RIVIEW ARTICLE

# The Historical Perspective of Forensic Medicine

Mushtaq Ahmad[1], Md Abdus Samad Al-Azad[2], Zahedul Karim Ahmed[3], Md. Humayun Kabir[4], Golam Mostafa[5], Gulshan Ara[6]

## Introduction :

In an international context, the terms Forensic Medicine, Legal Medicine and Medical Jurisprudence are used synonymously. Medical Jurisprudence is the older term but nowadays Forensic Medicine or Legal Medicine is more commonly used. However, in Bangladesh and India, Forensic Medicine and Medical Jurisprudence are viewed from different perspectives. Here Forensic Medicine is the subject which deals with the medical aspects of law and Medical Jurisprudence is the subject which deals with the legal aspects of medicine[1]. Although present day Forensic Medicine or Legal Medicine emerged as a specialty only in the early part of the sixteenth century, its roots may be traced back thousands of years[2]. Elements of medical ethics, toxicology and evidence of anatomical study by human dissection found in ancient and early civilizations, may be considered to be the foundations of modern day Forensic or Legal Medicine.

## The historical perspective: *Babylonian*

The Babylonian or Summerian civilization existed along the Rivers Tigris and Euphrates and was one of the oldest civilizations in the world. It is believed that the Babylonians were the first to codify the responsibilities of Physicians.

1. Graded Specialist and Head of the Department of Forensic Medicine, Armed Forces Medical College, Dhaka.
2. Graded Specialist, Department of Forensic Medicine, Armed Forces Medical College, Dhaka.
3. Associate Professor, Department of Forensic Medicine, Ibrahim Medical College, Dhaka.
4. Associate Professor and Head of the Department of Forensic Medicine, Holy Family Red Crescent Medical College, Dhaka.
5. Assistant Professor, Department of Forensic Medicine, Dhaka National Medical College, Dhaka.
6. Assistant Professor, Department of Forensic Medicine, Dhaka Medical College, Dhaka.

King Hammurabi (2132-2081B.C.) who reigned for years drew up and elaborated codification of laws including laws for those who practiced medicine[3].

It has been found by studying the inscriptions on clay tablets that various herbs such as aloes, asafetida belladonna, cannabis, cardamom, castor oil, cinnamon, colocynth, coriander, garlic, henbane, mandragora, mint, mustard, myrrh, pomegranate and poppy were used for therapeutic purposes. Evidence also suggests that the Babylonians practiced dissection of animals and performed some surgical operations. They attached much importance to the study of human anatomy as well as the anatomy of animals[3].

### *Egyptian:*

Our knowledge of Medicine in ancient Egypt is derived from certain Egyptian papyri. The

Edwin Smith Papyrus which is a surgical treatise, with case records from the seventeenth century BC, contains information on traumatic and spontaneous bone injuries, eye diseases like trachoma, ulcerating limbs, fatty tumours, intestinal parasites and dysentery, hookworms, amputations, llithotomy, bandaging, cupping, venesection, circumcision and castration. It also contains information about drugs[4]. Physicians were usually priests and they used drugs such as opium hemlock, salts of copper and castor oil.

The Egyptians developed complicated methods of artificial preservation of bodies. Removal of the internal organs was an important part of the embalming process. Although the organs were often torn out and the dissections were ruthless and coarse, the Egyptians had working knowledge of Anatomy[5].

Regulations for the practice of medicine were also found in ancient Egypt. Medical men had to treat patients in a way laid down by earlier physicians and any treatment contrary to this, which led to the death of the patient, resulted in punishment[5].

With the migration of the Greek intelligentsia to Alexandria in Egypt the science of anatomy greatly developed, mainly owing to the subsequent royal sanctioning of the practice of human dissections under the Ptolemies. The Ptolemies are said to have gone into the dissection rooms and taken part in the study of the dead. The impetus given to the medical sciences under the Ptolemies was, however, short-lived. The great library and museum at Alexandria was largely destroyed when Julius Caesar captured Alexandria in 48 BC. However, much of the ancient learning of the Alexandrians was preserved before the destruction and transported in the form of copied manuscripts to many lands including Rome[3, 4, 5].

***Indian:***

The systems of medicine which are indigenous to the soil of India are the Siddha and the Ayurvedic. The Siddha system of medicine is said to have originated in the days of Mohenjodaro of the Indus Valley civilization. It is traceable to the period between 3000 and 5000 BC. Ayurveda is considered the essence of the Vedas. Of the four Vedas viz (a) Rig Veda (b) Ya jur Veda (c) Saama Veda and (d) Atharva Veda the Rig Veda and Atharva Veda are the chief sources of information regarding Medicine during the Vedic period. Sushrutha and Charaka were the earliest writers of medicine in India.

Sushrutha was the son of the famous Vedic priest and singer Visvamitra. He probably flourished in India abut 1000 B.C. in the pre-Buddhist period. The Sushrutha Samhita or Sushruta's Compendium compiled by Sushrutha based on his medical knowledge is held in high esteem as a great authority on Surgery. This was translated from Sanskrit into Arabic in the eight century as Kitab Showsoin-Al- Hind. It was translated into English by U.C. Datta in 1833, by A. Chattapadhya in 1891 and by Rudolph Hoerale in 1897. Translations into Latin were made by Heller and into German by Vullers.

Evidence of medical ethics is found in the Sushrutha Samhita. This is in the from of an Oath which was administered to the qualified medical students.

Evidence of a registration system for medical graduates is also evident from the writings of Sushrutha. According to Sushrutha, dissection

was practiced in ancient India. Sushrutha has given very elaborate instructions for preparing the human body for dissection.

The book Charaka Samhita or Charaka's Compendium is still the standard textbook in Ayurvedic medicine. It was translated from Sanskrit into Arabic in the beginning of the eight century. The Charaka Samhita also includes elements of medical ethics in the form of an oath taken by a student upon completion of his medical studies[3].

***Chinese:***

Although the "Hsi Yuan Lu", a textbook of medical jurisprudence, was published in 1250 AD, evidence of Chinese materia medica goes back about 3000 years BC. which gives information on poisons such as aconite, arsenic and opium[6]. Dissection of the human body was performed, as is evidenced from the following writings of Chi Pai who was one of the founders of Chinese Medicine: "After death the human body may be dissected and observations made as to the size of the organs, the capacity of the intestines, the length of the arteries, the condition of the blood and others"[3].

***Greeko-Roman:***

Hippocrates of Cos (460-355 BC) who is traditionally known as the Father of Medicine, was the first to teach that the cause of disease had to be found by observation and experiment. In ancient Greece, although autopsies were generally not carried out because dead bodies were considered sacred, dissection of animals was carried out and the Greeks had a general knowledge of the position and character of the viscera. Herophilos of Chalcedon, who was born before 300 BC. was according to Pliny the Elder (23-79 AD), the first man to have searched into the cause of disease by dissection of the human body [4,6]. Various poisons including Cannabis indica, Datura stramonium, hyoscyamus and hemlock were known to the ancient Greeks [3, 4, 6].

The Hippocratic oath which forms the foundation of the Geneva Declaration was laid down by Hippocrates nearly 2000 years ago[7]. The greatest figure in Greako-Roman Medicine after Hippocrates was Cladius Galen (130-200 AD). While working in his official capacity as doctor to the gladiators, Galen dissected human bodies and made anatomical studies. However, as Roman tradition did not license necropsy, he was not able to dissect human bodies freely and often dissected monkey and made careful observations on them[3, 4].

The Roman codified many medico-legal matters concerning the insane, the unborn child and personal injuries. The famous Twelve Tables of 449 BC set a period of 300 days as the maximum duration of pregnancy. The Justinian came dating from about 550 AD recognized the status of the doctor as an expert witness[2].

***Islamic:***

Unani Medicine is the system of medicine which developed during the Islamic period. The famous school of Jundishapur in Persia was established by the Nestorian Greeks, who were driven out of their hoes due to Byzantine intolerance. This school was well developed at the time of the rise of Islam in the seventh century and was the main source for the transmission of Greeko-Alexandrian, Indian and Persian medicine to Islam. The subsequent preservation and enrichment of this medicine reached its height during the golden age of

Arabian learing between 750-850 AD, under the enlightened patronage of the Caliphs of Baghdad. During this time the words of Hippocrates, Galen and others were translated into Arabic universities, hospitals and medical schools were established. Learning in general was greatly encouraged [3, 4, 8, 9].

The Sahih of Al Bukhari, which is the most celebrated body of traditions of the sayings and doings of the Prophet Muhammad were collected and arranged according to subjects in the ninth and tenth centuries. This contains two books dealing with medicine and the sick [19]. Later writers, such as Abu Naim (died 1350 AD) and Jalalud-Din Abd'ur Rahman ibn Ai Bakr as-Suyuti (born 1445 AD) compiled the medical teachings of the Prophet. Most of these works share the common title of Tibbun-Nabi or The Prophets Medicine, which contain the following elements of medial ethics: "A skillful doctor, masters his job and is legally accepted by the law and by the patient he treats: If he caused damage to life, or to an organ, or to a function in the body, there is no responsibility here" [10].

During the reign of the Abbasid Caliph Al-Mugtadir in the year 920 AD. a decree was issued which made it compulsory for doctors to pass an examination before being allowed to practice medicine. On qualification, the doctors would take the Hippocratic oath, the wording of which was changed to suit the Muslim doctrine of monotheism [11].

Although human dissections were not widely carried out during the Islamic period, there is evidence of dissection of apes by the celebrated Yuhanna ibn Musawayh. It is recorded in Ibn Ali Usabia's "Clases of Physicians" that a particular species of ape, which resembled man very closely, was supplied to Yuhanna ibn Musawayh by the ruler of Nubia at the command of the Caliph al- Matasin in the year 836 AD. There apes were dissected in special dissecting rooms built on the banks of the river Tigris[9].

Among the medical writers of the Islamic period Ali-ibn Rabban, Aby Bakr Muhammad ibn Zakariyya, Ali ibnul-Abbas and Abu Ali Husayn ibn Abdullah ibn Sina are prominent [19]. Ali ibn Rabban was the oldest medical writer and the Firdawsal Hikmat or Paradise of Wisdom is the most important of his works. This book is divided into seven parts, thirty discourses and three hundred and sixty chapters. Discourse number two of part four deals with injuries of the head. Discourse number ten deals with signs of death and discourse number eleven deals with wounds and bruises[9].

Abu Bakr Muhammad ibn Zakariyya (865-925 AD) called in Arabic "ar Razi" and by the medical Latinists "Rhazes", was universal scholar whose fame in the west became immense and whose authority remained unquestioned till the seventeenth century. His treatise on small pox and measles correctly defined for the first time the difference between small pox and measles. An English version of this treatise was published by the Sydenham Society in 1848 by Greenhill. This was much celebrated in Europe and according to Neuburger, "It ranks high in importance in the history of epidemiology as the earliest monograph on small pox and shows us Rhazes as conscientious practitioner, almost free from dogmatic prejudices, following in the footsteps of Hippocrates". His contributions in the field of chemistry are also noteworthy[10].

Ali Ibnul-Abbas al Majusi (died about 990 AD) known in Europe as "Haly Abbas" wrote

among other things on hold birth and anatomy. This work the Maliki or Liber Regius served as a model for the Liber Pantegni, which belongs to the body of words transited by Constatius Africanus of the medical school of Salerno. The Maliki or Liber Regius consists of twenty discourses. The second and third of these discourses deals with anatomy and the nineteenth deals with surgery [12].

Abu Ali Husayn ibn Abdullah ibn Sina (980-1037 AD) known to the west as "Avicenna" was th most famous of the Persian physicians. His main medical work the Qanun or Cannon is divided into five books. The second book deals with simple drugs arranged alphabetically. The fourth book deals, among other things, with fractures, dislocations and toxicology. Among the medical writers of the western Caliphate in Spain the names of Abul Qasim az-Zahrawi (Abulcasis), Ibn Rushd (Averroes) Ibn Zuhr (Avenzoar) and Maimomides are prominent. Ibn zuhr or Avenzoar as known to the west is of special interest because of his works on pathology [9]. Medical works of the Islamic period were made known to Europe through the Latin tongue as a result of the works of Constanine Africanus, Gerard of Cremona and others [9].

***European:***

Although there was a period of relative non-productivity in the medical field from the twelfth to fifteenth centuries, certain important events took place which had an impact on the future of the forensic sciences[4]. It is said that during the reign of Frederick II (1194-1250) a law was passed permitting dissection. Anatomical dissection become a regular part of university teaching in Bologna during the thirteenth century as a result of the works of Taddeo di Alderetto[4]. Although medico-legal autopsies were carried out at this time, the situation was confusing because of the Christian prohibition of human dissection. As a result, dissections were carried out in a clandestine manner and this continued throughout the fourteenth and fifteenth centuries[5].

In 1507, the Bishop of Bamburg promulgated Bamburg code, which required medical evidence in the investigation of all deaths from violence. Under the Carolinian code of 1532, medical evidence was deemed to be required more frequently by the courts of law in connection with a wider range of medico-legal situations such as homicide, suicide, abortion, infanticide, serious injury, complications of pregnancy and other suspect circumstances[2]. In 1556, the Catholic church gave sanction to human dissection and mentioned that it was a permissible activity as it served a useful purpose[4]. During the rest of the sixteenth century the academic base of legal medicine was beginning to form. Among the various works, those of Ambriose Pare in 1575 and Fidelis of Palermo in 1598 are notable. By the end of the sixteenth century legal medicine was a recognized discipline and was included in the medical curriculum[2].

Among the major developments in the seventeenth century was Paulus Zacchias, "Medico- Legal Questions" published over a period of fourteen years. Towards the end of the eighteenth century professorial chairs in forensic medicine were established in Paris, Montpellier and Strasbourg. By the nineteenth century there was an extensive network of academic medico-legal institutes almost all over Europe. The present day continental system of medico-legal investigation evolved from European practice.

***United Kingdom:***

Academic interest in forensic medicine developed relatively later in the United Kingdom than the rest of continental Europe. The first chair in medical jurisprudence was established in 1807 in Edinburgh[2]. However, inquests on dead bodies were held by the Medical coroners as far back as the twelfth century. Historically the coroner's office was established for preserving the interests of the crown. The purpose of these medical inquests was essentially financial by way of realization of the murdrum. This was heavy fine imposed on the community if the dead person was proved to be a Norman victim of assassination[2, 13].

Over the years, the coroner's role as keepers of the pleas of the Crown-Custos Placitorum Coronas was gradually tailored down to focus on the investigation of sudden, unexpected or unexplained death, giving rise to the present day Coroner's system of medico-legal investigation which is practiced in England and Wales[2]. There are regional differences in the medico-legal practice within the United Kingdom. The most notable among these is the Procurator Fiscal System practiced in Scotland, which has combined features of both the coronial as well as the continental systems[7].

***United States:***

The development of legal medicine as an academic discipline in the United States began in the early part of the nineteenth century. The first professorial appointments in legal medicine were in 1813 in New York[2, 6]. The English Coroners system brought in by the English settlers was replaced or the first time in 1877 by the Medical Examiners system by the Commonwealth of Massachusetts [6, 14]. Subsequently, other states adopted the medical examiners system although the coroners system is still prevalent in some states[2]. In some areas coroners are political appointees.

***Present Context in Bangladesh:***

Present day forensic medicine in Bangladesh originated during the British rule in this subcontinent and its roots may be traced back to the introduction of the civil surgeons who belonged to the Indian Medical Service which was created in 1764 [15]. The civil surgeons are still functional and are responsible for all medico-legal affairs at the district level. In places where medical colleges have been established the medico-legal works are carried out by the academic staff of the Forensic Medicine Departments. In comparison to other disciplines of medical science forensic medicine has fallen behind a little in Bangladesh as elsewhere. However, the recent introduction of post graduate courses in forensic medicine has opened up the doors for future advancement of this subject. It may also be mentioned that a DNA lab has been established in the Forensic Medicine Department of Dhaka Medical College which is currently carrying out DNA analysis of specimens in sexual assault cases. The utility of the DNA lab is becoming evident in the increase in number of cases and the applicability of DNA evidence in the courts of law.

**Conclusion:**

History bears testimony to the importance given to the unique relationship of law and medicine. Present day forensic medicine or legal medicine is the culmination of that unique relationship. Over its journey through time Forensic Medicine has blossomed out to become one the most rapidly advancing

scientific disciplines. Through its various subdivisions it constantly endeavors to assist the judiciary to take right decisions. The current interest in developing forensic medicine in Bangladesh is suggestive of an enlightenment both at the individual as well as national level.

**References:**


1 Reddy KSN. In: The Essentials of Forensic Medicine, 26th Edition. Hyderabad : K. Shaguna Devi, 2007. pp-1

2 Knight B. The development of medico-legal systems In: Mant AK (editor). Taylors Principles and Practice of Medical Jurisprudence, Thirteenth Edition. Edinburgh: Churchill Livingstone, 1994. pp- 11

3 Bhatia SL. In: A History of Medicine with Special Reference to the Orient. New Delhi, India: 1977. pp- 39.

4 Long ER. A History of Pathology. New York, USA Dover Publications, INC.. 1965. pp- 184-189.

5 Hill IR. The History of the Autopsy in Foresic Odontology, - Its Scope and History. The Old Swan, Swan Lane, Marsh Gibbon, Bicester, 1984. pp 17-34.

6 Camps E, Robinson AE, Lucas BG. Gradwhol's Legal Medicine, Third edition. Bristol: John Wright and Sons Ltd, 1976. pp- 53.

7 Knight B. In: Legal Aspects of Medical Practice, Fifth edition. Edinburgh. Churchill Livingstone, 1992. pp- 44.

8 Nasr SH. In: Islamic Science: An Illustrated Study. London: World of Islam Festival Publishing Company Ltd, 1976. pp- 20.

9 Browne EG. In: Arabian Medicine. Cambridge, 1921. pp- 5-16.

10 Jawziyya IAQA. In: Ahmed S (editor). Al Tibb-Al-Nabawi. Jeddah: Saudi Arabian Publication, 1984. pp- 47.

11 Taha A. In: Medicine in the light of the Quran and Sunnah. London: Ta-Ha Publishers Ltd, 1993. pp- 120.

12 Schacht and Bosworth. In: The Legacy of Islam. London : Oxford University Press, 1974. pp- 72.

13 Hill IR. The Coroner-12th and 13th century developments of the office. Medicine, Science and the Law, 1990: 30:2.

14 Helpern M, Knight B. In: Autopsy. London: The Paperback Division of W. H. Allen & Co, 1982. pp- 14.

15 Ahmad ZK, Swapon MR. Medico-legal practice in Bangladesh : Past, present and Future. Journal of Dhaka Medical College 2001; 10: 118-123.