
Rosetta

Kristt, Don. (2024). 'Of Demons and Diagnostics: Healing Arts in Ancient Egypt, Mesopotamia and Biblical Israel.'

Rosetta 29: 35-71

DOI: <https://doi.org/10.25500/rosetta.bham.00000027>

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Of Demons and Diagnostics: Healing Arts in Ancient Egypt, Mesopotamia and Biblical Israel

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Abstract

In Egypt and Mesopotamia, as in most of the ancient world, belief in all-encompassing black-magic informed life and death. These magical forces also were believed to be a key determinant of health and disease operating through a pantheon of gods and demons. Nevertheless, by the third millennium BCE, institutionalisation of healing was well established in both societies and true medical practitioners were recognised. Although healing and magic were integrated by both priests and physicians, each profession functioned with a different balance. Physical examination and diagnosis could be rational and reasonably accurate, but highly formalised. Therapeutics was an empirically based mix of common sense, *Materia medica* and, of course, magic; the latter was also a consideration in deciphering causality and assigning diagnosis. In contrast, biblical Israel, as a monotheistic, magic abhorring society, was unique in many regards. It was responsible for introducing the first examples of systematic differential diagnosis as well as practising good, popular public health policies that were possibly innovative. Overall, though, biblical Israel was representative of other societies that functioned as end users of the medical skills and technology developed in Egypt and Mesopotamia. In their approach to disease and healing, the ancient biblical society still shared an outlook ubiquitous in the ancient Middle East that balanced spiritual considerations with real medicine.

Introduction

Injury to the human body – *disease* in the broadest sense – and attempts to reverse or repair the damage, *healing*, appear as fundamental concerns throughout humankind's sojourn on earth. Indeed, disease and healing appear as a motif in all human societies – primitive to highly advanced – as attested already in pre-history.¹ Therefore, in this review,

¹ Halberstein 2005: 689; Hardy et. al. 2012: 99.

the goals were threefold. First, to clarify the world view of the denizens of the ancient Near East (ANE) from the 3rd to 1st millennia BCE that energised and culminated in the development of the key features of the healing arts. Second, to compare the status and key operational features of the healing arts in the three major cultures in the ANE. Third, to highlight their similarities and differences, and as a corollary, to seek transcultural unifying themes in ancient medical practice. These are feasible goals despite the differences between these three societies, and they were different. Their cultures, religions, forms of government, etc., exhibited many differences. Nonetheless, enough of a commonality of locale, time and the human condition was shared that a comparison of their medical skills and institutions should deepen our understanding of the cornerstones of a human activity that became modern medicine.

Methodological Considerations

Sources

Primary sources and original investigations, wherever possible, were utilised, relying for the former on noted translations of papyri and cuneiform tablets. The Hebrew sources were translated by the author; they are primarily biblical, but later rabbinical sources are occasionally cited. Secondary sources were used when primary sources seemed inadequate to clarify a point. Several sources were often compared in deciding the generality and/or reliability of information from a particular source on different aspects of the subject; secondary sources were useful here as well.

Analysis

The sources were analysed in two ways. First, retrospectively from the perspective of the mature healing arts in antiquity. That is, the material was examined for a common world view and pre-historic trends in healing that were likely contributory to what ultimately appears as medical institutions and practices in each society, i.e., some of the formative societal processes leading to the field of medicine. The results of this analysis comprise 'Part I. The Ancient World View and the Emergence of the Healing Arts.'

In the second approach, the analysis of sources focused on universal categories that exemplify medical practice, such as diagnostic acumen and therapeutic approaches. These categorical terms were meant to be understood as a series of questions regarding the characteristics of the healing arts, e.g., what was their diagnostic acumen? The source material was probed to provide answers to these queries. Since most categories are common to healing arts in general, they provided a direct, relatively objective basis for intra-cultural comparisons, that easily highlight similarities and singularities, as described in 'Part II. Comparison of the Healing Arts in Different Cultures.' As noted below, this approach may also insulate this review against certain types of cultural biases. The historical developmental of the field, per se, will not be emphasised other than to consider the broad rubric of early, i.e. pre-historic, healing practices.

Limitations

Although our goal is to differentially consider the healing arts in three societies, strict comparisons are not always possible because of several factors. One critical variable is that the comparisons span broad periods of time in different cultural milieus. Indeed, culture imposes its biases regarding the assessment of ancient healing practices, since they affect the balance between demonic and physical healing in different ways in each culture. However, in terms of the present review, the effect is expected to be minimal, since the focus is on categorical comparisons related to objective elements in the society operating as a framework to medical practice. Additionally, culture is reflected in education, which plays a key role in shaping local medicine. For instance, as we will detail, the intensity of anatomic education varied as a function of societal norms for dealing with death. Culturally specific forms of education may also impact on the reliability, or comparability, of our sources, since education creates expectations which influence the observer (i.e., observer bias).² However, this factor should not introduce a significant bias here, in as much as categorical comparisons are emphasised that are documented descriptively, not interpretively, allowing the descriptions in many cases to be related and judged through the lens of modern medicine.

² Greene et. al. 2015: 1239.

Another issue encountered in dealing with 3000–5000-year-old primary source material, is that it is written in a script transcribing a dead language. In many instances, the language and terminology are often uncertain due to our ignorance, scribal sloppiness or damage to the text resulting in omissions; even the translations at times are difficult to relate to modern terminology. Some papyri are only found in a single surviving example, precluding comparisons to clarify these uncertainties. Since this is not a treatise dependent on any specific document, or disease description, recourse to secondary, authoritative interpretations has been the approach to arrive at a consensus interpretation. Aside from these scriptural issues, certain diseases, such as leprosy, are so non-specific in their descriptions and identification that one cannot conclude much other than the described leprosy-like entity is likely infectious in nature, and even then, today such findings could be interpreted as a purely inflammatory disease of skin, e.g., psoriasis, rather than infectious. In short, as useful as these ancient sources are, the gap in time, disease understanding by the observers, and cultural factors requires that modern readers approach these texts cautiously.

Part I. The Ancient World View and the Emergence of the Healing Arts

Humankind's World View in Antiquity

Ancient humankind accepted that it was subject to invisible forces, and unknown magical elements, demons. As Wiedemann summarised this point at the International Folk-Lore Congress in 1893: 'he [ancient man] was surrounded by spirits; some good, who gave him existence, some evil who studied to ruin his fortune. He must become and remain master of them.'³ In general, this idea is evidenced in the wide array of idols, often household items, that originate in remote antiquity. For instance, the well-known Gobekli Tepe site in modern Turkey, dating from the Pre-Pottery Neolithic B period (ca. 8600-7000 BCE), displays numerous anthropomorphic and zoomorphic sculptures. Whatever their precise significance, these are regarded as cultic, Neolithic installations.⁴ Such sites

³ Wiedemann 1893: 466.

⁴ Verhoeven 2002: 233.

and their sculptures appear to be directed at incomprehensible forces surrounding early humans, often encoded in myth. These magical forces could afflict one's body and cause personal suffering or impact the village, resulting in epidemics, droughts and floods. Magic, however, must be understood in terms of the ancient mindset, and not as a form of illusion, as in our age. For them, magic was a real, all-encompassing force pervading every aspect of daily life, similar to what was referred to in Egypt as *Heka*.⁵ These forces, at some point, were deified, and became gods and demons to whom to pray or appease.⁶

Approach to Disease in Antiquity

As anticipated from the foregoing, this world view is translated into their approach to diagnosis, therapy, and preventative medicine (public health). Against this backdrop, diagnosis and therapeutics could be rational in the sense of being systematic and analytic, at least in some areas of practice that we will shortly detail. This analytic undercurrent may also be reflected in the importance of observation in medical care. Indeed, many texts indicate that the diagnosis and evaluation of outcomes were rooted in observation, i.e. based on actual examination of findings in a patient, while concomitantly considering the patient's complaints and implications of the temporal progression of his presentation, e.g. episodic versus steadily increasing fever. The process could be reasonably accurate, at least in certain areas such as spinal and cranial trauma⁷ and for many common medical issues, such as animal bites, gynaecological issues and parasitic infections.⁸ Simple common sense and accepted folk medical approaches were employed, such as removing a presenting intestinal parasitic worm from the anus (e.g., tapeworm), a method that has changed little to the present day and still would be acceptable medical practice.⁹

⁵ Assmann 1997: 3.

⁶ Maimonides: §1,2.

⁷ Risse 1972: 912; Stiefel et al 2006: 182.

⁸ Nunn 1996: 88, 191.

⁹ Cyriac 2011: 365.

Nonetheless, a true etiological (causal) perspective on disease, so central to modern medicine, was lacking. In their pre-microscopic, pre-technological era, no appreciation existed of infectious agents (e.g. bacteria, virus) or metabolic processes, processes in any event that would have struck ancient healers as the work of demons. Incidentally, such misunderstanding of pathophysiology conceivably may have led to their distorted sense of organ function, e.g. the belief that the kidney¹⁰ or the heart was the seat of cognition rather than the brain. These errors may partially reflect the limitation in their knowledge and understanding of anatomy¹¹ and physiology, critical in modern diagnostics and therapeutics, as we will elaborate in a later section. On the other hand, the close interactions with the animal kingdom may have provided some counterbalance. Experience with animals, then, as today, provided a natural laboratory for understanding and coping with disease.¹²

The foregoing has focused on manifest disease that brings an individual into the medical care giving system. Prevention of disease and ensuring wellness and wellbeing were also represented in a typical biphasic way. Gods and demons, represented as amulets¹³ or small household statuettes, were believed to maintain wellness in the home, and promote fertility, a satisfying sex life, child health, etc. Regarding the medical side of this issue, rudimentary public health measures also existed that we would recognise as such.¹⁴ They were rudimentary in the sense that both Mesopotamia and Egypt were sensitive to the importance of contaminated water, but only in a limited way compared to modern practices. Egypt seems more developed in this regard because it emphasised washing and cleanliness and primitive bathrooms, or at least commodes, have been described there.¹⁵ Additionally, by the nineteenth century BCE stone drainage channels were constructed that ran down the centre of the streets.¹⁶ Although less clearly described for

¹⁰ Although differing in each society, biblical Israel may have considered the kidney as the seat of advice and learning, as suggested by Psalm 16 v.7: "I will bless the Lord that *advises* me, even during the nights; He *instructs* me through my kidneys." Speculatively, this idea may originate by observing that clinical evidence of kidney disease [e.g., bloody urine, painful flanks] appeared in a demented person. This may have suggested the inverse: that the healthy kidney enables normal cognition.

¹¹ Kharoshah et. al. 2011: 10.

¹² Schwabe 1978: 8.

¹³ Andrews 1994: 36.

¹⁴ Tulchinsky and Varavikova 2014: 1.

¹⁵ Reeves 1992: 12.

Mesopotamian cities, urban sanitary drainage and private lavatories probably existed there as well.¹⁶ In another direction, both Egypt and ancient Israel were distinguished by the development of public health measures affecting women. For example, following childbirth women were given a period of rest, recuperation and purification in fresh streams,¹⁷ which was a good public health practice for the new mother during the highly vulnerable post-partum period, regardless of other justifications.¹⁸ In any event, this preventative aspect of health care was additionally important because it gave a person more direct participation in *physically* maintaining individual well-being.

Emergence of Healers

As important background to the sections that follow, it should be noted here that specialised medical healers are historically attested by the third millennium BCE.¹⁹ Given the character of genuine healing arts by that period and the healing practices in some extant societies,²⁰ we can reasonably assume that the healing arts began sometime in pre-history. Then, humankind seemingly discovered that certain actions, or elements in their environment, improved disease outcomes, perhaps by observing animals in the wild,²¹ despite the belief in demonic causality. It must have been a remarkable realisation that death or disability were not inevitable. Some individuals would have appeared particularly talented in directing these interventions that optimised healing and recovery, as we commonly note today. The recognition of such healing-gifted individuals, that the sick or traumatised could turn to, likely led to the eventual emergence of a dedicated class of healers. Further, we can presume that these early healers were apparently clever empiricist and astute observers of natural phenomena. They would have been quick to capitalise on cases of clear causality with intuitive solutions. For instance, snake bites were often successfully treated with local excision, herbal compresses that reduced swelling and bandaging;²² traumatically fractured limbs were typically immobilised. In the

¹⁶ Mahon 2015: 19.

¹⁷ Graves-Brown 2010: 78; Hebrew Bible, Leviticus 12 v.2,5.

¹⁸ Couto-Ferreira 2014: 289.

¹⁹ Oppenheim 1962: 101.

²⁰ Ackerknecht 1946: 467.

²¹ Andrews 1994: 36.

²² Golding 2020: 208; Nunn 1996: 188.

ancient period, as today, such therapeutic successes contributed to the belief that healers possessed special powers, and of course, knowledge. Similarly, even with maladies that had unknown causality and no obvious therapeutic option, like the common cold or headache, these empirically minded early healers might have exploited common sense observations of disease outcomes and interventions. For example, the periodic effectiveness of herbs and minerals to produce relief as well as the self-limited nature of many diseases likely would have aided their reputation.²³ But despite these successes, therapeutic options were recognisably limited in the face of a daunting spectrum of medical challenges, i.e. physical afflictions without known causality, believed mediated by demonic forces. Many of these maladies had feared fatal outcomes such as peri-natal complications for mother and child.²⁴ So, for these reasons, early healers were likely a synthesis of medical healer and magician, roles today we could – and later did – assign to a physician and priest. A similar synthetic persona occurs in some contemporaneous societies, such as a medicine man (headman, shaman).²⁵ However, as ancient societies continued to develop their basic societal institutions along with specialisation of individual functions, so too did the healer and the priest; they developed separate areas of activity, at least by the 4th and 3rd millennia (see below), although some overlap of function persisted between them.

Disease and Personal Action

It is remarkable that the human spirit persisted in attempting to make order out of what appeared to the denizens of the ancient world as the random actions of the gods, demons, or magical forces in disease causality and recovery. We can imagine that anthropomorphising the gods made their actions more comprehensible in human terms. But, parallel to these imaginings, an awareness developed for possible personal responsibility for human suffering: Are we suffering because we have done something to offend the gods (sinful behaviour)? The reactions were regret, a sense of guilt, or at least fear of divine retribution.²⁶ These concerns would bring a person to the ancient healer,

²³ Halberstein 2005: 689; Hardy et. al. 2012: 99.

²⁴ Fouly et. al 2012: 272.

²⁵ Ackerknecht 1946: 467.

²⁶ Bleeker 1966: 81.

who had recourse to magic and material medicine. Even later, both priests and physical healers were routinely sought out, as we will see.

Institutionalisation of Medicine

Since ancient medicine eventually became formalised, as will be described, we can imagine it was the end point of these earlier prehistoric phases, milieu, and mindset, which allowed the priestly and healer historical streams to become progressively more formalised, and ultimately institutionalised. This process was critically facilitated by the development of written language, predominantly in the third millennium BCE, namely, cuneiform in Mesopotamia,²⁷ hieroglyphs in Egypt,²⁸ and Semitic scripts which emerged in the Levant during the second millennium BCE.²⁹ Such a break-through in human civilisation enhances progress through records of collective experience.³⁰ With the foregoing as background, we will now proceed to compare key, characteristic features of healing in three important ancient Near Eastern societies: Egypt, Mesopotamia and biblical Israel.

Part II. Comparison of the Healing Arts in Different Cultures

Egypt

Earliest text on medicine

Approximately 15 documents are extant, written mostly in the priestly hieratic script on papyrus, dating from approximately the nineteenth to fourth centuries BCE. Representational works on facets of medicine, as well as medical artifacts, also have survived in tombs. Some of these documents may have roots in a third millennium BCE

²⁷ Woods et. al. 2011: 87.

²⁸ Woods et. al. 2011: 118.

²⁹ Woods et. al. 2011: 189.

³⁰ Diamond 1999: 78. Regarding the Spanish conquest of the Incas (16th century CE), he notes that the Spanish possessed writing; the Incas did not. The significance of writing there was to facilitate the dissemination of ideas “more widely, more accurately, and in more detail by writing” than could be orally transmitted. Additionally, [present author] texts could be repetitively copied, allowing knowledge to be preserved over time, in addition to the spatial dissemination noted by Diamond.

medical work, believed to have been written by Imhotep.³¹ Although his life is poorly documented historically, he has at least the mythical status of an extra-ordinary physician and the father of Egyptian medicine.³² Extant statuary often depict him with a scroll on his lap, supporting a role as teacher and author.³³ Two of the most informative documents are referred to as the Edwin Smith (surgical),³⁴ and Ebers (medical) papyri.³⁵ In general, they represent a series, or collections, of case reports, but not a textbook in the traditional sense. One can see that they were clearly written with an eye to a didactic function. The format of a typical example would include the following five elements descriptively presented: *Title, Examination, Diagnosis, Prognosis* (see below), and *Treatment*; the latter at times would be acceptable by modern standards, as considered shortly. The diagnostic phase did not include differentiation among visually similar possibilities, a critical medical process referred to today as the differential diagnosis that will be dealt with below. Spells may be included as an approach to treatment of the case or be a dominant component of the entire piece. The cases would be interpreted by a senior physician or instructor, as a way of conveying the necessary basic background. Some papyri, or sections (chapters) within the same papyrus, are predominantly or exclusively, medical in a rather modern sense, while others integrate spells and incantations into the therapeutic approach to certain healing issues. The most modern, i.e., least magical, chapters and papyri are those that deal with traumatic injury: diagnosis and surgical treatment.³⁶ In any event, by their very nature, these documents provide a rich cache of details of normative medical practice, from both the physical and magical sides.

³¹ Nunn 1996: 122.

³² Nunn 1996: 122 notes that the middle Egyptian hieroglyphic designation for a physician *swnw* is absent from surviving statuary and epigraphy of Imhotep, which would have definitively established his status as a physician. Additionally, his tomb has never been discovered, which typically would contain attestations of his titles in life. It is alleged that Sir William William Osler (1849-1919), a giant among historic modern physicians, said that Imhotep is 'the first figure to stand out clearly [as a physician] from the mists of antiquity'.

³³ Nunn 1996: 122.

³⁴ Risse 1972: 912; Breasted 1980; van Middendorp 2010: 1815.

³⁵ Ebbell 1937.

³⁶ Diamond 1999: 78.

Epidemiology

Although this subject is deserving of extensive discussion, on its own, here we will restrict ourselves to note a few brief aspects of the epidemiology relevant to the diagnostic and therapeutic challenges facing ancient Egyptians healers. First, certain types of *physical* disease occurred regularly, as descriptions in papyri attest. These documents are supported by illustrative scenes in tombs and examinations of mummies.³⁷ Second, the attested cases occur mostly in the following four categories: *infectious*, *traumatic*, *neoplastic (tumours)*, and *toxic/nutritional*.³⁸ These categories well reflect the scope of disease types recorded in their medical literature.

Diagnostic Approaches

In general, by the second millennium, Egyptian physicians had achieved several scientific landmarks. First, they promoted the idea that the diagnosis should reflect *scientific*, not demonic, causality: it was a rational analytic process. This is truly a remarkable development for a third to second millennium magic-imbued society with an extensive and powerful priesthood. Second, they recognized that a specific diagnosis required a specific therapeutic response, at least to the extent that their limited therapeutic repertoire and pathophysiological understanding would allow. This idea represented a major stride forward for the development of rationale medicine. From a typical case recorded in the medical papyri, one can discern that a clear logical relationship was recognised between the patient's initial complaint or symptoms (the 'presentation'), results of physical examination (physical findings) and the final diagnosis,³⁹ as we will illustrate shortly.

So, the approach to diagnosis in early Egyptian medicine was reasonable. But, practically, did this framework provide correct diagnoses? Indeed, a sufficiently sophisticated level of diagnostic acumen had been attained to warrant division of this skill into specialties; specialties were common already in the 3rd millennium, and at least seven areas have been described,⁴⁰ such as gastroenterology and cardiology. *Imhotep*, mentioned above,

³⁷ Sandle 2013: 3.

³⁸ Nunn 1996: 64ff; 163ff.

³⁹ Ebbell 1937; van van Middendorp 2010.

⁴⁰ Nunn 1996: 191; Reeves 1992: 21.

was an example of the former, while cardiological acumen is exemplified in the following proverb: “from pulse you can know the whole body”, an idea I have seen applied currently by skilled healers.

A component of the diagnostic process was a crude assessment of the eventual outcomes of the case in question, or *prognosis*. According to the Edwin Smith Papyrus,⁴¹ three possible outcomes were considered: 1) an ailment I shall treat (*likely positive outcome*); 2) an ailment I shall fight with (*guarded outcome, possible success*); 3) an ailment not to be treated (*grave outcome anticipated; treatment beyond the scope of physical medicine*). Importantly, the third formula does *not* proffer something like: ‘may *Sekhmet* heal this man’, which might be expected from the language of therapeutic formulae (see below). This may imply that the format originated with healers primarily subscribing to the power, or importance, of purely medical modalities, rather than magic. One serious shortcoming in their diagnostic approach was the absence of *differential diagnostic* considerations, i.e., recognising disease entities with similar presentations but requiring a different therapy. A modern example is sub-sternal chest pain that may be due to different process requiring particularised treatment for each. This issue will be treated in greater detail in a later section.

Therapeutic approaches

In distinction to diagnostics, therapeutics was entirely empirical, in the sense that it was based on remembered, or recorded, observations; it was not statistical in any manner, despite the sophistication of Egypt in other aspects of mathematics. Nor was therapy rational in the sense that it was etiologically based or related to a recognition of placebo effects or even spontaneous recovery which occurs for many diseases. Moreover, with this empirical mindset, the use of magical elements may have indeed appeared as effective as real medical interventions, since many conditions could have recovered spontaneously or with non-specific ministrations; indeed, healers often selectively remember their successes, even today.⁴² Additionally, of course, the physician generally accepted the relevance of the mystical power of magical approaches in and of themselves

⁴¹ van Middendorp 2010.

⁴² van de Wiel et. al. 2011: 81.

as important therapeutic tools. In physical medical terms, the therapeutic repertoire was reliant on *Materia medica*, external surgery, bandaging, suturing etc. We know from written records and paintings that medicinal formulations were compounded *de novo* for each case, and that Egyptian physicians were world renowned in that field. Nunn cites an Akkadian document (thirteenth century BCE) testifying that a certain physician was dispatched to the Hittite court to 'prepare herbs' for the king.⁴³ Due to the institutionalisation of healing, therapeutics was also influenced by the collective experience of Egyptian medicine as documented for treating many diseases, both typical and atypical; such documentation would have been available in the *Per Ankh*, 'House of Healing', which was often part of the temple complex.

Healing functionaries

Although we have already commented on therapeutic capabilities above and the basic division of labour, the organisation of the community of healers warrants further comment. The basic organisation involved the medical healer (physician), *and* priest (figure 1). The main class of 'medical' healer was referred to as *Sunu*. He appears to be highly respected both among his peers and the lay public. Although a *Sau* healer relied primarily on magical incantations and spells, this was not an absolute distinction since there was a medical side in some cults; priests of *Sekmet* functioned similarly to the *Wet* priest⁴⁴ and those of *Serquet's* cult were also surgeons and apparently experts at treating common and potentially deadly scorpion bites,⁴⁵ as suggested by the typical representation of *Serquet* in figure 2. Similarly, *Sunus* could not only engage in real medical interventions, but also regularly would utilize magic as part of their therapeutic repertoire, perhaps as something of a backup.⁴⁶

The priesthood was organised into a hierarchy with many levels and functions. A *Hry-hb.t hry-tp* or chief *lector* (reader) priest was a fundamental element of the temple and *per Ankh*, and a master of spells and incantations. As the name lector priest suggests

⁴³ Nunn 1996: 131.

⁴⁴ Nunn 1996: 134.

⁴⁵ Wilkinson 2003: 233.

⁴⁶ Nunn 1996: 113-114.

they were likely concerned with more academic aspects of their calling, such as copying older papyri, and perhaps adding the new cases to the classic medical works. *Hry-tp* priests may have functioned as wise men and counsellors to the Pharaoh, analogous to biblical functionaries, the *Hartumim*, described in the biblical exodus story.⁴⁷ The *Sau* healer mentioned above,⁴⁸ was another but less prestigious priestly class, whose status and limited focus on orally recited magical incantations, perhaps positioned him to provide the population's everyday magical needs, at least regarding health.

Another medically related functionary was the embalmer, who was responsible for mummification, but had other healing functions as well. He was known as a *Wet/Wab* priest, although occasionally the task is attributed to a *Sunu* priest. Interestingly, the Bible attributes mummification to *Rofa'im*,⁴⁹ based on a Hebrew word *Rofe*, which in biblical and modern Hebrew indicates some sort of healer,⁵⁰ and not a priest. Although the *Wet* priest and *Rofe* perform the same procedure, no direct linguistic or conceptual link exists between them. Therefore, it has been suggested that the commonality is their skill as a bandager,⁵¹ since a *Rofe* is clearly identified as a bandager⁵² and mummification requires a bandager, as well. Conversely, it is reasonable to suggest that the *Wet* also served as an early bandaging healer,⁵³ and therefore was tapped for mummification in the third millennium, when it originated. Moreover, bandaging was not simply the skill of wrapping a cloth (presumably Egyptian flax) to protect a wound or dead body. The cloth bandages were soaked in herbs, resins, mineral extracts etc. which then were slowly released to the underlying tissue. In the case of mummification, for preservation; for the physician, healing via percutaneous absorption either locally over a wound or even for broader systemic effects, as the verse from Ezekiel suggests: '...I have broken the arm of Pharaoh...and I have [purposely] not bandaged it to apply medicinals, [then] to wrap it with its bandage to strengthen it [and allow it to heal].'⁵⁴ I might parenthetically add that

⁴⁷ Hebrew Bible, Exodus 7 v.11.

⁴⁸ Nunn 1996: 113-114.

⁴⁹ Hebrew Bible, Genesis 50 v.2.

⁵⁰ For example the Hebrew Bible, II Chronicles 16 v.12-13, uses the word *Rofe* exclusively as a physical healer, a physician in the modern sense.

⁵¹ Kristt 2021: 34.

⁵² Hebrew Bible, Ezekiel 30 v.21.

⁵³ Kristt 2021: 34.

⁵⁴ Hebrew Bible, Ezekiel 30 v.21.

using medicinal-embedded bandages is analogous to current methods for enhancing delivery of a drug for certain dermatological conditions, e.g., psoriasis, and more recently, even for systemic therapies, through transdermal patches containing hormones.

Training of healers

One interesting, and advanced, feature of the medical profession, is the *Per-Ankh*, House of Life (Healing). This served as an educational centre, where novices were trained and medical and religious texts were written and copied.⁵⁵ Considering the institutional aspects of medical practice and the importance of cultic considerations, it is not surprising that this institution was located within the temple complex.

A traditional part of medical training is knowledge of the structure and function of the human body. Regarding learning anatomy of the human body, Egyptian students had access to cadavers during mummification when the internal organs are manipulated. Less useful and dependable avenues for learning this information relied on autopsies¹² or exhumation of cadavers; additionally, the later exercises can be an unpleasant olfactory experience due to tissue decomposition, particularly in the heat. Since mummification has not been attested in Mesopotamia, therefore, it is likely that Egyptians were superior anatomists. However, it is hard to gauge how this impacted on the healing arts in these cultures since invasive therapies were not practiced in Egypt, and apparently not common in Mesopotamia (see below).

Circumcision

This minor surgical procedure, or ritual, was apparently performed by a low-level funerary priest. It was performed as a ritual involving a cohort of teenage friends, for whom it served as a social binding event that signified the rite of passage to adulthood.⁵⁶ It differed technically from biblical circumcision by maintaining a posterior attachment of the

⁵⁵ Reeves 2001: 22, 23.

⁵⁶ Nunn 1996: 171.

foreskin.⁵⁷ The Greek historian Strabo recorded that female circumcision was also practiced, although mummy investigations so far have not supported that claim.⁵⁸

Gods of healing

In a society and vocation interweaving magical and rational healing the pantheon of gods played an important role, as we discussed above in a general way earlier. Here, just a short, focused discussion has been added regarding the characteristics of two of the major gods relevant to the healing arts and its purveyors.

Sekhmet (figure 2), considered the patron of healers, was a multi-faceted goddess having both qualities as a bringer of war (and as a warrior), and a bringer of disease; if she was appeased, disease would be arrested and there would be healing.⁵⁹ Her representation shares that duality: *Sekhmet* was depicted traditionally as a female human figure with the head of a lion – recognised for its fierceness – and an *Ankh* [life] symbol in one hand. Her priests not only attended to their cultic service but also were reputed to be particularly adroit at medically treating common illness, and not merely by magical means. However, *Sekhmet* was not the only god in the Egyptian pantheon who was a healer; other gods were believed to have roles in healing and insuring wellness, particularly for the home, such as *Bes* (children/childbirth, see figure 1), *Heqet* (childbirth), *Beset* (domestic protection) and *Serqet*. The goddess *Serqet* was the goddess of fertility, nature, animals, medicine, magic, and healing, particularly of venomous stings and bites.⁶⁰ Apparently curing scorpion bites was strongly associated with *Serqet*, to the extent that her representation appears crowned with a scorpion (figure 2). Such events appear to have been an enduring and common medical issue in the ancient Near East,⁶¹ as they are today in many Near Eastern countries. At least one Egyptian scorpion species is particularly deadly (*L. quinquestriatus*), if left untreated. Although *Serqet's* priests were skilled in the medical care of such events, magic was employed in this situation as well,

⁵⁷ Sasson 1966: 473.

⁵⁸ Wilkinson 2003: 181.

⁵⁹ Wilkinson 2003: 181.

⁶⁰ Wilkinson 2003: 233.

⁶¹ T.B. Pesachim 8a.

since spells and incantations to treat or ward-off snakes and scorpion bites often invoked her name.⁶²

Mesopotamia

Of the three ancient societies we are considering here, Mesopotamia is most parallel and comparable to Egypt. In undertaking this comparison, it is important to bear in mind that over-all, the main elements of the two medical systems are quite similar, viz. origin, progress, approach, and underlying belief system. As in Egypt, despite the preoccupation with magical aspects of life and disease, a rational, structured profession still managed to emerge. The documentation in the east was not as rich and in-depth as the Egyptian counterpart both in terms of artifacts and texts. Hence, some of our observations must be seen through this lens of uncertainty. Nor was mummification practiced, so that a productive window of observational opportunities was closed to students of ancient Mesopotamian medicine. Nonetheless, sufficient artifacts and documentation exist to provide a reasonable preliminary comparison; a wealth of material has yet to be translated and studied in both collections of actual tablets and online transcriptions.⁶³ It should also be born in mind that the geographical extent and political heterogeneity of Mesopotamia – as compared to Egypt – make it difficult to trace original documents from copies discovered in different geopolitical subunits of the Mesopotamia, such as Babylonia, Assyria, Anatolia, Ugarit, the Hittite Kingdom, and others. In the following review, we will focus on some of the features that are unique to this region.

Earliest text on medicine

A Sumerian (southern Mesopotamia) medical cuneiform work has been discovered dating from 2200-2000 BCE during the Ur III epoch. Earlier works are possible, since it has been suggested that Hittite scribes probably were copying Babylonian cuneiform medical texts in the 17th century BCE that date to hundreds of years earlier.⁶⁴ However, the most complete, and scholastically most and informative, is a series of 40 clay tablets from

⁶² Fleming and Lothian 2012: 219

⁶³ For example: Medical Texts, CDLI, a cuneiform digital library initiative by University of Oxford and the British Museum's Ashurbanipal Library Project, Fincke 2004: 55.

⁶⁴ Oppenheim 1962: 101; Geller 2010: 149.

around 1000 BCE in the Akkadian language. Formally referred to as the *Sakikku*, it is commonly known as the *Diagnostic Handbook*.⁶⁵ It is not as extensive as the Egyptian medical papyri, but it is systematic and covers a broad range of medical topics in a case report style. A still larger collection of medical tablets has been uncovered in the Royal (Neo-Assyrian) Library of Ashurbanipal at Nineveh originating in the 7th century BCE;⁶⁶ Ashurbanipal was a ruler renowned for the scope and extent of his library, which included many copies of earlier medical works. These tablets are now housed in the British Museum.⁶⁷

Epidemiology

The attested cases also occur mostly in the following four categories: *infectious*, *traumatic*, *neoplastic (tumors)*, and *toxic/nutritional*. This parallel with Egypt probably suggests, at least, that the range of basic disease entities was common throughout the ANE, although it may be truly universal since this basic classification is applicable today as well.

Diagnostic approaches

The approach is quite parallel to that of Egyptian medicine in that it was structured and analytic. Yet, in Mesopotamia case records tended to be more loosely descriptive and not quite as neatly formalised into a scheme factoring in outcomes as a function of the diagnosis. In the *Sakikku*⁶⁸ the general format is simpler, as it appears in numerous examples, as follows: "If [symptom(s)], then [diagnosis and/or cause]; then [prognosis]." This is the basic descriptive unit; however, several descriptive units may be linked if they concern (1) different stages in the same patient or (2) a common process in a cohort of patients suffering from the same malady. A good example would be fever, which may be part of the initial presentation (i.e., the patient's signs and symptoms) as well as a later complication when the disease process progresses. Naturally, these composite

⁶⁵ Oppenheim 1962: 101; Geller 2010: 149.

⁶⁶ Fincke 2004: 55.

⁶⁷ Fincke 2004: 55.

⁶⁸ Oppenheim 1962: 101; Geller 2010: 149.

descriptions broadened a student's understanding of the clinical presentation, progression and resolution for a range of diseases.

Therapeutic approaches

Apart from diagnostic information in the *Sakikku*,⁶⁹ separate therapeutic texts have been discovered that often include magical spells, as well as purely pharmacological works based on the *Materia medica*;⁷⁰ the latter are similar in form and content to those recorded in Egyptian documents.

As in contemporaneous Egyptian practice, the Mesopotamian healer would attempt to strike a balance between science and superstition, balancing scientific diagnosis and therapy with cultic elements for appeasing demons. So, we can see that this approach was a central tenet of medical care throughout the ANE.⁷¹ Nonetheless, certain stylistic differences existed between the two medical traditions. For instance, a Mesopotamian, or at least a Babylonian medical style, was to use a therapy that completely integrated both medicinal, and magical additives along with incantation elements for treating a given medical problem. The two following examples, that illustrate this last point, are derived from a Babylonian cuneiform prescription (therapeutic) tablet from the 6th century BCE.⁷²

The first prescription is an integrated combination of medicinals and magic; both facets are for a fever:

If a man has been seized by heat, you pulverize together cumin, kammantu-plant, kamkadu-plant, "dog's tongue"-plant, male and female nikiptu-plant, "white aromatic" juniper, azupīru-plant, fresh "fox-vine", mushroom peel. You mix (them) in oil, you pour (them) into a bronze tamgussu-vessel, you throw a live lizard into it (and) boil (the medicine) on charcoals...(and) recite the incantation "The Sky is destro[yed], the Earth is destroyed" three times, then you salve him and he will get well.

⁶⁹ Oppenheim 1962: 101; Geller 2010: 149.

⁷⁰ Oppenheim 1962: 101; Geller 2010: 149.

⁷¹ Oppenheim 1962: 101; Geller 2010: 149.

⁷² Bacskay 2018: 93.

The same tablet, in another prescription for recurrent fever emphasizes fumigation: urānu-plant, “nest-of-labbinu-fly”, soiled rag: (you place it) around his neck, (and) fumigate him with scales of a serpent, mother scorpion, saḥlû-cress, soiled rag, combed-out hair.

Incidentally, these therapeutic formulations appear to support my earlier suggestion (Part I, above); namely, that assuming the healers’ empirical mindset, the use of magical elements may have indeed appeared as effective as real medical interventions, at least in particular instances.

For comparison, Egyptian medical treatment would have similarly entailed medical (medicinal) prescriptions being supplemented by spells and incantations, with two main differences. First, Egyptian spells more often evoked the gods. Second, treatments were not typically an intimately formulated combination of magical-medical components, as in Mesopotamia that we illustrated above. To concretely exemplify this point, consider the following example of an Egyptian remedy/spell against headache:⁷³

"My head, my head," said Horus. "The half of my head (= migrane), the half of my head," said Thoth. "Act for me, mother Isis and aunt Nephthys! Give me your head in exchange for my head, the half of my head!" (Isis speaks): "Just as I have seen these people (= human sufferers), so = I have heard these gods (Horus and Thoth) saying to me on behalf of my son Horus: “Let there be brought to me your head in exchange for my head.”"

The Egyptian patient was also likely to have received a supplemental physical antidote for headache as well, a procedure reminiscent of the treatment of snake bites in Egypt. This medical/surgical treatment would normally be accompanied by a separate magical incantation similar to the Horus incantation.

Herbs as therapy

Although herbs were a consistent component of the *Materia Medica* in the ancient world, herbal medications played an especially important role in Mesopotamian medicine. They were such a fundamental element in how Mesopotamians viewed medical therapeutics

⁷³ Borghouts 1971: 18 (no.8) and pls. 3-4 (cols.3/8-4/3); Retranslated by Robert K. Ritner.

that the Sumerian word for herb, *shammu*, came to assume the general connotation of healing. The latter point is supported by the observation that medicinal concoctions using *shammu*, were usually applied by being absorbed into bandages, as in Egypt.⁷⁴ That practice became a synonym for the healing of an *Asu* physician,⁷⁵ although not uniquely so; as we noted above, this therapeutic approach actually was widespread in the ANE with parallels in the *Wet* priest in Egypt and the *Rofe*, in biblical Israel.⁷⁶

Invasive surgery

Another contrast with Egyptian medicine has been suggested, viz. that a Caesarean section was performed in Mesopotamia (second millennium BCE).⁷⁷ Although the language of the cuneiform tablet is ambiguous, Oppenheim thought that an invasive procedure was the most likely interpretation. Regarding Egypt, such surgery seems *not* to have been documented among the Egyptian medical papyri examined up to 1996.⁷⁸ Mesopotamian physicians apparently had fewer qualms regarding surgical invasion of the living human body than their Egyptian colleagues.

Healing functionaries

The division of labour between magic and medicine resulted, as in Egypt (figure 1) with two basic classes of health workers: physician, *Asu* and Priest (magical expert), *(A)sipu* (figure 3).⁷⁹ The elaborate hierarchal nature of the Egyptian priesthood vis-à-vis healing does not appear to have existed in Mesopotamia. Bearing in mind, that we have much less documentation on the Mesopotamian medical system, priestly functions in relation to healing, seem generally similar to those of Egyptian priests, except for mummification, which was not practiced. In lieu of Egypt's multi-tiered priesthood, an array of what might be considered paraprofessionals provided both ancillary services in the magical

⁷⁴ Kristt 2021: 34.

⁷⁵ Oppenheim 1960: 292.

⁷⁶ Kristt 2021: 34.

⁷⁷ Oppenheim 1960: 292; literally: 'a child who was pulled out of the womb', is ambiguous.

⁷⁸ Nunn 1996: 163. He found no convincing evidence for invasive surgery in Egyptian documents.

⁷⁹ Ritter 1965: 299.

(exorcists) as well as the medical realms (fumigators, blood letters, midwives). Admittedly, some paraprofessionals appeared in both societies.⁸⁰

Circumcision

Because this minor surgical procedure plays a role in Egypt and biblical Israel, we should briefly note that it is controversial whether it was performed in the north (Aram), but it was likely disdained in the south, the centre of old Sumerian culture.⁸¹ In any event, it does not seem to have the religious or social significance for its practitioners or recipients that occurs elsewhere in ancient Middle East.

Gods of healing

Gula was the principal deity that influenced health and, as a consequence, served as the patron of physicians.⁸² As a goddess, she is often represented as a dog figure, or a seated female figure with a dog at her side (figure 3). Since dogs groom to heal wounds (cf. 'to lick his wounds'), it has been suggested that that attribute became generalised to this goddess making her the goddess of healing. According to one mythological stream, *Gula* had a son *Ninazu*, who in his own right was associated with healing, well-being, etc.⁸³ Interestingly, his symbol was two serpents intertwined along a staff, similar to the caduceus of Hermes; the symbol of the legendary physician Asclepius is a staff with a single serpent, despite popular belief.⁸⁴

Biblical Israel

A few introductory comments on social attitudes and beliefs in biblical Israel are appropriate here because they inform the society's attitude regarding healing and healers. Biblical Israel was organised around the core legal system defined in the Torah (Pentateuch) and clarified in the companion oral law that is codified in rabbinical sources.

⁸⁰ Nunn 1996: 131.

⁸¹ Sasson 1966: 473.

⁸² Bock 2014: 7.

⁸³ Bock 2014: 7.

⁸⁴ *Hermes'* caduceus, or the staff of *Ninazu*, became the insignia of the U.S. Army Medical Corps. It is likely Asclepius was the intended proper symbol of medicine.

Its authority derived from a monotheistic belief system centred on a transcendental God, which was in stark contrast to the other polytheistic cultures in the ANE. This system of law covered all major aspects of personal life and societal organisation, where faith in God and religious observance together was the dominant perspective. Scientific exploration *per se* was not of much interest, at the societal level. Nonetheless, it is worth emphasising that biblical Israel shared with most contemporary societies the recognition that healing entailed a symbiosis between spiritual and physical approaches. In the following discussion, my perspective will focus predominantly on biblical sources, with a few references to later developments in the Talmudic and post-Talmudic periods.

Biblical Israel was distinguishable from the two main medical cultures we have discussed in a number of regards. There was no formalisation of a medical profession, and consequently an institution comparable to the Egyptian *per ankh*, for training or medical services, is not described across the entire five centuries of the Israelite Kingdom or alluded to in the Bible. Nonetheless, the biblical society managed to be medically innovative regarding diagnosis and public health, but as an incidental byproduct of the society's unique theological mission in antiquity. These points will be considered in more detail shortly.

Attitude towards the nature of healing

The *Torah* (Pentateuch) provides only one specific comment on the attitude towards healing which is theological in tone: 'I am the God who heals you.'⁸⁵ Reliance on magic of any sort for healing, in the sense of *Heka*,⁸⁶ was prohibited by the *Torah*.⁸⁷ Underpinning the last contention is the assumption that a significant difference exists between faith and ancient magic, a subject I can only raise here in passing. Similarly, spells or incantations, commonly found in Mesopotamian or Egyptian medical sources, are never recorded in the Bible. This may appear somewhat surprising because of the Israelite national experiences with both cultures, as the biblical narrative relates.

⁸⁵ Hebrew Bible, Exodus 15 v.26; Deuteronomy 32 v.39.

⁸⁶ Verhoeven 2002: 233.

⁸⁷ Hebrew Bible, Exodus 22 v.17; Leviticus 20 v.27.

Parallel to this spiritual dimension of healing, a recognition coexisted of the practical need for medical healers, or at least, a system of health care. These issues are not articulated specifically in biblical sources but are intimated in the Torah's description of *torts* or laws of damages. For instance, an injured person can bring a suit in court for compensation for medical care as a result of assault or negligent injury: 'You will surely pay the healing costs'⁸⁸ referring to the legal obligation of the defendant/assailant.

Healing Functionaries

As we noted above, some sort of medical care system was apparently in place in biblical Israel. However, no societal functionary with the task of healer or professional physician is mentioned in the Bible that is equivalent to the *Sunu* or *Asu* in the other ANE cultures. Judges, policemen, soldiers, kings and prophets with specific functions are well defined; a description of a medical care giver, comparable to a physician, is absent. On the other hand, as noted earlier, a *Rofe* – a physician in modern Hebrew – is mentioned with limited functions in two contexts: as bandagers of broken bones,⁸⁹ and as embalmers,⁹⁰ activities that involve the same skills.⁹¹ Additionally, several stories are recounted with a *Rofe* perhaps functioning as a general healer. In one example, the Judahite king Asa (late 10th century BCE) suffered from a serious, ultimately fatal, illness that was being treated by physicians.⁹²

Non-medical healers also are described. For instance, the Israelite prophets, may have performed similar healing functions, as indicated by the episode in which Elisha revives a child who has lost consciousness.⁹³ Although this story is the most suggestive of a biblical account of a medical incident, insufficient detail is provided to clearly evaluate that

⁸⁸ Hebrew Bible, Exodus 21:19.

⁸⁹ Hebrew Bible, Ezekiel 30 v.21.

⁹⁰ Hebrew Bible, Genesis 50 v.2.

⁹¹ Kristt 2021: 34.

⁹² Hebrew Bible, Chronicles 2, 16 v.12.

⁹³ Hebrew Bible, II Kings, Chap 4.

possibility. In any event, a prophet's primary focus was never medical, although the prophets were occasionally distinguished for their miraculous healing capabilities.

Circumcision

As in Egypt, circumcision was practiced, but, exclusively on male children.⁹⁴ Additionally, it was viewed dogmatically as a religious obligation, not as a health or social phenomenon, as we can see in the language of the later legal codes: 'It is a positive commandment on the father to circumcise his son...'⁹⁵ It was not done by priests and not necessarily by a medically trained individual; the practitioner could either be a family member, often the father, or a community member expert in this particular procedure.

Role of the priesthood in healing

Despite its biblically defined spiritual dimension, the process of healing does not involve the priesthood or temple rituals directly, i.e., no specific healing rituals are described, nor do the priests have a defined therapeutic function in any context. Indeed, health in ancient Israeli was pursued predominantly on the personal rather than institutional level; the individual was expected to take responsibility for his own wellness and healing, as we will discuss in more detail below.

Role of personal responsibility

The biblical attitude was also distinctive in specifically commanding an individual to preserve his own life and not to endanger it,⁹⁶ i.e., mandating personal responsibility to keep healthy, physically and spiritually, to avoid danger, and seek healing. Perhaps more graphically: 'I [God] put before you life and death, the blessing and the curse, choose life.'⁹⁷ And how is that achieved? The key was adherence to the biblical code of law, but

⁹⁴ Hebrew Bible, Genesis 17 v.10.

⁹⁵ *Yoreh De'ah*, §260.

⁹⁶ Hebrew Bible, Deuteronomy 4 v.9,15; 30 v.19.

⁹⁷ Hebrew Bible, Deuteronomy 4 v.9,15; 30 v.19.

the language has also been interpreted to refer to actually guarding and caring for one's health.⁹⁸

Differential Diagnosis

Although priests do not function as healers, they are expert diagnosticians of macroscopic skin pathology. A priest is trained to critically observe key features of suspicious skin lesions and to render a diagnosis, much as occurs in the other medical traditions. However, in biblical Israel, if those observations do not enable a specific diagnosis that distinguishes among similar appearing lesions, the priest must use the natural history of a lesion to make that differential distinction. That is, he must follow the evolution of the lesion and re-examine it over time until the diagnosis is resolved; what today is routine follow-up. The following Levitical text (loosely translated; brackets are author's clarifications) exemplifies this process:

If the priest sees that the lesion in the skin [i.e. a nodule, scab or a white bright spot] has (1) *hairs* emerging from it that have turned *white* [in a normally dark-haired individual] and (2) that the site of the lesion in the *skin is depressed* [then] it is the plague of *tzorat*. However, if the lesion was (1) a *white bright spot* and (2) the skin was *not depressed* or (3) the *hairs* in it had *not changed* colour, then the [examining] priest will isolate the individual for seven days, [since the definitive diagnosis is uncertain. After this period, on re-examination], if the priest sees it is stable, i.e. has *not extended* [locally, then the diagnosis is still uncertain] and the individual will be isolated for another seven days. [At that point] if the lesion is seen to be (1) dimmer in colour and it still has (2) *not extended* locally, the priest concludes it is not *tzorat*. However, if [examination now shows] it has *extended* than it is [indeed] *tzorat*.⁹⁹

This appears to be the first example in medical history of differential diagnosis being utilised; as briefly considered earlier, differential diagnosis refers to establishing empirical criteria to differentiate among various diseases with a similar appearance, symptoms or clinical findings. In biblical Israel, the correct diagnosis was determined by observing the evolution of the lesion over time; today we would periodically order supplementary

⁹⁸ For instance, Rav Mordechai Yaffa (1530-1612) in his authoritative commentary on *Yoreh De'ah*, §116. There, he says: 'There is an implication in this language that an individual must guard his body and soul so that we will not come to [put himself in] danger.

⁹⁹ Hebrew Bible, Leviticus 13 v.3-8.

laboratory or radiological studies. This is a key element of modern medical reasoning leading to an appropriate diagnosis. To my knowledge, this process of differential diagnosis, in this way, does not appear in Mesopotamian tablets or epigraphy or Egyptian papyri; indeed, Percy does not refer to it at all in his essay on diagnosis in ancient literature.¹⁰⁰ So, it can be argued that ancient Israel was more advanced, at least in regard to this aspect of medical reasoning in a modern sense. Whether a diagnosis of *tzorat* had religious, medical or mixed significance has been debated for at least 2000 years and will not be further explored here. Importantly, these diagnostic sections are not associated with any therapeutic recipes or formulae anywhere in the Hebrew bible, in contrast to medical works from other societies. I suggest an answer to this puzzle may be in the foregoing section on the attitudes towards healing in biblical Israel.

Public Health initiatives in the Bible

To clarify at the outset, it was not a primary goal of the Bible to self-consciously focus on public health edicts. The main driving force in all of these regulations is attaining ritual purity; it was analogous to priestly purity in Egypt,¹⁰¹ but here it was generally directed at the lay population. However, many of these rituals clearly have distinct public health implications. For instance, natural bodies of flowing water, as from a spring, were frequently used for personal purification by immersion. This behaviour would be expected to foster general hygiene and cleanliness, important in preventing disease. As noted above, the requirement for a women's post-partum separation for a week or more, and purification,¹⁰² would reduce the likelihood of infectious complications, regardless of their primary ritual significance. Similarly, several biblical regulations would be expected to be helpful in preventing or limiting public spread of disease. Although toilets are not described in the Bible, the removal of sites of defecation outside the camp and covering the excrement is clearly indicated, and could reasonably serve to limit the spread of intestinal infections, which can produce epidemic dysentery: 'You shall have a place outside the [army] camp... And you shall have a trowel with your gear, and when you

¹⁰⁰ Percy 1992: 595.

¹⁰¹ Bleeker 1966: 81.

¹⁰² Hebrew Bible, Leviticus 12 v.2-5; although not specified in these verses, the women's impurity is rectified by ritual immersion, similar to the other instances noted here.

[need to defecate], you shall dig a hole with it and turn back and cover up your excrement.¹⁰³ Diet also was regulated, forbidding some animals that can transmit parasitic disease to humans; admittedly, the taxonomy of the prohibitions is more complex, since it includes zoonotic vectors that would not have been recognised.¹⁰⁴ A group of laws target Individuals with seemingly contagious diseases (e.g. of skin or urogenital tract) who consequently were socially isolated until they demonstrated evidence of healing, and then required cleansing and purification in water.¹⁰⁵ Contact with the dead, requires purification in water as well as a purely religious ceremonial act.¹⁰⁶ Nonetheless, all of these activities were viewed through a ritual, theological and not medical lens. Whether there was an awareness in biblical Israel of the health implications of these behaviours is a debatable issue deserving separate attention.

Medical text

In contrast with the other medical systems discussed previously, there is a conspicuous absence in the Bible of a corpus of medical experience, diagnosis or therapeutic medicinal formulae. Indeed, a medical text of any format is unknown in this culture during the approximately 1000 years covered by the bible. The ancient Israelites were presumably reliant for medical knowledge – and scientific knowledge in general – on ambient cultures of the ancient world. Indirect support of this last suggestion comes from the work of Geller,¹⁰⁷ who posits that Talmudic medical *recipes* (prescriptions, medicinal formulae), recorded in Tractate Gittin of the CE third to fifth century Babylonian Talmud, show remarkable similarities to those in the early Mesopotamian Medical ‘Diagnostic Handbook’, described earlier; one possible inference is that there was no indigenous, earlier biblical work for the Talmud to reference.

¹⁰³ Hebrew Bible, Deuteronomy 23 v.12-14; evidence for implementation is sparse: Neufeld 1971: 41.

¹⁰⁴ Hebrew Bible, Leviticus 11 v.2-7. Simplistically, in some prohibited cases, clinical or pathological features of disease were visualisable, e.g., Trichinosis in pigs, where larval loci in muscle are grossly visible; in rabbits, fungal ringworm is clinically apparent. In contrast, bovine tuberculosis is transmitted to humans from a permitted animal, but is caused by an unimaginable microscopic infectious agent. So, such diseases were likely considered to be of divine origin and not linked to the permitted animals.

¹⁰⁵ Hebrew Bible, Leviticus 14 v.9; 15 v.6.

¹⁰⁶ Hebrew Bible, Numbers 19 v.19.

¹⁰⁷ Geller 2004: 1.

General Conclusions

In this brief review, several key trends in the practice of the healing arts in the ancient world were explored. In both Egypt and Mesopotamia, the healing arts were characterised by a balance between demons and diagnostics, so a complete separation between priest and physician did not occur; complementary overlaps persisted in their functions. Nonetheless, real medicine emerged in ancient Egypt and Mesopotamia by the 3rd millennium BCE. It was rational in the sense that it was systematic, analytical, and in some measure, institutionalised. Extant records, and artifacts, indicate that for some types of illness, physicians and healers performed diagnostically and therapeutically at an acceptable level even by modern standards.

In contrast, biblical Israel as a monotheistic, magic abhorring society was unique in many regards, but it probably was representative of other societies that functioned as end users of the medical skills and technology developed in the two great, medically innovative societies of antiquity. Additionally, Israel is of interest not so much because of its direct contributions to the history of medicine, but rather as a basis to appreciate how this contemporary culture, in the same region, exposed to the same medical challenges, could respond in such a strikingly unique fashion. The latter observation would suggest that the developments in the healing arts in Egypt and Mesopotamia were not inevitable events in early ANE societies, but rather reflected special cultural aspects of these two dominant cultures. Nonetheless, in its approach to disease and healing, ancient Israel still shared an outlook ubiquitous in the ancient Near East that balanced spiritual considerations with real medicine.

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Figures

Figure 1

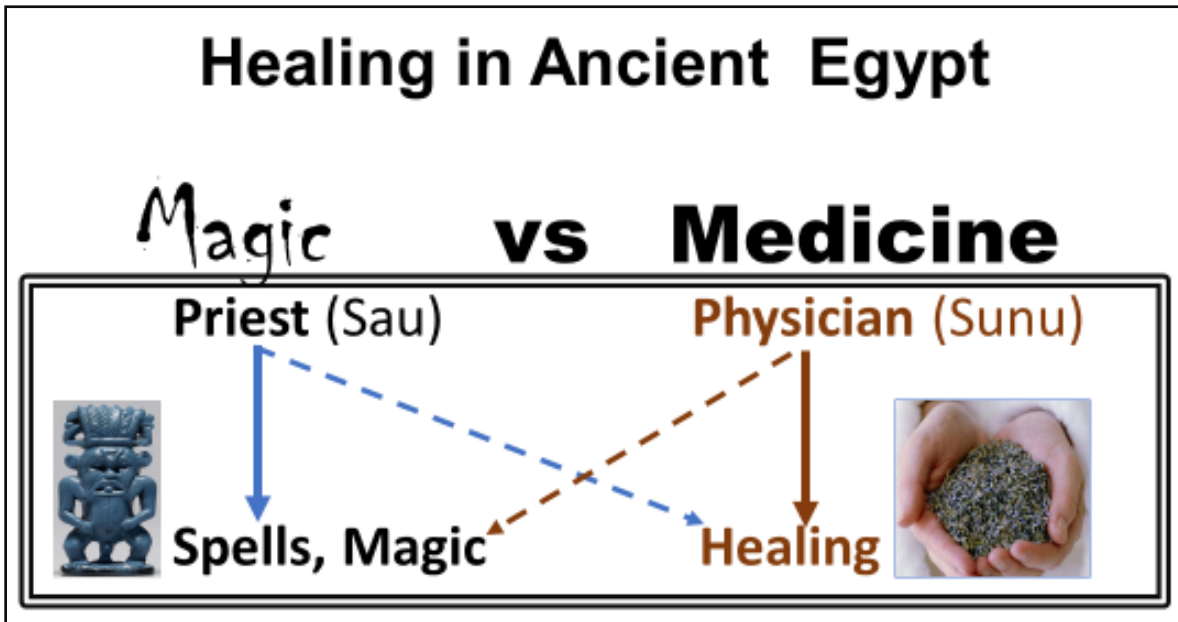


Figure 2

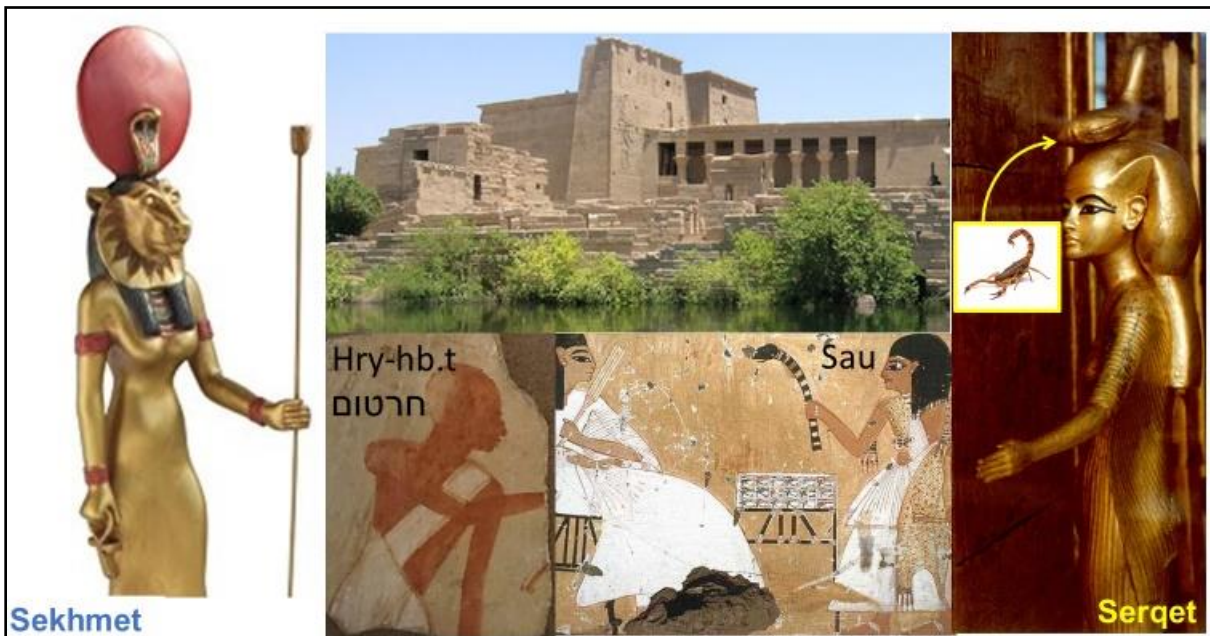


Figure 3



Figure Legends

Figure 1. Schematic Illustration of the balance between Magic and Medicine, and how the two societal functionaries, priests and physicians, provided healing in a complementary fashion in ancient Egypt; Mesopotamia was similar, with different titles and more ancillary para-priestly and medical personnel involved. The priest and physician, or healer, each had a primary role, but their secondary roles overlapped their opposites. The small blue figure to the left, is an amulet of the popular Egyptian household god, Bes. (Composite illustration by author from open-source components.)

Figure 2. Two key medically related goddesses of ancient Egypt. Left, is the figure of Sekhmet, the patron of physicians. The cult's priests are well attested to provide medical healing in addition to otherwise typical priestly duties. Serqet was the goddess protecting against scorpion and other potentially fatal animal bites. Her priests similarly were well recognised for the technical skill in actually treating these conditions. The center panel shows a typical Egyptian temple, located on the Nile river. Two types of priests are depicted, center bottom. The *Hry-hb.t Hry-tp* (lit., "the ones over the head"; in Neo-Assyrian sources as *ḥarṭibi*) is possibly linguistically related to the Hebrew *Hartumin* (חַרְטוּמִים) of Exodus, e.g. 7 v.11; these were spell sayers, while the *Sau* priest, was a master of black magic. Parenthetically the *Sau* may also be reflected in another Hebrew word in the same verse: *Mechashfim* (מַכְשָׁפִים), generally translated as practitioners of black magic. Here the *Sau* priest is depicted holding a snake reminiscent of the confrontation of Moses and Pharaoh in Exodus, exemplified in the noted verse. (Composite illustration by author from open-source components.)

Figure 3. North Mesopotamian temple and religious rites from the city of Mari. Top right panel shows the goddess *Gula*, goddess of dogs, who was the patron of physicians and healing. *Asipu* priests are depicted bottom right. (Composite illustration by author from open-source components.)