

## ETHNO-OPHTHALMOLOGY IN THE EGYPTIAN DELTA: AN HISTORICAL SYSTEMS APPROACH TO ETHNOMEDICINE IN THE MIDDLE EAST

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**Abstract**—Ethnomedical studies of the Middle East may be enriched by a long-term historical perspective, which takes into consideration the complex syncretism, through time, of both literate and nonliterate medical systems in this region, as well as the tumultuous history of conquest and colonialism in the Middle East. In this paper, the authors place the seemingly idiosyncratic, local, 'ethno-ophthalmological' practices of one northern Egyptian community, which is afflicted by the blinding eye disease, trachoma, into a broader historico-political context, through examination of the four major literate medical systems of Egypt and the imperialistic forces responsible for their entrenchment.

**Key words**—ethnomedicine, medical systems, trachoma, Egypt

### INTRODUCTION

The medical anthropology of the Middle East is still in an inchoate stage of development. As Morsy [1] has argued in her thought-provoking critique of the existing literature, most of the ethnomedical studies of this region provide superficial, functionalist descriptions of indigenous medical beliefs, culture-bound 'folk illnesses', and traditional healing practices, while largely ignoring the sociopolitical environment that transcends the local boundaries of these institutions and beliefs. Likewise, studies of competing medical systems have largely been undertaken to 'pave the way' for biomedicine, by identifying traditional beliefs that may serve to either facilitate or hinder the adoption of so-called 'modern' health care practices. Thus, Morsy, for one, has argued for an analysis of Middle Eastern health systems that places them in a broader political-economic framework.

While concurring with Morsy's assessment of the deficiencies of the literature, as well as her suggestions for remedial investigation of the social structural dimensions of health and illness in the Middle East, we want to expand her political-economic perspective even further by examining a dimension that remains largely unconsidered in her scheme and in those of other medical anthropologists of the Middle East. Namely, we argue that the medical anthropological studies of the Middle East would be significantly enriched by a long-term historical perspective, which takes into account the complex admixture, through the millenia, of both literate and nonliterate medical systems in this region, as well as the history of conquest and colonialism in the Middle East.

Although anthropologists continue to pay lip service to diachrony, history has never been the strong suit of most, who have preferred the field to the archives and who have been able to justify, rather too easily, their 'slice-in-time', synchronic studies, be-

cause of the dearth of written records for the societies that they have tended to investigate. This excuse is, frankly, inexcusable for the Middle East, where written materials have existed for literally thousands of years. Fortuitously, many of these records deal with health beliefs and practices, and they provide an exquisitely detailed account of the numerous medical systems and accompanying ideologies that have gained hegemony in this region throughout the centuries. These systems and ideologies—and the cultural milieus in which they existed—have been well described by medical historians of the Middle East, including Bürgel [2], Dols [3], and Gran [4]. However, medical anthropologists, with the notable exceptions of Good [5], Good [6], Greenwood [7], and Shiloh [8], have often ignored primary and secondary sources of historical information on Middle Eastern medical systems—data that would provide the necessary context for a fuller understanding of contemporary ethnomedical beliefs and practices, including their historical origins.

Through examination of historical sources, it becomes apparent—and strikingly so—that many of the traditional medical practices observed in the Middle East today have not arisen, *sui generis*, in response to the biological, psychological, or social needs of isolated communities existing in historical vacuums. Rather, they are extant manifestations of events occurring, in some cases, thousands of years before and often involving the forces of imperialism—both political and medical—which have operated in the Middle East over several millenia. Indeed, in rural Egypt, the focus of this discussion, many of the currently held beliefs and practices surrounding health and illness can be traced to medical traditions that date back to pharaonic times and that were often introduced to Egypt as a result of the medical exigencies of invading armies.

To demonstrate the importance of historical reconstruction to the study of ethnomedicine in the Middle East, we will focus our discussion on one segment of

this field, which we have chosen to call 'ethno-ophthalmology', to designate the study of non-biomedical approaches to eye care. Our objective is to place the seemingly idiosyncratic, local ethno-ophthalmological practices of one northern Egyptian community into a broader historico-political context. To do this, we will first trace briefly the history of medical systems in Egypt, but only as they relate to ophthalmology and eye disease. Then we will examine 4 common traditional therapies for the eyes, currently employed by the inhabitants and healers of the small, Egyptian farming community where we have been conducting anthropological fieldwork since late 1985.

#### THE HISTORY OF MEDICAL SYSTEMS IN EGYPT

##### *Pharaonic medicine*

The literate medical systems of Egypt date back to the pharaonic period. Between 1900 and 1200 B.C., 8 medical papyri were written [9]. One of these, the Ebers papyrus, written in about 1550 B.C., provides a detailed account of the eye diseases present in Egypt at that time, as well as a description of their treatment [10-12].

Among the conditions cited in this ancient document were blepharitis, cataract, entropion, granulation, and 15 other common eye ailments known today to Western ophthalmologists [10]. Treatments for these conditions were largely homeopathic, in that they utilized "like to cure like" [11]. Thus, irritants were used to treat inflammations; substances that would cause tearing were used to relieve excessive lacrimation; and heat-producing substances were used to soothe burning sensations in the eyes [13].

Apparently, the various collyriums and incantations described by the Ebers papyrus and utilized by pharaonic oculists were at least partially effective, for the fame of Egyptian ophthalmology spread throughout the ancient Middle East. Indeed, in a now legendary tale of cataracts and conquest [14], the ruler of Persia requested from the pharaoh of Egypt that he send him his best "physician of the eye" to cure the dim vision of his aging mother. The Egyptian pharaoh, Amasis, sent his finest oculist, named Nebenchari, who performed a cataract operation on the Persian queen mother by, in his words, "cutting the skin that covers the pupil of the eye" [14, p. 296]. But, in a long story made short, the pharaoh played a dirty trick on Nebenchari by eventually engaging for himself the services of Nebenchari's arch professional rival. In revenge, the ophthalmologist Nebenchari, now in favor with the king of Persia for having performed the miraculous cataract operation, devised a scheme that eventually resulted in the Persian invasion of Egypt. Thus, Nebenchari, perhaps the original aggrieved ophthalmologist, was largely responsible for a war that destroyed the Egyptian empire in the early part of the fourth century B.C. [14].

##### *Unani medicine*

Despite the demise of the pharaohs, pharaonic medicine continued as the predominant literate medical system in Egypt until about 300 B.C., when Alexander the Great established the Egyptian city of

Alexandria, which still bears his name [15, 16]. Thus, Greek physicians now had access to intellectual circles in Egypt, where, at the Alexandrian medical school, they introduced the second literate medical tradition, known as Unani medicine. ('Unani' means 'Greek' in both Persian and Arabic.)

Unani medicine was based on the teachings of Hippocrates, who was a proponent of the so-called 'humoral theory' of pathology. According to the tenets of humoral pathology, the body consisted of 4 humors, blood, phlegm, yellow bile, and black bile, which corresponded, in turn, to the 4 elements, earth, water, fire, and air [17]. If improperly balanced, these humors could, among other things, wreak ophthalmological havoc, by causing the eyelids to ulcerate and the membranes of the eye to rupture, leading to pain, swelling, and secretion. Thus, the primary goal of the physician and his medicines was to restore the delicate balance of the 4 humors through a system of therapeutic opposition, in which hot substances were used to treat cold diseases, moist substances to treat dry conditions, and vice versa.

The primary protege of the Hippocratic tradition of Unani medicine was Claudius Galen, who studied medicine at the then famous Hellenic medical school in Alexandria, Egypt, from A.D. 147 to 158 [18]. Galen was perhaps the most renowned of the Unani ophthalmologists. In his 3 ophthalmological texts—entitled *Optics*, *Diagnostics of Diseases of the Eye*, and *Anatomy and Physiology of the Eye*—he introduced to Egypt and the rest of the Arab world detailed theories of vision and ocular anatomy, as well as a classification of ocular diseases and their treatments [19]. Like Hippocrates, his pathology was fundamentally humoral and his philosophy of therapeutics oppositional (i.e. hot-cold, moist-dry).

Galen's version of ophthalmology was eventually adopted and transformed by Arab physicians, who translated the Greek texts into Arabic [19]. Hunain ibn Ishaq, who lived in the 8th century A.D., was the most prolific of these scientific translators, and his book entitled *Ten Treatises on the Eye*, based on Galenic visual theory, was the major text for Arab ophthalmologists of the time [3, 20-21]. These Arab ophthalmologists not only described, precisely, the signs and symptoms of various eye diseases, but their use of therapeutic *kuhls*, or powders to treat eye infections, earned them the title *al kuhul* (which was eventually transformed into the English term 'alcohol' [16]). Interestingly, *kuhl* is still one of the main medicinal substances used for treating eye disease in rural Egypt.

##### *Prophetic medicine*

During the time when Hellenistically inspired Arab medicine enjoyed ascendancy in Egypt, a dramatic event occurred in another part of the Middle East. Namely, between the years A.D. 610 and 630, the Prophet Muhammad rose to power in what is now Saudi Arabia, and within 100 years of his death in A.D. 632, Islam spread throughout most of the Arab world.

With Islam came yet another medical system, which was based on the teachings of the Prophet Muhammad in the Qur'an and the Hadiths and which came to be known as prophetic medicine [4].

Actually, this system of medicine became 'systematic' only after the Prophet's death, when Islamic believers collected everything the Prophet had said about hygiene, alcohol consumption, circumcision, sanitation, and preventive medicine and institutionalized these rules into a form of widely accepted practice [4].

For believers, prophetic medicine was the word of God, since, throughout history, Muslims have considered the Qur'an to be the word of God as spoken to Muhammad. But historians have suggested that prophetic medicine was actually a syncretic blend of biblical 'Jewish medicine', as contained in the book of Leviticus; nomadic folk medicine, as practiced in Arabia (and particularly in Medina and Mecca) during the Prophet's lifetime; and Persian medicine, as taught in the famous Persian medical school of Gondeshapur, which was attended by several of the Prophet's relatives [4, 23]. The Prophet Muhammad was, after all, of nomadic ancestry; thus, it is not surprising that many of the injunctions of prophetic medicine resemble nomadic aphorisms—for example: "God hath not created disease without first creating its remedy" [4, p. 341]. Indeed, although prophetic medicine lacked a specific ophthalmological armamentarium, the Prophet Muhammad is said to have recommended the use of *kuhl*, painted on the eyes 3 times daily, to "brighten the sight" [24].

In addition to this Islamic corpus of medicine, popular Islamic mystics, known as Sufis or marabouts, began catering to the medical and psychosocial, as well as religious, needs of the less privileged classes of Egyptians [4]. Cults of these mystics, known as Sufi orders, began to proliferate in Egypt in the 16th century A.D., and with this proliferation came medical specialization. Thus, some cults dealt specifically with the ailments of women, while others specialized in psychiatric problems, most of which were attributed to *jinn*, or spirit, possession. The character of so-called 'maraboutic medicine', the history of which dates back to the 10th century A.D., diverged somewhat from prophetic medicine, in that it was not a literate tradition, nor was it uniformly practiced. Rather, as Gran [4] has argued, maraboutic medicine was 'holistic', in that it dealt with the spiritual, cultural, and political problems of the downtrodden, as well as their medical complaints. Furthermore, it drew not from one, but from all the medical systems previously described in this paper.

Maraboutic medicine has continued in the Middle East, somewhat clandestinely, until today. The Sufi healing ceremonies, which often involve ecstatic trance states and even self-mutilation, are patronized mostly by the urban and rural poor, and these rituals have been richly described by medical anthropologists [25–28]. According to the residents of the Egyptian village in which we work, Sufi *shaikhs* are considered capable of achieving truly miraculous cures; thus, individuals go to them with their worst medical complaints, including, among other things, infertility and impotency, the severe, debilitating consequences of parasitic infection, and, pertinent to this discussion, the headaches that are thought to cause eye disease (and for which the *shaikhs* write Qur'anic verses directly on the patient's temple near the infected eye or on small scraps of paper, which are to be worn in the patient's headgear).

### European biomedicine

Up until the 18th century A.D., eye ailments had been a concern of every literate and nonliterate medical tradition in Egypt, and ophthalmology as a specialized form of practice had flourished. But the shape of Egyptian ophthalmology was to change immeasurably with the European colonial invasion in the 18th and 19th centuries and the resulting epidemics of eye infection that ravaged the European troops during the Napoleonic Wars. In fact, we would not be overstating the case if we were to claim that the invading armies of Europe suffered their greatest losses not at the hands of Egyptian soldiers, but because of invisible bacteria, which invaded their eyes and caused unmitigated suffering, vision impairment, and permanent blindness in many cases.

Indeed, when Napoleon Bonaparte left Toulon, France, on 19 May, 1798, headed for Egypt, he knew nothing of the 'military ophthalmia' that would soon decimate his troops. After seizing Alexandria on 2 July (a day after arriving in Egypt), defeating the defending Mameluke armies in the Battle of the Pyramids on 21 July, and taking Cairo on 22 July, Napoleon's victorious troops began experiencing outbreaks of eye infection [29]. In many battalions, as many as three-quarters of the men were infected, and many lost some degree of vision. But they continued to fight, their muskets being pointed at the enemy by other soldiers who could still see [30]. Within 3 months of landing on Egyptian soil, however, nearly 3000 French soldiers had fallen victim to eye infections, which, based on retrospective examination of clinical reports, appear to have been caused by a variety of bacterial and viral pathogens common to Egypt, but not found in Europe at that time [30]. By the end of the first year of occupation, nearly two-thirds of the French army was infected with ocular pathogens, and, as Tower [29] notes, many of those who had been wounded in battle suffered more from their infected eyes than from the battle injuries.

Because of the prevalence of both temporarily and permanently blinded soldiers, several military operations had to be suspended, and by 1801—only 3 years after landing on Egyptian soil—Napoleon's troops were forced to retreat largely as a result of blinding eye disease [29, 31]. They left by way of Italy, and within weeks of their arrival on the island of Elba, their eye infections had spread to the Italian troops and population, and eventually along most of the Adriatic coast [29].

The British, who occupied Egypt after Napoleon's retreat in 1801, fared no better. Their troops were plagued over the next 2 years by what they called the 'Egyptian ophthalmia', and numerous British ophthalmologists, including, most notably, John Vetch, were called to care for the eyes of visually impaired British soldiers [29, 30]. When the British troops were evacuated and disbanded during the temporary peace of 1802–1803, they carried the ophthalmia back to the British Isles [29], where the Egyptian ophthalmia spread to and ravaged almost every regiment of the British army for the next 10 years. In fact, so many English soldiers were partially or totally blinded that the government was forced to

grant its first military pensions for the support of disabled blind veterans [29, 30].

It is important to note that, at this time, the European medical establishment believed that the so-called 'military ophthalmia' was a noncontagious disease, confined to soldiers. Yet, the various forms of blinding eye disease originating in Egypt spread widely through the civilian populations of Europe, devastating the continent for nearly 50 years after the breakup of the various armies that had fought in the Napoleonic Wars. Since the mechanism of infection was not yet understood, causes were sought in dust, sand, sun-glare, and perspiration [12]—all of which are etiologies of eye disease described by Egyptian villagers today.

Returning to 19th-century Egypt, which has become obscured in this discussion of European military history, the Egyptian Mameluke armies, part of the sprawling Ottoman Empire, were overthrown by Napoleon, who then retreated—making it possible for a young Ottoman colonel, named Muhammed Ali, to secure a position for himself as Viceroy and Pasha of Egypt and founder of a dynasty that ended rather ingloriously with King Farouk in 1952 [33]. Muhammed Ali Pasha was determined, for military reasons, to keep his ocularly infected troops in good visual and general health. Thus, he sent emissaries to France to recruit eminent physicians; one of those physicians, Antoine B. Clot, was soon to initiate a system of European biomedicine—complete with hospitals, medical schools, and public health programs—that would alter the structure and future of Egyptian health care.

In retrospect, then, it is largely because of the military experience with eye disease—resulting in French and British medical care of blinded soldiers—that European 'biomedicine' gained its initial foothold in Egypt.

European-inspired biomedicine, much modified over the last 2 centuries, continues as the predominant literate medical system in Egypt today. Yet, the much older literate and nonliterate medical systems continue to survive, perhaps not as formally legitimated 'systems' *per se*, but as informal, and in some cases, widely held belief systems and practices among the Egyptian populace. It is to these beliefs and practices that we now turn.

#### ETHNO-OPHTHALMOLOGY IN THE EGYPTIAN VILLAGE

Considering the fate of the European armies, it is not surprising that Orientalist writers traveling through Egypt in the early part of the 18th century dubbed Egypt the "land of the blind". Even today, Egypt has an inordinate share of blind and otherwise visually impaired citizens—most of them the rural poor and the victims of a chronic and in some cases blinding eye infection called trachoma, which is hyperendemic in rural Egypt [34, 35].

In biomedical terms, trachoma is an ocular infection caused by the atypical obligate intracellular microorganism, *Chlamydia trachomatis*. In its communicable, inflammatory phase, the disease is characterized by follicular keratoconjunctivitis and the growth of superficial blood vessels over the cornea [35, 36]. In most individuals, the infectious trachoma-

matous inflammation undergoes spontaneous resolution, resulting in varying degrees of scarring of the conjunctiva that line the eyelids. In the worst cases, this conjunctival scarring causes inward distortion of the eyelids and inturned eyelashes, resulting in abrasion of the cornea by the stiff eyelashes. Constant abrasion eventually produces corneal ulceration and permanent corneal opacity. Thus, final visual acuity may range from normal vision to total blindness [35, 36].

In heavily affected communities, children, who contract the infection as early as 1 year and who may have active disease well into their teens, are the chief reservoir of trachoma infection in the community. The flies that cluster on the children's eyes to feed on ocular discharges transfer these discharges to the eyes of other children [35]. In addition, the disease can be transmitted by direct or indirect contact with infected material (e.g. hands, clothing, towels) [35]. Thus, factors thought to be associated with poverty, including the presence of several young children in a household, crowding, the unavailability of safe water for household use, and fly breeding areas (specifically human and animal wastes), contribute to the prevalence of trachoma infection in the community [35].

In the communities in which we work in the Nile Delta region of northern Egypt, recent epidemiological and ophthalmological studies have shown trachoma to be holoendemic, with almost all children showing signs of active infection and adults the manifestations of past disease. (Some adults, especially women with young children, also show signs of active infection.)

Because the majority of rural Egyptians have or have had trachoma, the condition, which Egyptian physicians call *ramad hubaybi*, is widely recognized by Egyptian villagers—who think of it not as one disease, but rather as a series of separate conditions marked by discrete symptoms. For example, in the village where we are conducting ethnographic research, *ramad*, which is an Arabic term from pre-Islamic times, is used today by Egyptian villagers to describe the eye condition marked by redness and excessive lacrimation, or tearing. *Lahmiyya*, meaning 'meaty', is used by traditional healers and villagers to describe the 'pimples' of the inner eyelid that, upon eversion, appear red and beefy. *Al-shaqqa* and *mashqūqa*, meaning 'tear', 'rip', or 'fissure', are used to designate the condition thought to be caused by 'sand' in the eye, which 'scratches the eyeball'. (The feeling of 'sand' is probably caused by post-trachomatous concretions of the inner eyelid.) And *al-sha'ra*, or 'hair', is used to describe the eyelashes that turn inward on the eye, causing excessive pain and tearing.

According to the still existent tenets of humoral pathology, eye disease is thought to be caused primarily by exposure to excessive heat or, in some cases, to cold drafts. As one informant stated: "In the summer, there is a lot of heat coming from the land. When we work in the hot sun, sweat gets in the eye and mixes with the heat and dust and stings. This is the beginning of *ramad*."

#### Non-surgical therapies

To prevent and treat the symptoms of eye infec-

Table 1. Ranking of traditional therapies for the eyes\*

	Percent of respondents who cited substance
<i>Preventive</i>	
1. <i>kuhl</i> (lead sulfide)	26
2. aromatic plant resins ( <i>murr</i> and <i>sabr</i> )	20
3. ground nutmeg ( <i>justitib</i> ), long pepper ( <i>'irg ed-dahab</i> ), and <i>Prunus</i> seeds ( <i>mehlab</i> )	15
4. <i>tutya</i> (iron oxide or copper sulfate)	4
5. lemon and sugar (orally)	4
6. <i>sheba</i> (alum)	2
7. egg white	2
<i>Therapeutic</i>	
1. <i>tutya</i>	21
2. <i>kuhl</i>	10
3. <i>murr</i> (myrrh)	10
4. onion juice	6
5. donkey dung compress	5
6. breast milk	5
7. ground nutmeg ( <i>justitib</i> ), long pepper ( <i>'irg ed-dahab</i> ), and <i>Prunus</i> seeds ( <i>mehlab</i> )	3
8. sour milk	3
9. tea	2
10. tomato compress	2
11. <i>sheba</i>	2
12. lemon and sugar (drops)	2

\*This table is based on structured interviews with 79 adults, 26 males and 53 females (1:2 ratio). The preponderance of women in the sample should not bias results, because women and children are, by far, the predominant users of traditional eye therapies. Adult males, because of their higher status, are often afforded the expense of biomedical treatment.

tion, numerous home therapies, described in Table 1, are employed. Two substances—*kuhl* and *tutya*—figure prominently in both the preventive and therapeutic categories.

*Kuhl*. *Kuhl*, which has already been mentioned several times, has a long history in Egypt, having been employed in every literate medical tradition since pharaonic times. For example, *kuhl* was one of the ingredients in eye remedies described by the Ebers papyrus [10, 11], and it was the most common eye paint found in the tombs of the Egyptian pharaohs [37]. The Greeks and their Greek-inspired Arab successors also used *kuhl* extensively. According to humoral theory, *kuhl* was a cold substance, hence good for treating "hotness of the eyes" [38]. The Arab ophthalmologist, as mentioned earlier, was called *al kahl* for his abundant use of *kuhl* powder in treating eye disease. And even the Prophet Muhammad is said to have mentioned the efficacy of *kuhl* in "brightening the sight".

Although there is some dispute over the chemical nature of the *kuhl* used throughout the centuries in Egypt, the *kuhl* used today by northern Egyptian villagers is galena, which is the mineral lead sulfide. Galena often contains antimony as an impurity, and it may be this antimony which has the purported therapeutic effect on the eyes [39]. In fact, antimony has been used therapeutically for centuries and is still employed by biomedical practitioners in the treatment of schistosomiasis and leishmaniasis, two parasitic infections found in areas of the Middle East [39].

In the village in which we work, *kuhl* is highly regarded and is used by women on themselves and on their children to prevent and treat the symptoms of trachoma. The women buy the galena ore from the herbalist at the market, then they pulverize it and mix it with either a powdered aromatic gum resin (*murr* or *sabr*), ground nutmeg (*justitib*), long pepper (*'irg ed-dahab*), or a *Prunus* seed (*mehlab*). This powdered mixture is then applied—usually with unwashed fingertips—around the eyes and inside the eyelid on the conjunctival surface. Commenting on *kuhl* application in her field notes, Lane noted:

"The mother of this household put *kuhl* on the eyes of three little girls. The technique for kids is to hold them down, pull the lids apart, and rub the *kuhl* on with a finger 8 to 10 times. To get the *kuhl* on the finger, the mother wets her finger with saliva from her own mouth. By this method, she rubs directly over the cornea of the child, who is wriggling and screaming (throughout)."

The *kuhl* powder, when applied, looks like dark blue eye shadow—which, without inquiry, is what it would appear to be. But with informal questioning, as well as systematic interviewing of 79 adults (26 males, 53 females) in the village, we soon discovered that women apply the *kuhl* either preventively or therapeutically on days when their own or their children's eyes are red and itchy. *Kuhl*, they explained, 'eats redness'. Interestingly, because *kuhl* resembles eye makeup and because adult males tend to be the ones who are afforded biomedical treatment, men do not use *kuhl*—or, if they do, they do so only in the privacy of their own homes. (Actually, men in the village say they do not use *kuhl*, and we never observed it on any man or older male child.)

*Tutya*. A second therapy, much like *kuhl*, is called *tutya*. There are two forms of *tutya*, one red and one blue. *Tutya hamra*, or red *tutya*, by far the more common of the two in this village, is hematite, or iron oxide. *Tutya zaraqa*, or blue *tutya*, often called 'blue vitriol' by early European practitioners, is chalcantite, which is copper sulfate.

Like *kuhl*, the two forms of *tutya* have been used extensively since ancient times in Egypt. The pharaonic practitioners used copper sulfate and iron oxide as treatments for 'dispelling granulation' of the inner eyelids [11]. The Greeks and their Arabs adherents desired these substances for their extreme astringent and drying qualities [38]. And the British, who sent their medical advisors to Egypt during the Napoleonic Wars, felt one of these substances, copper sulfate, had superior 'irritant' properties, and they utilized it in ocular solutions well into the 20th century [30, 40]. (In the West today, copper sulfate is used, among other things, as a pesticide for grape vines and apple trees and as an algicide in lakes and swimming pools.)

Copper sulfate and iron oxide *do* irritate the eyes, according to those who have undergone application. But these substances may be more irritating to the microorganisms that cause trachoma—which is why Egyptian villagers feel that *tutya* works so well. (As Table 1 shows, it is the most frequently cited therapeutic agent.) The substance, which is ground to powder on a piece of white clay and then rubbed onto the conjunctival underside of the flipped eyelid,

is said to burn terribly when it is applied. But it is also considered an extremely efficacious treatment for *lahmiyya* and *al-shaqqa*, two of the conjunctival ailments recognized by villagers. Because *tutya* application requires eversion, or flipping, of the eyelid, a traditional healer—who charges 1 Egyptian pound per flip—is usually called upon to apply the substance, which residents buy for themselves from the herbalist at the market.

In the village in which we work, the local *tutya* specialist is an extremely elderly, probably tubercular, Coptic Christian woman, who has lost the vision of 1 eye altogether and barely sees out of the other. Nevertheless, she is considered one of the preeminent 'ethno-ophthalmologists' in the area.

#### *Surgical therapies*

In addition to the home remedies, two of the most common therapies practiced in this village are invasive, surgical techniques, performed by the *hallāq saḥḥa*, or traditional barber-surgeon. The term *hallāq saḥḥa*, in translation, means 'barber of health', and these barbers, in addition to cutting the hair and shaving the beards of men, have acted as general surgeons to rural Egyptians for several centuries. As we will describe, they also operate as ophthalmological surgeons.

*Curettage.* One of the ethno-ophthalmological techniques performed by the barber-surgeon is curettage, or scraping of the inner surfaces of the eyelids with a razor blade (in fact, the same straight-edge razor blade used to shave the men). The procedure is performed when a patient has *lahmiyya*, or prominent trachomatous follicles and concretions on the conjunctival surfaces of the eyelids. The *hallāq saḥḥa* in the village in which we work claims that he learned this technique through observation of a local biomedical practitioner. This seems quite reasonable and likely, since Egyptian physicians are trained in the British biomedical tradition, and it was the British who, in the earlier part of this century, reintroduced curettage as a method of treating late-stage trachoma [41].

Curettage, however, has a much longer history in Egypt. Namely, the Greeks of the Galenic school believed in the efficacy of flipping the eyelid and then scraping the internal surface with a fig leaf, fish bone, thin wooden stick, or other sharp object [42, 43]. Indeed, the renowned Greek ophthalmologist Galen advised curettage for the treatment of granulations of the conjunctiva, noting that he used "the rough skin of the shark, cuttle-fish bone and pumice stone, and in some cases the spoon of the sound with a pointed end" [42, p. 45]. The Arabs eventually modified Galen's scraping technique, employing instead pieces of crystalline sugar or blades made of hematite and iron pyrite to scrape away the trachomatous follicles [22].

*Blood-letting.* A second common surgical technique performed today by the *hallāq saḥḥa* is to cut 3, small vertical slashes in the patient's temple, next to the infected eye. Approximately one-fourth of the residents of the village in which we work have these scars, which are usually inflicted during childhood. Thus, for the purposes of epidemiology, these slashes

serve as a convenient retrospective marker of serious childhood infection.

Historical sleuthing shows that the 3-slash therapy, so popular in this village, was a Unani practice, reintroduced to Egypt in 1802 by John Vetch, a British ophthalmologist who treated British soldiers returning from Egypt [30]. In the Galenic tradition, Vetch felt that blood-letting from the temples reduced the distention and congestion of the inflamed conjunctival vessels and that it should be continued until the patient fainted [30]. Bleeding was thought to be most effective when leeches were also applied to the periocular skin, the nasal septum, and even directly to the conjunctiva of the lower lid [30].

Egyptian villagers today do not practice such an extreme form of blood-letting. Rather, upon superficial scarification, the *hallāq saḥḥa* rubs medicinal *kuhl* powder into the bleeding wounds; then he rubs some of this bloody mixture into the patient's infected eyes. The commonly cited belief, on the part of those already scarred, the parents of children about to be scarred, and the scarrer (i.e. the *hallāq saḥḥa*), is that these slashes allow the 'bad blood' to be released from the inflamed eye of the youngster.

A variation of this procedure, which is performed by the village headman's wife, is to pass a threaded sewing needle through the cartilage of the patient's upper ear, letting the bad blood flow from this point. Thus, many of the villagers with 3 slashes also have tiny notches in their upper ears.

#### CONCLUSION

Understanding the so-called 'traditional' medicine of the Middle East requires, simply enough, an understanding of historical traditions. Unfortunately, most of the existing ethnomedical studies of this region have viewed indigenous beliefs and practices surrounding health and illness in a temporal and spatial vacuum. In a proposed corrective to this problem, Soheir Morsy, one of the Middle East's preeminent medical anthropologists, has called for an examination of the political-economic dimensions that underlie all aspects of health care—traditional and biomedical—in the Middle East [11].

This paper attempts to expand Morsy's recommendations even further, by making explicit a dimension that remains largely implicit and only partially clear in her otherwise noteworthy proposal for remedial change. Namely, we have argued that the medical anthropological studies of the Middle East must take into consideration the long and complex history of medical systems in this region, which, to the good fortune of scholars, have been largely literate systems and, hence, accessible through written records.

Indeed, in Egypt, the focus of this study, 4 major literate medical systems—i.e. pharaonic medicine, Unani medicine, prophetic medicine, and European biomedicine—have flourished at various periods throughout the past 4000 years. In each case, their temporary hegemony and their replacement by newer systems paralleled the tumultuous history of colonizing empires. Yet, even today, none of the 3 older systems of medicine has disappeared completely, for they continue to survive in rural Egypt in a state of 'fragmented pluralism'—i.e. not as formally legitimated 'systems' *per se*, but rather as informal, inter-

woven, and, in some cases, widely held 'traditional' belief systems on the part of contemporary Egyptian villagers.

Through historical reconstruction, we have documented how 4 traditional therapies for the eyes, currently employed by the residents and healers of a northern Egyptian farming community, have long and interlinking histories in Egypt. To view these therapies from a functionalist perspective, namely, as local solutions to isolated problems of poor eye health, would be an error of omission that, as Morsy's review of the literature has shown, is often committed by modern scholars of ethnomedicine in the Middle East. Rather, these 'ethno-ophthalmological' practices are intimately tied to an ancient, syncretic, and impressive medical past, which, by virtue of the unique written record in this region, contemporary ethnographers of the Middle East have an opportunity, and obligation, to unfold.

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#### REFERENCES

- Morsy S. A. Towards a political economy of health: a critical note on the medical anthropology of the Middle East. *Soc. Sci. Med.* **15B**, 159, 1981.
- Bürgel J. C. Secular and religious features of medieval Arabic medicine. In *Asian Medical Systems: A Comparative Study* (Edited by Leslie C.), p. 44. University of California Press, Berkeley, Calif., 1976.
- Dols M. W. *Medieval Islamic Medicine: Ibn Ridwan's Treatise "On the Prevention of Bodily Ills in Egypt"*. University of California Press, Berkeley, Calif., 1984.
- Gran P. Medical pluralism in Arab and Egyptian history: an overview of class structures and philosophies of the main phases. *Soc. Sci. Med.* **13B**, 339, 1979.
- Good B. J. The heart of what's the matter: semantics of illness in Iran. *Cult. Med. Psychiat.* **1**, 25, 1977.
- Good M.-J. D. Of blood and babies: the relationship of popular Islamic physiology to fertility. *Soc. Sci. Med.* **14B**, 147, 1980.
- Greenwood B. Cold or spirits? Choice and ambiguity in Morocco's pluralistic medical system. *Soc. Sci. Med.* **15B**, 219, 1981.
- Shiloh A. The interaction between the Middle Eastern and Western systems of medicine. *Soc. Sci. Med.* **2**, 235, 1968.
- Leake C. D. *The Old Egyptian Medical Papyri*. University of Kansas Press, Lawrence, Ks, 1952.
- Bryan C. P. *Ancient Egyptian Medicine: The Papyrus Ebers*. Ares, Chicago, Ill., 1930.
- Krause A. C. Ancient Egyptian ophthalmology. *Bull. Inst. Hist. Med. Johns Hopkins Univ.* **1**, 258, 1933.
- Kuhnke L. Early nineteenth century ophthalmological clinics in Egypt. *Clio Med.* **7**, 209, 1972.
- Ebbell B. *The Papyrus Ebers: The Greatest Egyptian Medical Document*. Levin & Munksgaard, Copenhagen, 1937.
- Snyder C. The war of an aggrieved ophthalmologist: a tale drawn from divers and ancient sources. *Archs Ophthalm.*, N.Y. **73**, 295, 1965.
- Adamson P. B. The influence of Alexander the Great on the practice of medicine. *Episteme* **7**, 222, 1973.
- Longrigg J. Superlative achievement and comparative neglect: Alexandrian medical science and the modern historical research. *Hist. Sci.* **19**, 155, 1981.
- Dash V. B. *Fundamentals of Ayurvedic Medicine*. Bansal & Co., New Delhi, 1978.
- Sandwith F. M. *The Medical Diseases of Egypt*. Henry Kimpton, London, 1905.
- Arrington G. E. Jr. *A History of Ophthalmology*. MD Publications, New York, 1959.
- Lindberg D. C. Alhazen's theory of vision and its reception in the West. *Isis* **58**, 321, 1967.
- Eastwood B. S. Cosmology and physiology in Galenic visual theory: Hunayn Ibn Ishaq. *Trans. Stud. Coll. Physns Philad.* **5**, 2, 276, 1980.
- Smith E. S. Drug therapy in trachoma and its sequelae as presented by Ibn al-Nafis. *Pharmacy Hist.* **17**, 95, 1972.
- Rahman F. *Islam*. Anchor Books, New York, 1966.
- Siddiqi M. F. (trans.) *Mishkat-al-Masabih*, Vol. 1. Law Publishing Company, Lahore, Pakistan, 516 AH.
- Saunders L. Variants in Zar experience in an Egyptian village. In *Case Studies in Spirit Possession* (Edited by Crapanzano V. and Harrison V.), p. 190. Wiley, New York, 1977.
- Fakhouri H. The Zar cult in an Egyptian village. *Anthrop. Q.* **41**, 49, 1968.
- Kennedy J. G. Nubian Zar ceremonies as psychotherapy. *Hum. Org.* **26**, 280, 1967.
- Nelson C. Self, spirit possession and world view: an illustration from Egypt. *Int. J. Soc. Psychiat.* **17**, 194, 1971.
- Tower P. The history of trachoma: its military and sociological implications. *Archs Ophthalm.*, N.Y. **69**, 157, 1963.
- Feibel R. M. John Vetch and the Egyptian ophthalmia. *Surv. Ophthalm.* **28**, 128, 1983.
- Duke-Elder S. *A Century of International Ophthalmology (1857-1957)*. Henry Kimpton, London, 1958.
- Wilson R. P. Selected reminiscences of the Giza Memorial Ophthalmic Institute (Cairo). *Surv. Ophthalm.* **17**, 255, 1973.
- Burrow G. N. Clot-Bey: founder of Western medical practice in Egypt. *Yale J. Biol. Med.* **48**, 251, 1975.
- Said M.-E., Goldstein H., Kobra A. and El-Kashlan K. Prevalence and causes of blindness in urban and rural areas of Egypt. *Publ. Hlth Rep., Wash.* **85**, 587, 1970.
- Dawson C. R. Pathogenesis and control of blinding trachoma. In *Clinical Ophthalmology* (Edited by Duane T. D.). Harper & Row, Philadelphia, Penn., 1984.
- Dawson C. R. Review of eye infections with *Chlamydia trachomatis*. In *Chlamydial Infections* (Edited by Mardh P.-A.), p. 71. Elsevier Biomedical Press, New York, 1982.
- Lucas A. *Ancient Egyptian Materials and Industries*, 4th edn. Arnold, London, 1962.
- Meyerhof M. *The Book of the Ten Treatises on the Eye Ascribed to Hunain Ibn Is-Haq (809-877 A.D.)*. Government Press, Cairo, 1928.
- McCallum R. I. Observations upon antimony. *Proc. R. Soc. Med.* **70**, 756, 1977.
- Trevor-Roper P. Then and now—therapy. *Trans. Ophthalm. Soc. U.K.* **100**, 30, 1980.
- MacCallan A. F. *Trachoma*. Butterworth, London, 1936.
- Cumston C. G. A brief historical summary of the treatment of trachoma, with special reference to the Arabian School and the writings of Ali Ibn-el-Aissa (Jesu Hali). *Proc. R. Soc. Med.* **14-15**, 4, 1920-22.
- Cumston C. G. A brief historical summary of the treatment of trachoma, with special reference to the Arabian School and the writing of Ali Ibn-el-Aissa (Jesu Hali). *Ann. med. Hist.* **3**, 244, 1921.