intermixed.¹⁹ But conceptual gap, which had opened between western and Indian medical system, did not lead Europeans to abandon the dialogue between themselves and Indian practitioners.

During this phase an adversarial relationship appears to have existed between the practitioners of the European system of medicine on the one hand the *Unani* and *Ayurvedic* practitioners on the other. John Fryer who came to India in 1673, medicine as a field was 'open to all Pretenders' who could neither understand the pulse nor treat other ailments.²⁰ Careri also speaks in the same vein when he remarks, 'In Physick they have but small skill, and cure several diseases by fasting'.²¹ He however accedes to the efficacy of the Indian drugs when at another place he notes "Experience having shown that European medicines are of no use here". He further goes on to add:

¹⁹ Patti and Harrison, *Health, Medicine and Empire*, op. cit., p. 41.

²⁰ John Fryer, *A New Account of East India and Persia in Eight letter being Nine years Travel began 1672 and Finished 1681*, Delhi, 1985, pp.114-115.

²¹ Careri, *Indian Travels of Thevenot and Careri*, edited by Surrender Nath Sen, New Delhi, 1949. p.247.

“...the physicians that go out of Portugal into those parts, must at first keep company with the Indian surgeons to be fit to practice, otherwise if they go about to cure those Distempers, so far different from ours after the European manner they may chance to kill more than they cure”.²²

It is however interesting to note that in spite of Careri’s adverse comments on fasting as a cure for illness prescribed by Indian doctors, we have the testimony of William Finch who in April 1609 was treated, presumably by the European physicians in India, using the same procedure:

“I was also in the beginning of April [1609] taken with a burning fever, which drew from me much blood besides ten days fasting with a little Rice.....”²³

The European doctors in India like their *Unani* counterparts appear to have relied on blood-letting or ‘bleeding’ as a cure for many diseases. Thus Christopher Farewell in 1614 mentions such a treatment at the hands of European physician at Surat:

“I here suddenly fell sicke of burning fever and (thankes be to God) as sodainly recovered. For, fearing the extremity of that raving and uncomfortable sicknesse, against his will I prevailed with our chyrurgion to lat me bleed till I fainted againe, as foreseeing it to be my remedy; applied all comfortable things to my head; tooke my bed; and, full of perplexity to dye sencelesse, I commended myself to God. After some idle talke to my friends about me, I fell into a slumber; but

²² Ibid, pp.161-62.

²³ Samuel Purchas, *Hakluytus Posthumus or Purchas his Pilgrims : Contaying a History of the World in Sea Voyages and Lande Travells by Englishmen and others*, Vol. IV, Glasgow, 1905, p.24.

quickly wakened by a desire to ease my stomacke, and had at least a dozen vomits naturally, which gave me a most comfortable night...’’²⁴

The European physicians, howsoever, appear to have been much sought after at the Mughal court. One such person who earned a great reputation as a European ‘doctor’ was Francois de la Palisse, alias Saint Jacques (1628-1694). He was the French physician who played a prominent role at the court of Emperor Aurangzeb. His name was mentioned by many travellers, merchants, East India Company’s agents, diplomats, missionaries, and other European physicians present in India at that time. He was consistently hospitable and never hesitated to play his princely cards when interceding on his compatriot’s behalf. He enjoyed well recognized status at the Mughal’s court. Saint Jacques is thought to have arrived in India around 1648. Probably he was not professionally trained as a physician at all because, there is no evidence to that effect or that he had ever studied medicine. He may have picked up some medical knowledge from missionaries. His importance at Mughal court is evidenced by Jean Baptiste Tavernier who in Delhi in 1665 and met “a French surgeon de La Palisse”. According to him when in 1668, “Emperor Aurangzeb banished all Christians except physicians and goldsmiths to at least one league from Delhi. Saint Jacques was one of those who stayed put”.²⁵

²⁴ *The Voyage of Nicholas Downton*, Hakluyt, London, 1938, p. 135; Cf. M. N. Pearson, “The Thin End of the Wedge: Medical Relativities as a Paradigm of Early Modern Indian–European Relations”, *Modern Asian Studies*, Vol. 29, no. 1, Feb. 1995, pp154-155.

²⁵ C. Regnier France, “French Physicians”, op. cit., pp.96-97.

He enjoyed the patronage of Aurangzeb who assigned him a grant of Rs. 6000 per annum. In a letter dated December 27, 1678, to his Superior in the Society of Jesus, the Portuguese priest Joseph Freyre wrote:

“In the city of Delhi lived a Christian by the name of Saint Jacques, a Frenchman by nationality and physician by profession, to whom the palace gates had been opened in recognition of the excellence of his art. For the perfection of the care that he administered he was rewarded with the King’s gratitude complete with the title of Macebdar and an allowance of 6000 rupees a year, all of which gave him much standing and respect at Court”.²⁶

Manucci also mentions about St. Jacques, as being at the Mughal court in 1666.²⁷

He is said to have returned to France in 1688 died there on December 23, 1694.²⁸

John Albert de Mandeslo a physician from North Germany visited Goa in 1639. He has left behind a vivid description about the health status in India. He particularly mentioned about the problem of infirmity. He described that ‘there were a large number of patients in the infirmary, most of them suffering from ‘*Pox*’ or *bloody Flux*, those whose life were despaired off and were

²⁶ Ibid.

²⁷ Niccolao Manucci, *Storo do Mogor or Mughal India* (1653-1708), trans. William Irvine, Calcutta, 1996(reprint) Vol. I, p. lxxiii.

²⁸ C. Regnier France, “French Physicians”, op. cit., pp.96-97.

carried to a private room where each was attended by a priest till their end came.²⁹

Niccolao Manucci (c.1639-1717) came to Delhi in 1656 and started medical practice at Agra after the murder of Dara in 1659 seemingly without any training or knowledge. During the period of 1671-78, he practiced medicine in Lahore where he had opened his private clinic and then during 1678-82, served as physician to the Aurangzeb's eldest son Shah Alam. He went to Madras in 1686 and remained there till his death in 1716.³⁰

Niccolao Manucci admitted his 'limited knowledge' of the medicinal science. He held a firm belief that the *tabibs* had no knowledge of medicine and were definitely not in a position to cure the Stone, Paralysis, Apoplexy (Epilepsy), Dropsy, Anemia, Malignant Fevers or other difficult complaints and Indian physicians cured 'hot complaints with cooling remedies'.³¹

Form his account we find mention of several other European surgeons in India. An Armenian, called Sikander Beg, was surgeon to Dara's eldest son Sulaiman Shikoh in 1658.³² A Venetian surgeon, Angello Legrenzi was serving at the court of Shah Alam at Aurangabad in 1679,³³

²⁹ A. De Mendelslo, John, *Voyages and Travels into the East Indies, the Moladires*, trans. J. Davis, London, 1669.p.101; See also M.S. Commissariat, *Mendelslo's Travels in Western India (AD 1638-39)*, OUP, London, 1931, p.70.

³⁰ Manucci, op. cit., Vol. I, pp. lv-lix.

³¹ Ibid, Vol. II, p.333.

³² Ibid, Vol. I, p.278.

³³ Ibid. Vol. I, p. lxxiii.

Francois Bernier (1620-1688), who had a formal degree of MD from Montpellier and came to India in 1658 at Surat served as surgeon to Dara Shikoh. After the murder of Dara he joined the service of Aurangzeb in 1665. He ultimately returned to Europe through Persia and died on 22nd September 1688 in Paris.³⁴ In a very perceptible remark on the indigenous medicinal knowledge and its practitioners he says:

“It is not surprising that the Gentiles (Hindus) understand nothing of anatomy. They never open the body either of man or beast, and those in our household always ran away, with amazement and horror, whenever I opened a living goat or sheep for purpose of explaining to my *Agah* the circulation of blood, showing him the vessels, discovered by Pacquet, through which chyle is conveyed to the right ventricle of the heart. Yet notwithstanding their profound ignorance of the subject; they affirm that the number of veins in human body is five thousand neither more nor less; just as if they had carefully reckoned them.”³⁵

Another French physician, Delon makes same kind of remarks about the Indian knowledge of medicine and its practitioners:

“The *pagan* (i.e. Hindu) physicians, whom they call pandites, are a sort of people without learning or any knowledge or insight into Anatomy. All their skill is confined to a certain number of receipts, which they apply promiscuously without making the least reflection upon the

³⁴ S. L. Bhatia, *A History of Medicine with Special Reference to the Orient*, Office of the Medical Council of India, New Delhi, 1977, p.168;

³⁵ Francois Bernier, *op. cit.*, p.339. (The discovery of the blood circulation credited to William Harvey, who born in 1578 and died in 1657. It was in 1616; he delivered a lecture at Royal College of Physician in London and firmly announced his discovery of the blood circulation. Jean Pacquet, born at Dieppe, in France in 1622 died in 1674. He studied medicine at Montpellier, where Francois Bernier was also a student, and it was there that he prosecuted those investigations which led to his discoveries, in connection with conversion of the chyle into blood.)

different Age, Sex, constitution, or Strength of their Patients. They are very timorous, and rather will left a patient perish than run the hazards of a Remedy, which.... appears doubtful to them.”³⁶

Manucci described that the European physicians were not ready to accept salaries at par with those of Indian physician.³⁷Tavernier in his first and second visit mentioned about the Royal Hospital of Goa, which was renowned throughout India and attended by patients. According to him:

“.... Since this hospital has changed its managers, patients are badly treated, and many Europeans who enter it do not leave it save to be carried to the tomb”.³⁸

Francois Pyrard de Laval also reported in1602-07 about the disease *Farangui baescour* (firangi basur) i.e. European piles, which was known to the people of Maldives.³⁹

Jan Huyghen Van Linschoten, the Dutch traveller of sixteenth century, sailed from Spain to Goa. In 1596 wrote an account of his travels in which he speaks very favourably of the Indian physicians and, says they made no

³⁶Dr. Delon, *A Voyage to the East Indies: Giving an Account of the Isles of Madagascar, and Mascareigne, of Suratte, the Coast of Malabar, of Goa, Gameron, Ormus, and the Coast of Brazil, with the Religion, Manners and Customs of the Inhabitants, etc., as also a Treatise of the Distempers Peculiar to the Eastern Countries*, Trans. Anon. from the French, London, D. Browne, 1698, p.232-233.

³⁷ Manucci, op. cit., Vol. II, p.381.

³⁸ J. B. Tavernier, op. cit., p.160.

³⁹ Francois Pyrard de Laval, *The Voyages of Francois Pyrard of Laval to The East Indies, the Maldives, the Moluccas and Brazil*, tr. from the third French edition of 1619 by Albert Grey, Assisted by H.C.P. Bell, Two Volumes in three parts, Hakluyt Society, London,1838, Asian Educational Services, New Delhi, 2000, Vol. I, pp.182-83.

distinction in treating the Indian and Europeans alike.⁴⁰ He also notes that Indian physicians at Goa were held in esteem and were honored by custom.⁴¹

At another place, he mentions:

“There are in Goa many Heathen physitians which observe their gravities with hats carried over them for the sunne, like the Portingales, which no other Heathens doe, but (onely) Ambassadors or some rich merchants. These Heathen physitians doe not onely cure their owne nations (and countriemen) but the Portingales also, for the viceroy himself, the Archbishop and all the monkes and friers doe put more trust in them than in their owne countriemen, whereby they get great (store of) money and are much honoured and esteemed.”⁴²

Linschoten also tells us about the local ailments prevalent during his period:

“...The sicknesses and diseases of Goa and throughout India which are common come most with the change of the times and the weather. There reigneth a sickness called mordexijn which stealeth upon men that it weakneth a man and maketh him cast out all that he hath in his bodie and many times his life with all. The bloody fluxe is very common and dangerous as the plague with us. They have many continuall fevers which are burning agues and consume men whereby within four or five days they are whole or dead. This sickness is very common and dangerouse and hath no remedy for the Portingales but letting of blood but the Indians and the Heathens doe cure with hearbes and other such like ointment wherewith they ease themselves. This sickness consumeth many Portingales every yeare, some because they have little to eat and less to drink of that which is nourishing and use much company of women because ye land is naturall to provoke them thereunto... Pockes

⁴⁰ J. H. V. Linschoten, *The Voyage of East Indies*, Edited by Arthur Coke Burnell, Asian Educational Society, New Delhi, 1988, Vol. I, p.230.

⁴¹ Anonymous: A Dutch Physician of XVI Century on Indian drugs: Linschoten's account of spices and drugs of India supplemented and annotated by Dr. Bernardus Paludanus. *Bulletin of Department of History of Medicine*, Hyderabad 3: 173-184, 1965.

⁴² J.H.V Linschoten, op. cit., Vol. I. p.230.

and piles with other secret diseases, they are very common and not concealed... They heal them with the root China... The plague hath never been in India... but poysoning, witchcraft and suchlike whereby some lose their lives is their dayly exercise... The stone, the gravel and rupture reigneth much especially among married men by reason of the great quantitie of water that they drink, being given to all pleasures and riotousness, enjoying what their hearts desire, sitting always with their bellies open in their shirts in gallerie, recreating themselves with the wind that cooleth them...”⁴³

Linschoten mentions various diseases like Fever, Cholera, and Dysentery etc. He was praiseful to the Garcia de Orta to become the first European who described the frightful disease i.e. cholera in 1563⁴⁴. This disease was quite common but the European physicians and practitioners had no remedies for it. The Indian physicians were however able to cure it by herbs, sanders, and other ointments.⁴⁵ He mentioned that India in general and Goa in particular, this disease was common and widely spread with changing weather and extremely affected the human body and caused large number of deaths.⁴⁶

John Ovington, an educated and clergy man reflected a European consensus concerning cause and cure of cholera:

“Cholera (*mordechine*) is violent vomiting and looseness, and which is caused most frequently by an excess of eating particularly of fish and flesh together. It has been cured by red hot iron clapt to the heal of him

⁴³J.H.V Linschoten, op. cit., Vol. I. p.235-236.

⁴⁴Ibid., pp.235-36 (n. d.).

⁴⁵Ibid., p.236.

⁴⁶Ibid, pp.235-236.

that is sick, so close that it renders him uneasy by its nearness, whereby it leaves a scar behind it".⁴⁷

This method of remedy applied to take an iron ring about an inch and a half in diameter and thick in proportion. Then heating it red hot in the fire, extend the patient on his back, and apply the ring to the naval, in such a manner that the naval may be as a centre to the ring. As soon as the patient feels the heat, take away the ring as quick as possible when a sudden revolution will be wrought in his intestine.⁴⁸ Another method of curing this disease was described by Grose. According to him:

“For bloody fluxes, the Brahmins suggest a very simple, and as they pretend a most inflammable remedy, conflicting in a strict abstinence from every thing but rice stewed dry; to which they allow no sauce of any kind whatever, and attribute to it an absorbent quality, that is excellent against that acrimony which preys on the entrails, and breeds the disorder. For drink they give nothing but water, corrected by a very moderate quantity of cinnamon or Cassia-lignum. As to the Tellicherry-bark, long boasted as a specific in this distemper, it seems to have lately greatly declined in practice, probably from experience having shewn, that it was not so much to be trusted to as was imagined”.⁴⁹

⁴⁷ J. Ovington, *India in 17th Century: Voyages to India by Ovington and Thevenot*, Vol. II, ed. by J. P. Guha, New Delhi, 1976, p. 240.

⁴⁸ Denis Kincaid, *British Social Life in India 1608-1937*, London, 1973, p.37.

⁴⁹ John Grose, *A voyage to the East Indies ; Containing Authentic Accounts of the Mogul Government in general, the Viceroyalties of the Decan and Bengal, with their several subordinate Dependances of Angria, the Morattoes, and Tanjoreans of the Mahometan, Gentoo, and Parsee religions of their Customs and Antiquities, with general reflections on the Trade of India of the European settlements, Particularly those belonging to the English; their respective Factories, Governments, Trade, Fortifications and Public Buildings: The History of the War with the French from 1754 to the conclusion of the general Peace in 1763*, S. Hooper, London, 1772, in 2 Vols, I, pp.250.

He found that indigenous method of curing this disease had regional variations as well:

“There is likewise known on the Malabar-coast chiefly, a most violent disorder they call the Mordechín; which seizes the patient with such fury of purging, vomiting, and tormina of intestines, that it will often carry him off in thirty hours. For this the physicians among the natives know no more effectual remedy, than the actual cautery applied to the soles of the feet, the powerful revolution of which rarely fails of a salutary efficacy”.⁵⁰

Grose keenly observed that there were few specific diseases which particularly targeted the Europeans as he mentioned:

“The Barbeers is another dreadful illness of the paralytic kind that attacks mostly the Europeans, and deprives them of the use of their limbs. The natives, with what reason I know not, say, that it is most commonly brought on by venereal excesses, having irrecoverably exhausted the radical moisture and sprits of life. The Portuguese apply to such as are in this condition, from that circumstances, the term of *Essalsados*: but I am far from clear, that by it they mean all who are afflicted with the Barbeers; which, not denying but it may sometimes be the effect of that cause, it not always so; being sometime produced by colds caught by lying out exposed to the dew, or night-air, and by the consequences of fevers, especially by being over-physic ked for venereal complaints.”⁵¹

He also mentioned the view of Indian physicians regarding this disease:

“The Malabar physicians particularly are of opinion, that it is unwholesome to be out in the air at sun-rise; for that at that time it gives a certain life and activity to the noxious damp vapors of the atmosphere, risen during its ascent, conquers and dispels”.⁵²

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid.

Paucity of local doctors was another feature of the seventeenth century Indian society. According to Tavernier physicians were mainly in the services of kings and prince, while family health was the concern of the women in the family who collected the herbs from the forest for the cure of the domestic diseases after the commencement of the rainy season. These women were aware of the use of herbs.⁵³ In the towns there were generally one or two men who had some knowledge of medicine, who seat themselves each morning in the market place or at a corner of the street and administered remedies, either potions or plasters, to those who come to ask them. According to him “they first feel the pulse, and when giving the medicine, for which they take only the value of two farthings, they mumble some words between their teeth”.⁵⁴

A little later when Abbe Carre was sick, a Persian noble is alleged to have told him ‘as to providing someone who can give you remedies and treat your illness, you are aware that there is no doctor or surgeon amongst us; we hardly know what such a man is, and Europeans are only consult when one of them happens to be passing in the country’.⁵⁵ This we know, however, was a false claim!

Manucci refers to a French gunner and surgeon M. Claude Malle of Bourges, who was a surgeon as well as physician to the governor of

⁵³ Tavernier, op. cit., Vol. I., p. 240.

⁵⁴ Ibid.

⁵⁵ Abbe Carre, *The Travels of the Abbe Carre in India and the Near East, 1672-74*, London, Hakluyt, 1947-48, 3 Vols., p.271.

Allahabad in 1666. Malle advised to against the use of Ganges water because according to him it caused stomach upset.⁵⁶

Thevenot, a European traveller who visited Div in 1666 noticed that indigenous people were using stone bezoars in the cure of snake bite. This was composed of ashes of burnt roots which were mingled with a kind of soil and then a kind of paste was prepared. People used against the stinging of serpents and other venomous creatures, or when one is wounded with poisonous weapons.⁵⁷

Jean Chardin, a jeweler's son who arrived in India in 1667 left behind a detailed and scrupulous study of local therapeutic practices, tells us:

“In those parts, all missionaries are taken for physicians because they dabble in prescribing treatments...As there are no physicians or surgeons, they have made themselves indispensable to the practice of medicine and surgery, with some being remarkably knowledgeable and practicing with great success.”⁵⁸

It must be pointed out that the Portuguese physicians helped their ascendancy by several non-medical means as well. They wanted to establish their supremacy psychologically also. In 1567, the First Provincial Council

⁵⁶Manucci, op. cit., Vol. I., pp.95-96, 228; Tavernier, op. cit., Vol. I, p.95.

⁵⁷M. de Thevenot, *India in the Seventeenth Century: Voyages to India by Ovington and Thevenot*, ed. J. P. Guha, New Delhi, 1976. Vol. II, p.56.

⁵⁸ Jean Chardin, *The travels of Sir John Chardin into Persia, and the East-Indies, through the Black-Sea, and the Countrey of Colchis: describing Mingrelia, Imiretta, Georgia and several other countries unknown to these parts of Europe: with a new map of the Black-Sea: and also divers curious descriptions of many cities and towns on copper plates: to which is added, The coronation of this present King of Persia, Solymanthe Third*. London, UK: Moses Pitt; 1686, cf. C. Regnier France, “French Physicians”, op. cit., p.93.

banned non-Christian physicians from treating Christian patients “on account of the many evils resulting there from both to Faith and to Morality,”⁵⁹ knowing fully well that there were, then, no physicians among the native Christians. In fact, there were few native Christians then.⁶⁰ In 1572/74 the Portuguese physicians ‘stirred themselves to such an extent that they caused the governor, Antonio Moniz Barreto, to issue a notification on 15 December 1572/74, banning native physicians from going about the city and suburbs on horseback, in palanquins and on *andores* (a kind of sedan chair)’. This was certainly an act of humiliating the native medical practitioners. The governor exempted the *Pandits* who were in the private physician of his own household.⁶¹

Further a regulation was decreed on 3rd November 1618, that no one could practice as a physician, surgeon or bleeder without having previously been examined by the *fisico-mor* (chief physician) or *cirurgiao-mor* (chief surgeon),⁶² The decree condemned the Hindu physicians practicing in Goa for not conducting themselves properly in the treatment of their patients, leaving them whilst seriously ill and absenting themselves upcountry. They were

⁵⁹ cf. S. K. Pandya, “Medicine in Goa- A Former Portuguese Territory”, *Journal of Post Graduate Medicine*, Vol. 28, No. 3, 1982, pp.123-48; See also Ashok Kumar Bagchi, *Medicine in Medieval India (11th to 18th Centuries)*, Konark Publication, New Delhi, 1997, p.114.

⁶⁰ A.K. Bagchi, *Medicine in Medieval India*, op. cit., p. 115; See also Cunha, *Tristao Braganza: Goa's Freedom Struggle*, Dr. T. B. Cunha Memorial Committee, Bombay, 1961.

⁶¹ cf. S.K. Pandya, “Medicine in Goa- A Former Portuguese Territory”, op. cit., pp.123-48; See also A.K. Bagchi, *Medicine in Medieval India*, op. cit., pp.115-116.

⁶² *Ibid.*

therefore ordered not to leave the city without obtaining the Senate's authorization. Finally, it was decided that only 30 infidel physicians if they possessed the certificate of examination held by the *fisico-mor* might practice in the city, the number of 30 never to be exceeded. Many Hindu physicians therefore fled to other parts of India.⁶³

Whilst the ancient Greek form of medicine, translated into the Indo-Arabic Unani, and was practiced in Goa, but the Hakims had a much smaller impact on the populace in Goa than elsewhere in India. Albuquerque, Portuguese governor of Goa nurtured a bitter hatred against the Moors and therefore did not tolerate Muslim physicians in Goa. On the other hand, he was patron and friend to the Hindus during the early part of his stay. However, he remained reluctant to take in his expeditions Hindu physicians in whose professional ability he had little confidence. His antipathy towards the Muslims, of course, had a political basis. Before the appearance of the Portuguese, Asian trade was entirely controlled by the Muslim Arab merchants who thereby dominated the North African and European markets and helped in the propagation of their religion. The Portuguese were anxious to break the Arab monopoly on Asian trade and halt the spread of Islam as expeditiously as possible.⁶⁴

⁶³ Ibid.

⁶⁴ Cf. S.K. Pandya, "Medicine in Goa- A Former Portuguese Territory", op. cit., pp. 123-48; See also A.K. Bagchi, *Medicine in Medieval India*, op. cit., p.115; Cunha, *Tristao Braganza: Goa's Freedom Struggle* op. cit.; D'Souza Bento Graciano, *Goan Society in Transition: A Study in Social Change*, Popular Prakashan, Bombay, 1975; De Menezes, Antonio, *Panjim through the centuries*, in, "International Seminar on Indo-Portuguese

After the Portuguese, British Medical practitioners were another important group of European medical practitioner. Their presence in India dates from 1600, when a small number of ship's surgeon arrived on board the English East India Company's first fleet. The ships of the East India Company arrived at the western port of Surat in 1608 and immediately established their superiority over the Portuguese. The English East India Company moved towards the Bengal in 1651 and set up their empire over there.

From the very beginning the East India Company had developed the practice of sanctioning one medical officer for each of its permanent factories. In Bengal the company factories started appearing from 1620, first in Patna and subsequently in Hugli (1651), Kasimbazar (1659), Decca (1668), Malda (1676) and other places. The early names of physicians and surgeons we get from these settlements are those of Edward Whiting in 1662, Ralph Harwar, surgeon in Hugli in 1672, John Plomer, surgeon in 1695, and William Warren, a surgeon in Calcutta in the closing years of the seventeenth century. Apart from there indispensable professional services, the physician and surgeons were not frequently employed for diplomatic purposes.⁶⁵

Every English ship had a surgeon-general; John Woodall (1556-1643) was appointed as the first one on 13th December 1613. In 1635, The East India

History", ed. John Correio-Afonso, S. J. Heras Institute. St. Xavier's College, Bombay, 1978, pp. 5-9.

⁶⁵ See *Indian Journal of History of Science*, Vol. 23, no. 1 and 2, January and April 1988, p.126.

Company discharged him from services and died on 28th August 1643. After the death of Woodall, another surgeon Henry Boone was employed at this place.⁶⁶ There was growing realization of importance of European surgeons and the Gabriel Boughton, an English surgeon of ship *Hopewell*, arrived in India in 1644. Asalat Khan, the Mir Bakshi of Mughal Empire and favorite to the Shahjahan had been keen to obtain the services of a European surgeon and had asked the company at Surat to send him one.⁶⁷ He accepted the appointment and came to Agra in 1645. After death of Asalat Khan he was entered into the services of Shah Shuja, emperor's son and governor of Bengal and move to Rajmahal. When he successfully treated one of the princess favorite concubine, who was suffered with great pain and could not find any cure. Then, two *nishans* were issued by Shuja granting duty exemption. This duty exemption however was for Boughton's personal trade and not the company. It was through a misuse of these *nishans* that a profitable trade was opened in the rich province of Bengal.⁶⁸

Manucci also attributed Boughton for the treatment of Shahjahan's daughter Jahan Ara, on Moharram 27, 1054H (Feb.4, 1644), and says:

⁶⁶ D.G. Crawford, *A History of Indian Medical Services 1600-1913*, 1914, in 2 Volumes, W. Thacker & Co, London, Vol. I, p. 26; See also Rajesh Kochhar, "The Truth behind the Legend; European Doctors In Pre-Colonial India", *Journal of Bioscience*, Sept. 24, No. 3, 1999, pp. 259-268; Bhatia, *A History of Medicine*, op. cit., p.169. (Woodall was born in 1556 and served as surgeon to St. Bartholomew's hospital. Woodall was a member of the London Company of Barber Surgeon.)

⁶⁷ For details see Rajesh Kochhar, "The Truth behind the Legend", op. cit., pp. 259–268.

⁶⁸ Ibid

“It happened one night while engaged in such-like dances that the thin raiment steeped in perfumed oils of the princess’s favourite dancing woman caught fire, and from the great love she bore to her, the princess came to her aid, and thus was burnt herself on the chest.”⁶⁹

The attitude of Indians to European skill in medical science is interesting.

While Indian physicians did not believe or admit that European doctors were properly acquainted with medicine,⁷⁰ masses held a different opinion we are told in 1634:

“For these Barbarian holds that wherever a Portuguese goes good fortune skill attend him. Indeed so general is this opinion in those regions, that as soon as any Firangui arrived at a place and it becomes known, they at once bring up their sick, all kinds of diseased persons coming to consult them and beg for remedies and drugs for their ailments, just as if the skill of Esculapius, Galen, and other great men who professed the art of medicine was a natural attribute of the nation of those whom they style Firanguis.”⁷¹

William Hamilton a Scottish surgeon of John Sermon’s embassy who reached at Delhi in 1715 and remained there for the next two years. It was an opportunistic time that in Delhi, the emperor Farukhsiyar was suffering from some disability that was prevailing his marriage. Hamilton offered his

⁶⁹Manucci, Vol. I, p.211; See also Inayat Khan, *The Shahjahan Nama of Inayat Khan: An Abridged History of the Mughal Empire Shahjahan compiled by his Royal Librarian*, A. R. Fuller, W. E. Begtey and Z. A. Desai (trans.); New Delhi, Oxford University Press, 1990, p.309.

⁷⁰ Fray Sebastian Manrique, *Travels of Fray Sebastian Manrique 1629-43*, translated by C.E. Laurd and Hosten, Vol. II, Hakluyt Society, 2nd Series, LXI, Oxford, London, 1927. pp. 225-6; See also A. J. Qaiser, *The Indian Response to European Technology and Culture (A.D.1449-1707)*, OUP, New Delhi, 1982, p.16.

⁷¹ Manrique, Vol. II, p.112; See also Qaiser, *The Indian Response to European Technology*, op. cit., p.16.

services, and his treatment was successful. There is, however, no tangible evidence to indicate that he asked the Emperor for favours for the company.⁷²

However, Marshal mentioned that the delegation finally got the right of duty free trade in Bengal in return for a payment of an annual tribute.⁷³ This piece of information is inscribed on a plate on Hamilton's grave as well which is as follow:

“His memory ought to be dear to this Nation’, the English inscription stated, ‘for the credit he gained ye English in Curing Ferrukseer, the present king of Indostan, of a Malignant Distemper, by which he made his own Name famous at the Court of that great Monarch’.⁷⁴ (See Plate XIII)

The number of British surgeons increased in India steadily as the company extended their trading operations and rights but until 1763, there was no regular medical establishment. The Bengal Medical services were established in 1763.⁷⁵ The Bengal medical services fixed grade and definite rules of promotion. The Bengal medical services comprised with four head surgeons, eight surgeons and twenty eight surgeon's mates. And these

⁷² Tom Patterson, “The Interaction of Indian Medicine and Modern Medicine”, op. cit., p.579.

⁷³ P. J. Marshal, *East Indian Fortunes: The British in Bengal in the Eighteenth Century*, Oxford, 1976, p.7.

⁷⁴ Robert Tavers, “Death and the Nabob: Imperialism and Commemoration in Eighteenth Century India”, *Past and Present*, no. 196, August, 2007, p.93.

⁷⁵ D.G. Crawford, *A History of Indian Medical Services 1600-1913*, in 2 Vols. W. Thacker & Co., London, 1914, Vol. I, pp. 1-6; See also W.B. Baetson, “Indian Medical Service: Past and Present”, *Asiatic Quarterly Review*, 14, 1902, pp.272-320; Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine 1859-1914*, Cambridge University Press, New Delhi, 1994, p.7.

types of services started soon in other presidencies like Bombay and Madras. In 1775 the medical services were expanded and set up their boards in each presidency to administer Europeans hospitals.⁷⁶

Hamilton described in his memoir when the monsoon rains subsided in October, the ‘putrefaction’ of rotting fish caused a ‘yearly mortality’ in one year he claimed,

“There were reckoned in August about 1200 English, some Military, some servants to the Company, some private Merchants residing in the Town, some Seamen belonging to Shipping lying at the Town, and before the beginning of January there were four hundred and sixty Burials registered in the Clerk’s Book of Mortality”.⁷⁷

P.J Marshall calculated that out of 645 men appointed as covenanted civilian servants of East India Company in Bengal between 1707 and 1775 and 368 (57%) died in India. The death ratios of European in India were actually well above 60 per cent before 1750 and about 25 per cent of European soldiers seem to have perished each year.⁷⁸

In early eighteenth century the European traders believed that Calcutta to be particularly unhealthy and India as potentially fatal for them. Alexander

Charles Curtis worked at naval hospital at Madras in 1782-83. He wrote in 1807 that European nosology and definitions in India would prove

⁷⁶ cf. Mark Harrison, *Public Health in British India*, op. cit., p.7.

⁷⁷ Alexander Hamilton, *A New Account of the East Indies, Being the observation and Remarks of Captain Alexander Hamilton Who Spent his Time There from the Year 1688 to 1723 Trading and Travelling by Sea and Land, to Most of the Countries and Island of Commerce and Navigation, between the Cape of Good Hope and the Island of Japan, 1727*, in 2 Volumes, Asian Educational Services, New Delhi, 1955, Vol II, pp.7-8.

⁷⁸ P. J. Marshal, *East Indian Fortunes*, op. cit., pp. 218-19.

but uncertain and fallacious guides. He also talks about the Indian environment and its maladies and the European reappraisal of European medical knowledge in the light of new circumstances.⁷⁹ His interesting work provides evidence of importance of post-mortem dissections for disease theory and therapeutics in India.⁸⁰ Curtis also mentioned another Madras Surgeon John Paisley and cited as:

“In Europe Cholera is produced by an increase acrimony, and increases secretion of bile...but it seldom there brings on sudden weakness at the first onset. On the contrary, bleeding is often unnecessary in the beginning. But when it is epidemic here, it is totally a disease of high putrid bile, which... brings on sudden prostration of strength, and spasms over the whole surface of the body”.⁸¹

Curtis also given remarks about the same diseases with different kind in India and Europe as:

“All the inflammatory affections of [the Liver] are dominated here, as well as in Europe, by the general name of Hepatitis, but Indian hepatitis includes a variety of affections of this bowel, different in their nature, extent, and termination”.⁸²

George Balingall, who spent seven years in India at the beginning of nineteenth century and Similar remarks given by him. He preoccupied with

⁷⁹ C. Curtis, *An Account of the Diseases in India, as they appeared in the England fleet, and in the Naval Hospital at Madras, in 1782 and 1783; with observations on Ulcers, and the Hospital Sores of that Country*, Edinburgh, 1807 , p.xvi. Cf. Mark Harrison, *Public Health in British India*, op. cit., p.36.

⁸⁰ cf. Biswamoy Pati and Mark Harrison (ed.), *The Social History of Health and Medicine in Colonial India*, London, 2009, p.178.

⁸¹ Paisley to Curtis, February 1774. C. Curtis, *An Account of the Diseases in India*, op.cit, p. 86, cf. Mark Harrison, *Public Health in British India*, op. cit., pp.36-37.

⁸² C. Curtis, *An Account of the Diseases in India*, op. cit., p. 90, cf. Mark Harrison, *Public Health in British India*, op. cit., p.37.

dysentery and one of the principal cause of sickness and admissions to hospitals among the British troops in India. He mentioned that the new medical men in India might be misunderstanding the diseases. He mentioned that there were two types of dysentery; one confined to the large intestine and other a more chronic and extended to the liver. He preferred to prescribe purgatives in most cases than the European method of treatment of dysentery by mercury.⁸³

John Clark, the East India company surgeon writing in 1773 about the climatic condition of Malabar Coast as ‘temperate and healthy’. He enjoyed ‘a remarkable immunity from the endemic and popular diseases of warm climate’ but in the port of madras women seemed sensitive to the intense heat and suffering from ill health particularly to their sex.⁸⁴

Dr. Martin's book, "*The Influence of Tropical Climates*" mentioned about Tropical Hygiene and the treatment of Cholera and its caused was best mentioned for European travellers as:

“The attacks of this terrible disease may in general be traced to some imprudence, as eating unripe fruit, oysters, or other indigestible food; intemperance; drinking cold liquid or anything that suddenly chills the body when overheated; exposure to cold night air. Among the natives the most common causes are drinking unwholesome water, sleeping on

⁸³ George Ballingall, *Practice, Observation on Fever, dysentery, and Liver Complaints, as they occur amongst the European troops in India*, Edinburgh, 1818, pp. 40, 41, 81; cf. Mark Harrison, *Public Health in British India*, op. cit., p.37.

⁸⁴ John Clark, *Observations of the Diseases which prevail in long Voyages to Hot Countries, Particularly those in the East Indies: and on the same Diseases as they appear in the Britain*, London, 1809, pp. 78, 81, 84; cf. Mark Harrison, *Public Health in British India*, op. cit., p.38.

the damp ground or in the open air during unhealthy seasons. He mentioned that for the natives, the safest remedies appear to be the application of mustard plasters, particularly to the abdomen, or the warm bath, draughts of warm water, after which 80 drops of laudanum, 6 drops of oil of peppermint, or 20 drops of essence of peppermint, and 20 grains of calomel, should be taken. To allay the burning thirst, warm *kanji* or rice water, with plenty of table salt, may be given, or pieces of ice may be allowed gradually to melt in the mouth. After the first attack is over, if there be much irritability remaining, the dose of 20 grains of calomel must be repeated. Afterwards the bowels must be kept open with calomel and jalap. For a child of from one and a half to two years old, 12 grains of calomel, 8 drops of laudanum, 2 drops of oil of peppermint, may be given on the instant of attack. The hands and feet must be put into water as hot as the child can bear until the disease is subdued. After a lapse of eight hours from complete relief, a dose of castor oil must be administered. Great attention must be paid to the size of the drops of laudanum. They must be dropped from a 2 oz. phial. To natives who are not of a plethoric habit, the following pills may be given: - Astringent pills on the first attack. Calomel, 5 grains; assafetida, 2 grains ; black pepper, 2 grains; opium, 2 grains; camphor, 3 grains; to be mixed and divided into three pills, which, if rejected, must be re-administered. Three hours after these pills, if the symptoms have stopped, mix the following into three pills:- Calomel, 5 grains; extract of colocynth, 12 grains; extract of tartar emetic, 1/4 grain. The cholera pills are an excellent purgative in general for bowel complaints”.⁸⁵

He also mentioned that the medicines and articles may be taken on a journey into places where medical aid is not available as:

“Cholera pills, calomel, eau de luce, ipecacuanha, laudanum, magnesia, oil of peppermint, quinine, rhubarb, adhesive plaster, blistering plaster,

⁸⁵ Edward Eastwick, *Hand book for India. - Madras*, part I, John Murray, London, 1859, p. xiv.

gold beater's skin, lint, sponge, scales and weights, cautory, lancet, teaspoon, scissors".⁸⁶

He was much cautious regarding the climate and its bad affects on Europeans and suggested that:

"No European should voluntarily expose himself at any season to the direct rays of the sun. If forced to be out of doors, the *chhata* or large umbrella should never be neglected, if he wish to avoid *coup de soleil* or other dangerous consequences. The ample turbans of the natives are a great defence against the sun; and where an umbrella cannot be conveniently used, muslin twisted many times round an English jockey cap, with a white covering stuffed with cotton, such as worn by Sir C. Napier in a well-known print, is the best protection. Similarly, the thick *kamarbands* or *waist-cloths* of the natives protect the important viscera of the abdomen from the injurious effects of cold".⁸⁷

The European method of treatment of snake bite was different as Indian has snake Charmers. The European method mentioned as:

"A ligature should be instantaneously fixed round the limb affected some distance from the wound to prevent absorption. If the wound be in a fleshy part, the ragged edges must be cut out, making the incision elliptical. The wound must then be sucked with a cupping glass, or with the mouth. If stupor, fainting, or sinking of the pulse supervene, administer brandy one oz., laudanum one drachm, in warm water, with sugar and peppermint water. The patient must be kept walking about, or the throat, chest, and extremities may be rubbed with laudanum, ammonia, and ether. Dram doses of ammonia, or *eau de luce*, mixed with water, and repeated every ten or twenty minutes, according to the urgency of the symptoms, have also been tried with success. But scarification, or excision and cauterization are the only sure means of

⁸⁶ Ibid.

⁸⁷ Ibid., p. xi

escaping death in the case of being bitten by the most poisonous snakes as the cobra and black kerite”.⁸⁸

European Christian missionaries were also engaged in the health services. Among the European who settled in India during eighteenth century were almost 100 Roman Catholic missionaries who belonged to the so called Tibet Mission. This mission was entrusted to an Italian province of Capuchin friar of Franciscan order. Most of the Capuchins of the Tibet mission came from the Le Marche region of east central Italy. They established the first hospice of the mission in the French settlement of Chandernagore in Bengal in 1706, and another hospice soon afterward in the city of Patna in Bihar and then another hospice setup in Kathmandu valley in Nepal and in Tibet at Lhasa. They also maintained a hospice in princely state Bettiah (now in East Champaran) in north western Bihar in December 1745. They were expelled from Nepal and Tibet in 1745 and 1769 respectively. But they continued to maintained hospices in Bettiah, Patna, and Chndernagore throughout the second half of the century.⁸⁹ In Patna they never expelled due to their limited proselytizing activities and ministered exclusively to the European and Eurasian Christian resident there and after the victory of battle of Buxur in 1764, the local elite of Patna and Bettiah lost their ability to expel the friars, eventually the friars opened several hospices in Bihar and Bengal.⁹⁰

⁸⁸ Ibid., p. xv

⁸⁹ David N. Lorenzen, “Europeans in late Mughal South Asia: The Perceptions of Italian Missionaries”, *Indian Economic Social History Review*, 40, 1, 2003, pp. 1-2.

⁹⁰ Ibid., p.5.

Due to their services, these missionaries earn various friendly attitude and privileges from the ruling authorities. In case of Bettiah, Giuseppe Maria da Gargnano and the local raja (Dhurup Singh) which gave the friars the opportunity to established a more permanent presence of missionaries. The friars Marco della Tomba in his account '*an Introduction to the Voyage to India*', probably written in about 1774 on basis of an earlier dairy claims that Guiseppe Maria da Gargnano was called upon to cure the queen of Bettiah of a mysterious illness that turned out to be, in Marco's word, 'merely some gangrene on the throat'. Giuseppe Maria da Gargnano is said to have cure this ailment quickly and thereby won the lasting support of the raja.⁹¹ But according to the Cassiano da Macerata, Guiseppe Maria da Gargnano arrived in Patna on 8th December 1739 and stayed there until he left for Tibet in the spring of 1742. It was during this period that Guiseppe Maria met the raja of Bettiah and won his support and mentioned as:

I must add that, while Fr. Guiseppe Maria kept himself busy in this Hospice with medicine... having made acquaintance in the English Factory of the Kinglet [*Regolo*] of Bettiah, who had com thither for his affairs with the court of Patna, he won so greatly that Lord's esteem that the latter, having returned to his little Kingdom, a five days journey to the Northeast of Patna, sent to request him to be so good as to come to him, and offered him every convenience he might wish... In one of [his] visits he left with king a certain medicine, to cure him of some troubles which he had explained to him. The next year he returned to visit him, and the kinglet, having received him with always greater signs of esteem and veneration, presently told him that with the first dosage of

⁹¹ Maro della Tomba, *Gli Scritti de Padre Marco della Tomba, missionario nelle Indie Orientali*, A. de Gubernatis (ed.), Florence, Italy, 1878, p.16. cf. Ibid.,

the medicine that was left with him he in an instant felt himself relieved of certain pains which for twelve years had tortured in spite of the infinite medicines he had taken to cure himself.... Attracted by Fr. Guiseppe Maria's religious exemplarity, the king and the queen begged him repeatedly to come and live near them, offering him an ample site and the necessary dwelling as also whatever he required for his daily livelihood. The missionary always did not excuse himself, declaring that it did not depend on him to found new hospices, nor was it in the power of the Fr. Perfect to satisfy him, unless he received from Rome a greater number of missionaries, since those who had newly been brought over scarcely sufficed to staff the old hospices. For the moment the king kept still. He urged his request by a letter to the Sovereign Pontiff Benedict XIV, asking him to give him two missionaries.⁹²

It is clear from both accounts that Giuseppe Maria made first contact with raja in 1740 and cured some physical ailments of either the king or the queen of Bettiah or both. In response, the raja sent a letter to Pope Benedict XIV asking that a Capuchin hospice be established in Bettiah. A summary of raja's request and a Latin version of the pope's reply of 1742 still exist. But the pope's letter was not delivered to raja Dhurup Singfh until 7th December 1745, when Giuseppe Maria, Cassiano da Macerata and a Tibet convert named Michael arrived in Bettiah from Nepal. The king offered them a house in which a hospice established.⁹³

While these missionaries established the hospitals and entered into the health services to the common masses, they learnt local customs and

⁹² Cassiano da Macerata, *Memorie Istoriche*, pp.13-15; cf. *Ibid.*, pp.5-6; Cassiano da Macerata was a personal friend and companion of Guiseppe Maria da Gargnano.

⁹³ David N. Lorenzen, "Europeans in late Mughal South Asia: The Perceptions of Italian Missionaries", *op. cit.*, p.6.

languages for their purposes but the importance was given to the opportunity while they got to learn about the native method of medical practices. As it was mentioned by Marco della Tomba who had some previous knowledge of astronomy and geography also. His own account of his arrival in Bettiah in March 1785 mentioned:

“The example of said Father [Giuseppe Maria] encouraged me. I applied myself enthusiastically to learn the language. I transcribed immediately both a grammar and a dictionary, and with the aid of said father and of a [native] scribe or teacher, in the space of six months I began to preach in church. In my free time, I constructed an armillary sphere and terrestrial globe in the language of the country. This caused me the continual company of Brahmin doctors, from whom I learned many things of their books and their religion that I attentively noted in a separate book”.⁹⁴

Another medical missionary John Thomas (1757-1801) first went out to India as a ship’s surgeon in 1783. Returning to England in 1792, he offered his services to the newly formed Baptist Missionary society and in the following year sailed for India with William Carey, the Society’s founder. However, Thomas’s possession of medical skills played only an incidental part in his appointment as a missionary and his chequered career with the Baptist mission in India certainly did not mark an auspicious beginning for an alliance between medicine and missions- Thomas was widely regarded as an erratic character whose impulsive and often eccentric behaviour caused considerable embarrassment to his missionary colleagues. Thomas died at Dinajpur in northern Bengal in 1801, shortly after a florid episode of mental

⁹⁴ Maro Della Tomba, *op. cit.*, p.10; cf. *Ibid*, p.10.

illness, reportedly induced by his excessive excitement at the winning of the mission's first convert to Christianity.⁹⁵

The growing power of the European relied on symbolic and rhetoric capital as well as coercive technologies and the important tool of empire was mobilizing support for state militaristic goals.⁹⁶ In 1740, East India Company established medical department to supervise and conduct the medical affairs. The establishment comprised with military surgeons and local assistants. The Bengal Medical Service was started in 1763 to give more logical and legal foundation of medical services and the individual medical officers serving in Bengal Presidency from 1st January 1764 with fixed grade, regular service and rules of promotion.⁹⁷

The third phase of the European medicine in India started in the late Eighteenth Century and continued upto around the first few decades of the nineteenth century. During this period attempts were made once again to record the indigenous medical practices.⁹⁸

⁹⁵Rosemary Fitzgerald, "Clinical Christianity: The Emergence of Medical Work as a Missionary Strategy in Colonial India, 1800-1914", Patti and Harrison, *Health, Medicine and Empire*, op. cit., pp.91-92, (nd.)

⁹⁶ Colley Linda, *Britons: Forging the Nation, 1707-1837*, London, 1992. Cf Robert Tavers, "Death and the Nabob: Imperialism and Commemoration in Eighteenth Century India", *Past and Present*, no. 196, August, 2007, p.83.

⁹⁷ Orders passed in Fort William Consultations dated 20 October, 1763; cf. Anil Kumar, *Medicine and Raj: British Medical Policy in India 1835-1911*, Sage Publication, New Delhi, 1998, p.18; See also W. J. Buchanan, "The Introduction and Spread of Western Medical Science in India", *Calcutta review*, Vol. nil, No. 278, 1914, p. 431.

⁹⁸ Patti and Harrison, *Health, Medicine and Empire*, op. cit., p. 41.

Western medical system during the eighteenth century occupied an important place in India. Abd al Latif became exposed to the medical practices in Calcutta and noted the changes in the methods of diagnosis and treatment that European physicians practiced. The Europeans appear to have had an immense faith in the medical practitioners and their diagnosis and prescriptions.⁹⁹ Instead of midwives, doctors were employed to deliver babies and in the time of war it was doctors again who took care of the wounded soldiers.¹⁰⁰ The new methods of training prevailed in Europe in which beginners and learners of medical practitioners were not admitted as medical practitioners until they discovered their own new diagnosis or treatment method.¹⁰¹ In surgery, Europeans had no equal, and it was they who introduced special surgical instrument like clinical thermometer in course of diagnosis and treatment. They also resorted to electro-therapeutic treatment.¹⁰² The British Physicians however did not explain the use of these new instruments to the Indians and the Indians thought that they were more magical than scientific.¹⁰³

The Indian medical men also made considerable use of surgical technique in different parts of India during the eighteenth century which witnessed by Colonel Kyd as:

⁹⁹ Gulfishan Khan, *Indian Muslim Perceptions of the West during the 18th Century*, OUP, Karachi, 1998, p.295.

¹⁰⁰Ibid.

¹⁰¹Ibid., p.296.

¹⁰²Ibid., pp.296-297.

¹⁰³Ibid., p.297.

“Chirurgery (in which they are considered by us the least advanced) they often succeeded, in removing ulcers and coetaneous irruptions of the worst kind, which have baffled the skill of our surgeons, by the process of inducing inflammation and by means directly opposite to ours, and which they have probably long been in possession of”.¹⁰⁴

These Europeans were not only critical to the Indian method of medical practices but also sometimes praising for it. According to Dr. H. Scott:

“In medicine I shall not be able to praise their science very much. It is one of those arts which is too delicate in its nature to bear war and oppression and revolutions of governments. The effects of surgical operation are more obvious, more easily acquired and lost by no means so readily. Here I should have much praise. They practice with great success the oppression of depressing the crystalline lens when become opaque and from time immemorial they have cut for the stone at the same place which they now do in Europe. These are curious facts and I believe unknown before to us”.¹⁰⁵

Europeans were also introduced new methods to fight with the diseases. They introduced the inoculation to prevent from smallpox. While the Indian method

¹⁰⁴ Indian Office Records: Mss Eur F/95/I, Some remarks on the soil and cultivation on the Western side of the river Hoogly, ff.81r; cf. Dharampal, *Indian Science and Technology in the Eighteenth Century: Some Contemporary European Accounts*, Implex India, Delhi, 1971, p.xliii.

¹⁰⁵ *Aspects of Technology in Western India* consists of extracts from letters addressed from Bombay by Dr. H. Scott to Sir Joseph Banks, Presidents of the Royal Society, London, during 1790-1801. Cf. Dharampal, op. cit., pp. xliii, xliv, 268. Helenus Scott, in a medical service of east India Company and served at Bombay. He spent thirty years in India and return to England and began practice at Bath. In 1815 he was admitted a licentiate of the college of physicians, in London. In 1817 started practice in Russell Square, London. In same year he contributed a paper to the *Transactions* of Medico-Chirurgical Society on the use of nitro muriatic acid in medicine. He died on 16th November 1821. (Details cited here from Dharampal, op. cit., p.281.)

of variolation was similar to that was practiced by native Indians for the same purpose.

On describing the method of variolation in India, Robert Coult wrote a letter to Dr. Oliver Coult on 10 Feb. 173. Natives of Bengal in their native language called it *Tikah* and practitioners were known as *Tikadars* or Mark-maker.¹⁰⁶

The method of operation mentioned as:

“Their method of performing this operation is by taking a little of the pus (where the small pox are come to maturity and are of a good kind) and dipping these is the point of a pretty large shape needle. There with make several punctures in the hollow under the deltoid muscle or sometime in the fore head, after which they cover the part with a little paste made of boiled rice.”¹⁰⁷

Another detailed report about inoculation was given by John Zephaniah Holwell (1711-1798), who studied surgery at Guy’s hospital and served in Bengal from 1732-1760.

He mentioned that Inoculation was performed in India particularly by Brahmins, who are delegated annually for the service from the different college of Bindoobund (Brindaban), Eleabas (Allahabad), Banaras & C. Overall the distant provinces; dividing themselves into small parties, of three or four each they plan their traveling circuits in such wire as to arrive at the places of their respective destination some weeks before the usual return of

¹⁰⁶ Robert Coult, *An Account of The Diseases Of Bengal*, Calcutta, 1731, in Dharampal (ed.), *Indian Science and Technology in the Eightieth Century; Some Contemporary European Accounts*, Implex India, Delhi, 1971, p. 141.

¹⁰⁷ Ibid.

the disease. They arrived commonly in the Bengal provinces early in February.¹⁰⁸ The inoculation method was believed to be very old in India. Nana Raojee of Warneer taluka (Nasik) and his colleague Bhadoo Nana deposed before the magistrate at Surat thus:

“ the left arm over the vein was scratched and when a little blood appear, the variolous matter, which had been taken from someone who had smallpox earlier was inoculated. After six days, the patient got fever and had a moderate reaction which subsided in three days, giving immunity. The inoculators, who were *kumbhars*, received one seer of rice and one piece as payment, or sometimes nothing from those unable to pay.”¹⁰⁹

Hakim Ahmadullah Khan Dehlawi composed *Shifa-ul-Majdur* in 1792 and dealt about the treatment of the poxes.¹¹⁰ Maulana Mahmud Alam Bisharat Khani was a native of Rampur but shifted to Hyderabad. He composed *Ilaj-ul-Majdur* in 19th century on small poxes at the request of Maulvi Nasrullah Khan, an officer of criminal court of Hyderabad.¹¹¹ Mahadeva's *Rajasimha Sudhasindhu* in 1787 composed this treatise on

¹⁰⁸ John Zephaniah Holwell, *An Account Of The Manners Of Inoculating For The Small Pox In The East India* in Dharampal (ed.), *Indian Science and technology in the Eightieth Century; Some contemporary European Accounts*, Implex India, Delhi, 1971, pp. 141-42

¹⁰⁹ *Vaccination Reports*, Bombay Presidency, 1874-75, p. 30; *General Department Volumes*, Government of Maharashtra Archives, Vol. 26, 1824, pp.171-180; cf. Mridula Ramanna, “ Indian Response to Western Medicine: Vaccination in the City of Bombay in the Nineteenth Century”, in S.P. Verma and A.J. Qaiser (eds), *Art and Culture; Endeavour in Interpretation*, New Delhi, 1996, p.68.

¹¹⁰ cf. A. Rahman et al, *Science and Technology in Medieval India: A Bibliography of Source Materials in Sanskrit, Arabic Persian*, INSA, New Delhi, 1982, p. 15

¹¹¹ Ms., Mashriqi Kutub Khana Salar Jung, Hyderabad; Persian Manuscripts Catalogue, *Tibb* 163; 25ff, 1869; cf. A. Rahman et al, *Bibliography of Source Materials in Sanskrit, Arabic Persian*, op. cit., p. 135

cowpox and their inoculation.¹¹² But, probably inoculation was not much popular in every part of country. Buchanan visited south India in 1800-1801 and during his visit the epidemic was spreading at Coimbatore that time but there was absence of inoculation and the natives were unknown to Inoculation.¹¹³ In 1837, Donald Butter, a physician visited India and wrote outlines of the topography and statistics of the southern districts of Oudh and wrote that various inoculation was not practiced in Oudh and vaccination was encountered much resistance.¹¹⁴ There was in Oudh the mortality among infant due to smallpox was very low or occasional. He also mentioned that medicine was not given to young child when he suffered with disease but to their wet nurses.¹¹⁵ He further mentioned that due to absence of inoculation, it was noticed that smallpox was visited to the same person many times.¹¹⁶

Europe learnt variolation from Turkish. When lady May Wortley Montagu (1689-1762), the wife of the British ambassador described how Turkish peasant women carried out the inoculation by local technique of mild infections through insertion of matter from smallpox pustules. Now she got her Five-year-old daughter inoculated. On her return in 1718, she introduced

¹¹² cf. A. Rahman et al, *Bibliography of Source Materials in Sanskrit, Arabic Persian*, op. cit., p. 165

¹¹³ Francis Buchanan, *A Journey From Madras Through The Countries Of Mysore, Canara And Malabar*, London, 1807 Vol. I, pp. 249-50, 262, 35; Vol, II pp. 153, 285-86.

¹¹⁴ Donald Butter, *Outline of the Topography and Statistics of the Southern Districts of Oudh and the Cantonment of Sultanpur Oudh*, edited with Introduction by Safi Ahmad, Idarah-i- Adabiyat-i-Delhi, First edition 1839, reprint 1982, New Delhi, p. 169.

¹¹⁵ Ibid.

¹¹⁶ Ibid.

the practice in England,¹¹⁷ and finally, a better method was discovered in 1796 by Edward Jenner (1749-1823). Jenner observed that infection with cowpox gave milkmaids immunity against the far more dangerous to small pox. The inoculation was not with the true smallpox virus but with the cowpox. Vaccination was introduced into India in 1802.¹¹⁸

The cowpox vaccine samples dispatched by Jenner and his colleague around the world after few years of introduction of inoculation for the preventive of small pox in 1798. The British had particular interest to introduce new method of inoculation in India.¹¹⁹ In 1803, Dr. George Keir of the medical establishment of Bombay Presidency published a pamphlet on cowpox.¹²⁰

The superintendent of Deccan, Joseph Glenn, observed that Hindus and village *patels* were particularly opposed to the inoculation. He recorded that Englishman were opposed for inoculation and for this reason the Indian inoculators were encouraged to learn vaccination on a stipend of Rs. 8-9 pr

¹¹⁷ cf. Habib, Irfan, "Inside And Outside The Systems: Change And Innovation In Medical And Surgical Practice In Mughal India", in Deepak Kumar (ed.), *Disease and Medicine in India: A Historical Review*, IHC, New Delhi, 2001, p.71,78; See also Rajesh Kochhar, "The Truth behind the Legend" op. cit., pp. 259-268.

¹¹⁸ Mark Harrison, *Public Health in British India*, op. cit., p. 82.

¹¹⁹ Michael J. Bennett, "Smallpox and Cowpox under the Southern Cross: The Smallpox Epidemic of 1789 and the Advent of Vaccination in Colonial Australia", *Bulletin of History of Medicine*, 83, 2009, p.38. See also idem, "Passage through India: Global Vaccination and British India 1800-05", *Journal. of Imp. Commonwealth History*, 38, 2007, pp.201-20

¹²⁰ S.M. Edwards (ed.), *Gazetteer of Bombay Presidency and Island*, Vol. III, Bombay, 1909, p. 199, cf. Mridula Ramanna, *op.cit.* p.68.

month.¹²¹ But the progress was slow and a proposal was actually made in 1835 to make vaccination compulsory which was subsequently rejected.¹²² There were propagation of benefit of vaccination in Marathi, Gujarati, Kannada and Hindustani and explained about Jenner's discovery of smallpox. The difference between inoculation and cowpox vaccination was emphasized and mentioned that the latter never produced disfigurement, blindness or death.¹²³

Charles Morehead, the principal of Grant Medical College, Bombay recovered his observation on smallpox between 1838 and 1853 pointed out that the incidence of the disease prevailed more in March and April. He also noted that between 1848 and 1853, the total death due to smallpox was 4038 in which 3203 were children under seven years and only 12 Europeans were dead due to this disease out of 1177.¹²⁴ In 1822-23, 3464 persons were vaccinated and the number increased in 1854-5 to 7218¹²⁵ in 7218 includes 4403 males and 2815 females of which 4922 were Hindus, 1289 Muslims, 830 Christians and 177 Parsis¹²⁶ Soldiers were compulsorily vaccinated.¹²⁷

¹²¹ *General Department Volumes*, Vol. 26, 1824, pp223-37, cf. *Ibid.*, p.68.

¹²² *General Department Volumes*, Vol. 40, 1838, p. 170, cf. *Ibid.*, p.68.

¹²³ *General Department Volumes*, Vol.101, 1856, p. 157, cf. *Ibid.*, p.69

¹²⁴ Charles Morehead, *Clinical Research on Disease in India*, London, 1860, pp. 182-190; cf. *Ibid.*, p. 69.

¹²⁵ *General Department Volumes*, Vol. 101, p. 5; cf. *ibid.* p.69.

¹²⁶ cf. *Ibid.*, p.76.

¹²⁷ *Ibid.*, p. 69.

There are several opinions regarding who the inoculators were. Robert Coult says they were Brahmans and physicians of eastern part of India.¹²⁸ Holwell says that they were Brahmans who came from Brindaban, Allahabad and Banaras¹²⁹ and Buchanan says inoculators were of both religious i.e. Hindu and Muslims and all castes and says they belonged to ‘the same lowest dregs of the populace’.¹³⁰ Dr. Francis Buchanan saw variolation in Dinajpur district.¹³¹

However, Deepak Kumar mentioned that Inoculation was the earliest experiment and it involved both coercion and persuasion. Native *Tikadars* (inoculators) and Brahmin were recruited for the purpose of inoculation on large scale. Vaccination and variolation were essentially similar operations.¹³² The religious resistance is clearly evident in the case of small pox vaccination

¹²⁸ Robert Coult, *An Account of The Diseases Of Bengal*, Calcutta, 1731, in Dharampal (ed.), *Indian Science and Technology in the Eightieth Century*, op. cit., p. 141.

¹²⁹ John Zephaniah Holwell, *An Account Of The Manners Of Inoculating For The Small Pox In The East India* in Dharampal (ed.), *Indian Science and Technology in the Eightieth Century*, op. cit., p.143.

¹³⁰ Montgomery Martin, *The History, Antiquities, Topography and Statistics of Eastern India &c*, Vol. II, London, 1838, pp. 690-91; See also F. Buchanan, *An Account of the District of Purnia in 1809-10*, Patna, 1928, p. 187.

¹³¹ Montgomery Martin, *The History, Antiquities, Topography and Statistics of Eastern India &c*, Vol. II, London, 1838, pp. 690-91

¹³² Deepak Kumar, *Unequal Contenders, Uneven Ground; Medical Encounters in British India, 1820-1920*, in Andrew Cunningham and Bridie Andrews (ed.), *Western Medicine as Contested Knowledge*, Manchester University Press, Manchester, 1997, p. 176.

for such religious objections to the secular practices of vaccination were outcome only slowly.¹³³

The methodological way of inoculating small pox was not similar everywhere. He mentioned that there had been tremendous effort to vaccinate this disease, but the vaccination had very little or no reach among the natives. Buchanan noticed it in Shahabad and further informed us that the disease had more recurrence in this place in comparison to Bengal but it was less fatal than in Europe. Therefore, when the fever caused by this disease was hunting the hills without any barriers to repulse them.¹³⁴ Surprisingly about 30 inoculators of the small pox were residing in Shahabad but these were unable to operate. The operators came from the north side of Ganges and there practice of operations became the fast healing ground for small pox.¹³⁵ In the other part of South Bihar, *Gotpachcha* and *Pachaniyas* were responsible for carrying out these inoculations for small Pox. This practice was considered to be the rule of caste.¹³⁶ As it was mentioned earlier that skilled Brahmanas were engaged in its inoculation, People from lower castes disguised themselves as Brahmanas and performed it. Buchanan mentioned that *Mali* (seller of garlands and flowers) who belong to lower caste and disguised

¹³³ See David Arnold, "Smallpox and Colonial Medicine in Nineteenth Century", in David Arnold (ed.), *Imperial Medicine and Indigenous Societies*, Manchester University Press, Manchester, 1988, pp. 45-65.

¹³⁴ Francis Buchanan, *An Account of the District of Shahabad in 1812-13*, Patna, 1934, p.155

¹³⁵ *Ibid.*, p.176.

¹³⁶ Montgomery Martin, *The History, Antiquities, Topography, and Statistics of Eastern India*, op. cit., Vol. II, p.88-89

themselves as Brahmans and engaged in it. Some of the Europeans were also inspired or more correctly impressed by this local spells that they performed these practices without any logical explanation.¹³⁷ People who have no other remedy against small pox and who rely upon prayers for its cure, have great faith on inoculation of smallpox and due to its acceptance by large masses, the practice was flourishing with great success. In fact, due to traditional value no person whose father had rejected this practice of inoculation will give his consent for operating his child. The tribes who performed these operations were *Tikawatch*, *Gotpachcha*, *Basanta chikitsak* and *Pachaniyan*, belongs to lowest dregs of populace owing great similarity to those in Dinajpur. Around 600 to 700 families in this district earn the bread by executing these practices.¹³⁸ In this part of the country the demand of the local inoculators were still at large because inoculation for the small pox was made less progress than Bengal at time of Buchanan's visit to this region.¹³⁹

The fourth phase of European medicine in India covers the period spanning over the nineteenth century. This period, experienced the establishment of Calcutta medical college in 1822 and the abolition of Native medical institution altogether. Importantly, it is noteworthy that the teaching of indigenous and western medical science in vernacular languages also

¹³⁷ Francis Buchanan, *An Account of the District of Behar and Patna in 1811-12* (1-2 vols.); Patna, 1928, Vol. I, p.304.

¹³⁸ Francis Buchanan, *An Account of the District of Purnia in 1809-10*, p.187.

¹³⁹ Montgomery Martin, *op cit.*, p.412 (to confirm)

started. Moreover the trend was intensified between the indigenous and the European practitioners.¹⁴⁰

Shiv Visvanathan divides the development of western science and technology in India from mid eighteenth century onwards into three distinct phases. He noted that the first phase started from the British conquest or annexation of Indian territories in the mid eighteenth century. Visvanathan regards it as the era of the 'great surveys'. During this period a number of surveys conducted which were on topography, statistic and other aspects of the Indian social life. These were based on 'Scientific' outline, not only for the development of science and technology in India but for the development of scientific knowledge in Britain and Europe. William Jones established Asiatic Society of Bengal in 1784 for institutionalization of modern western science in India.

The Second Phase was marked with the introduction of scientific and technical education in India. It was a period of 'Conflict' and 'Competition' in direction of scientific and technical education. The period is also well known for the 'Anglican' and 'Oriental' controversy. The third phase was 'Experimental' which marked the development of scientific institution in Indian society.¹⁴¹

¹⁴⁰ Patti and Harrison, *Health, Medicine and Empire*, op. cit., p.42.

¹⁴¹ Shiv Visvanathan, *Organizing for Science: The Making of an Industrial Laboratory*, Oxford University Press, New Delhi, 1985, pp.8-14; See also Zaheer Baber, *The Science of Empire: Scientific Knowledge, Civilization, and Colonial Rule in India*. OUP, New Delhi, 1992, pp.137-38.

The introduction of western science into India happened over the professionalization and specialization of the discipline in Europe. To develop an understanding over the issues related with health, medical practices and use of various resources needed the intense study for this purpose the establishment of scientific societies started in colonial India from the late eighteenth century onwards. The establishment of Asiatic society of Bengal in 1787 was followed by the establishment Botanical garden at Calcutta in 1787 on the pattern of Ken Gardens in London. The Bombay Literary Society founded in 1804, which later became the Bombay Branch of Royal Asiatic Society. Later many clubs and societies were founded in Calcutta, Madras and Bombay. The Madras literary society was formed in 1818. Various surveys were conducted by the organizations like trigonometric surveys were organized in late eighteenth century.¹⁴² But the middle of the eighteenth century, the alien British government in India established medical services essentially for the benefit of the British nationals, the armed forces, and privileged civil servants.¹⁴³ The Calcutta Medical and Physical Society established in March 1823 which broke the social and professional isolation of the doctors and without any government aid. The society published its monthly circular regularly.¹⁴⁴ These societies started as exclusively for

¹⁴² Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices*, Permanent Black, New Delhi, 2004, pp.10-11.

¹⁴³ N. S. Deodhar, "Primary Health Care in India", *Journal of Public Health Policy*, Vol. 3, No. 1, March., 1982, p.77.

¹⁴⁴ Medical Selections, 1, Calcutta, 1833, pp. iii-iv; cf. Deepak Kumar, *Science and Raj: A Study of British India*, OUP, New Delhi, 1995, Second Edition 2006, p.56.

Europeans and the Indians those were accepted by the Asiatic Society of Bengal till 1829.¹⁴⁵

The Charter Act of 1813 allocated the fund of Rs. one lakh which was to be spent on education for the introduction and promotion of scientific knowledge among the inhabitants of British India.¹⁴⁶ The imperial ethos had already assured Macaulay an easy victory and after the arrival within few weeks he founded the Indigenous Medical System.¹⁴⁷ In 1822, a medical school was opened for the purpose of the training cheaper than getting technical personnel from abroad for local youths.¹⁴⁸ This school was opened as the demands of subordinate health workers grew and school opened and both European and Indian system of medicine was taught. The medical classes were also started at the Calcutta Sanskrit College and Calcutta Madrasa. Similar experiments were conducted in Bombay and Madras as well. In early 1826 a medical school was founded in Bombay by Elphinstone, the governor. The purposes of those schools were mainly the diffusion of medical science among the natives by educating native's youths to knowledge of European system and then sending them into the various districts to practice.¹⁴⁹

¹⁴⁵ Deepak Kumar, *Science and Raj*, op. cit., p.156.

¹⁴⁶ Arthur Howell, *Education in British India*, Calcutta, 1872, p.5; cf. *ibid.*, p. 48

¹⁴⁷ Home Public, no. 15, 7 March 1853, Cf. Deepak Kumar, *Science and Raj*, op. cit., p. 49.

¹⁴⁸ Deepak Kumar, *Science and Raj*, op. cit., p. 51.

¹⁴⁹ Home Public, no. 18, K.W. 18 July 1838, Cf. Deepak Kumar, *Science and Raj*, op. cit., p.

In the late eighteenth century and early nineteenth century England, medical colleges were the only educational establishments to offer some resemblance of a scientific education. Most pursuits of science were thus by men who had graduated in medicine and joined the Indian army as surgeons. Thereafter, their lives followed diverse patterns. Hugh Falconer, was later internationally recognized for his paleontological discoveries, was born in 1808 in Forres, in the north of Scotland. He studied medicine at Edinburgh and also followed of his interest in natural history by studying botany and geology. Acquiring his MD, he proceeded to London and studied 'Indian herbarium' under Dr. Nathaniel Wallich, a British Indian botanist. In the museum of the Geological society of London, he also studied Indian fossils obtained from the bank of the Irrawaddy under one Dr. Lansdale. In 1830 he proceeded to India as surgeon and, in 1831, was posted to Meerut, where he worked with a certain Dr. Royle at the Saharanpur botanical Garden. Later, he was posted in Siwalik Hills, and then in the higher Himalayas. It was here that he collected fossils for several years, the study of which made significant contributions to geological science, these being much lauded in Europe. In 1837 he (and another scientist by the name of Cautley) was jointly awarded the prestigious Wollaston gold medal by the Geological Society of London. Falconer was one among several colonial scientists who began and spent a large part of their scientific careers in a colony and then get high reputation in England. When Falconer went back to England he was a member of the Geological Society, where he read paper on glacial erosion in the Himalayas,

comparing these mountains to other mountain ranges. He played a leading role in raising Europe's geological attention towards the Himalayan ranges.¹⁵⁰

Fredrick Corbyn was among the most important scientists of colonial India. Born in Manchester in 1792, he got his medical degree from London and in 1813 was appointed to the medical service of the Company in its Bengal establishment. In 1814, he joined troops assembled in the Tarai against the Nepalese under General Morley where in 1815 they suffered great losses. In 1818, now serving the twenty fifth regiments, Corbyn found the troops suffered from a disease known as 'Tarai Fever'. In the same year, Corbyn published a tract describing the diseases, its effects and the manner in which he had countered these effects.

From 1818 onwards he wrote regularly on medical matters. In 1819 he gave a short treatise on cholera, followed up the next year by additional observations on the same disease. His stay in the Trai region also enabled him to study its topography, and he was one of the first to discover the tea plant. In 1828, he wrote on the diseases on infants in India, and in 1830 a large work on cholera was published. Four years later he became editor of the *Indian Journal of Medical and Physical Science*. In 1836 he started a new periodical,

¹⁵⁰ Charles Murchison (ed.), *Paleontological Memoirs and Notes of the Late Hugh Falconer*, London, Robert Hardwicke, 1868, vol. I, pp. xxii-xxx; See also Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices*, op. cit., pp.34-35.

Indian Review and *Journal of Foreign Science and Arts*, which he continued to edit along with others till 1842.¹⁵¹

Sir William Brook O'Shaughnessy was famous for his contribution to the Indian telegraph system though he too began his career as surgeon. He was appointed as assistant surgeon in Bengal in 1833. Here he wrote numerous articles on medicine, chemistry and other subjects, while devoting his attention mostly to electric telegraph. Anxious to introduce it in India, he published a pamphlet detailing the results of experiments conducted by him in 1839. He was knighted in 1856 for his efforts in the development of telegraph in India. Earlier he had been elected a Fellow of the Royal Society in 1856.¹⁵² He wrote *Bengal pharmacopeia* in 1844 but the botanical portion was written by Wallich.¹⁵³

Francis Balfour made an important contribution on meteorology's connection with health. He probably received his M.D. degree from Edinburgh. He entered the English east India Company's services in Bengal as an assistant surgeon in July 1769 and was appointed full surgeon in August

¹⁵¹ *Indian Review and Journal of Foreign Science and Arts*, vol. viii, no. 4, 1843, pp. 201-10; cf. Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices*, op. cit., pp.35-36.

¹⁵² Sir Leslie Stephen and Sir Sidney Lee (eds.), *Dictionary of National Biography from the earliest time to 1900*, Oxford, OUP, 1917, vol. xiv, p. 1204; cf. Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices*, p.36.

¹⁵³ cf. Deepak Kumar, *Science and Raj*, op. cit., p.79.

1777. He retired from service in 1807. Balfour interested himself in politics and medicine and also devoted much time to oriental studies.¹⁵⁴

In 1807, James Johnson, the most popular medical writer commented on Climate and diseases in India before 1850 remarked approving of the efforts being made on Helena 'to spread vegetation and plants trees' to increase the availability of moisture.¹⁵⁵

R. Tytler, in March 1817 was directed to take charge of medical duties at Jessore district in Bengal. While here he published a concise narrative of facts connected with cholera which occurred in that district during the months of August and September in same year, and made some observations on its symptoms, causes and treatments. He was also accomplished in anatomy, surgery and mathematics. But the field here he made significant discoveries was electro-galvanism, where he claimed to have made discoveries similar to those of Faraday. He also studied the influence of magnetic geological geometry upon the science of geology.¹⁵⁶

The major process of discovery was done under the Warren Hastings, the translation and rewriting of ancient text by using expertise of Brahmin 'Pundits'.¹⁵⁷ The several European texts were translated into vernacular

¹⁵⁴ Sir Leslie Stephen and Sir Sidney Lee (eds.), op. cit., Vol. I, p.970; cf. Pratik Chakrabarti, *Western Science in Modern India: Metropolitan Methods, Colonial Practices*, op. cit., p.37.

¹⁵⁵ James Johnson, *The Oriental Voyager*, London, 1807, pp.308-02; See also Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origin of Environmentalism, 1600-1850*, OUP, New Delhi, 1995, p. 408.

¹⁵⁶ *Indian Review and Journal of Foreign Science and Arts*. Vol. III, 5 April, 1838, pp. 40-6

¹⁵⁷ *Ibid.*, pp.11-12.

languages. The work of Robert Hopper called *Anatomist's Vade Mecum* was translated into Arabic called *Anis ul Musharrahin*.¹⁵⁸ Tytler had translated in Urdu *London Pharmacopeia*, J. Hutchinson's Bengali tracts on fever and five pages Urdu tracts on foetus composed by him and a tract on cataract in Urdu.¹⁵⁹

The nineteenth century was the period of attentions of British doctors towards the translation work of medical texts. In 1873, Francis Gladwin (though he was not a doctor) translated the work of Nur-ud-din Mohammed Abdullah Shirazi¹⁶⁰ *Ulfaz Adwiyah* into English.¹⁶¹ George Playfair, superintendent surgeon in Bengal Services in 1833 translated the work of Hakim M. Sharif Khan entitled *Taleef Sharif*.¹⁶² In 1844, Dr. R.H. Irvine, a surgeon at Patna wrote a *Materia Medica* for the city.¹⁶³

Our period of study reflects that the both Western and indigenous medicinal system were subjected to trial. War, isolation, cultural exchanges, and climate had expanded and redefined the possibilities of their practices.

¹⁵⁸ Seema Alavi, *Islam and Healing: Loss and Recovery of an Indo-Muslim Medical Tradition 1600-1900*, Permanent Black, Ranikhet, 2007, p.61.

¹⁵⁹ Ibid., p.85.

¹⁶⁰ He was a Personal physician to the Emperor Shahjahan.

¹⁶¹ cf. Seema Alavi, *Islam and Healing*, op. cit., p.130

¹⁶² Ibid., p.131.

¹⁶³ R. H. Irvine, *A Short Account of the Materia Medica of Patna*, Calcutta, 1848, p. 2.