## 4. Medicine in the Mamluk society

### *4.1. Graeco-Islamic medicine*

When the Muslims conquered the Byzantine and Sasanian lands in the 1st/7th century, they became acquainted with the Greek medicine practised by the Syrian Christians. Obviously Galenic medicine proved to be more effective and versatile than the traditional practices of the Arabs and it gained popularity among the Muslim rulers, who therefore attached Christian doctors to their courts. The Galenic texts the doctors used were Syriac translations from the original Greek. These translations into Syriac had begun in the 6th century AD and continued after the Islamic conquest. These texts were subsequently translated into Arabic. The first translations were already made in the 1st century after Hijra,[125] but most of the translations were made in the early ʿAbbasid era. Translations were not only made from Syriac but also from Greek and Pahlavi.[126] The Muslim notables supported these activities, because the existence of Arabic medical texts was a prerequisite for the education of Muslim doctors, who could then reduce Christian control over medicine.[127] This goal was eventually achieved and after the 4th/10th century the majority of the doctors were Muslims and the language of the medical science was no longer Greek or Syriac but Arabic.

The medical theory taken over by the Muslims was based on the teachings of Hippocrates as systematized by Galen. The Muslims elaborated the Galenic system and clarified its ambiguities thus creating a Graeco-Islamic[128] medical theory. According to this theory all things were composed of four elements (*arkān*): fire, air, water and earth. Fire was a hot substance, air was moist, water cold and earth dry. The mixture of the elements was called temperament (*mizāj*). If the elements were present in equal proportions, the temperament was balanced, whereas if the proportions were unequal, it was unbalanced: it was hot if the fiery element dominated; hot-wet if fire and air dominated together, etc. Each individual had his own temperament depending on his age, sex, habits, profession, and the climate of his native area. Man's organs were created from the 'daughters of the elements' (*banāt al-arkān*), i.e. the four humours: yellow bile, blood, phlegm and black bile. Each of them had a cor-

125 GAS, vol. 3, pp. 5f.

126 Ullmann 1978, pp. 8-19.

127 Dols 1989, pp. 51f.

128 I have chosen to use the term 'Graeco-Islamic' and not 'Islamic', which is often used, because I do not want to confuse it with the Prophet's medicine, which I will describe later on as an Islamic form of medicine.

responding quality:

| **elements** | **humours** | **qualities** |
|---|---|---|
| fire | yellow bile | hot and dry |
| air | blood | hot and wet |
| water | phlegm | cold and wet |
| earth | black bile | cold and dry |

In a healthy individual the humours were in balance and had their natural quality. Illness was a state where the humours were unbalanced or their quality had changed.[129]

Life was maintained by the innate heat (*ḥarāra gharīzīya*), which was contained in the heart. The innate heat was nourished by spirits, pneumata (*arwāḥ*).[130] The human body contained three types of spirits: natural, animal and psychic, which supported three corresponding faculties that governed the physiological processes in the body. Both the natural spirit (*rūḥ ṭabīʿīya*) and the natural faculty (*qūwa ṭabīʿīya*) originated in the liver and were carried along the veins to the organs, which thereby received the faculty to grow, procreate or attract nourishment. The animal spirit (*rūḥ ḥayawānīya*) and the animal faculty (*qūwa ḥayawānīya*) originated in the heart and maintained the life in the organs through arteries. The psychic spirit (*rūḥ nafsānīya*) and psychic faculty (*qūwa nafsānīya*) originated in the brain and were carried by nerves to the organs and enabled man to think, sense and move.[131]

Because illness was defined as a state of humoral imbalance, the purpose of therapy was to restore the balance. First the doctor had to determine the natural temperament and humoral balance of the patient and then find the correct treatment to correct the imbalance. The therapy was allopathic: if a disease was considered 'hot' it was treated with 'cold' remedies. All drugs, foodstuffs and drinks were analysed to determine their qualities and effect on humours. The foundation of the Graeco-Islamic pharmacology was Dioscorides' *Materia medica* enlarged by the medieval pharmacologists.[132]

The purpose of medicine was not only to restore health but also to maintain it. Each individual could protect his health by living a life suitable for his temperament. If a man had a balanced temperament, he had to take care to be moderate in movement and rest, eating and drinking, sleeping and waking, excretion and retention of superfluities and in passions. If the natural temperament deviated from the balanced, the optimal way of life had to be modulated accordingly. For example, a man with a fiery temperament was advised not to indulge in physical activities, because they would only increase the heat in his body already hot by nature and cause damage. Instead, it was recommended that he rectify his hotness by leading a relaxed life.[133]

129 Ullmann 1978, pp. 56-58.

130 Dols 1984, p. 20. Ullmann 1978, p. 65.

131 Ullmann 1978, pp. 60-63. Klein-Franke 1982, p. 79. Dols 1984, pp. 20f.

132 Dols 1984, p. 15.

The best-known representatives of Graeco-Islamic medicine, such as Muḥammad ibn Zakarīyā' al-Rāzī, Ibn Sīnā and Ibn Zuhr, lived during the so-called golden age from the 10th to the 12th century but some important doctors also lived at later times. The most famous doctor of the early Mamluk era was Ibn al-Nafīs (d. 687/1288), who functioned both as a physician and a teacher in Damascus and Cairo. He was highly esteemed in his own time and was even called 'the second Ibn Sīnā'. In his commentary to Ibn Sīnā's *al-Qānūn*, Ibn al-Nafīs expressed his own views on blood circulation opposing the accepted Galenic doctrine and is credited as being the first one to describe pulmonary circulation. His pupil, the Syrian Ibn al-Quff (d. 685/1286), made a further contribution to the theory of blood circulation postulating the existence of capillaries between the arteries and veins.[134]

## *4.2. Medical education and profession*

In Islamic society the study of the Koran, hadiths and law was given priority. It was also necessary to study grammar and literature in order to understand the language of the Koran and hadith better. These subjects were first taught in mosques and later in colleges (*madrasa*). Another group of sciences consisted of the so-called 'sciences of the Ancients' meaning the Greek sciences, among them medicine. The *madrasa*s were financed by pious foundations (*waqf*), which did not support teaching of subjects containing non-Islamic elements. This provision excluded sciences of pagan origin, such as philosophy and natural sciences, from the curriculum. Being one of the foreign sciences, medicine was thus taught privately in the teacher's home or in the *madrasa* but outside the official curriculum and without the financial subsidies given to students and teachers of the religious sciences. Therefore the student had to combine his medical studies with the study of religious sciences if he wanted to secure himself a stipend in a *madrasa*.[135]

It seems that during the Mamluk period medicine was not strictly excluded from the curriculum of the *madrasa*. The Egyptian historian al-Maqrīzī mentions that the Mamluk Sultan al-Malik al-Manṣūr Qalāwūn established al-Madrasa al-Manṣūrīya, which in addition to religious sciences also offered lectures on medicine. al-Maqrīzī further informs us that Sultan Lājīn, after restoring the mosque of Ibn Ṭūlūn, appointed teachers to lecture on *fiqh*, *tafsīr*, hadith and medicine at the mosque.[136] According to the *waqf* document of the Ibn Ṭūlūn mosque, stipends were given to ten medical students.[137] Medicine was also taught at the mosque-*madrasa* of Sultan al-Ḥasan (d. 762/1361), possibly also at the mosque of Amir Shaikhū (d. 758/1357) and the complex

133 Ullmann 1978, pp. 97f.

134 Ullmann 1970, pp. 172-177.

135 Makdisi 1981b, pp. 77-79. Dols 1984, p. 26.

136 al-Maqrīzī, al-Khiṭaṭ, vol. 4, p. 41 (mosque of Ibn Ṭūlūn) and p. 218 (al-Madrasa al-Manṣūrīya).

137 Behrens-Abouseif 1987, p. 8.

of Sultan Barqūq (d. 801/1399).[138]

There were also schools specializing in the teaching of medicine. The first medical schools were founded in Baghdad in the 6th/12th century and in Damascus and Cairo in the 7th/13th century.[139] There were three medical schools in Damascus, which were all endowed by wealthy physicians. al-Madrasa al-Dakhwārīya was founded 622/1225 by Muhadhdhab al-dīn al-Dakhwār (d. 628/1230), an influential doctor and teacher.[140] al-Madrasa al-Dunaisirīya was founded by the Shafiʿite jurist-physician ʿImād al-dīn al-Dunaisirī (d. 686/1287) and al-Madrasa al-Lubūdīya al-Najmīya in 664/1266 by the bureaucrat and physician Najm al-dīn ibn al-Lubūdī (d. 670/1271).[141]

Theoretical and practical medicine was further taught in the hospitals. The big hospitals had traditionally contained lecture rooms and libraries for teaching purposes. It seems that during the Mamluk period the hospitals did not contribute much to medical education. A lecture room is mentioned as a part of the Manṣūrī hospital founded by Sultan al-Malik al-Manṣūr Qalāwūn in Cairo, but the *waqf* deed mentions only one teaching position, and no stipends for students are mentioned.[142] This can be contrasted with the stipulations for the shrine, *qubba*, which, like the hospital, was a part of the Manṣūrīya complex. Fifty Koran readers were employed to recite the text day and night in the *qubba*, teachers were employed to teach *tafsīr* and hadith, and stipends were given to thirty students.[143]

Probably the most usual way of acquiring medical training was to become an apprentice to a practising doctor. The biographical dictionaries of physicians show that medicine was a hereditary profession. The medical practitioners formed dynasties with several generations of physicians. Therefore a common form of education was for the son to learn the trade from his father. The *dhimmī*s in particular must have learned their trade largely through apprenticeship, because they were excluded from attending courses at the *madrasa*. Also the Manṣūrī hospital was closed to the *dhimmī* students.[144]

The Mamluks have been credited with supporting Muslim learning, but their support was clearly confined to the religious sciences. The teaching of medicine was for the most part left to the physicians themselves. They transmitted their practical experience and theoretical knowledge to their apprentices. It was not the Mamluks but wealthy physicians, who founded the schools specialized in teaching medicine. The

138 ibid., p. 8.

139 Dols 1984, p. 26.

140 IAU vol. 2, p. 244. Meyerhof and Schacht 1968, Introduction, p. 10.

141 Makdisi 1981b, p. 313, note 38. IAU vol. 2, pp. 267-270 (al-Dunaisirī) and 185-189 (al-Lubūdī). al-Iʿlām, vol. 6, p. 183 (al-Dunaisirī) and vol. 8, p. 165 (al-Lubūdī). The teaching of medicine at al-Lubūdīya is mentioned in Ibn Kathīr, al-Bidāya, vol. 13, p. 262.

142 al-Maqrīzī, al-Khiṭaṭ, vol. 4, p. 260. Behrens-Abouseif 1987, p. 9.

143 al-Maqrīzī, al-Khiṭaṭ, vol. 4, p. 261.

144 "The foundation deed of the Qalāwūn hospital states that no Jew or Christian should be allowed into the foundation either as physician or as patient, nor in the administration" (Behrens-Abouseif 1987, p. 12). This implies that dhimmī students were not accepted either.

Mamluk investments in educational institutions were channelled to the *madrasa*s, only some of which offered teaching in medicine. The *madrasa*s primarily saw to the religious learning, the prominence of which was criticized by Ibn al-Ukhūwa (d. 729/1329) in his book on *ḥisba*—the control of the professions and public morality. Ibn al-Ukhūwa complained that the country was overcrowded with jurists, but medicine was mostly left to the *dhimmī*s. The reason why the Muslims neglected medical studies was according to him that religious studies gave better career opportunities and higher prestige among one's peers. He saw this as a vanity and prayed God to deliver the Muslims from it.[145]

### *4.2.1. The curriculum of medical studies*

The model of medical education was the curriculum of the Alexandrian school. Alexandria had been a centre of medical education in Byzantium and the school survived until the early 2nd/8th century. To begin with, the student was expected to learn grammar, logic, arithmetic, geometry, astrology, ethics, and the compounding of drugs. After mastering these subjects, he proceeded to study Aristotle's books on logic and Hippocrates' and Galen's books on medicine, all in Arabic translations. In order to be recognized as a well-educated physician, the student had to complete the whole curriculum.[146] Ibn Buṭlān (d. 458/1066) has described the abilities of a physician:

> You know that the excellent Galen has explained in a monograph that the physician is a man in whom all the excellent qualities are perfected; they are: (the knowledge of) the mathematical, the natural and the theological sciences; moreover (the possession of) the arts of Logic and Medicine, good actions and a beautiful character. (You know) further that he who is perfect in Medicine, but defective in one of the other branches, is not a physician (*ṭabīb*), but a mere medical practitioner (*mutaṭabbib*); and that he who is still not perfect in the medical art, is a mere student who does not even merit to be called a medical practitioner.[147]

In addition to the texts of Hippocrates and Galen, also books written by famous Graeco-Islamic doctors were studied. Among these, Ibn Sīnā's *al-Qānūn fī al-ṭibb* (The canon of medicine) and al-Rāzī's *al-Ḥāwī fī al-ṭibb* (The comprehensive book on medicine) were the most appreciated. also very popular were the many medical handbooks and treatises on particular illnesses written specially for students.[148]

In medicine as well as in the other fields of study, the text books were usually memorized by the student. ʿAbd al-Laṭīf al-Baghdādī (d. 629/1231) advised the student: "When you read a book make every effort to learn it by heart and master its meaning. Imagine the book to have disappeared and that you can dispense with it,

145 Ibn al-Ukhūwa, Maʿālim al-qurba, p. 166.

146 Dols 1984, pp. 3f and 27f.

147 Meyerhof and Schacht 1937, pp. 112f. Quoted in Hau 1979, p. 176.

148 Leiser 1983, pp. 62-64.

unaffected by its loss."[149]

The education of doctors also included practical training. Those who studied in hospitals or as apprentices of doctors naturally gained a lot of practical experience, but also those who received a more theoretical training in the class-room were expected to spend a period practising under the surveillance of an experienced doctor. This was not so relevant for those medical students who concentrated on medical theory as an intellectual discipline. This was in accordance with the Hellenistic tradition, where theoretical studies were often kept separate from practice. In the Islamic era the complete exclusion of the practical application of medicine was less usual.[150]

The lists that contained the standard books a medical student should master did not include books on the Prophet's medicine but only Galenic texts. Throughout the Middle Ages there were religious scholars who were also famous for their knowledge of medicine.[151] Even though medicine was usually outside the regular curriculum of the mosques and *madrasa*s, it did not prevent legal and religious scholars from being interested in medicine and even teaching it. Obviously medicine was not considered un-Islamic in the same way as philosophy was, because many hadiths showed that the Prophet had approved of it.

Medicine could even be taught in religious establishments as a part of hadith studies. For example, Ṣadr al-dīn ibn al-Wakīl (d. 716/1316) is reported to have taught medicine under the guise of hadith.[152] It is possible that the medicine thus taught included the medicine of the Prophet. It is reasonable to assume that a hadith scholar teaching medicine took up the medical traditions of the Prophet, explaining and analysing them in the light of the current medical theory. The various collections of medical hadiths and the books on *al-ṭibb al-nabawī* must have been their natural text books. al-Dhahabī's and Ibn al-Qayyim's systematized accounts of the Prophet's medicine could well have been used by religious scholars to propagate a medical system that accepted the theoretical basis of Graeco-Islamic medicine but at the same time respected the values of Islam.

The Prophet's medicine may indeed have formed a part of the medical curriculum as Seyyed Hossein Nasr has claimed,[153] at least in the cases where the tutor was a scholar of religious sciences, and the subject was taught at the theoretical level. It is likely that it did not occupy as prominent a place in the teaching curriculum of the medical colleges or hospitals. On the other hand, it is possible that the Prophet's sayings were taught to Muslim students in order to show them that the Prophet had

149 IAU, vol. 2, p. 209. The passage is translated in Makdisi 1981b, p. 89.

150 Dols 1984, pp. 22, 31 and 38.

151 Ibn Abī Uṣaibiʿa's biographies of famous doctors sometimes state that a person was both a jurisconsult and a doctor, e.g. Afḍal al-dīn al-Khūnjī, the chief *qāḍī* of Egypt (d. 646/1248) (IAU, vol. 2, p. 120) and Rafīʿ al-dīn al-Jīlī, the chief *qāḍī* of Damascus (d. 641/1244) (ibid., p. 171).

152 Makdisi 1981b, p. 78.

153 "Moreover, the Medicine of the Prophet became the first book to be studied by a medical student before he undertook the task of mastering the usual compendia of medical science" (Nasr 1968, p. 193). Unfortunately S. H. Nasr does not give any references to the sources on which he bases his statement.

encouraged the study of medicine and approved of the use of medicaments.[154]

### *4.2.2. Supervision of the physicians*

Medical education in the Middle Ages was not institutionalized. The student could choose between an apprenticeship, independent studies or attending lectures at a hospital or a medical school. There were no formal generally applied examinations for physicians, nor did they need an official licence to practise. Authorizations (*ijāza*) were given to students by their teachers, but they were not general certificates of completed medical studies: they merely gave the student the right to transmit further the medical texts he had himself memorized. Similar practice was observed in legal studies.[155] These *ijāza*s were not necessarily seen as proofs of the physician's abilities. Ibn al-Ḥājj warned against relying on them, because they could be obtained even by inexperienced youngsters. Therefore he did not consider the *ijāza* to be any kind of guarantee of qualified treatment.[156]

Charlatans were a constant problem and some control measures were necessary. The supervising of the medical profession seems to have been one of the duties of the chief physician (*raʾīs al-aṭibbāʾ*) who was appointed by the sultan or the governor and was associated with the royal court.[157] The doctors were also controlled by the market inspector (*muḥtasib*), who was usually a jurisconsult (*faqīh*).[158] It was the inspector's duty to oversee the market place and the moral behaviour of Muslims. His duties were outlined in books on *ḥisba* and included the control of medical practice and the exacting of penalties for malpractice. According to the Egyptian *ḥisba* book by Ibn al-Ukhūwa, doctors took the Hippocratic oath before the *muḥtasib*. The book also names the medical texts on the basis of which the *muḥtasib* should examine the doctors. The *muḥtasib* had to be competent in law, but had hardly received any education in medicine. Therefore his task of supervising doctors must have been difficult and not really very effective.[159]

The *muḥtasib* seems only to have controlled the independent physicians, because the handbooks do not mention anything about hospitals.[160] During the Mamluk era the

154 al-Dhahabī interpreted the Prophet's words "God did not give an illness without giving it a cure" as an injunction to study medicine (DH, p. 156).

155 Leiser 1983, pp. 71-75. Dols 1984, p. 32. According to Gary Leiser, there were occasional examinations but the procedure was arbitrary (Leiser 1983, pp. 67f and 71).

156 Ibn al-Ḥājj, Madkhal, vol. 3, p. 91.

157 Leiser 1983, p. 72. Lapidus 1967, p. 96. Petry 1981, p. 67.

158 Cahen and Talbi 1971, p. 488.

159 Ibn al-Ukhūwa, Maʿālim al-qurba, pp. 167-169. Klein-Franke 1982, p. 51. Leiser 1983, p. 72. Dols 1984, pp. 33f.

160 Michael Dols suggested that the reason for the absence of hospitals from the *ḥisba* books was their non-public legal status as *waqf* endowments (Dols 1987, p. 387). I do not think this could have been the reason, because public baths (*ḥammām*) were also *waqf* endowments, but their supervision was the duty of the *muḥtasib*. The difference between the baths and hospitals was that the

financial control of each hospital was in the hands of a controller (*nāẓir*), who was appointed by the sultan. The controller did not have a medical education but was chosen on purely political grounds. The keen interest the ruler showed in the hospitals was based on the large revenues the hospitals had at their disposal.[161] The close contact between the ruler and the hospitals may also have affected their medical supervision, and it is therefore possible that it was the duty of the chief doctor associated with the court to control the standard of treatment at the hospitals.

Capable medical practitioners were respected for their knowledge in the art, and medicine was in general considered to be useful and beneficial to everybody. Doctors were entitled to be paid for their services, but there were no fixed fees. They varied according to the economic status of the patient. Physicians were generally considered to be greedy and some of them were criticized for concentrating on rich patients, even though medical ethics demanded that the poor had to be treated as well.[162] However, physicians who became rich and influential by serving the rich and the ruling class were exceptions. Most got their livelihood out of the practice, but their level of income was hardly higher than that of the average shopkeeper.[163]

## *4.3. Medical treatment*

The first Muslim hospitals had been founded in the early ʿAbbasid era in Baghdad. Since then it had become a custom for the rulers to establish and patronize hospitals as an act of charity. The hospitals received their funds from pious foundations (*waqf*), which covered the salaries of the personnel and the cost of medication. Patients were treated free of charge. The level of amenities offered to the patients varied depending on the stipulations of the *waqf* and on its value. The hospitals were situated in the major towns and due to the royal patronage they were often monumental complexes offering a variety of medical services.[164]

The most famous hospitals of the Mamluk era were the Nūrī hospital in Damascus and the Manṣūrī hospital in Cairo. The Nūrī hospital had been founded by Nūr al-dīn ibn Zangī in the 6th/12th century. In 675/1276 the Mamluk Amir al-Malik al-Manṣūr Qalāwūn visited Damascus and was suddenly taken ill. He was treated by medicaments brought from the Nūrī hospital and quickly recovered. He then visited the hospital and was very impressed by what he saw. al-Malik al-Manṣūr Qalāwūn made a vow that if he ever became sultan he would make provisions to build and run a hospital. And so a few years after becoming sultan he founded the Manṣūrī hospital, which was completed in 683/1284. It was a large establishment containing wards for

endowments supporting the *ḥammāms* were much more modest than those of the hospitals.

161 Petry 1981, p. 141. The largest budget was that of the Manṣūrī hospital. Its orginal endowment yielded nearly one million dirhams (ibid., pp. 216 and 332).

162 Dols 1984, pp. 37f.

163 Rosenthal 1978, p. 484.

164 Dols 1987, pp. 386f.

the treatment of different diseases. Men and women were cared for in separate sections.[165] The sultan had established a foundation that yielded one million dirhams per year for the running costs of the hospital. The value of this original donation gradually dwindled due to inflation and inroads on the foundation capital, but this was compensated for by further funds contributed by private persons and rulers so that the Manṣūrī hospital kept its position as the most important hospital in Cairo throughout the Mamluk period.[166]

The hospitals were charitable institutions, and the in-patients were mainly poor people, who either did not have a family or whose families were unable to care for them.[167] This view is confirmed by the practice carried out at some hospitals of giving extra alms in the form of money and new clothes to each patient at the moment of discharge.[168] In the Manṣūrī hospital the patients who had been cured of mental disturbances were given five gold pieces when they were discharged, so that they did not immediately have to return to hard labour.[169] These kind of financial considerations would not have been necessary if the patients had been wealthy.

Hospitals were not the usual source of medical help for the majority of the population, who were treated at homes, where the choice of the type of treatment was also made. Graeco-Islamic medicine was not the only acceptable method of treating illnesses. Probably depending on the nature of the illness and the diagnosis, the choice of treatment was made between home remedies, a physician's advice, prayers, visits to the graves of holy men, etc. out of a large variety of existing alternatives.[170] One of these alternative treatments was the medicine of the Prophet, which combined the well-known humoral concepts of Graeco-Islamic medicine with the religious act of following the example of the Prophet. It must have been the choice of treatment of many Muslims, who felt that the physicians did not concern themselves with the spiritual well-being of the patient and, in their concentration on the humours and temperaments, forgot the salvation of the soul.

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165 The complex, which also included the Manṣūrīya *madrasa*, is described in al-Maqrīzī, al-Khiṭāṭ, vol. 4, pp. 259-263.

166 Petry 1981, p. 219 and p. 433 note 36.

167 Dols 1987, p. 370.

168 Rahman 1987, p. 68.

169 Dols 1992, p. 172.

170 Dols 1984, p. 39 and Dols 1988, p. 421. On the powers of the saints, cf. Kriss & Kriss-Heinrich 1960, vol. 1, index s.v. *ziyārāt*, Heilungswunder, Grabkult. The popularity of visiting graves in the Mamluk period is attested by Ibn Taimīya's and Ibn al-Qayyim's condemnations of the practice. Ibn Taimīya's views on the saint worship and grave cult are described and analysed in Olesen 1991. Ibn al-Qayyim's book Ighāthat al-lahfān contains an extensive discussion of visits to graves as an innovation (*bid'a*). Ibn al-Qayyim mentioned that in Damascus people visited a certain well, a pillar and a tree in order to gain health (Ibn Qayyim al-Jauzīya, Ighāthat, vol. 1, p. 229).