

Magico-medical treatment in Ancient Egypt:

An overview of the magical and medical treatment of disease in ancient Egypt
using mummies, medical papyri and modern research



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Ancient Egypt has been a place of mystery throughout much of the modern world. Until Champollion deciphered the meaning of hieroglyphs at the end of the 19th century little was known about this awe-inspiring culture and its ruins. This dissertation will be examining the wealth of information still available today, from examinations of mummies through to the medical papyri and ingredients themselves in order to determine if ancient Egyptian medicine was effective at treating disease.

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Introduction

The ancient Egyptians had access to a vast array of ingredients that could be used in medicine thanks to the location of Egypt on the Nile river and their trading links which expanded into much of Africa and reached as far east as India (David 2017). As a culture, ancient Egypt spanned almost three millennia, and several of the main medical papyri that survive today come from the Middle and New kingdoms, and even some of these are believed to be copies of much older papyri. In this respect it can be argued that the ancient Egyptians had the world's first medical practice. This likely came about out of necessity, since the location of most settlements were on the banks of the river Nile, which was teeming with disease. Chronic and debilitating diseases such as schistosomiasis are believed to have plagued a large percentage of the population (Aboelsoud, 2010), but despite this the culture of ancient Egypt continued to flourish and they built great temples, cities and tombs. They are responsible for the construction of the only surviving wonder of the ancient world, the great pyramid, which is a testament to their perseverance and skill.

To have been able to create such marvels and maintain cultural, political and military dominance over their part of the world means that disease, while prevalent, must have been managed so that it was not able to severely affect the population.

For despite the fact that magic and ritual played an incredibly important role in ancient Egyptian healing it is often unknown that a number of their medicines and pharmaceutical practices were effective, and recent research by groups such as the Pharmacy in Ancient Egypt Project and Manchester Egyptian Mummy Project and individuals who champion this research such as Dr Rosalie David, have discovered that some of their medical expertise is just as useful as treatments used in Western medicine today.

Today we know the names of Pharaohs, Queens, priests, and even their religious beliefs which have all been translated and written down. Despite being translated however; one area of ancient Egyptian knowledge is often overlooked; their skill with medicine. The ancient Egyptians' religious beliefs were interwoven so tightly with their daily life that it can be seen influencing

every aspect of society, and therefore it is often assumed that their medical knowledge was primarily magical in nature. While it is true that magic played a vital role in ancient Egyptian healing it was often a supplement to real medicine. However, it can be debated that some of the medicine in ancient Egypt was wholly ineffective, since it utilised unconventional ingredients such as animal faeces, lead and hair (Aboelsoud, 2010).

Disease would have affected a large majority of the ancient Egyptian population, and this dissertation will be using mummies as case studies for specific diseases. The diseases schistosomiasis and dracunculiasis have been selected to be looked at in-depth, focusing on the mummies of the two brothers and mummy 1770 respectively. It will also be looking at other diseases that would have been prevalent during the time of the Pharaohs.

The ancient Egyptian physicians were not one unified group, as there is evidence that several different priestly factions all occupied medical roles (see chapters 2.2 and 2.5). The role of the temples, in particular the House of Life, will be examined. There is evidence that suggests these places sometimes functioned as a place where physicians could work. The statue of Udjahorresnet shows this evidence.

In an effort to understand the ancient Egyptian medical profession it is important to look at both the magical and medical aspects of treatment. As well as the benefits these could give the difficulties must also be examined, whether that be due to the uncertainty of translation or the fact that any remedies given would merely give the illusion of a treatment. This can be summed up in the three categories ancient Egyptian physicians used when diagnosing a patient. I can treat this, I can contend with this and I can do nothing for this (Pinch 2010).

The ancient Egyptians believed that some ingredients used in treatment had magical abilities or were held sacred as they were associated with particular deities.

The fact that magic and medicine were utilised together is no coincidence. The ancient Egyptians attributed many of the diseases they suffered from to supernatural entities in an effort to explain them. It also links into the theme of duality that is woven throughout all aspects of ancient Egyptian life. The goal of

the ancient Egyptians was to uphold and preserve Ma'at (balance), and disease was seen as an imbalance that threatened it within an individual's own life.

This dissertation will give an overview of how the ancient Egyptians perceived disease, as well as the steps they took, both magical and medical, to combat it. By examining the mummies of individuals who suffered from disease, as well as any possible treatments that could have been attempted, it may be possible to determine if ancient Egyptian medicine was effective. While this will be touched on in this dissertation it will not be its main focus.

Disease and its evidence in mummies

'In the archaeological and textual record of ancient Egypt there are many references to disease and the various agencies which cause disease processes.' (Forshaw 2014).

Due to the climate and location of settlements in ancient Egypt, disease was very prevalent, however despite the almost endemic nature of disease in ancient Egypt, they had a flourishing and successful culture that spanned almost three millennia. To understand how Egyptian culture managed to flourish, it is important to look at the diseases they suffered from and the medicine they used to combat them. Understanding the ancient Egyptian medical process is arguably very important to fully understanding the daily life of ancient Egypt, since without this knowledge it may be impossible to determine how the ancient Egyptians managed to create such a long-lasting civilisation.

Thanks to the burial customs of the ancient Egyptians and the climate of Egypt itself, human remains tend to be very well preserved and offer archaeologists a wealth of information about the past. Egyptian mummies have been examined for many years in order to gain better insight into their daily lives, and therefore evidence for several diseases have been found. The ancient Egyptian custom of mummification has allowed for a much better rate of preservation of tissue. It should be noted however that the majority of mummies available for study today come from the nobility and priesthood, or members of the various royal families. This arguably means that the information we can glean from them is not representative of the ancient Egyptian population as a whole, since they

make up a wealthy minority who may not have suffered from the same illnesses as the majority of the population.

As mentioned by Sandison and Tapp (1998) the chief literary sources on disease in ancient Egypt are the Ebers, Edwin Smith and Kahun papyri. This dissertation will mostly be utilising evidence from the Ebers papyrus, as this is the only one of the three that specifically deals with disease, as the Edwin Smith papyrus mostly contains methods on treating trauma and the Kahun papyrus concerns itself with gynaecological disorders.

Schistosomiasis and the Two Brothers

By utilising the information of two diseases, $\text{C}3\text{C}$ disease and AAA disease it has been determined that these two diseases are actually schistosomiasis. This is known thanks to the KNH Centre for Biomedical Egyptology listing schistosomiasis as also being named AAA disease. The author of this dissertation also noted that Zucconi (2013) mentions a disease known as $\text{C}3\text{C}$, which is also listed as AAA disease. It can therefore be assumed that these diseases are one and the same.

Sandison and Tapp (1998) mention the fact that schistosomiasis was not recognised until 1851, which suggests that the ancient Egyptians were unlikely to have identified it themselves. Therefore, it can be assumed that this is one of the reasons why there appears to be confusion amongst the medical papyri, where translations have given the disease other names.

‘One of the more common illnesses in the medical papyri is the $\text{C}3\text{C}$ disease which also possesses both natural and supernatural origins.’ (Zucconi 2013: 24). $\text{C}3\text{C}$ is schistosomiasis which is ‘described in the Ebers papyrus as the AAA disease and mentioned 50 times in various other medical papyri.’ (KNH Centre for Biomedical Egyptology). This is important since it means that the ancient Egyptians had some form of treatment for the disease. The treatment of all the diseases mentioned in this chapter will be examined later in this dissertation.

It is known that schistosomiasis would have widely affected the population of ancient Egypt, however it did not appear to affect the population as severely as expected. Therefore, it is likely that the ancient Egyptians had a treatment that

at least alleviated the symptoms. Thanks to the examination of mummies using laboratory techniques it has been possible to see how long schistosomiasis affected the ancient Egyptians.

Samples of tissue, bone, hair, and teeth taken from mummies can now be examined using a range of techniques that include histology, immunocytochemistry, enzyme-linked immunosorbent assay, and DNA analysis. Such diagnostic tools have helped identify diseases in the mummies; it has even been possible to amplify and sequence ancient *Schistosoma* DNA fragments in the remains of a disease-causing parasite found in a 2000-year-old mummy.

(David 2008: 1802)

By using these laboratory techniques to find evidence of disease in ancient peoples it is also possible to determine the spread of disease throughout both the ancient and modern worlds. 'The earliest case of human schistosomiasis (*S. haematobium*) identified using immunodiagnosis (ELISA) occurred over 5,000 years ago in an Egyptian adolescent' (Kloos and David 2002: 16). By using this information, it is possible to determine when a disease first entered the human population. While this is undoubtedly an important area of research it falls outside the bounds of this dissertation and so will not be examined in further depth.



Figure 1 The sarcophagi of the Two Brothers

The case study for schistosomiasis utilises two mummies, those of the two brothers found at Deir Rifer 1907. They lived and died during the 12th dynasty. The bodies were in poor states of preservation prior to unwrapping, with Murray (1910: 31-32) noting that the mummy of Nekht-Ankh was better preserved than that of Khnumu-Nekht. In order to examine the bodies for schistosomiasis 'a sample of the liver from the Egyptian mummy Nekht-Ankh and a sample of intestine from KhnumNakht, believed to be his brother, were analyzed by PCR for schistosomal DNA' (Matheson *et al.* 2014: 41).

The findings from this examination found

S. mansoni DNA was amplified and sequenced from the liver of a 3900 year old Egyptian mummy, Nekht-Ankh, suggesting that he suffered from chronic schistosomiasis. This was confirmed in two independent laboratories. The intestinal samples from Khnum-Nakht were positive for S. haematobium but were negative for S. mansoni

(Matheson *et al.* 2014: 44)

From this it can be concluded that at least one of the mummies, Nekht-Ankh, suffered from schistosomiasis. Unfortunately, it is impossible to repeat these tests due to sample limitations. Matheson *et al* also note that one of the DNA sequences had a 100% match with S. mansoni.

Schistosomiasis is described by the World Health Organisation (WHO) as a chronic disease caused by parasitic worms that enter the human body via contact with infected water. The WHO also states that agricultural and fishing communities are the most likely to be affected by this disease. Ancient Egypt relied heavily upon the river Nile for the irrigation of crops and fishing, which made them susceptible to it. Of the mummy samples tested to date, 25% have returned positive results for the disease (KNH Centre for Biomedical Egyptology).

The KNH Centre for Biomedical Egyptology also mentions that there are 'limitations that have been imposed by the lack of availability of tissue samples such as liver and bladder. To overcome this, the enzyme linked immunosorbent assay (ELISA) test was used to diagnose the disease in other tissues such as skin and brain.' This is a problem when attempting to diagnose several diseases, since the organs that contain evidence of them do not always survive,

and those that do are not always able to be tested in an effective manner. This could be used to argue against the use of testing the effectiveness of ancient Egyptian medicine since if the organs the diseases inhabit are too damaged to be examined the results may not be accurate.

As mentioned it was difficult to obtain samples for testing these mummies. Rutherford (2016) suggests that the best evidence of schistosomiasis in ancient Egypt comes from the 'forty-eight Graeco-Roman mummies found in the Dakhleh Oasis' (Rutherford 2016: 205). Therefore, it can be suggested that researchers looking at this disease in the ancient world should pay close attention to these mummies.

Dracunculiasis and Mummy 1770



Figure 2 Examination of Mummy 1770

Another disease that affected the ancient Egyptians was dracunculiasis, also known as guinea worm disease. Dracunculiasis causes fever, nausea and vomiting, as well as a fiery pain that has led to it being called the 'fiery serpent' or 'Pharaoh's worm' (WHO 2014). It is believed that this disease was very prevalent during the 18th dynasty, as the exodus mentions Ramses as the Pharaoh.

Several ancient Egyptian texts suggest it was common during the middle of the second millennium BC. Undoubted evidence of the worm's existence in New Kingdom Egypt was confirmed by a calcified male guinea-worm found in Manchester Egyptian Mummy Project.

(World Health Organisation 2014)

Dracunculiasis affects the body by causing fever, nausea and vomiting. It can also cause severe pain as the worm works its way through the subcutaneous tissue, and can cause ulceration when the worm emerges from the victim's body (WHO 2014).

The mummy that will be used as a case study for this disease is Mummy 1770, which was examined by the Manchester Mummy Project (MMP) in 1975. The MMP was led by Dr Rosalie David, one of the foremost experts on the investigation of mummies. As such her work will be referenced multiple times in this dissertation.

Mummy 1770 was a young girl, probably aged thirteen or fourteen at the time of her death. If Mummy 1770 did indeed die due to complications from the treatment of dracunculiasis then it can be used as an argument against the effectiveness of ancient Egyptian medicine at treating disease. Rosalie David states that 'Her lower legs had been amputated probably about two weeks before death, possibly because they were ulcerated as the result of trying unsuccessfully to extract the female Guinea worms which sometimes try to break out and emerge through the skin on the legs.' (David 2001).



Figure 3 Remains of Mummy 1770's wooden legs

There is a possibility that Mummy 1770 came from a moderately wealthy family, since she was found with gold coverings on her fingertips. This relates back to the fact that most of the mummies available for study come from the wealthy elite, since ordinary people could not afford the mummification process, and also were unable to possess gold. This is only speculation, however the importance the ancient Egyptians placed upon gold would give this theory credibility. As a commodity, gold was for the most part controlled by the Pharaoh, but those of lesser status, such as nobles, could also own the precious metal (Schorsch 2017).

An interesting note for the treatment of dracunculiasis is that the modern treatment of the disease is almost unchanged from the one that is mentioned in the Ebers papyrus. The fact that the treatment has remained essentially unchanged from ancient times could be seen as an argument for the effectiveness of ancient Egyptian medicine at treating disease. This treatment will be examined in the next chapter. With the fact that Mummy 1770 died after the amputation of her legs, perhaps in an effort to treat the disease, it can be construed that the amputation was conducted when the customary treatment was unsuccessful.

Other diseases

The ancient Egyptians obviously suffered from many diseases, including ones that were previously thought to be modern until forensic examinations proved

otherwise. The physicians of ancient Egypt had access to detailed medical papyri that allowed them to diagnose and treat a number of ailments, with disease being a common affliction. Some of the more common diseases that affected the ancient Egyptians include tuberculosis and vascular disease.

Treatment of schistosomiasis

As mentioned, schistosomiasis was likely a common disease in ancient Egypt due to the fact that it is a waterborne disease. As such the Ebers papyrus has several remedies listed within it, which this dissertation will examine. It should be noted that the effectiveness of these treatments is difficult to determine without recreating it and giving it to someone who suffers from the disease. This would be highly unethical, and it is therefore unlikely it can ever be determined what benefit, if any, these remedies offered.

One of the first remedies mentioned in the papyrus is 'bark of the pomegranate tree soaked in beer. Keep moist in a jug of water. Strain a sufficient amount each morning and let the patient drink' (Bryan 1930: 121). While it may not have cured the disease, pomegranate bark is a rich source of alkaloids which can treat worms in the gastrointestinal tract (Newman and Lanksy, 2007). It can be assumed that through experimentation the ancient Egyptians realised that the bark of the pomegranate tree was useful in treating this type of disease, and by soaking it with beer it allowed the remedy to be drunk, which would have added to the patient feeling well treated during the process.

This was likely one of the more pleasant treatments, as another treatment the Ebers papyrus mentions calls for flesh of a live cow mixed with freshly baked bread, incense, lettuce and sweet beer, which had to be drunk over a period of four days (Bryan 1930). This remedy must be questioned over its instructions to 'drink' the concoction, as there is no mention of how it is converted into a fluid. On the other hand, this may just be an issue with the translation, as the translation used by this dissertation was first translated from hieroglyphs to German, and then later into English. This treatment was very likely to have made little difference to the condition of the patient, since some of its ingredients were arguably only included due to their mystical significance.

Lettuce for example, was the favourite food of Seth, and the flesh of a live cow could have been evoking the goddess Hathor.

The final method of treatment for schistosomiasis that this dissertation will look at involves using castor oil. Instead of the usual manner of administering it, which was by swallowing it, the papyrus calls for it to be rubbed into the body.

Smear therewith any person who has the swelling with stinking matter. Lo, the evil will be driven away as if nothing ailed him. Let him use the oil in the same way for ten days as an ointment, smearing himself twice in the early morning in order to drive away the disease as is proper.

(Bryan 1930: 122)

As can be seen with this method of treatment it focuses on treating the external symptoms, and it is therefore unlikely it had any permanent effect on the disease. Castor oil is mostly used today as an over the counter laxative, which could be used to argue that it would not have been effective in treating schistosomiasis.

As a whole, it appears that of the remedies for schistosomiasis listed the one that would have had the most effect was the pomegranate bark soaked in beer, as it was using ingredients that are known to combat gastrointestinal worms. Unfortunately, without testing these cures today it is impossible to know if they had any long-lasting effects. Additionally, it is unknown whether the two brothers received any treatment for schistosomiasis since their remains were too badly damaged for intensive examinations. And finally, it should be noted that the body parts that would have shown evidence of treatment are unlikely to survive into the present day, and those that do are often in a less than ideal state for testing.

Treatment for dracunculiasis

Treatment of dracunculiasis has remained virtually unchanged since the time of ancient Egypt. The disease itself is rarely fatal according to the WHO. It can therefore be assumed that Mummy 1770 suffered complications caused by the disease, which would explain the amputation. It was likely an infection from the amputation that killed her. The treatment for this disease is as follows;

First, each day the affected body part is immersed in a container of water to encourage more of the worm to come out. To prevent contamination, the infected person is not allowed to enter drinking water sources. Next, the wound is cleaned. Then, gentle traction is applied to the worm to slowly pull it out. Pulling stops when resistance is met to avoid breaking the worm. Because the worm can be as long as one meter in length, full extraction can take several days to weeks. The worm is then wrapped around a rolled piece of gauze or a stick to maintain some tension on the worm and encourage more of the worm to emerge. This also prevents the worm from slipping back inside.

(Ruiz-Tiben and Hopkins 2006: 275-309)

This is the modern treatment of the disease, with additional steps including the use of antibiotics and ibuprofen to ease discomfort. However, as has been stated, the modern cure does not differ from the ancient one in its main aspects. The worm would still have to be removed from the patient slowly by wrapping it around a stick.

As can be seen from these case studies, the ancient Egyptians suffered from a number of diseases that still affect people today. As such they developed practical treatments in an effort to cure these diseases. However, it is impossible to determine the success rates of these treatments without testing the ancient remedies, which is highly unethical. Especially in regard to the case study used for schistosomiasis, it will never be determined if they received treatment for the disease as there is not enough surviving tissue to test for evidence of treatment.

These case studies also highlight the importance of laboratory testing when attempting to identify diseases. It also shows that a body must be in a good state of preservation in order to get a substantial amount of tissue that can be examined both for disease and ancient DNA.

Medicine

‘Ancient Egypt was famous throughout the Mediterranean world for its skilled physicians. We know of several instances in which foreigners requested that Egyptian doctors treat them.’ (Thompson 1997: 28). The Ancient Egyptians understood medicine and the human body unlike many other civilisations of the ancient world. They were masters of human anatomy and healing mostly due to the extensive mummification ceremonies (Aboelsoud 2010: 82).

Due to their belief that a body had to be perfect and whole in order for the deceased to enter the afterlife, bodies were carefully prepared for mummification, and there is evidence that ‘dummy’ organs and body parts were used (see Mummy 1770 for an example of these ‘prosthetics’) to give the illusion of a whole body. Of course, it must be noted that only the wealthy could afford the mummification process, and therefore our understanding of illness and treatment in ancient Egypt is not complete, as it reflects the life of an elite who would have suffered from different ailments. A lot of the practical medicine was based upon plants and animal products, and today would be classed as herbal medicine, or homeopathy. Nevertheless, Ancient Egyptian medicine enjoyed a prestige and success that was unparalleled anywhere else in the Ancient world.

Most of our knowledge of Ancient Egyptian medicine has come through the surviving medical papyri, although our understanding of it in practice comes from the excellent preservation of human remains, since there is a lot of surviving tissue that can be tested for evidence of disease. Some of the principal medical papyri are the Ebers, Hearst and Edwin Smith papyri. They cover diseases and injuries ranging from eye troubles to heart and lung problems. The Edwin Smith papyrus is also an important medical papyrus; however, it deals with trauma and surgery and therefore will not be looked at in this dissertation. A lot of the medical knowledge of the Ancient Egyptians survives in the medical papyri, such as the Ebers papyrus, which dates from the sixteenth century BCE, and it is believed that it is derived from an earlier source.

It should be noted that despite the age of the medical papyri, many of the treatments listed within them are still effective. It has been shown that 64% of their prescriptions had a therapeutic value on a par with drugs used in Western medicine during the past fifty years (David 2017: 12). With this information one could safely argue that the Ancient Egyptians had an advanced understanding of medicine for their time. Ancient Egyptian medicine could easily be a dissertation subject all its own, however this dissertation will be focusing solely on medicine that would have been used in treating diseases.

Egyptian temples were rumoured to contain six volumes that contained the secrets of the physicians (Pinch 2010). These are likely to have contained the information of the surviving medical papyri as well as knowledge that is likely lost to us. One cannot begin to understand Egyptian medicine without becoming versed in the magical practices of ancient Egypt as the two are almost inseparable. Pinch states that it is 'doubtful there was ever a time in Egyptian history when medicine and magic were not complementary parts of a doctor's skills' (Pinch 2010: 133).

The Ancient Egyptians sourced many of their pharmaceutical plants and minerals from within Egypt, but others were imported through trade-routes with the Near East, North Africa, Nubia and southern Mediterranean countries (David 2017). This meant that the Ancient Egyptians had many pharmaceuticals to use in medicine, which allowed them to combat a wider array of illnesses. A number of foodstuffs were also used in medicine, such as onions and garlic, since many of them aid with digestion and ease cardiovascular problems. Droppings and urine of a number of animals were also used in treatments ranging from eye troubles to contraception. With such a wide array of pharmaceutical ingredients, it is unsurprising that the Egyptians had at least one treatment for many diseases.

Magic and medicine are interwoven so thoroughly that it can seem strange when coming from the logic and evidence based medicine of the Western world. However, the ancient Egyptians had no knowledge of germ theory and therefore had no rational way of explaining disease (Metcalf 2016). This would

mean that to the ancient Egyptians disease had magical origins that could only be treated by a combination of medicine and magic.

Thanks to the trading links established by the ancient Egyptians, their doctors had a number of ingredients to choose from when preparing treatments. This is likely to be one of the main reasons the ancient Egyptians had a treatment for many illnesses. When the doctors made their diagnosis, they would place the illness their patient was suffering from into one of three categories, those they could treat, those they could contend with and those they could do nothing for.

Thanks to the surviving medical papyri a number of Egyptian treatments are known, both magical and mundane. However, as mentioned throughout this dissertation one cannot fully separate the physical treatment from the magical, since to the ancient Egyptians they worked together to create one treatment. The ancient Egyptians knowledge of medicine arguably allowed them to create one of the most powerful civilisations of its time. This chapter will be focusing on the physical treatments for disease and examining whether they would have had any effect at alleviating the symptoms of diseases. It will also examine the more unconventional ingredients to see why the ancient Egyptians believed they had healing properties.

Abelsoud (2010) states that the ancient Egyptians also utilised what they called 'Godly Medications'. They believed that these medicines were created by deities such as Ra, when in actual fact the priests and physicians developed these cures, which consisted of ingredients such as honey, wax, and up to fourteen other botanical substances, and attributed them the gods. These medicines were believed to be able to cure any ailment and were allegedly very popular amongst the ancient Egyptians.

Two ingredients that may not appear medicinal are mentioned quite frequently in the Ebers papyrus are bread and beer. Bread is used in fourteen recipes and multiple types of beer feature in one hundred and six of the remedies listed within the papyrus (Metcalf 2016). The most common type of beer used was sweet beer, which included honey. Metcalf also suggests that beer was likely used as a placebo effect, since it would make the patient feel well treated during

their recovery. As such it can be assumed that bread and beer mostly served as a method of making a patient feel like they were being treated well, and to disguise the taste of unpleasant remedies, which it can be argued there were many, since animal faeces and urine were often used in Egyptian medicine.

There is however, a problem when it comes to the lists of ingredients used in medical treatments, since there is an 'uncertainty in the translation of a number of the constituents, particularly in view of their unique vocabulary' (Forshaw 2016). This highlights one of the problems of determining the effectiveness of ancient Egyptian medicine since without knowing all the ingredients it is impossible to tell if the remedy would have made any difference.

Aboelsoud (2010) writes about the different botanical ingredients the ancient Egyptians used. Among them were garlic, honey, poppy, and mustard. Garlic was often used as a laxative and was believed to rid the body of spirits. 'A freshly peeled clove of raw garlic wrapped in muslin or cheesecloth and pinned to the undergarment is hoped to prevent against infectious diseases' (Aboelsoud 2010: 83). Honey was used liberally in Egyptian medicine, as it could be added to honey to make it sweeter, and it was likely used to mask the taste of some of the more unpleasant ingredients. It could also be used to soak bandages, which would allow the bandage to stick to the body. Since honey is a natural antiseptic, applying it to bandages that are placed over a wound would allow the honey to fight off infections. Poppy, which is also an opiate, would have been an excellent painkiller. Mustard could be used to relieve chest pain, so the ancient Egyptians would likely have used it to treat heart conditions.

The use of foodstuffs in Egyptian medicine is quite intriguing, since the use of everyday items suggests that the ancient Egyptians had an understanding of the immune system and how some foods were able to help bolster it, even if they believed it to be something completely different. The foods that also aided digestion, such as cardamom and garlic, were widely prescribed due to their availability and aid in reducing symptoms.

The ancient Egyptians had a form of pharmacy, which has been explored by the Pharmacy in Ancient Egypt project, who, as mentioned earlier, discovered that around 64% of the medicinal items used in ancient Egypt matched drugs

available in the Western world (David 2017). It has been noted that the Pharmacy in Ancient Egypt Project was conceived in order to determine if ancient Egyptian remedies 'were at least partially science based and not magical placebos' (David 2017: 12). The findings from this project have changed modern understanding of ancient Egyptian medicine, forcing the perspective of it being reliant on magic to magic only being part of the solution offered, bolstered by real, effective medicines.

Drug doses and medical prescriptions

The ancient Egyptians had an early form of pharmacy that appears to have been quite effective. The physicians were able to administer drugs based upon the age of the patient. An example of this can be seen in the treatment for water retention. 'An adult would be given a mixture of water, ale sediments, green dates and other vegetables, while a child would be given an old piece of papyrus soaked in oil applied as a hot band around his stomach' (Aboelsoud 2010: 84). Additionally, when writing a prescription, the ancient Egyptian physicians displayed a great skill.

A prescription usually began with a description of the medicine, e.g., "Medicine to discharge blood out of wounds", followed by ingredients and measures used in addition to method of preparation and usage whether in tablet form, ointment or inhaling. Silverburg 1966

(Aboelsoud 2010: 84).

The remedies that were offered as cures to disease were typically contained a mix of both conventional and unconventional ingredients, as mentioned in the treatment of schistosomiasis, one of the treatments utilised the flesh of a living cow combined with bread and beer. It is not mentioned if the flesh is to be consumed raw or cooked, and for the sake of the individual prescribed this remedy one can only hope it was cooked. The usefulness of such treatments can be brought into question, though it is important to remember that some of the ingredients used by the ancient Egyptians were selected due to the links they had to deities. This was briefly touched on in the chapter on magic and is arguably a link that the ancient Egyptians were keen to exploit, since linking deities to specific treatments would marry the mystical and medicinal elements of treatment together.

It could be argued that the prestige enjoyed by ancient Egyptian doctors is thanks to the wide array of medicinal ingredients they had at their disposal. Being centred on the river Nile, ancient Egypt had access to the plants and minerals that were abundant on its fertile banks, and their trading links throughout Africa, the Mediterranean and Asia afforded them rarer items that they made full use of. Rosen notes that several of the ingredients used in ancient Egyptian medicine came from locations such as the Levant, Canaan, and Punt. This highlights just how far the trade of ancient Egypt reached.

Thanks to this wide array of medicinal ingredients there was arguably very few ailments the ancient Egyptians were not able to at least attempt to treat. This is likely what gave the Egyptian healers their reputation as some of the best the ancient world had to offer. The medicine of ancient Egypt had its basis in science, and thanks to this it appeared to have a great success rate when alleviating the symptoms of disease.

Magic

"Magic is effective together with medicine. Medicine is effective together with magic." (Mark 2017)

This quote comes directly from a translation of the Ebers papyrus, one of the most complete and important medical texts from Ancient Egypt. This fits into the idea the Ancient Egyptians believed that alongside the medicine they prescribed, magic had an important role in the healing process. From this it could be argued that the Ancient Egyptians believed that magic supplemented medicine to allow it to be effective. This next chapter will be examining this idea of magic as a supplement to medicine, as well as the use of magic to treat diseases that medicine could not.

The surviving evidence from Ancient Egypt (papyri, statues, inscriptions, depictions etc) suggests that magic was always prevalent in the daily life of Ancient Egypt. To the Ancient Egyptians magic and medicine had no difference. Incantations, spells, and invocations to the gods were just as important as the physical treatments. One interesting point from the Brooklyn medical papyrus is that the papyrus instructs the magician on how to protect the living against the Devouress (Pinch 2010). This highlights the role that the Ancient Egyptians

believed demons played in attempting to upset balance, or Ma'at. They also believed that demons were responsible for causing illness, and if a patient's condition appeared to improve it was assumed that the demon that was causing them illness had been expelled through the combination of magical and physical treatment.

The physicians of ancient Egypt were known to examine a patient and list the main symptoms they were suffering from. They could then be divided into three categories, those the doctor could treat with confidence, those the doctor could contend with, and those the doctor could not treat (Pinch 2010: 136). Most of the diseases mentioned in this dissertation would likely fall into the second and third categories, with those in the third being completely reliant on magical and religious treatment. It could be argued that this would merely be a placebo effect, since if an individual showed improvement it would be only temporary.

The importance of magic

Magic in Ancient Egypt was very real and used for many different reasons. For healing purposes, magic could be just as important if not more important than practical medicine, since despite the Ancient Egyptians knowing a great deal about anatomy, many internal functions were unknown to them, and as such they believed many diseases to be the work of demons. Therefore, the Egyptians believed that magic would be able to treat the disease by expelling the demon responsible for causing it. As such magic often supplemented physical treatments, and in some cases the physical treatment was bolstered by prayer to make it effective.

Zucconi (2013: 18) states that 'for ancient Egyptians, health and illness were manifestations of a person's relationship with the universe around him, which included not just people and animals but communities of spirits and gods as well'. This belief that health and illness, and indeed medicine in general was intrinsically linked to other aspects of ancient Egyptian life is arguably a result in the ancient Egyptian belief in duality, and their duty to uphold Ma'at. This theme of duality permeates almost every aspect of Ancient Egyptian culture, and this will be examined more later.

Since it can be assumed that healing magic was available to commoners as well as the nobility, healing magic likely fell into 'state magic'. It is important to differentiate state magic from private or royal magic since these were reserved for the upper classes. Ritner (1993) showcases this by explaining that royal magic was also considered priestly magic, and that this was available to the one percent of the population that could read and write; the king, priests and scribes. While it is unknown if this type of magic offered healing spells unavailable to the wider populace it can be assumed that this magic would have been seen as more powerful, and was perhaps coupled with remedies only the elite could afford. This is however pure conjecture, and this line of thought will not be followed further in this dissertation, as it falls outside of the constraints of the topic.

One point that is important to note is the fact that the formulae, aside from those preserved in the medical papyri tended to be passed on through oral traditions. This was likely to ensure that someone without the proper training attempted to prepare treatments.

The role of Sekhmet

The lion headed goddess Sekhmet was an important deity in healing, as she was the goddess of sickness and health. In this respect she was respected and feared by the Ancient Egyptians, as she was responsible for both causing and curing disease and injury. Sekhmet was revered by physicians, who were trained in magic as well as practical medicine, [and] were therefore usually priests of Sekhmet (Allen and Mininberg, 2005). With such an important role to play within Ancient Egyptian life, the cult of Sekhmet was large and important, with major cult centres at Memphis, where she was worshipped as part of the Memphis Triad, along with Ptah and Nefertum, and Leontopolis. Sekhmet was also revered as the lady of slaughter, which reflected her dual nature as a destroyer and bringer of life. Sekhmet was the one who revealed the cures to ailments to those who pleased her, so her priests and physicians were widely respected.

The respect and fear commanded by Sekhmet can be seen in the spell the book of the last day of the year. It was recited during the late summer and early

inundation period so the terrifying goddess would not send plague, famine or flood to ruin Egypt (Pinch 2010). This highlights just how powerful the lion headed deity was and how she was revered as a deity of healing.

Sekhmet and her emissaries were also held responsible for causing burns, as she was associated with fire and heat (Pinch 2010). This assumption would have been made since identifying the cause of disease or injury with a supernatural entity was one of the defining aspects of Egyptian medicine.

To highlight the importance of the Sekhmet priests in healing one needs only look at the papyri themselves. 'The rubrics to some spells state that they are to be spoken by any doctor or any Sekhmet priest' (Pinch 2010: 134). Since these instructions mention the Sekhmet priests specifically it can be assumed that they held an important role in healing alongside physicians.

Egyptian healing magic utilised several different aspects, the most common of which were incantations, commands, prayer and spells. These were typically administered by the priests of Sekhmet or physicians. The fact that these spells and incantations had to be administered by one who had been trained in the mysteries of Sekhmet suggests that the ancient Egyptians believed this magic to be very powerful and the uninitiated risked incurring the wrath of the lion headed goddess.

Mark (2017) notes that Sekhmet was not the only deity of healing or medicine. There was also Heka, the god of magic and medicine, and several deities, such as Serket, Nefertum, Bes, Tawaret, Isis and Hathor could all be called on to help treat various illnesses. 'All of these deities, however, no matter how powerful, had to be called by an experienced practitioner and this was the doctor of ancient Egypt; part magician, part priest, and part physician.' (Mark 2017). This shows the versatility of the Ancient Egyptian deities and the role religion played in medicine, as there was no fixed deity to invoke. This could be construed as a 'catch-all' since there would have always been a magical option for the treatment of illnesses. This definitely shows the importance magic played in medicine.

Heka: The god of magic and medicine

As mentioned earlier, Heka was another deity who played an important role in the ancient Egyptian healing process, as he was the god of both magic and medicine. He is mentioned in spell 261 of the coffin texts as having existed since the time of creation and before duality had yet come into being (Wilkinson 2003). As such Heka was viewed as a powerful god and Wilkinson also suggests that he was feared by the other deities and from the twentieth dynasty his name was accompanied by the hieroglyphic symbol for power. The main cult centre for Heka was at Esna, which is some fifty-five kilometres south of Luxor.

As the god of magic and medicine Heka would have likely been utilised in the magical treatment of illness quite often. Since he was associated with magic and healing one could assume he would have been more important to the healing process than Sekhmet, although there is little evidence for this.

Horus in healing magic

Horus is further shown to be an important deity in healing by virtue of his eye. The eye of Horus was considered an incredibly powerful method of protection, and it can therefore be argued that the eye of Horus would have been utilised as both a method of preventing disease as well as being used in treatments. The eye, also called the Udjat, had a practical role as well, since it could be used to record quantities (Saeed 2016). This can be seen in figure 4.

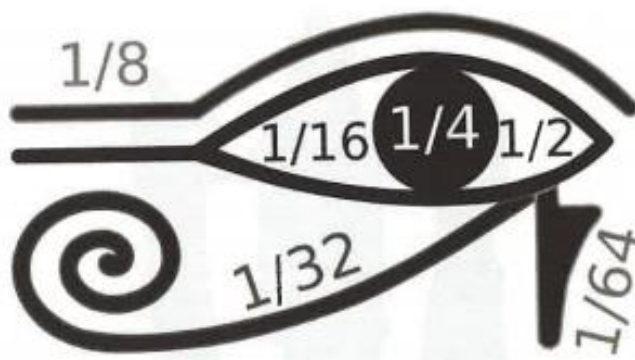


Figure 4 The eye of Horus' mathematical values

Another story of Horus has Seth attempting to have sexual intercourse with him. Isis discovers this plot, and causes Seth to eat lettuce that had Horus' semen applied to it. Seth eventually gives birth to a sun disc through his forehead.

While this story sounds perplexing to the modern reader it was essentially a story of cause and effect, and this would have 'resonated with expected responses from ancient Egyptian healing practices' (Saeed 2016).

As can be seen, Horus was undoubtedly a popular and versatile deity to invoke in the healing process. Another story of Horus focuses on the goddess Hathor restoring his eyesight with milk. Milk was a staple in a number of remedies used by the ancient Egyptians, and will be looked at more closely in the chapter on medicine. Hathor was another god associated with healing and magic, with her name meaning 'house of Horus' invoking a motherly protection on the falcon headed god.

Magical ingredients

It should be remembered that some of the ingredients used by the ancient Egyptians were selected based upon links to deities. Honey, for example, while created by bees, was associated with the solar deity Ra, who was said to have created bees from his tears (Kritsky 2015).

The Lector priests

The Lector priests were one of a number of groups that were considered healers. Others included the priests of Sekhmet, physicians (also known as Sennu), wab priests and local healers (Forshaw 2014). Forshaw mentions that;

Egyptians would have sought assistance from others in an attempt to obtain relief... Inevitably, certain members or groups in the community would emerge who would claim to possess certain skills and healing abilities.

(Forshaw 2014: 115)

It is believed that the lector priests played an important role in both magical treatments and physical treatments. The Ebers papyrus mentions a remedy including pork grease be prepared by a lector priest who 'knows this ointment' which suggests that lector priests occupied a higher position in the 'medical profession' of ancient Egypt.

As can be seen from the role of the priests of Sekhmet and the Lector priests, the role temples played cannot be discounted. It is believed that the House of Life was a location where healing practises were engaged in, evidence of which comes from a translation of the statue of Udjahorresnet, who was commanded to restore the House of Life. 'His majesty did this because he knew the worth of this craft for causing the sick to live' (Forshaw, 2014: 117). Using this evidence, as well as the depiction of medical tools at the temple at Kom Ombo (see figure 5), and the fact that several deity's priests were considered to be physicians, it can be assumed that the temples played an important role in healing.



Figure 5 Relief of Medical Tools at Kom Ombo

Spells and incantations

Ancient Egyptian physicians did not distinguish between the different spells and incantations, preferring instead to utilise them all together. Spells and incantations were some of the most common methods in employing magic in the healing process. 'The incantations can focus on the illness, the remedy, the patient or the gods in a variety of combinations' (Zucconi 2013: 28). This would have been useful to the physicians of ancient Egypt since they would have been able to attempt a number of treatments before they would have to announce that they could do nothing for a disease.

All of the spells within the Ebers papyrus begins with a mythological episode, or historiola, which 'assimilates the patient and his fate to the successful healing of a deity' (Redford 2002: 200). This was likely to reassure the patient that that

the physician would have the means to treat whatever ailed them. Redford (2002) also states that the generic spells at the beginning of the Ebers papyrus were likely used as standard healing incantations, and that these would be spoken so that even remedies that did not have their own set of incantations would be accompanied by a magical feature.

Any god could be invoked on a patient's behalf, with a popular deity being Horus and his mythic cycle, which can be found in the Ebers papyrus. 'Do you recall that Horus and Seth were brought to the great palace at Heliopolis when the testicles of Seth were negotiated with Horus... and he was new like one who is on earth' (Zucconi 2013: 29).

In Egyptian mythology Seth often attacks Horus in order to usurp the throne of Egypt, and therefore it seems fitting this cycle is used when attempting to heal a patient. Furthermore, it can be argued that Isis is the parallel to the treatment of an individual, as she is a goddess of magic and her actions would mirror those of the treatment.

Seth himself could also be invoked to protect against disease. He was utilised to fight off the demons. Pinch (2010) states that the spells used to combat some diseases appeared to switch between treating the 'patient's condition as a disease and as a personified demon' (Pinch 2010: 141). This is arguably due to the fact that the ancient Egyptians knew that diseases moved through the body, but not necessarily why it moved.

Taking into account all of this information on magic, one can see why there is a misconception when it comes to ancient Egyptian medicine. However, it can be assumed that the main reason there was so much emphasis placed upon magic and the gods was simply due to the fact that religion was a pivotal part of ancient Egyptian life. Magic was likely added to the healing process because it was what the ancient Egyptians were used to, as for them everything in the world could be explained through the presence of the divine.

One should never discount the ancient Egyptian reliance on magic. It was prevalent in almost every aspect of the daily life of ancient Egypt and was used by people from all walks of life, from the Pharaoh to the common farmer. The role magic played in the healing process is indisputable, as it occupied an

important position since many remedies had a reliance on magic. In some cases, magic may have been the only remedy that could be offered to a patient that suffered from a disease that the ancient Egyptian physicians could do nothing for.

Conclusion

Having looked at the diseases the ancient Egyptians suffered from, as well as the magical and medical methods of treating them, it is easy to see why the ancient Egyptians enjoyed a prestige in the ancient world for their medical skill. Thanks to their great skill at mummification the ancient Egyptians had a knowledge of anatomy that was unmatched, and it also fed into their information of the internal functions of the body.

The work of various organisations, such as the Manchester Mummy Project and Pharmacy in Ancient Egypt Project have redirected the attention of those whose research disease in ancient Egypt. Today the examination of mummies and detection of disease is supplemented by knowledge of treatments that may have had an impact on the diseases. And by showing how in most cases magic was merely a supplement to physical treatments has abolished the old theory that Egyptian medicine was seeped in mystical practice.

By looking at magic and medicine together, rather than opposed to one another a clearer picture of ancient Egyptian medicine emerges. It shows a culture that developed remedies partly out of a belief in the mystical and partly out of scientific experimentation. Ancient Egyptian physicians would have also had the benefit of having access to a wide array of medicinal ingredients that could be combined with magic to create a hybrid form of medical care, that took care of the patient's physical ills as well as their spiritual ones.

Study of the medical papyri have revealed dozens of treatments for illnesses of all kinds, and has shed new light on the treatment process, revealing a type of pharmacy that was unexpected to have originated so early. It has been proven that the ancient Egyptian physicians were experts at measuring out the quantity of drugs needed depending upon the patient and wrote extensive and clear prescriptions that would have been easy for those who were literate to read and fulfil.

Schistosomiasis and dracunculiasis, two diseases that appear to have been prevalent in ancient Egypt, are both shown to have treatments that may have been effective. Of the three treatments examined for schistosomiasis, the one that employed the use of pomegranate bark may have brought some relief to the afflicted, as the high alkaloid levels are effective at treating gastrointestinal worms. For dracunculiasis, the treatment has remained almost unchanged except for the introduction of sterile environments and antibiotics, so it can safely be assumed that this would have been an effective treatment.

The fact that ancient Egyptian healers came from a number of sects as opposed to belonging to a single one highlights the versatility of ancient Egyptian religion, since the priests of several deities were trained in the healing arts. Some of these priests were trained in different aspects of medicine, as befit the deity they served. This level of specialisation was a unique feature of the medical practice of ancient Egypt, and was something that many people today would not think such an ancient people would have been able to accomplish.

Taking together all the themes this dissertation has looked at, it is clear that ancient Egyptian medicine was a reflection of their belief in duality. Magic and medicine blend together to form a unique hybrid of medicinal practice, and it was able to treat many ailments. From simple wounds such as burns to the diseases that could prove deadly, ancient Egyptian medicine was able to attempt to cure it all. Its effectiveness may not be able to be determined completely, but the fact that they at least tried to treat illness with a limited understanding of disease is extraordinary.

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Figure 3: Remains of Mummy 1770's wooden legs.
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